

MCLI.....

Since 1988, Microwave Communications Laboratories Inc. (MCLI) has built a solid reputation on delivering high quality Microwave components. MCLI offers one of the industries broadest selection of components as standard catalog items. We are committed to excellence and specialize in fast delivery with a competitive pricing structure.

Team MCLI.....

Our design team and staff focus on each customer's individual needs. MCLI is able to complete engineering and manufacturing tasks in a matter days offering hundreds of custom designed products each year. Our "purchase today, receive tomorrow" policy is second to none as we understand the need for immediate delivery in today's fast paced environment.

Selection.....

MCLI offers one of the largest inventories of passive components allowing easy selection for narrow or broadband applications.

Production/Inventory.....

Production and inventory are controlled using a computerized system. The system utilizes an MCLI database which indexes all part numbers and is updated at regular intervals. We stock most standard products and offer "in-house" manufacturing which allows total control over every step in the production process.

Testing.....

All components and subsystems are one hundred percent tested using the latest equipment with Calibration traceable to the National Institute of Standards.

Quality Assurance.....

MCLI has an incoming and in-process inspection system in accordance with MIL-I-45208 in order to insure the high quality and reliability of its products.



Inside the MCLI facility, staff members work to complete a new requirement.



In stock materials offer improved delivery schedules and "in-house" control of purchase orders.



Each product is inspected by a Quality Assurance staff member to ensure high quality and reliability.



MICROWAVE COMMUNICATIONS
LABORATORIES INC.

PRECISION MICROWAVE COMPONENTS

- Power Dividers/Combiners
- Couplers
- Hybrids
- Isolators/Circulators
- Terminations
- Oscillators
- Attenuators
- Power Amplifiers
- Switches

Microwave Communications Laboratories Inc. (MCLI) is an innovative leader in the design and manufacture of RF and Microwave Passive and active Components.

As we enter the 21st century, we will continue to provide high quality components and excellent service to our customers throughout the world.

Now in our second decade, experience has told us that competitive pricing, quick delivery, and the highest quality products are the key to success in the fast changing communication technology sector. Throughout the years, MCLI has built our reputation on these three key factors while providing excellent service to each new or existing client.

MCLI will provide a partnership with each customer and offer our assistance in helping you achieve your design goals. Our latest catalog includes an extensive line of components for many application needs. If for some reason the product you require is not in this catalog, please contact an MCLI associate for custom design options.

At MCLI, we take pride in our products and service and hope you will give us the opportunity to earn your trust and business. Our reputation for product reliability, immediate delivery and competitive pricing is

MCLI ... Precision Components for an active world.



MICROWAVE COMMUNICATIONS
LABORATORIES INC.

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TEL: (727)344-MCLI (6254) ● 1-800-333-MCLI (6254) ● FAX: (727)381-6116

Internet: WWW.MCLI.COM

● Email: Sales@MCLI.com

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POWER DIVIDERS

LUMPED ELEMENT AND STRIPLINE

3 kHz - 26.5 GHz

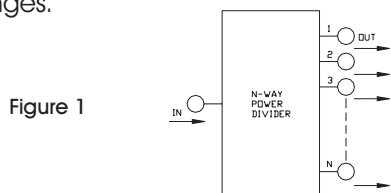
GENERAL INFORMATION

MCLI offers one of the largest selections of power dividers/combiners in the world. These high performance components are primarily used to distribute or combine RF power from signal sources.

An in-phase power divider is defined as a network with one input and (N) outputs whose relationship is 0. The in-phase power divider connected to a signal source will distribute the input signal equally (both in amplitude and phase) to each output port, while remaining well matched at both input and output ports.

Power dividers can also be used to combine signals for near lossless power combination as is required in parallel amplifiers and signal distribution networks.

The MCLI family of power dividers/combiners consists of models ranging from two-way through thirty-two way units covering various frequency ranges.



An n-way power divider is shown in Figure 1. The device has a single input port and n output ports. Ideally, input power would be divided equally between the output ports. The output phase relationship would depend upon the construction of the device.

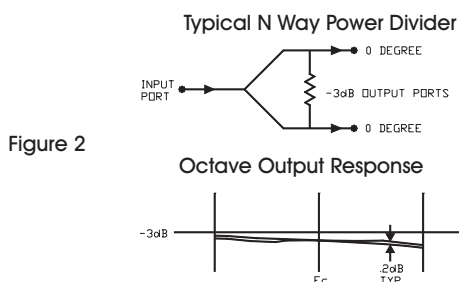


Figure 2 shows the relationship of a typical two-way divider/combiner.

Frequency Range: The Frequency Range over which the power divider must meet the specifications listed.

Insertion Loss: The difference in excess of nominal splitting loss (see chart) in dB between the amplitude of any output signal and the amplitude of the input signal. The total unrecoverable power dissipated within the circuit.

Number of Outputs	Nominal Insertion Loss (dB)
2	3.0
3	4.8
4	6.0
5	7.0
6	7.8
8	9.0
9	9.8
10	10.0
11	10.5
12	10.8
16	12.0
32	19.8

$$\text{Insertion Loss} = 10 \log \frac{P_1 + P_2 + \dots + P_n}{P_{\text{IN}}}$$

Amplitude Balance: The maximum peak to peak amplitude difference in dB between the output ports over the specified frequency range.

Isolation: The difference in dB that the signal level is measured at one output port is below the signal level into the adjacent output port, with the input port terminated in 50 ohms.

Phase Balance: The maximum peak-to-peak difference in phase (degrees) between the output ports over the specified frequency range.

VSWR (Input): The maximum voltage standing wave ratio at the input port assuming matched terminations at all other ports.

VSWR (Output): The maximum voltage standing wave ratio any one of the output ports assuming matched terminations at all other ports.

Average Power: The maximum power that may be applied to the common or input port with the output ports terminated in a load with the VSWR's

2-WAY LUMPED ELEMENT POWER DIVIDERS

1 MHz to 2000 MHz, SMA AND TYPE N CONNECTORS

Features:

- High Isolation
- Low Insertion Loss, Low VSWR
- Uniform Amplitude And Phase Balance
- Ultra Broadband



ELECTRICAL SPECIFICATIONS:

Model* Number	Freq. Range (MHz)	Insertion Loss (dB Max)	Isolation (dB min)	Amplitude Bal. (± dB Max)	Phase Bal. (± Deg Max)	VSWR (Max)	Figure	
							SMA	Type N*
PL2-1	0.3-60	0.5	35	0.2	1.0	1.30:1	1	2
PL2-2	0.5-100	0.5	28	0.2	1.0	1.30:1	1	2
PL2-3	5-500	0.7	28	0.2	2.0	1.30:1	1	2
PL2-4	100-500	0.5	35	0.2	2.0	1.20:1	1	2
PL2-5	10-1000	0.8	28	0.4	5.0	1.30:1	1	2
PL2-6	20-1000	1.3	30	0.4	5.0	1.30:1	1	2
PL2-7	20-1500	1.3	25	0.4	6.0	1.50:1	1	2
PL2-8	200-2000	2.0	20	0.4	8.0	1.70:1	1	2
PL2-9	20-2000	2.7	25	0.6	12.0	2.00:1	1	2
PL2-10	5-2500	1.8	20	0.4	6.0	1.50:1	1	2
PL2-11	200-2500	1.6	22	0.4	6.0	1.50:1	1	2

* Units with Type N Connectors: Multiply VSWR by 1.05,
Subtract 2.0 dB from isolation. Add suffix /NF to model no.

* Units also available with BNC, and TNC connectors.
75 Ohm Or Higher Power Models Available

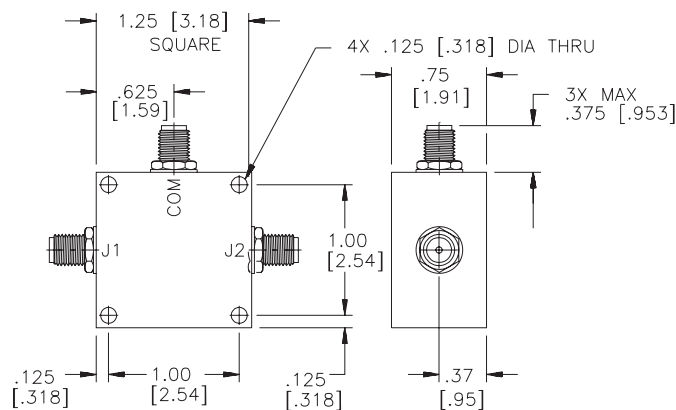


Figure 1

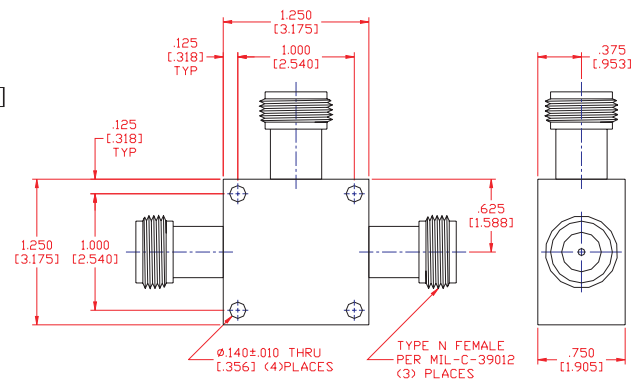


Figure 2

2-WAY HIGH POWER DIVIDERS/COMBINERS

2 - 1900 MHz

100 - 6000 WATTS CW

Features:

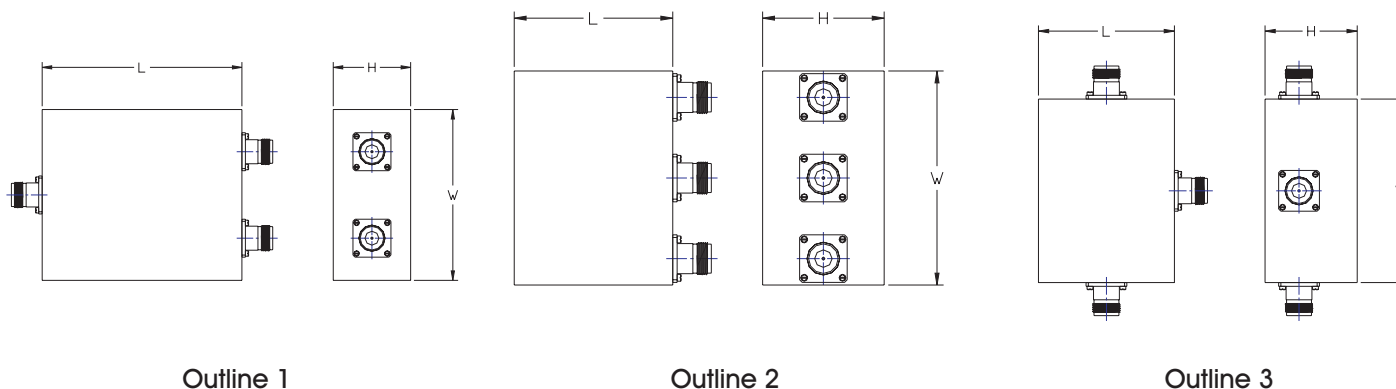
- High Power Applications
- Low Insertion Loss, Low VSWR
- Uniform Amplitude And Phase Balance
- Custom Designs Available



ELECTRICAL SPECIFICATIONS:

Model Number	Frequency Range (MHz)	Insertion Loss dB (Max.)	Isolation (dB min)	Amplitude Balance ($\pm$ dB Max)	Phase Balance ($\pm$ Deg Max)	VSWR (Max)	Power* (Watts CW)	Connectors (In/Out)	Size (Inches) (L/W/H)	Outline
PLH2-1	1800-1900	0.3	20	0.20	5.0	1.30:1	100	N/N	3 X 6 X 1.4	1
PLH2-2	20-500	0.5	20	0.20	5.0	1.40:1	100	N/N	3 X 3 X 2.3	1
PLH2-3	20-1000	1.0	18	0.30	5.0	1.50:1	100	N/N	3 X 5 X 2.3	2
PLH2-4	2-32	0.3	20	0.20	5.0	1.30:1	200	N/N	3 X 5 X 2	3
PLH2-5	2-220	0.4	20	0.20	4.0	1.30:1	200	N/N	3 X 3 X 2.3	1
PLH2-6	800-1000	0.3	20	0.25	5.0	1.30:1	200	N/N	2 X 3 X 1.5	1
PLH2-7	10-500	0.9	20	0.25	5.0	1.50:1	400	N/N	5 X 6 X 3.5	1
PLH2-8	2-32	0.2	25	0.15	3.0	1.30:1	500	N/N	3 X 5 X 2.3	3
PLH2-9	20-100	0.3	20	0.20	5.0	1.30:1	600	N/N	3 X 5 X 2	3
PLH2-10	100-500	0.5	15	0.30	5.0	1.50:1	1000	N/SC	12 X 9.3 X 2.3	1
PLH2-11	88-108	0.3	20	0.15	3.0	1.25:1	1000	N/N	5 X 6 X 2.3	3
PLH2-12	500-1000	0.2	18	0.20	3.0	1.50:1	1000	N/N	2 X 5 X 1.9	2
PLH2-13	2-30	0.1	20	0.10	2.0	1.25:1	3000	N/N	7 X 3.8 X 2.7	1
PLH2-14	5-28	0.2	20	0.10	6.0	1.25:1	6000	SC/SC	7 X 9 X 4	3

* Custom Design for Higher Power Handling Available. Contact Manufacturer for details.



2-WAY STRIPLINE POWER DIVIDERS / COMBINERS

0.225 - 26.5 GHz, SMA CONNECTORS

Features:

- Ultra Wide and Octave Models
- Stripline Construction
- High Isolation, High Reliability
- Low Insertion Loss



ELECTRICAL SPECIFICATIONS

Model No.	Freq. Range [GHz]	Isolation* [dBmin]	VSWR[max]		Insertion Loss [dBmax]	Amplitude Bal. (± dBmax)	Phase Bal. (± Degrees) (Max)	Average Power [Watts] Load VSWR			Outline
			Input	Output				1.2	2.0	∞	
PS2-1	0.5-1	22	1.25	1.15	0.40	0.2	2.0	30	20	3	1
PS2-2	1-2	20	1.25	1.15	0.35	0.2	2.0	30	20	3	2
PS2-3	0.5-2	22	1.25	1.15	0.60	0.2	2.0	30	10	1	3
PS2-4	0.5-2.5	18	1.35	1.15	0.30	0.2	2.0	30	10	1	4
PS2-5	2-4	20	1.30	1.20	0.40	0.2	2.0	30	10	1	5
PS2-6	4-8	20	1.35	1.25	0.60	0.2	2.0	30	10	1	5
PS2-7	2-8	20	1.35	1.35	0.60	0.3	4.0	30	10	1	6
PS2-8	8-12.4	20	1.35	1.30	0.50	0.2	3.0	30	10	1	7
PS2-9	12-18	19	1.40	1.35	0.70	0.3	6.0	30	10	1	7
PS2-10	5-18	19	1.40	1.35	0.50	0.3	6.0	30	10	1	7
PS2-11	2-18	19	1.40	1.40	1.20	0.3	6.0	30	10	1	8
PS2-12**	18-26.5	15	1.60	2.00	1.00	0.5	12	2	1	1	9
PS2-13	.225-.400	25	0.20	1.17	0.20	0.2	2.0	30	20	1	10
PS2-14**	2-26.5	14	1.70	1.60	1.70	0.5	12	2	1	1	11
PS2-15**	.5-26.5	14	1.70	1.60	1.70	0.5	12	10	5	1	12
PS2-17'	.5-18	19	1.50	1.40	1.70	0.6	10	30	10	1	12
PS2-18	7.2-8.5	19	1.35	1.30	0.50	0.2	3.0	30	10	1	5
PS2-19	3.625-4.25	22	1.20	1.18	0.30	0.2	2.0	30	10	1	13
PS2-20	5.8-6.45	21	1.25	1.15	0.20	0.2	2.0	30	10	1	15
PS2-23	1-3	20	1.30	1.20	0.40	0.2	2.0	30	10	1	14
PS2-24	3.7-6.45	22	1.20	1.20	0.30	0.2	2.0	30	10	1	15
PS2-26	14-14.5	19	1.40	1.35	0.70	0.3	6.0	30	10	1	7
PS2-28	3.5-4.5	19	1.35	1.25	0.50	0.1	3.0	30	10	1	5
PS2-29	10.0-15.0	18	1.40	1.40	0.50	0.3	6.0	30	10	1	7
PS2-31	1.8-2.20	19	1.30	1.20	0.40	1.5	1.5	30	10	1	2
PS2-32	0.95-2.3	18	1.35	1.15	0.20	0.3	2.0	30	10	1	4
PS2-33	10.9-12.75	19	1.40	1.35	0.70	0.5	4.0	30	10	1	7
PS2-36	0.7-2.3	20	1.45	1.25	0.50	0.2	3.0	30	10	1	4
PS2-37	7.5-18.2	18	1.60	1.45	0.70	0.2	3.0	30	10	1	7
PS2-38	19.0-21.0	14	1.70	1.25	1.20	0.25	6.0	10	5	1	9
PS2-39	6.90-8.0	22	1.25	1.30	0.40	0.2	4.0	30	10	1	5
PS2-42	3.0-4.2	20	1.35	1.30	0.50	0.2	3.0	30	10	1	5
PS2-45	7.9-8.9	20	1.35	1.30	0.20	0.2	4.0	30	10	1	7
PS2-46	0.45-5.0	18	1.25	1.20	0.50	0.3	3.0	30	10	1	12
PS2-47	0.47-0.8	19	1.30	1.25	0.50	0.2	2.0	30	10	1	1
PS2-49	2.5-2.7	19	1.45	1.25	0.50	0.2	2.0	30	10	1	5
PS2-50	2.0-5.0	18	1.40	1.35	0.70	0.4	2.0	30	10	1	6
PS2-51	0.7-4.25	19	1.35	1.25	0.40	0.3	3.0	30	10	1	16
PS2-52	0.8-0.9	28	1.30	1.20	0.40	0.2	2.0	30	10	1	1
PS2-53	0.750-2.25	20	1.50	1.25	0.40	0.2	3.0	30	10	1	4
PS2-55	1.25-1.750	20	1.25	1.20	0.40	0.2	3.0	30	10	1	2
PS2-56	0.8-1.2	22	1.50	1.50	0.40	0.2	2.0	30	10	1	2

*Custom Design For Higher Isolation Available. Contact Manufacturer For Other Specifications.

** 3.5 mm, 2.9 mm, 2.5 mm, or 2.1 mm Connectors

Mechanical Outline available on page 11

2-WAY STRIPLINE POWER DIVIDERS / COMBINERS

0.225 - 26.5 GHz, SMA CONNECTORS

Features:

- Ultra Wide and Octave Models
- Stripline Construction
- High Isolation, High Reliability
- Low Insertion Loss



ELECTRICAL SPECIFICATIONS

Model Number	Freq. Range [GHz]	Isolation* [dBmin]	VSWR[max]		Insertion Loss [dBmax]	Amplitude Bal. (± dBmax)	Phase Bal. (± Degrees) (Max)	Average Power [Watts] Load VSWR			Outline
			Input	Output				1.2	2.0	∞	
PS2-57	0.96-1.21	28	1.20	1.20	0.30	0.15	1.5	30	20	1	17
PS2-59	7.0-24.0	12	1.90	1.65	4.0	0.5	10.0	30	20	1	18
PS2-60	10.9-12.75	19	1.40	1.35	0.70	0.3	6.0	30	20	1	7
PS2-62	0.35-1.6	19	1.40	1.25	0.50	0.3	5.0	30	20	1	3
PS2-63	0.85-2.8	19	1.30	1.20	0.40	0.2	4.0	30	20	1	16
PS2-64	0.75-2.6	20	1.30	1.20	0.50	0.2	4.0	30	20	1	4
PS2-65	0.875-4.4	20	1.40	1.40	0.75	0.3	6.0	30	20	1	16
PS2-66	7.0-12.4	16	1.70	1.70	0.70	0.6	8.0	30	20	1	7
PS2-67	1.5-8.0	19	1.40	1.35	0.70	0.6	6.0	30	20	1	6
PS2-71	10.5-10.6	20	1.35	1.30	0.70	0.2	3.0	30	20	1	7
PS2-72	3.4-6.6	22	1.20	1.20	0.40	0.2	3.0	30	20	1	15
PS2-76	24.0-24.5	14	2.00	2.00	1.4	0.4	7.0	5	2	1	7
PS2-77	17.0-22.0	13	2.00	2.00	1.8	0.8	12.0	5	2	1	7
PS2-78	16.0-24.0	13	1.90	1.80	2.5	0.7	11.0	5	2	1	7
PS2-79	1.0-28.0	15	1.80	1.70	2.2	0.5	8.0	5	2	1	12
PS2-80	0.8-3.5	18	1.40	1.40	0.6	0.5	8.0	30	10	1	16
PS2-82	0.8-16.5	17	1.70	1.60	1.5	0.3	10.0	30	10	1	12
PS2-83	26.5-40.0	12	2.00	2.00	3.9	0.9	12.0	5	2	1	19
PS2-84	21.0-31.5	12	2.00	2.00	3.8	0.9	12.0	5	2	1	19
PS2-85	21.0-22.5	12	2.00	2.00	3.8	0.9	12.0	30	10	1	18
PS2-86	18.0-50.0	10	2.20	2.20	4.0	1.2	N/A	30	10	1	18
PS2-87	18.0-60.0	10	2.51	2.20	5.0	1.3	N/A	30	10	1	18
PS2-88	0.13-0.55	20	1.15	1.15	0.4	0.2	2.0	30	10	1	22
PS2-89	0.40-2.7	19	1.40	1.40	0.6	0.3	7.0	30	10	1	21
PS2-90	10.0-15.0	18	1.50	1.50	0.6	0.3	8.0	30	10	1	7
PS2-91	8.0-18.0	19	1.40	1.35	0.6	0.2	3.0	30	10	1	7
PS2-92	3.0-6.0	18	1.40	1.30	0.7	0.3	6.0	30	10	1	6
PS2-94	0.5-6.0	18	1.50	1.50	1.3	0.5	8.0	30	10	1	12
PS2-95	10.25-14.5	19	1.40	1.40	0.8	0.3	6.0	30	10	1	7
PS2-96	1.5-3.0	20	1.35	1.25	0.35	0.2	3.0	30	10	1	14
PS2-97	22.5-23.5	15	2.00	2.00	2.8	0.5	8.0	2	1	1	7
PS2-108	0.4-3.0	19	1.35	1.35	0.8	0.4	5.0	30	10	1	20
PS2-109	0.3-3.0	22	1.35	1.40	1.0	0.4	6.0	30	10	1	20
PS2-110	26.0-31.0	12	2.00	2.00	3.0	0.3	9.0	1	1	0.5	19
PS2-112	7.0-14.5	16	1.65	1.60	1.2	0.5	7.0	30	10	1	7
PS2-117	16.0-18.0	16	1.70	2.01	3.0	0.3	9.0	30	10	1	7
PS2-121	17.3-18.1	15	1.80	1.70	1.3	0.4	7.0	30	10	1	7
PS2-125	11.7-13.6	18	1.45	1.40	1.2	0.6	7.0	30	10	1	7
PS2-135	12.75-18.5	16	1.50	1.45	1.4	0.3	8.0	30	10	1	15

*Custom Design For Higher Isolation Available. Contact Manufacturer For Other Specifications.

** 3.5 mm, 2.9 mm, 2.5 mm, or 2.1 mm Connectors

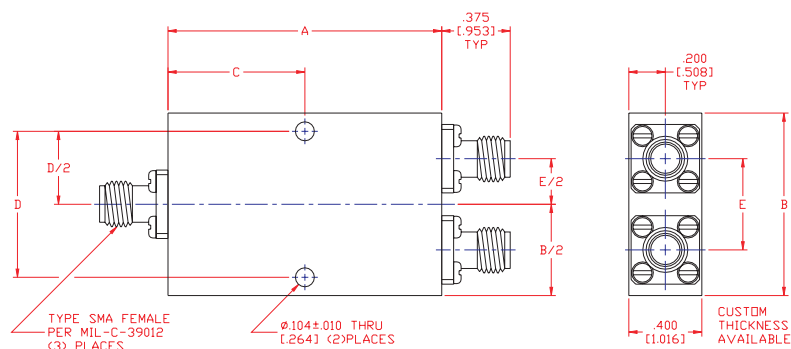
Mechanical Outline available on page 11

2-WAY STRIPLINE POWER DIVIDERS / COMBINERS

MECHANICAL OUTLINE SMA CONNECTORS*

MECHANICAL OUTLINE - SMA CONNECTORS

OUTLINE	A	B	C	D	E
1 (in)	1.24	1.50	0.62	1.146	0.50
(cm)	3.15	3.81	1.57	2.910	1.27
2 (in)	0.92	1.30	0.46	1.060	0.50
(cm)	2.34	3.30	1.17	2.692	1.27
3 (in)	1.24	1.38	0.62	1.146	0.50
(cm)	3.15	3.50	1.58	2.910	1.27
4 (in)	1.74	1.74	0.87	1.500	0.75
(cm)	4.42	4.42	2.21	3.810	4.45
5 (in)	0.92	1.05	0.46	0.812	0.50
(cm)	2.34	2.67	1.17	2.062	1.27
6 (in)	1.73	1.04	0.865	0.812	0.50
(cm)	4.39	2.64	2.20	2.062	1.27
7 (in)	0.79	1.00	0.395	0.812	0.50
(cm)	2.01	2.54	1.00	2.062	1.27
8 (in)	1.79	1.00	0.90	0.700	0.50
(cm)	4.55	2.54	2.29	1.78	1.27
9 (in)	0.55	1.0	0.28	0.80	0.50
(cm)	1.40	2.54	0.71	2.03	1.27
10 (in)	3.00	3.25	1.50	3.000	1.0
(cm)	7.62	8.26	3.81	7.620	2.54
11 (in)	3.375	1.00	1.68	0.700	0.50
(cm)	8.57	2.54	4.29	1.780	1.27
12 (in)	5.88	1.00	2.94	0.75	0.50
(cm)	14.94	2.54	7.48	1.91	1.27
13 (in)	1.00	0.85	0.50	0.650	0.45
(cm)	2.54	2.16	1.27	1.650	1.14
14 (in)	1.65	1.00	0.83	0.80	0.50
(cm)	4.19	2.54	2.10	2.03	1.27
15 (in)	1.10	1.00	0.55	0.800	0.50
(cm)	2.79	2.54	1.40	2.032	1.27
16 (in)	3.40	1.00	1.70	0.700	0.50
(cm)	8.64	2.54	4.32	1.78	1.27
17 (in)	2.00	2.00	0.15	1.70	2.00
(cm)	5.08	5.08	0.38	4.32	5.08
18 (in)	0.50	1.00	0.25	0.840	0.50
(cm)	1.27	2.54	0.63	2.134	1.27
19 (in)	1.35	1.00	0.675	0.800	0.50
(cm)	3.43	2.54	1.72	2.03	1.27
20 (in)	2.48	2.00	1.24	1.75	1.00
(cm)	6.30	5.08	3.15	4.45	2.54



* Additional outline configurations available. Contact manufacturer for your custom design.

2-WAY STRIPLINE POWER DIVIDERS / COMBINERS

0.225 - 14.0 GHz , TYPE N CONNECTORS

Features:

- Ultra Wide and Octave Models
- Stripline Construction
- High Isolation
- Low Insertion Loss



ELECTRICAL SPECIFICATIONS

Model Number	Freq. Range [GHz]	Isolation* [dBmin]	VSWR [Max]		Insertion Loss [dBmax]	Amplitude Bal. [±dBmax]	Phase Bal. [±Degrees] [Max]	Average Power [Watts] Load VSWR			Outline
			Input	Output				1.2	2.0	∞	
PS2-1/NF	0.5-1	20	1.30	1.20	0.40	0.2	3	30	20	3	1
PS2-2/NF	1-2	18	1.25	1.20	0.35	0.2	3	30	20	3	2
PS2-3/NF	0.5-2	18	1.40	1.30	0.60	0.2	4	30	10	1	3
PS2-4/NF	0.5-2.5	17	1.40	1.30	0.30	0.2	4	30	10	1	3
PS2-5/NF	2-4	19	1.30	1.20	0.40	0.2	3	30	10	1	2
PS2-6/NF	4-8	18	1.45	1.35	0.60	0.2	4	30	10	1	2
PS2-7/NF	2-8	17	1.50	1.45	0.60	0.3	6	30	10	1	4
PS2-8/NF	8-12.4	16	1.55	1.50	0.70	0.2	6	30	10	1	2
PS2-9/NF	12-14	16	1.70	1.60	0.70	0.3	10	30	10	1	2
PS2-10/NF	5-14	15	1.90	1.80	0.80	0.3	12	30	20	3	2
PS2-11/NF	2-14	12	1.90	1.80	1.50	0.3	10	30	10	1	5
PS2-13/NF	.225-.400	22	1.20	1.20	0.20	0.2	2	30	10	1	6
PS2-17/NF	0.5-14.0	12	2.00	2.00	2.20	0.6	18	20	10	1	?
PS2-18/NF	7.2-8.5	17	1.45	1.35	0.50	0.3	6	30	10	1	2
PS2-19/NF	3.625-4.25	22	1.25	1.20	0.30	0.2	2	30	10	1	7
PS2-20/NF	5.8-6.45	21	1.35	1.30	0.30	0.2	2	30	10	1	7
PS2-23/NF	1.0-3.0	20	1.35	1.30	0.4	0.2	6	30	10	1	3
PS2-24/NF	3.625-6.4	20	1.40	1.35	0.4	0.2	6	30	10	1	7
PS2-26/NF	14-14.5	15	1.85	1.75	0.80	0.3	8	30	10	1	8
PS2-27/NF	0.35-2.3	19	1.40	1.25	0.60	0.3	5	30	10	1	9
PS2-28/NF	3.5-4.5	17	1.40	1.30	0.70	0.1	6	30	10	1	2
PS2-29/NF	10.0-14.0	15	1.75	1.70	0.70	0.4	12	30	10	1	2
PS2-30/NF	0.45-0.96	15	1.50	1.50	0.70	0.4	8	500	300	100	10
PS2-31/NF	1.8-2.20	20	1.30	1.25	0.40	0.2	8	150	10	1	11
PS2-32/NF	0.95-2.3	17	1.40	1.40	0.30	0.4	4	30	10	1	3
PS2-33/NF	10.9-12.75	15	1.75	1.70	0.90	0.2	8	30	10	1	2
PS2-34/NF	7.10-7.70	19	1.35	1.13	0.40	0.3	4	30	10	1	2
PS2-35/NF	3.0-5.0	20	1.35	1.35	0.60	0.1	3	30	10	1	12
PS2-36/NF	0.5-2.3	17	1.45	1.45	0.45	0.4	4	30	10	1	3
PS2-39/NF	6.90-8.0	19	1.35	1.30	0.50	0.3	4	30	10	1	2
PS2-40/NF	0.95-1.45	20	1.25	1.20	0.35	0.2	3	30	10	1	2
PS2-41/NF	0.19-0.400	20	1.20	1.20	0.20	0.2	6	200	100	10	13
PS2-43/NF	0.7-1.5	17	1.40	1.30	0.40	0.3	6	30	10	1	3
PS2-44/NF	3.7-5.0	19	1.25	1.20	0.30	0.2	3	30	10	1	2
PS2-45/NF	5.8-8.5	19	1.45	1.40	0.40	0.3	4	30	10	1	2
PS2-48/NF	7.25-7.75	19	1.30	1.25	0.40	0.3	4	30	10	1	2
PS2-50/NF	0.8-2.0	19	1.25	1.20	0.50	0.15	4	30	10	1	3
PS2-52/NF	0.80-0.90	25	1.30	1.20	0.40	0.2	3	30	10	1	14
PS2-53/NF	0.75-2.25	20	1.40	1.30	0.40	0.2	3	30	10	1	14
PS2-56/NF	0.82-1.2	20	1.50	1.50	0.40	0.2	2	60	10	1	15
PS2-60/NF	10.9-12.75	16	1.80	1.70	1.4	0.2	7	30	10	1	2

*Custom Design For Higher Isolation Available. Contact Manufacturer For Other Specifications.

Mechanical Outline available on page 13

2-WAY STRIPLINE POWER DIVIDERS / COMBINERS

0.225 - 14.0 GHz, TYPE N CONNECTORS**

Features:

- Ultra Wide and Octave Models
- Stripline Construction
- High Isolation, High Reliability
- Low Insertion Loss



ELECTRICAL SPECIFICATIONS

Model Number	Frequency Range [GHz]	Isolation* [dBmin]	VSWR[max]		Insertion Loss [dBmax]	Amplitude Bal. (± dBmax)	Phase Bal. (± Degrees) (Max)	Average Power [Watts] Load VSWR			Outline
			Input	Output				1.2	2.0	∞	
PS2-64/NF	0.75-2.6	19	1.35	1.25	19	0.3	5	30	20	1	3
PS2-65/NF	0.875-4.4	20	1.40	1.40	0.75	0.3	6	30	20	1	9
PS2-68/NF	0.10-040	20	1.30	1.20	0.30	0.4	10	200	100	1	17
PS2-69/NF	0.10-1.0	25	1.35	1.25	0.50	0.3	4	30	20	1	18
PS2-70/NF	1.0-8.0	14	1.50	1.45	0.80	0.4	8	30	20	1	4
PS2-80/NF	0.85-3.5	20	1.35	1.30	0.40	0.2	4	30	20	1	9
PS2-81/NF	0.60-1.275	22	1.35	1.30	0.40	0.2	4	30	20	1	16
PS2-88/NF	0.13-0.55	20	1.15	1.15	0.40	0.2	2	30	20	1	19
PS2-94/NF	0.5-3.0	16	1.50	1.45	0.90	0.4	7	2	1	1	3
PS2-98/NF	0.88-0.96	20	1.35	1.30	0.50	0.4	7	100	50	1	20
PS2-109/NF	0.30-3.0	15	1.50	1.50	1.00	0.4	8	2	1	1	21
PS2-111/NF	2.0-13.0	19	1.60	1.55	1.40	0.25	8	30	20	1	14
PS2-113/NF	12.0-13.0	19	1.55	1.55	1.40	0.25	8	30	20	1	14

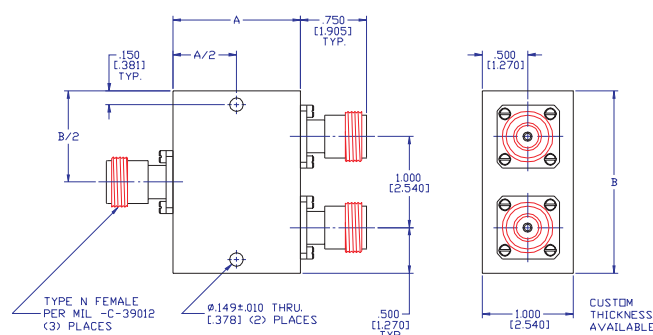
*Custom Design For Higher Isolation Available. Contact Manufacturer For Other Specifications.

MECHANICAL OUTLINE TYPE N CONNECTORS

OUTLINE	A	B
1 (in)	1.40	2.00
(cm)	3.56	5.08
2 (in)	1.00	2.00
(cm)	2.54	5.08
3 (in)	1.74	2.00
(cm)	4.42	5.08
4 (in)	1.73	2.00
(cm)	4.40	5.08
5 (in)	2.70	2.00
(cm)	6.86	5.08
6 (in)	3.00	3.25
(cm)	7.62	8.26
7 (in)	1.375	2.00
(cm)	3.492	5.08
8 (in)	1.00	1.00
(cm)	2.54	2.54
9 (in)	1.75	1.00
(cm)	4.45	2.54

OUTLINE	A	B
10 (in)	3.43	2.874
(cm)	8.71	7.299
11 (in)	1.60	2.00
(cm)	4.06	5.08
12 (in)	3.00	2.00
(cm)	7.62	5.08
13 (in)	2.25	3.55
(cm)	5.72	9.01
14 (in)	2.00	2.00
(cm)	5.08	5.08
15 (in)	1.62	1.62
(cm)	4.12	4.12
16 (in)	2.50	2.05
(cm)	6.35	5.21
17 (in)	6.00	3.00
(cm)	15.2	7.62
18 (in)	5.35	2.25
(cm)	13.6	5.72

OUTLINE	A	B
19 (in)	4.375	3.50
(cm)	11.11	8.89
20 (in)	1.20	2.00
(cm)	3.05	5.08
21 (in)	2.60	2.00
(cm)	6.60	5.08



** Additional outline configurations available. Contact manufacturer for your custom design.

3-WAY LUMPED ELEMENT POWER DIVIDERS / COMBINERS

1 MHz TO 2000 MHz, SMA AND TYPE N CONNECTORS

Features:

- High Isolation, High Reliability
- Low Insertion Loss, Low VSWR
- Uniform Amplitude and Phase Balance
- Ultra Broadband



ELECTRICAL SPECIFICATIONS:

Model* Number	Frequency Range (MHz)	Insertion Loss (dB Max)	Isolation* (dB min)	Amplitude Balance (±dB Max)	Phase Balance (± Deg Max)	VSWR (Max)	Outline		
							SMA	TYPE N	SMA
PL3-1	1-200	0.5	35	0.1	1.0	1.30:1	Fig. 1	Fig. 2	N/A
PL3-2	10-500	0.7	30	0.2	2.0	1.30:1	Fig. 1	Fig. 2	N/A
PL3-3	200-500	0.8	30	0.2	4.0	1.30:1	Fig. 1	Fig. 2	N/A
PL3-4	200-750	1.0	25	0.3	5.0	1.35:1	Fig. 1	Fig. 2	N/A
PL3-5	100-1000	1.0	25	0.3	5.0	1.30:1	Fig. 1	Fig. 2	N/A
PL3-6	500-1000	1.0	25	0.5	6.0	1.50:1	Fig. 1	Fig. 2	N/A
PL3-7	50-1500	1.5	20	0.4	8.0	1.30:1	Fig. 1	Fig. 2	N/A
PL3-8	850-1500	1.5	30	0.3	8.0	1.30:1	Fig. 1	Fig. 2	N/A
PL3-9	10-2000	2.5	18	0.5	5.0	1.60:1	Fig. 1	Fig. 2	N/A
PL3-10	20-2000	2.5	18	0.5	5.0	1.50:1	N/A	N/A	Fig. 3
PL3-11	1000-2000	2.2	18	0.5	5.0	1.50:1	N/A	N/A	Fig. 3

** Units with Type N Connectors: Multiply VSWR by 1.05;
Subtract 2.0 dB from isolation; Add suffix /NF to model no.

* Units also available with BNC, and TNC connectors.
75 Ohm Or Higher Power Models Available

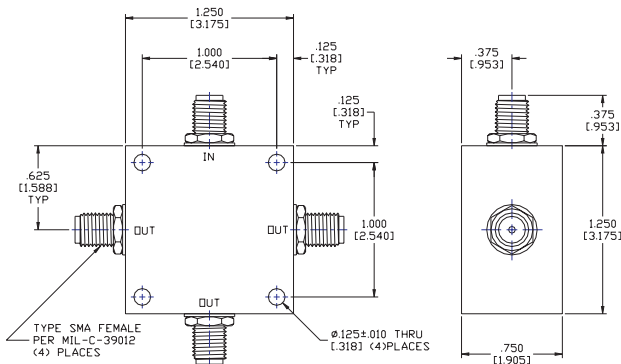


Figure 1

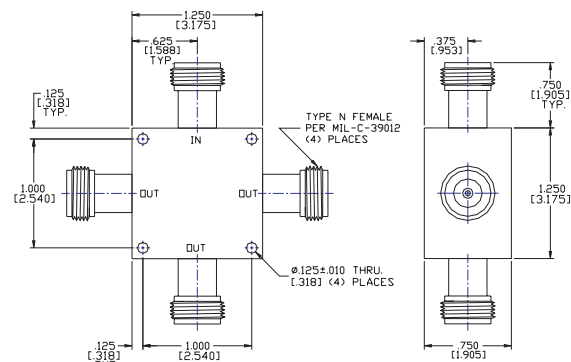


Figure 2

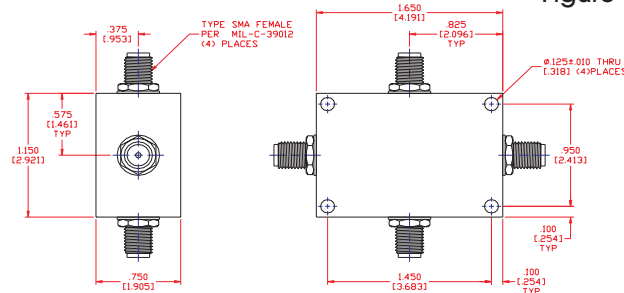


Figure 3

3-WAY STRIPLINE POWER DIVIDERS / COMBINERS

0.5 - 18 GHz, SMA CONNECTORS

Features:

- Wide band
- Stripline Contruction
- High Isolation
- Low Insertion Loss



ELECTRICAL SPECIFICATIONS

Model Number	Freq. Range [GHz]	Isolation* [dBmin]	VSWR(max)		Insertion Loss (dB max)	Amplitude Bal. (± dBmax)	Phase Bal. (± Degrees) (Max)	Average Power [Watts] Load VSWR			Outline
			Input	Output				1.2	2.0	∞	
PS3-1	.5-1	17	1.35	1.30	0.5	0.3	6.0	30	10	1	1A
PS3-2	2-2.5	19	1.35	1.30	0.3	0.3	5.0	30	10	1	2
PS3-3	2-6	17	1.50	1.50	0.9	0.3	7.0	30	10	1	3
PS3-4	6-18	17	1.60	1.50	1.2	0.3	10.0	30	10	1	4
PS3-5	.5-2	17	1.35	1.30	0.6	0.3	7.0	30	10	1	1A
PS3-6	2-18	16	1.60	1.50	1.5	0.4	12.0	30	10	1	2
PS3-7	.5-18	15	1.60	1.60	2.6	0.5	14.0	30	10	1	2A
PS3-11	.95-1.5	18	1.35	1.25	0.5	0.3	6.0	30	10	1	5
PS3-12	4-8	17	1.40	1.35	0.8	0.4	8.0	30	10	1	6
PS3-13	8-11	15	1.70	1.60	0.9	0.5	10.0	30	10	1	7
PS3-14	12-18	14	1.80	1.70	1.0	0.5	12.0	30	10	1	8
PS3-15	2-4	17	1.40	1.35	0.6	0.4	8.0	30	10	1	5
PS3-16	1.8-2.2	17	1.40	1.35	0.5	0.3	6.0	30	10	1	5
PS3-18	7.2-8.5	16	1.50	1.40	0.8	0.3	8.0	30	10	1	6
PS3-19	3.625-4.25	18	1.30	1.30	0.5	0.3	3.0	30	10	1	5
PS3-20	5.8-6.45	18	1.30	1.30	0.5	0.3	5.0	30	10	1	6
PS3-23	1.0-3.0	17	1.50	1.40	0.5	0.5	5.0	30	10	1	9
PS3-26	14.0-14.5	16	1.60	1.50	0.9	0.5	8.0	30	10	1	8
PS3-28	2.0-8.0	16	1.60	1.60	1.3	0.4	14.0	30	10	1	10
PS3-38	3.2-5.2	17	1.45	1.40	0.5	0.2	5.0	30	10	1	10
PS3-39	4.0-8.5	15	1.45	1.40	1.2	0.5	9.0	30	10	1	6
PS3-51	1.0-8.0	16	1.65	1.65	1.4	0.7	16.0	30	10	1	10
PS3-60	10.9-12.75	13	1.90	1.80	3.0	0.8	18.0	30	10	1	7

*Custom Design For Higher Isolation Available. Contact Manufacturer For Other Specifications.

MECHANICAL OUTLINE TYPE SMA CONNECTORS

OUTLINE	A	B	C
1 (in)	9.00	8.64	0.70
(cm)	22.8	22.0	1.78
2 (in)	3.50	3.14	0.70
(cm)	8.89	7.98	1.78
3 (in)	2.55	2.19	0.75
(cm)	6.48	5.56	0.70
4 (in)	1.75	1.375	1.78
(cm)	4.45	3.492	2.54
5 (in)	2.95	2.59	0.70
(cm)	7.49	7.49	1.78

OUTLINE	A	B	C
6 (in)	2.00	1.64	0.70
(cm)	5.08	4.17	1.78
7 (in)	1.50	1.14	0.75
(cm)	3.81	2.89	1.91
8 (in)	1.20	0.84	0.70
(cm)	3.05	2.13	1.78
9 (in)	6.47	6.11	0.70
(cm)	16.43	15.5	1.78
10 (in)	3.485	3.125	0.75
(cm)	8.852	7.938	1.91

OUTLINE A

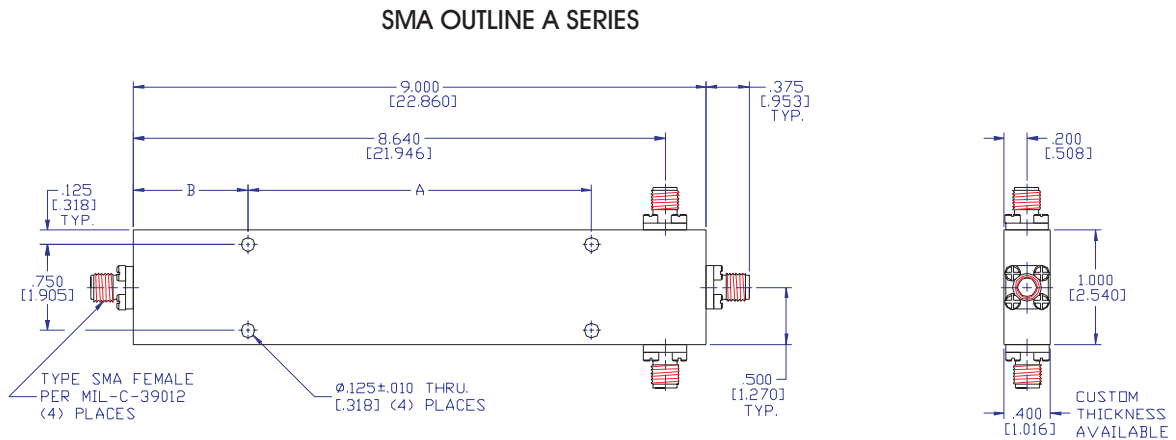
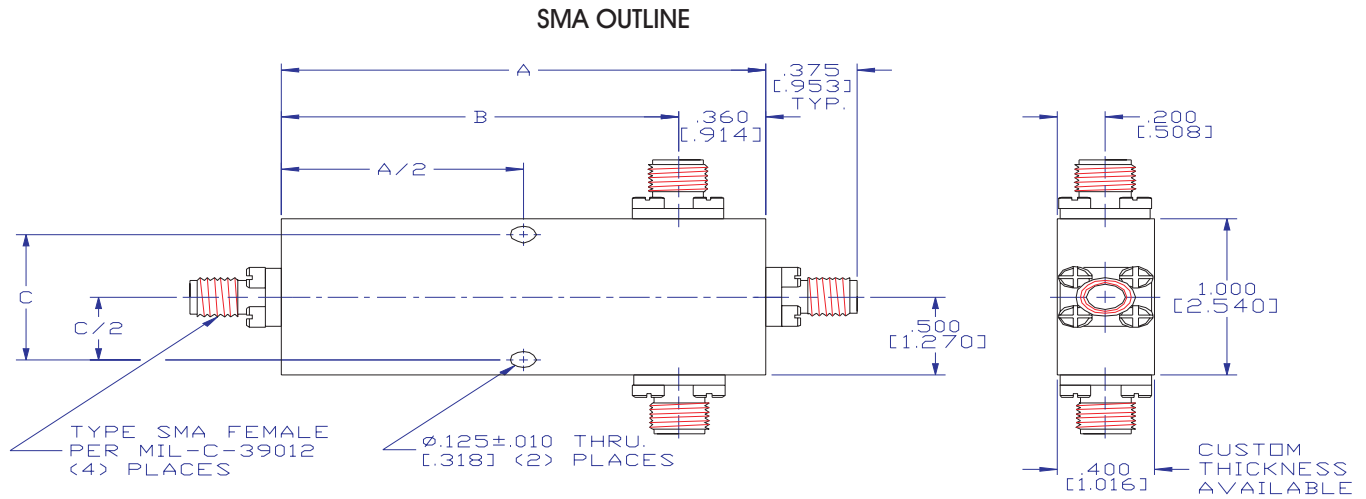
OUTLINE	A	B
1A (in)	6.00	1.50
(cm)	15.24	3.81
2A (in)	7.00	1.00
(cm)	17.78	1.01

Mechanical Outline available on page 16

3-WAY STRIPLINE POWER DIVIDERS / COMBINERS

MECHANICAL OUTLINES *

TYPE SMA CONNECTORS



* MCLI can also provide in-line output ports for your application.
 Contact the Manufacturer for additional information.

3-WAY STRIPLINE POWER DIVIDERS / COMBINERS

0.2-14.0 GHz, TYPE N CONNECTORS

Features:

- Ultra Wide Band True 3 Way
- Stripline Construction
- High Isolation
- Low Insertion Loss



ELECTRICAL SPECIFICATIONS

Model Number	Frequency Range (Ghz)	Isolation* (dB min)	VSWR(max)		Insertion Loss (dB max)	Amplitude Bal. (±dB max)	Phase Bal. (±Degrees) (Max)	Average Power (Watts) Load VSWR			Outline
			Input	Output				1.2	2.0	∞	
PS3-1/NF	.5-1	17	1.35	1.35	0.5	0.4	6.0	30	10	1	1A
PS3-2/NF	2-2.5	19	1.35	1.35	0.3	0.4	5.0	30	10	1	2
PS3-3/NF	2-6	17	1.55	1.55	0.9	0.4	7.0	30	10	1	3
PS3-4/NF	6-14	17	1.80	1.80	1.4	0.4	10.0	30	10	1	4
PS3-5/NF	.5-2	17	1.45	1.40	0.6	0.4	7.0	30	10	1	1A
PS3-6/NF	2-14	16	2.00	1.80	1.8	0.4	12.0	30	10	1	2
PS3-7/NF	.5-14	15	2.10	1.65	2.8	0.5	14.0	30	10	1	2A
PS3-11/NF	.95-1.5	17	1.40	1.35	0.6	0.3	7.0	30	10	1	5
PS3-12/NF	4-8	16	1.50	1.40	0.8	0.4	9.0	30	10	1	6
PS3-13/NF	8-11	14	1.80	1.70	1.1	0.5	12.0	30	10	1	7
PS3-14/NF	12-14	13	1.85	1.75	1.3	0.5	13.0	30	10	1	8
PS3-15/NF	2-4	16	1.45	1.40	0.7	0.4	10.0	30	10	1	5
PS3-15-S/NF	2-4	16	1.45	1.40	0.7	0.4	10.0	30	10	1	1B
PS3-16/NF	1.8-2.2	17	1.40	1.35	0.6	0.3	7.0	30	10	1	5
PS3-18/NF	7.2-8.5	16	1.50	1.40	0.8	0.3	10.0	30	10	1	6
PS3-19/NF	3.625-4.25	17	1.40	1.40	0.5	0.3	5.0	30	10	1	5
PS3-20/NF	5.8-6.45	17	1.40	1.40	0.5	0.3	5.0	30	10	1	6
PS3-23/NF	1-3	16	1.50	1.40	0.5	0.5	8.0	30	10	1	9
PS3-26/NF	14.0-14.5	15	1.75	1.65	1.2	0.5	10.0	30	10	1	8
PS3-28/NF	2.0-8.0	14	1.75	1.75	1.6	0.6	16.0	30	10	1	10
PS3-32/NF	0.80-0.90	14	1.45	1.40	0.5	0.3	4.0	30	10	1	10
PS3-35/NF	3.0-5.0	17	1.50	1.50	0.9	0.15	2.5	30	10	1	3
PS3-53/NF	0.8-2.0	18	1.45	1.35	0.7	0.4	7.0	30	10	1	1A
PS3-54/NF	0.40-0.45	18	1.50	1.50	0.5	0.4	8.0	30	10	1	2B
PS3-60/NF	10.9-12.75	18	1.65	1.60	0.5	0.4	8.0	30	10	1	7

*Custom Design For Higher Isolation Available. Contact Manufacturer For Other Specifications.

MECHANICAL OUTLINE TYPE N CONNECTORS

OUTLINE	A	B	C
1 (in)	9.00	8.64	0.70
(cm)	22.8	22.0	1.78
2 (in)	3.50	3.14	0.70
(cm)	8.89	7.98	1.78
3 (in)	2.55	2.19	0.75
(cm)	6.48	5.56	0.70
4 (in)	1.75	1.375	1.78
(cm)	4.45	3.492	2.54
5 (in)	2.95	2.59	0.70
(cm)	7.49	7.49	1.78

OUTLINE	A	B	C
6 (in)	2.00	1.64	0.70
(cm)	5.08	4.17	1.78
7 (in)	1.50	1.14	0.75
(cm)	3.81	2.89	1.91
8 (in)	1.20	0.84	0.70
(cm)	3.05	2.13	1.78
9 (in)	6.47	6.11	0.70
(cm)	16.43	15.5	1.78
10 (in)	3.485	3.125	0.75
(cm)	8.852	7.938	1.91

OUTLINE A, B

OUTLINE	A	B
1A (in)	6.00	1.50
(cm)	15.24	3.81
2A (in)	7.00	1.00
(cm)	17.78	1.01

OUTLINE	A	B	C
1B (in)	4.00	3.00	2.76
(cm)	10.16	7.62	7.01
2B (in)	6.69	3.00	2.75
(cm)	17.0	7.62	6.99

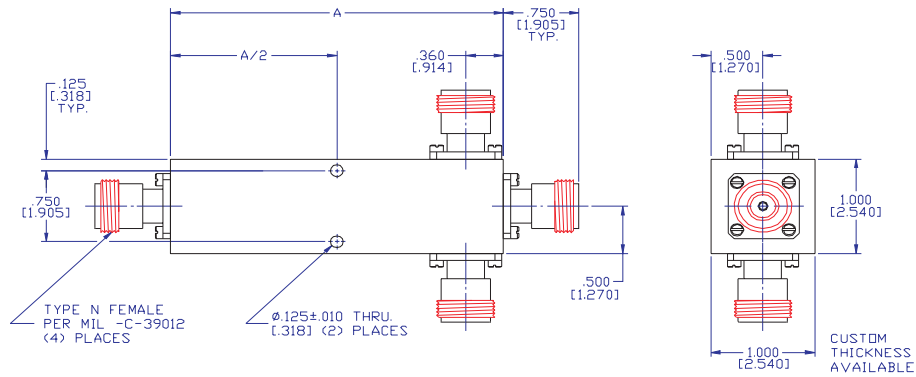
Mechanical Outline available on page 18

3-WAY STRIPLINE POWER DIVIDERS / COMBINERS

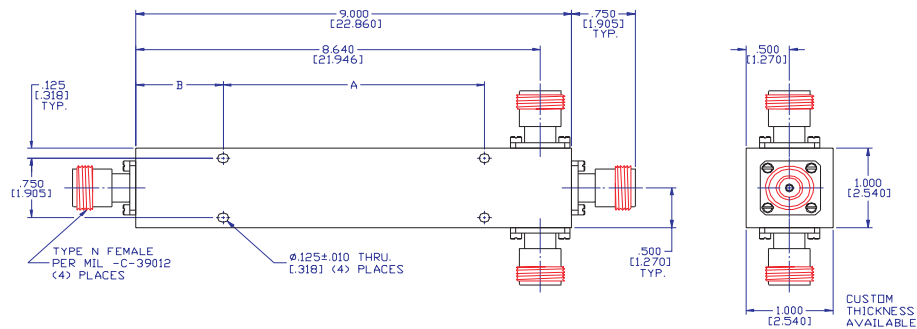
MECHANICAL OUTLINES *

TYPE N CONNECTORS

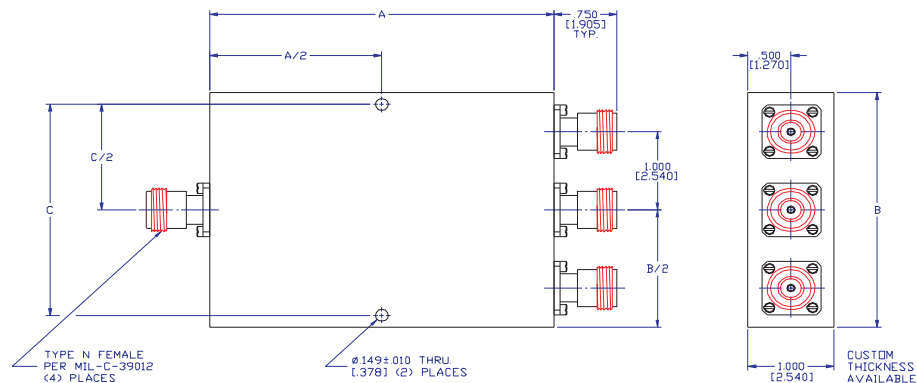
TYPE N OUTLINE



TYPE N
OUTLINE A
SERIES



TYPE N
OUTLINE B
SERIES



*Contact the Manufacturer for additional in-line output port mechanical outlines

4-WAY LUMPED ELEMENT POWER DIVIDERS / COMBINERS

1 MHz TO 2000 MHz, SMA AND TYPE N CONNECTORS

Features:

- Low VSWR, Low Insertion Loss
- High Isolation
- Uniform Phase and Amplitude Balance
- Ultra Broadband



ELECTRICAL SPECIFICATIONS

Model* Number	Frequency Range (MHz)	Max Insertion Loss (dB)	Isolation** (dB min)	Amplitude Balance (±dB Max)	Phase Balance (±Deg Max)	VSWR (Max)	Outline		
							SMA	Type N	SMA
PL4-1	0.5-100	0.8	25	0.1	1.0	1.30:1	1	2	3
PL4-2	3-500	1.0	25	0.2	2.0	1.30:1	1	2	3
PL4-3	200-1000	1.3	25	0.3	5.0	1.60:1	1	2	3
PL4-4	20-1500	1.6	23	0.3	6.0	1.50:1	1	2	3
PL4-5	200-2000	2.6	15	0.5	10.0	2.00:1	1	2	3
PL4-6	100-500	1.25	25	0.3	6.0	1.50:1	1	2	3
PL4-7	10-1000	1.8	20	0.5	6.0	1.70:1	1	2	3
PL4-8	20-1000	1.8	20	0.5	7.0	1.70:1	1	2	3
PL4-9	20-2000	2.6	18	0.7	10.0	2.00:1	1	2	3

** Units with Type N Connector: Multiply VSWR by 1.05, subtract 2.0 dB from isolation. Add suffix /NF to model no.

* Units also available with BNC, and TNC connectors.
75 Ohm Or Higher Power Models Available

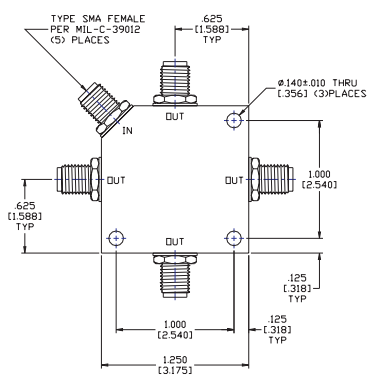


Figure 1

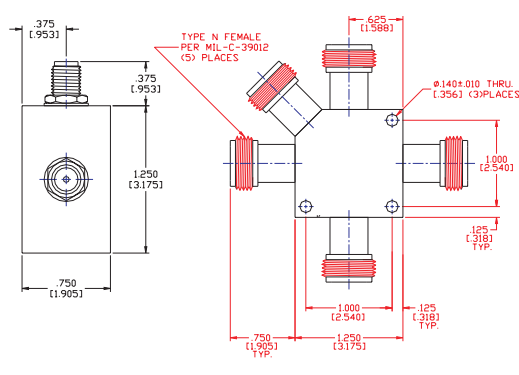


Figure 2

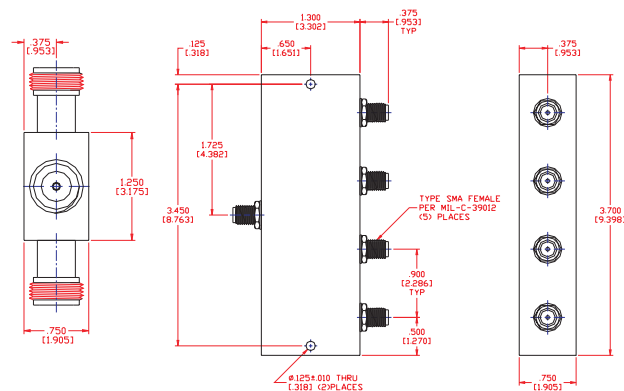


Figure 3

4-WAY HIGH POWER DIVIDERS/COMBINERS

1 - 1900 MHz

100 - 1500 WATTS CW

Features:

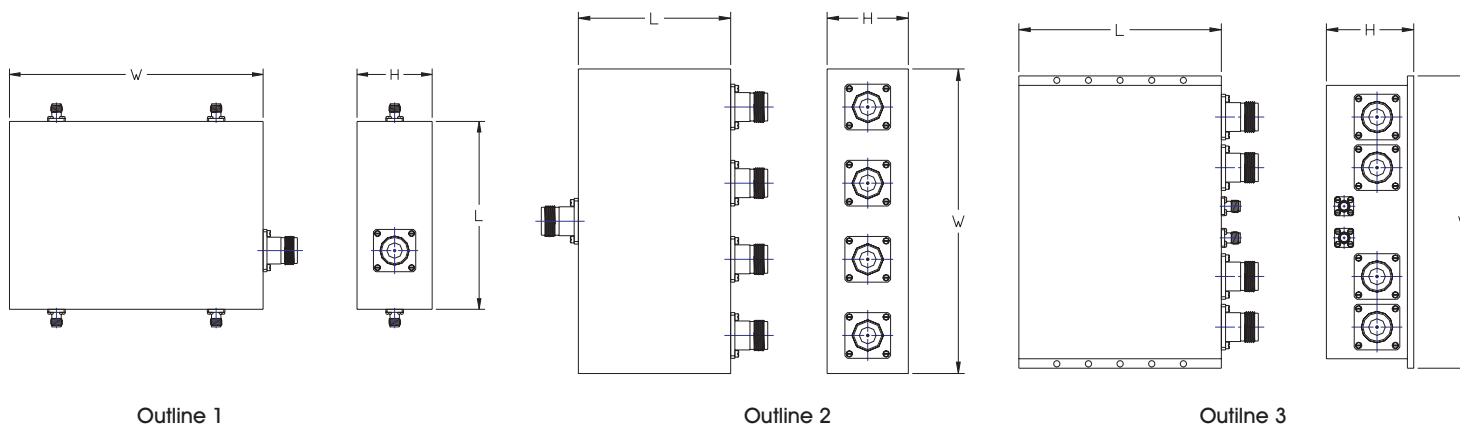
- High Power Applications
- Low Insertion Loss, Low VSWR
- Uniform Amplitude And Phase Balance
- Custom Designs Available



ELECTRICAL SPECIFICATIONS:

Model Number	Frequency Range (MHz)	Insertion Loss dB (Max.)	Isolation (dB min)	Amplitude Balance (dB Max)	Phase Balance (±Deg Max)	VSWR (Max)	Power* (Watts CW)	Connectors (In/Out)	Size (Inches) (L/W/H)	Outline
PLH4-1	1-1000	1.2	20	0.50	6.0	1.50:1	40	SMA/N	5 X 6 X 2.3	1
PLH4-2	100-1000	0.7	20	0.50	6.0	1.50:1	100	SMA/N	5 X 6 X 2.3	1
PLH4-3	800-1000	0.4	20	0.20	5.0	1.40:1	100	N/N	3 X 6 X 1.6	2
PLH4-4	1800-1900	0.5	18	0.30	10.0	1.30:1	100	N/N	5.4 X 8.4 X 1.4	2
PLH4-5	10-500	0.6	20	0.30	5.0	1.30:1	400	N/N	5 X 6 X 2.3	2
PLH4-6	225-400	0.4	15	0.20	5.0	1.50:1	800	N/N	5 X 4 X 1.3	2
PLH4-7	1-50	0.3	20	0.25	5.0	1.30:1	1000	N/N	9.5 X 8.5 X 3	3
PLH4-8	100-500	0.9	15	0.50	8.0	1.50:1	1000	N/SC	15 X 12 X 4	3
PLH4-9	20-100	0.3	20	0.20	5.0	1.30:1	1500	N/C	7.8 X 6 X 3	3

* Custom Design for Higher Power Handling Available. Contact Manufacturer for details.



4-WAY STRIPLINE POWER DIVIDERS / COMBINERS

0.225 - 26.5 GHz, SMA CONNECTORS

Features:

- Excellent Amplitude Balance
- Stripline Construction
- Low Insertion Loss
- Low VSWR



ELECTRICAL SPECIFICATIONS

Model Number	Freq. Range (GHz)	Isolation* (dB min)	VSWR (max)		Insertion Loss (dB max)	Amplitude Bal. (±dB max)	Phase Bal. (±Degrees) (Max)	Average Power (Watts) Load VSWR			Outline
			Input	Output				1.2	2.0	∞	
PS4-1	0.5-1	22	1.45	1.30	0.9	0.3	5.0	30	20	3	1
PS4-2	1-2	20	1.40	1.25	0.6	0.3	5.0	30	20	3	2
PS4-3	0.5-2	20	1.45	1.30	0.9	0.3	6.0	30	10	1	1
PS4-4	0.5-2.5	20	1.40	1.25	0.7	0.3	4.0	30	10	1	1A
PS4-5	2-4	20	1.35	1.35	0.6	0.3	6.0	30	10	1	2
PS4-6	4-8	20	1.45	1.35	0.5	0.3	6.0	30	10	1	4
PS4-7	2-8	18	1.45	1.35	0.9	0.4	6.0	30	10	1	6
PS4-8	8-12.4	18	1.45	1.35	0.8	0.4	6.0	30	10	1	7
PS4-9	12-18	18	1.50	1.40	1.5	0.5	6.0	30	10	1	7
PS4-10	5-18	18	1.60	1.40	0.9	0.5	6.0	30	10	1	7
PS4-11	2-18	18	1.50	1.40	2.3	0.8	10.0	30	10	1	5
PS4-12**	18-26.5	15	1.65	1.60	2.6	0.8	12.0	3	1	1	3
PS4-14	0.5-18	16	1.60	1.45	3.8	1.2	14.0	20	10	1	1B
PS4-15**	2.0-26.5	16	1.80	1.80	2.3	1.0	15.0	10	10	1	8
PS4-16**	0.5-26.5	16	1.80	1.80	4.3	1.2	15.0	10	5	1	9
PS4-18	7.2-8.5	18	1.40	1.35	0.8	0.3	6.0	30	10	1	4
PS4-19	3.60-4.25	19	1.30	1.25	0.5	0.3	5.0	30	10	1	11
PS4-20	5.8-6.4	19	1.35	1.30	0.5	0.3	5.0	30	10	1	10
PS4-21	1.0-3.0	18	1.45	1.35	0.8	0.5	6.0	30	10	1	12
PS4-24	3.6-6.425	18	1.35	1.35	0.6	0.4	6.0	30	10	1	10
PS4-28	14-14.5	17	1.50	1.40	1.0	0.4	7.0	30	10	1	7
PS4-30	4.2-12.0	16	1.65	1.65	1.0	0.4	10.0	30	10	1	5
PS4-31	0.80-1.50	18	1.50	1.50	2.0	0.25	6.0	30	10	1	13
PS4-32	0.60-1.70	20	1.35	1.25	0.5	0.15	6.0	30	10	1	13
PS4-33	10.5-13.0	17	1.35	1.35	0.8	0.3	8.0	30	10	1	7
PS4-36	12.2-12.7	18	1.50	1.50	0.9	0.4	2.0	30	10	1	14
PS4-37	3.20-6.70	20	1.45	1.45	0.3	0.3	8.0	30	10	1	15
PS4-38	1.215-1.4	20	1.35	1.20	0.5	0.15	2.0	30	10	1	2
PS4-39	0.35-2.85	17	1.65	1.20	1.2	0.3	4.0	30	10	1	1A
PS4-46	11.0-11.1	18	1.45	1.35	0.8	0.4	6.0	30	10	1	7
PS4-48	0.81-0.855	25	1.30	1.30	0.8	0.1	2.0	30	10	1	13
PS4-49	2.5-2.7	18	1.40	1.30	0.8	0.4	5.0	30	10	1	2
PS4-50	2.0-5.0	16	1.50	1.40	0.9	0.4	2.0	30	10	1	6
PS4-51	1.0-4.0	18	1.35	1.25	0.6	0.3	6.0	30	10	1	16
PS4-52	0.80-0.90	28	1.45	1.35	1.0	0.3	5.0	30	10	1	2A
PS4-53	0.70-2.2	15	1.45	1.20	1.0	0.3	6.0	30	10	1	1A
PS4-55	0.35-1.6	18	1.40	1.25	0.8	0.3	6.0	30	10	1	1
PS4-56	0.85-3.7	18	1.35	1.25	0.6	0.3	6.0	30	10	1	16
PS4-58	15.7-16.25	18	1.45	1.35	0.9	0.3	4.0	30	10	1	7
PS4-59	0.7-4.3	18	1.40	1.25	0.7	0.2	6.0	30	10	1	16

*Custom Design For Higher Isolation Available. Contact Manufacturer For Other Specifications.

** 3.5 mm, 2.9 mm, 2.5 mm, or 2.1 mm Connectors

Mechanical Outline available on page 23



MICROWAVE COMMUNICATIONS
LABORATORIES INC.

PAGE 21

TEL: (727)344-MCLI (6254) ● 1-800-333-MCLI (6254) ● FAX: (727)381-6116

Internet: <http://www.MCLI.COM>

Email: Sales@MCLI.com

4-WAY STRIPLINE POWER DIVIDERS / COMBINERS

0.225 - 26.5 GHz, SMA CONNECTORS

Features:

- Ultra Wide and Octave Models
- Stripline Construction
- High Isolation, High Reliability
- Low Insertion Loss



ELECTRICAL SPECIFICATIONS

Model Number	Freq. Range [GHz]	Isolation* [dB min]	VSWR[max]		Insertion Loss [dB max]	Amplitude Bal. (±dB max)	Phase Bal. (±Degrees) (Max)	Average Power [Watts] Load VSWR			Outline
			Input	Output				1.2	2.0	∞	
PS4-61	0.70-1.18	30	1.20	1.20	0.3	0.2	3.0	30	10	1	2A
PS4-62	0.55-1.28	20	1.45	1.20	0.3	0.3	4.0	30	10	1	2A
PS4-63	0.9-1.7	23	1.40	1.20	0.3	0.3	6.0	30	10	1	2
PS4-65	7.0-12.4	16	1.70	1.70	1.0	0.8	10.0	10	5	1	7
PS4-66	3.0-15.0	18	1.50	1.50	1.8	0.4	8.0	10	5	1	5
PS4-67	7.10-7.70	18	1.50	1.40	0.7	0.5	8.0	30	10	1	4
PS4-68	0.95-1.5	18	1.40	1.25	0.9	0.3	5.0	30	10	1	2
PS4-70	7.0-8.0	15	1.50	1.50	2.2	0.35	5.0	30	10	1	4
PS4-71	1.2-16	20	1.45	1.45	1.4	0.3	4.0	30	10	1	2
PS4-72	3.4-4.2	22	1.20	1.15	0.5	0.3	3.0	30	10	1	11
PS4-73	1.5-1.7	22	1.20	1.15	0.5	0.3	3.0	30	10	1	2
PS4-74	2.7-2.9	18	1.45	1.40	1.2	0.3	4.0	30	10	1	2
PS4-75	0.5-8.0	22	1.20	1.15	0.5	0.3	3.0	30	10	1	1B
PS4-76	10.9-14.6	15	1.50	1.45	2.5	0.3	5.0	30	10	1	7
PS4-77	0.40-2.7	17	1.50	1.40	2.3	0.3	5.0	20	10	1	1A
PS4-79**	17.9-21.6	15	1.70	1.60	3.8	0.35	8.0	30	10	1	18
PS4-80	0.5-3.0	18	1.50	1.40	1.6	0.25	4.0	3	2	1	1A
PS4-81	1.0-8.0	17	1.50	1.40	2.4	0.35	6.0	3	2	1	6
PS4-84**	18.1-18.6	15	1.80	1.80	1.9	0.75	8.0	10	5	1	18
PS4-86**	18.0-50.0	10	2.00	2.00	19.9	2.5	N/A	2	0.5	0.5	19
PS4-87	3.6-4.8	16	1.50	1.45	1.9	0.3	4.0	30	10	1	19
PS4-88	10.0-15.0	15	1.50	1.50	1.6	0.35	6.0	30	10	1	7
PS4-91	8.0-18.0	16	1.60	1.50	1.0	0.30	7.0	30	10	1	7
PS4-96	1.5-3.0	16	1.50	1.45	0.9	0.20	5.0	30	10	1	12
PS4-98	0.88-0.96	20	1.40	1.30	0.7	0.40	10.0	100	50	10	14
PS4-101	2.0-12.0	17	1.50	1.50	1.9	0.40	5.0	20	10	1	5
PS4-102	6.8-7.075	19	1.50	1.40	0.8	0.30	6.0	30	10	1	4
PS4-103	9.0-10.1	18	1.45	1.45	0.8	0.20	3.0	30	10	1	7
PS4-106**	24.0-26.0	12	1.75	1.70	3.8	0.60	N/A	10	5	1	3
PS4-107**	4.0-22.0	12	1.80	1.70	4.5	0.75	N/A	10	5	1	22
PS4-108**	17.0-22.0	16	1.50	1.45	1.9	0.3	4.0	30	10	1	18
PS4-109	0.300-3.0	17	1.40	1.40	1.5	0.5	10.0	3	2	1	21
PS4-121	17.3-18.1	17	1.55	1.55	1.5	0.3	4.0	10	5	1	18
PS4-137	2.0-20.0	14	1.80	1.80	2.3	0.60	8.0	2	1	0.5	22

*Custom Design For Higher Isolation Available. Contact Manufacturer For Other Specifications.

** 3.5 mm, 2.9 mm, 2.5 mm, or 2.1 mm Connectors

Mechanical Outline available on page 23

4-WAY STRIPLINE POWER DIVIDERS / COMBINERS

MECHANICAL OUTLINES

TYPE SMA CONNECTORS

MECHANICAL OUTLINE - SMA CONNECTORS*

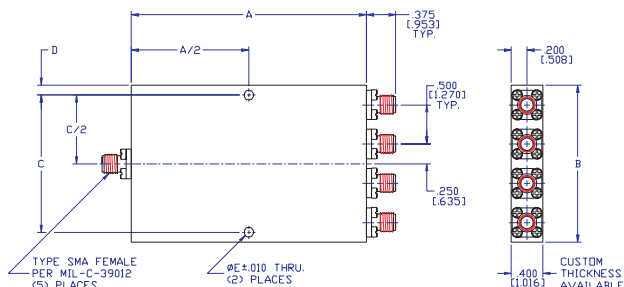
OUTLINE	A	B	C	D	E
1 (in)	2.75	2.60	2.36	0.120	0.140
(cm)	6.98	6.60	5.99	0.305	0.356
2 (in)	2.30	1.48	2.06	0.120	0.104
(cm)	5.84	3.75	5.23	0.305	0.264
3 (in)	3.30	2.90	2.66	0.120	0.125
(cm)	8.38	7.36	6.75	0.305	0.318
4 (in)	1.48	2.30	2.07	0.120	0.104
(cm)	3.75	5.84	5.23	0.305	0.264
5 (in)	4.70	2.00	1.75	0.125	0.125
(cm)	11.94	5.08	4.45	0.318	0.318
6 (in)	3.49	1.98	1.64	0.170	0.125
(cm)	8.86	5.09	4.16	0.432	0.318
7 (in)	1.46	1.98	1.64	0.170	0.149
(cm)	3.70	5.03	4.16	0.432	0.378
8 (in)	4.60	2.60	1.73	0.135	0.125
(cm)	11.7	6.60	4.397	0.343	0.378
9 (in)	8.00	2.60	2.33	0.135	0.125
(cm)	20.3	6.60	5.92	0.343	0.378
10 (in)	1.75	2.00	1.70	0.150	0.149
(cm)	4.45	5.08	4.32	0.381	0.378
11 (in)	1.45	2.00	1.70	0.150	0.125
(cm)	3.68	5.08	4.32	0.381	0.318
12 (in)	2.60	2.00	1.78	0.150	0.149
(cm)	6.60	5.08	4.52	0.381	0.378
13 (in)	4.00	2.00	1.75	0.125	0.125
(cm)	10.2	5.08	4.44	0.318	0.318
14 (in)	4.00	1.98	1.73	0.125	0.125
(cm)	10.1	5.02	4.39	0.318	0.318
15 (in)	1.75	1.98	1.78	0.100	0.104
(cm)	4.44	5.03	4.52	0.254	0.264
16 (in)	6.40	2.00	1.75	0.125	0.125
(cm)	16.2	5.08	4.44	0.318	0.318
17 (in)	4.00	2.90	2.60	0.150	0.125
(cm)	10.1	7.36	6.60	0.381	0.318
18 (in)	2.00	2.00	1.75	0.125	0.125
(cm)	5.08	5.08	4.44	0.318	0.318
19 (in)	0.75	2.00	1.80	0.100	0.104
(cm)	1.90	5.08	4.57	0.254	0.264
20 (in)	1.25	2.90	2.60	0.150	0.125
(cm)	3.18	7.36	6.60	0.318	0.318
21 (in)	5.30	4.00	3.70	0.150	0.149
(cm)	13.46	10.16	9.40	0.318	0.378
22 (in)	3.75	2.00	1.75	0.125	0.125
(cm)	9.52	5.08	4.44	0.318	0.318

OUTLINE A*

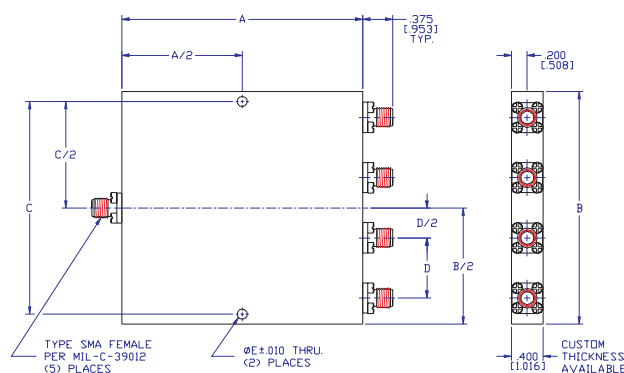
1A (in)	3.30	2.90	2.66	0.750	0.125
(cm)	8.38	7.36	6.75	1.905	0.318
2A (in)	4.00	2.90	2.60	0.750	0.125
(cm)	10.1	7.36	6.60	1.905	0.318

OUTLINE B*

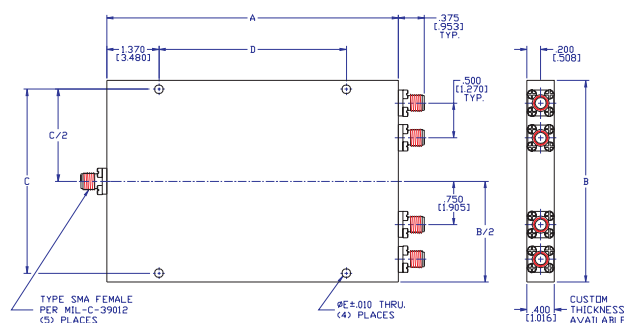
1B (in)	6.24	2.95	2.70	3.500	0.149
(cm)	15.8	7.49	6.86	8.890	0.378



SMA OUTLINE



SMA OUTLINE A SERIES



SMA OUTLINE B SERIES

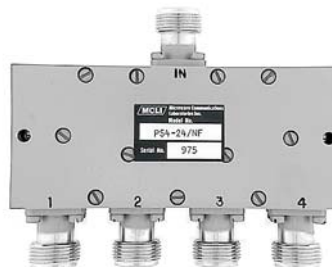
* Additional outline configurations available. Contact manufacturer for your custom design.

4-WAY STRIPLINE POWER DIVIDERS / COMBINERS

0.5 - 14 GHz, TYPE N CONNECTORS

Features:

- Excellent Amplitude Balance
- Stripline Construction
- Low Insertion Loss
- Low VSWR



ELECTRICAL SPECIFICATIONS

Model Number	Frequency Range (GHz)	Isolation* (dB min)	VSWR(max)		Insertion Loss (dB max)	Amplitude Bal. (±dB max)	Phase Bal. (±Degrees) (Max)	Average Power (Watts) Load VSWR			Outline
			Input	Output				1.2	2.0	∞	
PS4-1/NF	0.5-1	20	1.45	1.30	0.9	0.3	5.0	30	20	3	1
PS4-2/NF	1-2	18	1.40	1.25	0.8	0.3	5.0	30	20	3	2
PS4-3/NF	0.5-2	18	1.45	1.30	1.3	0.3	6.0	30	10	1	1
PS4-4/NF	0.5-2.5	18	1.40	1.25	1.3	0.3	4.0	30	10	1	3
PS4-5/NF	2-4	18	1.40	1.40	0.6	0.3	6.0	30	10	1	4
PS4-6/NF	4-8	18	1.50	1.40	0.5	0.3	6.0	30	10	1	5
PS4-7/NF	2-8	17	1.55	1.45	1.1	0.4	6.0	30	10	1	6
PS4-8/NF	8-12.4	17	1.60	1.50	1.1	0.4	6.0	30	10	1	7
PS4-9/NF	12-14	17	1.80	1.70	1.6	0.5	6.0	30	10	1	7
PS4-10/NF	5-14	17	1.85	1.75	1.3	0.5	9.0	30	10	1	7
PS4-11/NF	2-14	17	1.95	1.85	2.7	0.8	10.0	30	10	1	8
PS4-18/NF	7.2-8.5	17	0.55	1.40	0.9	0.4	8.0	30	10	1	7
PS4-19/NF	3.625-4.25	19	1.35	1.30	0.6	0.3	4.0	30	10	1	9
PS4-20/NF	5.8-6.45	19	1.35	1.30	0.6	0.3	4.0	30	10	1	10
PS4-21/NF	1-3	17	1.55	1.45	1.0	0.5	6.0	30	10	1	1
PS4-24/NF	3.6-6.45	17	1.55	1.45	1.0	0.5	6.0	30	10	1	10
PS4-27/NF	11.7-12.75	15	1.70	1.70	1.9	0.7	8.0	30	10	1	11
PS4-28/NF	14-14.5	17	1.60	1.45	1.0	0.4	8.0	30	10	1	5
PS4-33/NF	10.9-12.8	16	1.65	1.60	1.2	0.25	12.0	30	10	1	11
PS4-36/NF	12.2-12.7	16	1.25	1.25	1.0	0.3	10.0	30	10	1	11
PS4-43/NF	0.5-1.5	17	1.60	1.50	1.3	0.4	5.0	30	10	1	1
PS4-44/NF	3.7-5.0	17	1.40	1.20	0.6	0.3	6.0	30	10	1	10
PS4-45/NF	5.8-8.5	17	1.45	1.25	0.3	0.3	7.0	30	10	1	7
PS4-47/NF	0.85-1.0	20	1.20	1.20	0.5	0.3	4.0	30	10	1	12
PS4-48/NF	0.81-0.85	25	1.30	1.30	1.0	0.2	2.0	30	10	1	13
PS4-52/NF	0.80-0.90	28	1.45	1.30	0.9	0.3	10.0	30	10	1	14
PS4-54/NF	0.28-0.32	19	1.40	1.35	0.7	0.4	5.0	30	10	1	15
PS4-60/NF	10.95-12.75	16	1.65	1.60	1.2	0.25	12.0	30	10	1	11
PS4-61/NF	0.70-1.18	30	1.20	1.20	0.3	0.2	3.0	30	10	1	14
PS4-62/NF	0.55-1.28	20	1.45	1.20	0.3	0.3	4.0	30	10	1	14
PS4-67/NF	7.10-7.70	18	1.50	1.40	0.7	0.5	8.0	30	10	1	5
PS4-68/NF	0.95-1.5	18	1.40	1.25	0.9	0.3	5.0	30	10	1	2
PS4-69/NF	0.10-0.40	19	1.40	1.25	0.6	0.5	10.0	30	10	1	1A
PS4-99/NF	0.22-0.50	17	1.55	1.45	0.9	0.3	5.0	30	10	1	17
PS4-120/NF	0.80-1.50	40	1.55	1.45	1.9	0.6	4.0	5	2	1	2A

*Custom Design For Higher Isolation Available. Contact Manufacturer For Other Specifications.

Mechanical Outline available on page 25

4-WAY STRIPLINE POWER DIVIDERS / COMBINERS

MECHANICAL OUTLINES*

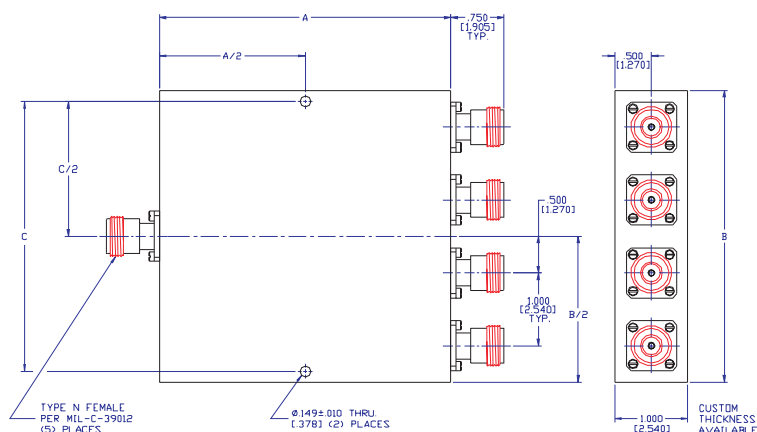
TYPE N CONNECTORS

MECHANICAL OUTLINE TYPE N CONNECTORS

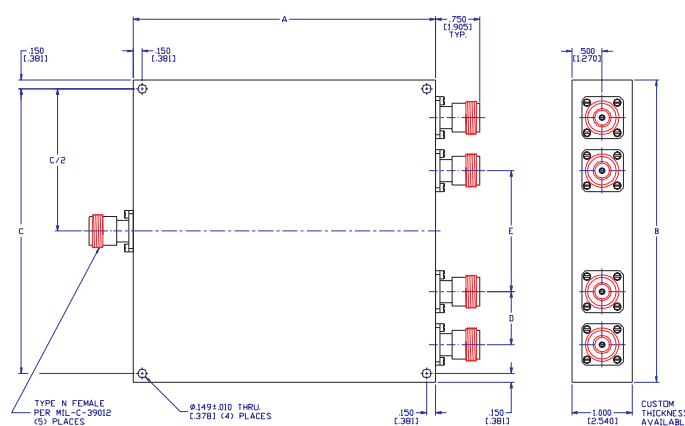
OUTLINE	A	B	C
1 [in]	2.750	4.000	4.000
[cm]	6.985	10.16	10.16
2 [in]	1.880	4.000	4.000
[cm]	4.775	10.16	10.16
3 [in]	3.490	4.000	4.000
[cm]	8.865	10.16	10.16
4 [in]	1.500	4.000	4.000
[cm]	3.810	10.16	10.16
5 [in]	1.540	4.000	4.000
[cm]	3.912	10.16	10.16
6 [in]	4.450	4.000	4.000
[cm]	11.30	10.16	10.16
7 [in]	1.460	4.000	4.000
[cm]	3.708	10.16	10.16
8 [in]	6.400	4.000	4.000
[cm]	16.25	10.16	10.16
9 [in]	1.450	4.000	4.000
[cm]	3.683	10.16	10.16
10 [in]	1.750	4.000	4.000
[cm]	4.445	10.16	10.16
11 [in]	1.880	4.000	4.000
[cm]	4.775	10.16	10.16
12 [in]	2.000	4.500	4.500
[cm]	5.080	11.43	11.43
13 [in]	2.000	4.000	4.000
[cm]	5.080	10.16	10.16
14 [in]	2.900	4.000	4.000
[cm]	7.366	10.16	10.16
15 [in]	3.000	6.000	6.000
[cm]	7.620	15.24	15.24
16 [in]	8.000	11.00	11.00
[cm]	20.32	27.94	27.94
17 [in]	10.50	5.000	5.000
[cm]	26.67	12.71	12.71

TYPE N OUTLINE A

OUTLINE	A	B	C
1 [in]	11.0	8.00	4.000
[cm]	27.9	20.3	10.16
2 [in]	6.00	20.0	5.000
[cm]	15.2	50.8	12.70



TYPE N OUTLINE



TYPE N OUTLINE A

* Additional outline configurations available. Contact manufacturer for your custom design.

5-WAY STRIPLINE POWER DIVIDERS/COMBINERS

0.5 - 26.5 GHz, SMA CONNECTORS

Features:

- Wide band
- Stripline Construction
- High Isolation
- Low Insertion Loss



ELECTRICAL SPECIFICATIONS

Model Number	Freq. Range [GHz]	Isolation* [dBmin]	VSWR[max]		Insertion Loss [dBmax]	Amplitude Bal. [± dBmax]	Phase Bal. [± Degrees] [Max]**	Average Power [Watts] Load VSWR			Outline
			Input	Output				1.2	2.0	∞	
PS5-1	0.5-1	16	1.70	1.50	1.4	0.5	N/A	10	5	1	N/A
PS5-2	1-2	15	1.70	1.70	1.7	0.5	N/A	10	5	1	2
PS5-3	0.5-2	14	1.70	1.70	1.9	0.8	N/A	10	5	1	3
PS5-4	0.5-2.5	12	1.75	1.70	2.6	0.8	N/A	10	5	1	3
PS5-5	2-4	14	1.75	1.75	1.9	0.8	N/A	10	5	1	4
PS5-6	4-8	13	1.75	1.75	2.2	0.8	N/A	10	5	1	5
PS5-7	2-8	11	1.80	1.75	2.5	1.2	N/A	10	5	1	5
PS5-8	8-12.4	12	1.80	1.80	2.8	1.2	N/A	10	5	1	1A
PS5-9	12-18	11	1.80	1.70	2.9	1.2	N/A	10	5	1	6
PS5-10	5-18	11	1.90	1.90	3.4	1.5	N/A	10	5	1	N/A
PS5-11	2-18	10	2.00	2.00	3.9	1.5	N/A	10	5	1	N/A
PS5-12**	18-26.5	9	2.00	2.00	5.6	1.5	N/A	10	5	1	N/A
PS5-15	1.0 - 1.8	18	1.61	1.61	2.0	0.5	8.0	10	5	1	2
PS5-18	7.2 - 8.5	16	1.70	1.70	2.2	0.8	N/A	10	5	1	5
PS5-19	3.625-4.25	17	1.65	1.65	1.5	0.8	N/A	10	5	1	4
PS5-20	5.8-6.45	17	1.65	1.65	1.5	0.8	N/A	10	5	1	5
PS5-21	6.0 - 8.0	17	1.70	1.70	1.5	0.8	N/A	10	5	1	5
PS5-23	1-3	16	1.65	1.65	1.6	0.8	N/A	10	5	1	N/A
PS5-26	1.93 - 1.99	18	1.40	1.45	1.5	0.5	8.0	10	5	1	2
PS5-38	1.2 - 1.4	17	1.45	1.35	1.5	0.5	7.0	10	5	1	7
PS5-39	2.0 - 6.0	15	1.60	1.50	1.7	0.8	N/A	10	5	1	8
PS5-43	2.0 - 6.0	15	1.60	1.50	1.7	0.8	N/A	10	5	1	5

*Custom Design For Higher Isolation Available. Contact Manufacturer For Other Specifications.

** 3.5 mm, 2.9 mm, 2.5 mm, or 2.1 mm Connectors.

*** Phase Balance is N/A for N-Way Dividers/Combiners. Contact Manufacturer for details.

SMA CONNECTORS

OUTLINE		A	B	C	D	E
1	[in]	4.50	1.250	2.250	1.000	4.140
	[cm]	11.43	3.175	5.715	2.540	10.516
2	[in]	7.90	2.50	2.260	0.149	4.900
	[cm]	20.07	6.35	5.74	0.378	12.45
3	[in]	4.70	3.00	2.700	0.149	2.700
	[cm]	8.89	3.175	6.858	0.378	6.858
4	[in]	6.55	3.00	2.700	0.149	3.550
	[cm]	16.6	7.62	6.858	0.378	9.017
5	[in]	2.95	3.00	2.700	0.149	1.950
	[cm]	7.49	7.62	6.858	0.378	4.953
6	[in]	3.00	2.35	2.700	0.149	1.320
	[cm]	7.62	5.97	6.858	0.378	3.352
7	[in]	3.30	2.50	2.200	0.150	0.149
	[cm]	8.38	6.35	5.588	0.381	0.378

OUTLINE	A	B	C	D	E
8 [in] [cm]	4.80	2.50	2.220	0.150	0.149
	12.19	6.35	5.64	0.381	0.378

OUTLINE A

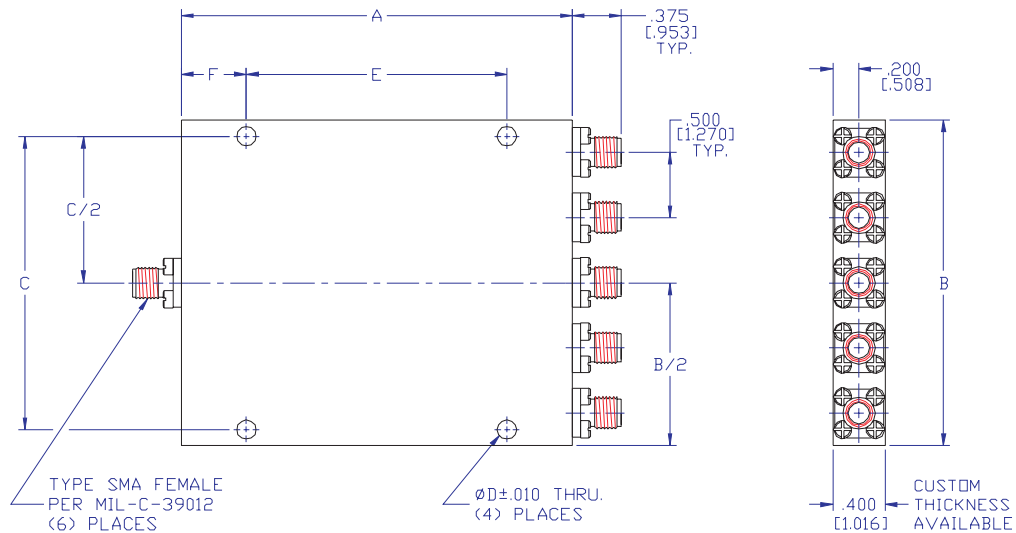
OUTLINE	A	B	C
1A _[in] [cm]	1.755	2.500	2.300
	4.457	6.350	5.842

Mechanical Outline available on page 27

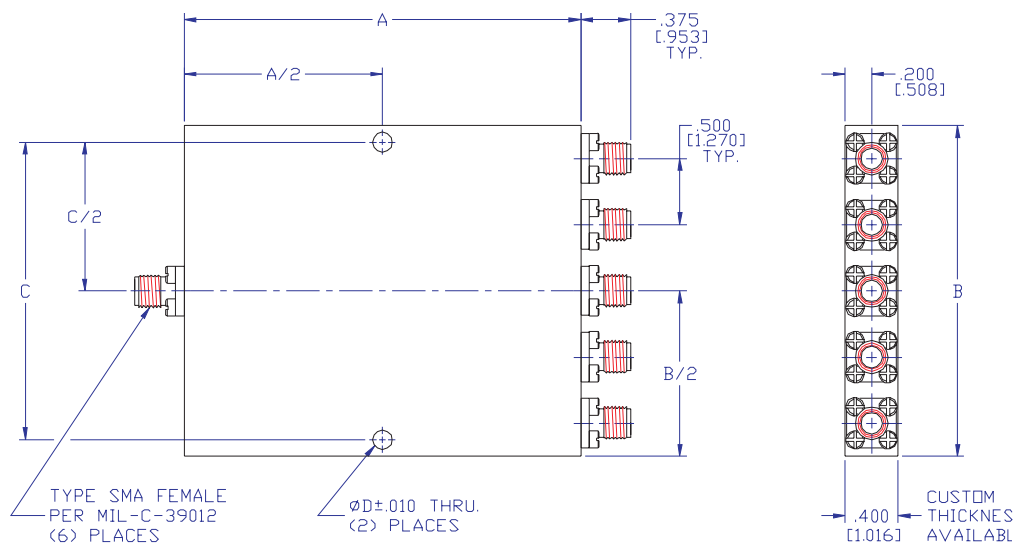
MECHANICAL OUTLINES *

TYPE SMA CONNECTORS

SMA OUTLINE



SMA OUTLINE A



* Additional outline configurations available. Contact manufacturer for your custom design.

6-WAY LUMPED ELEMENT POWER DIVIDERS / COMBINERS

5 MHz TO 2000 MHz, SMA CONNECTORS

Features:

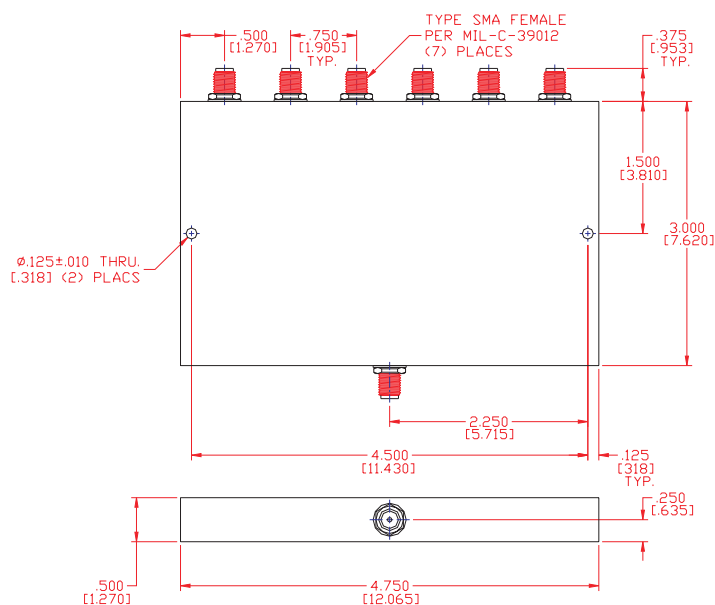
- Low Insertion Loss, Low VSWR
- High Isolation
- Uniform Phase & Amplitude Balance
- Ultra Wide Bandwidth



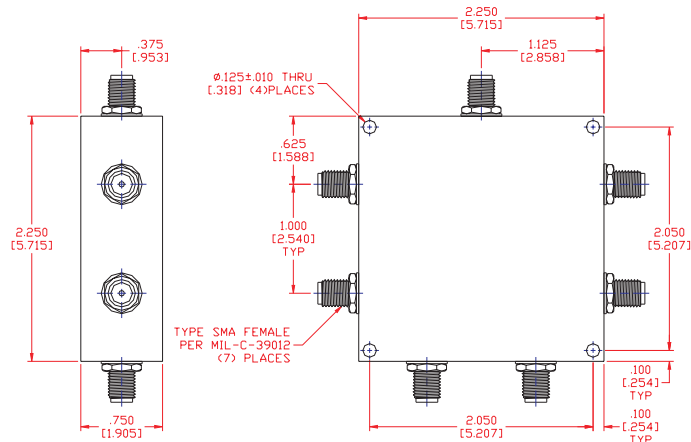
ELECTRICAL SPECIFICATIONS:

Model* Number	Freq. Range (MHz)	Max Insertion Loss (dB)	Isolation** (dB min)	Amplitude Balance ($\pm$ dB Max)	Phase Balance ($\pm$ Deg Max)	VSWR (Max)	OUTLINE
PL6-1	5-100	1.0	24	0.3	2.0	1.30:1	1
PL6-2	10-500	1.2	24	0.3	4.0	1.30:1	1
PL6-3	5-1000	2.5	18	0.4	10.0	1.60:1	1
PL6-4	50-1000	1.5	24	0.5	8.0	1.30:1	1
PL6-5	500-1000	2.8	18	0.4	10.0	1.60:1	1
PL6-6	50-1500	2.9	18	0.6	12.0	1.80:1	2
PL6-7	20-2000	3.0	16	0.7	14.0	2.00:1	2

* Units also available with BNC, and TNC connectors.
75 Ohm Or Higher Power Models Available



Outline 1



Outline 2

6-WAY STRIPLINE POWER DIVIDERS / COMBINERS

500 MHz to 18 GHz, SMA CONNECTORS

Features:

- Low VSWR
- High Isolation
- Low Insertion Loss



ELECTRICAL SPECIFICATIONS

Model Number	Freq Range (Ghz)	Isolation* (dB min)	VSWR(max)		Insertion Loss (dB max)	Amplitude Bal. (±dBmax)	Phase Bal. (±Deg.) [Max]	Average Power (Watts) Load VSWR			Outline SMA
			Input	Output				1.2	2.0	∞	
PS6-1	0.5-1.0	18	1.50	1.35	1.2	0.4	6.0	20	10	1	1, 1A
PS6-2	1.0-2.0	18	1.50	1.35	0.9	0.4	3.0	20	10	1	2
PS6-3	0.5-2.0	16	1.70	1.60	2.0	0.6	10.0	20	10	1	3, 2A
PS6-4	0.5-2.5	15	1.75	1.70	2.5	0.75	12.0	20	10	1	4
PS6-5	2.0-4.0	15	1.75	1.70	2.7	0.5	12.0	20	10	1	5
PS6-6	4.0-8.0	15	1.70	1.65	2.8	0.6	8.0	20	10	1	3A
PS6-7	2.0-8.0	14	1.85	1.85	3.8	0.8	7.0	20	10	1	5
PS6-8	8.0-12.4	15	1.65	1.50	3.2	0.6	6.0	20	10	1	4A
PS6-9	12.0-18.0	14	1.85	1.85	3.5	0.8	20.0	20	10	1	4A
PS6-10	5.0-18.0	12	1.85	1.85	3.8	0.85	N/A	20	10	1	6
PS6-11	2.0-18.0	12	1.90	1.85	4.2	0.9	N/A	20	10	1	N/A
PS6-12	18.0-26.5	11	2.00	2.00	5.0	1.25	N/A	20	10	1	N/A
PS6-13	6.0-18.0	12	1.80	1.60	3.8	0.75	N/A	20	10	1	6
PS6-14	0.78-1.0	18	1.50	1.40	1.4	0.5	6.0	20	10	1	5A
PS6-15	1.8-2.2	18	1.60	1.50	0.4	1.0	10.0	20	10	1	6A
PS6-16	0.5-18.0	16	2.00	1.80	12	0.7	N/A	20	10	1	N/A
PS6-17	0.8-2.0	16	1.70	1.50	0.8	0.3	N/A	20	10	1	3A
PS6-19	3.6-4.2	16	1.70	1.65	1.4	0.3	12.0	20	10	1	7A
PS6-20	5.6-6.4	12	1.90	1.85	4.2	0.9	N/A	20	10	1	3A
PS6-21	3.0-5.8	15	1.50	1.50	1.0	0.25	15.0	20	10	1	3A
PS6-23	0.95-1.75	18	1.45	1.45	1.7	0.4	12.0	20	10	1	2A
PS6-24	3.6-6.425	16	1.50	1.40	0.9	0.3	9.0	20	10	1	3A
PS6-25	0.45-1.0	18	1.50	1.40	0.6	0.1	4.0	20	10	1	1A
PS6-26	1.8-2.0	18	1.50	1.45	0.8	0.1	4.0	20	10	1	2A
PS6-27	7.25-8.4	17	1.50	1.45	0.9	0.2	4.0	20	10	1	3A
PS6-28	2.0-3.0	18	1.60	1.45	1.7	0.5	4.0	20	10	1	5
PS6-42	0.81-0.83	16	1.50	1.50	1.5	0.5	14.0	20	10	1	1A
PS6-43	2.0-6.0	17	1.60	1.50	1.6	1.6	10.0	20	10	1	5

*Custom Design For Higher Isolation Available. Contact Manufacturer For Other Specifications.

Mechanical Outlines (SMA Connectors)

Outline	A	B	C	D
1 [in]	5.70	2.00	1.48	3.22
[cm]	14.48	5.08	2.997	8.18
2 [in]	5.13	2.50	1.38	2.75
[cm]	13.03	6.35	3.50	6.99
3 [in]	5.50	4.00	1.53	0.500
[cm]	14.0	10.1	3.89	1.27
4 [in]	2.50	2.00	0.50	0.125
[cm]	13.9	10.16	3.88	8.81
5 [in]	2.00	2.00	0.50	0.125
[cm]	5.08	5.08	1.27	0.318
6 [in]	1.60	1.25	0.55	0.100
[cm]	4.06	3.18	1.40	0.318

Mechanical Outline
available on page 30

Mechanical Outlines (SMA Connectors)

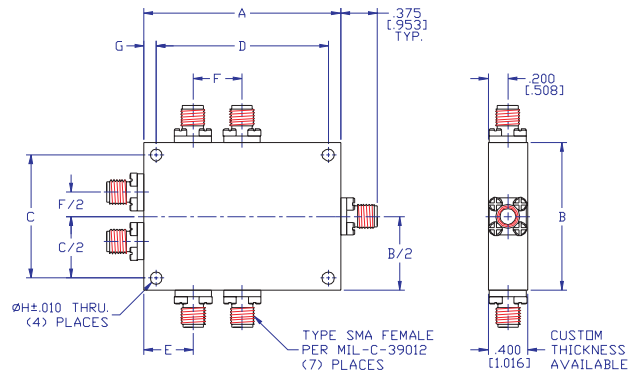
Outline	A	B	C	D
1A [in]	4.30	3.30	3.05	0.500
[cm]	10.9	8.38	7.75	1.270
2A [in]	6.80	3.00	2.70	0.500
[cm]	17.3	7.62	6.86	1.270
3A [in]	4.80	3.00	2.75	0.500
[cm]	12.2	7.62	6.98	1.270
4A [in]	3.60	3.00	2.75	0.500
[cm]	9.14	7.62	6.98	1.270
5A [in]	2.50	6.00	5.70	1.000
[cm]	6.35	15.2	14.4	2.540
6A [in]	4.75	4.00	3.65	0.500
[cm]	12.0	10.1	9.27	1.270
7A [in]	2.75	3.00	2.70	0.500
[cm]	6.98	7.62	6.85	1.270

6-WAY STRIPLINE POWER DIVIDERS / COMBINERS

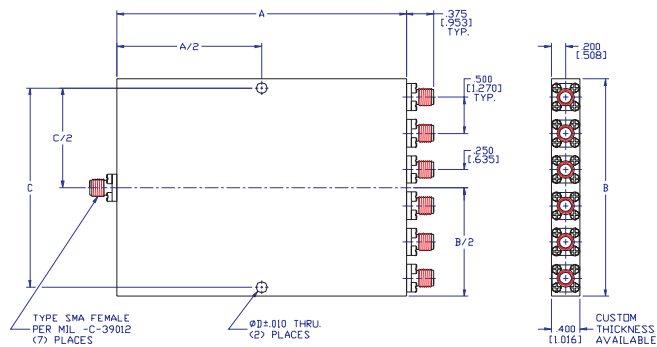
MECHANICAL OUTLINES*

TYPE SMA AND TYPE N CONNECTORS

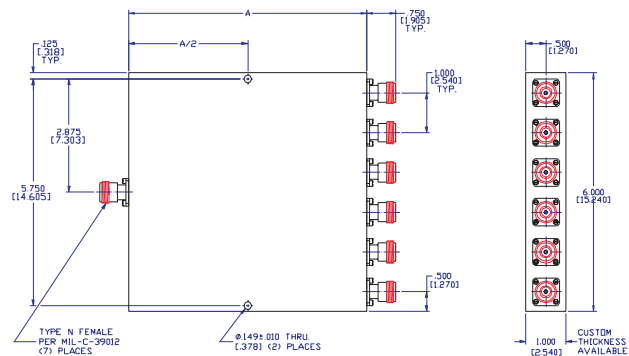
SMA OUTLINE



SMA OUTLINE A



TYPE N OUTLINE



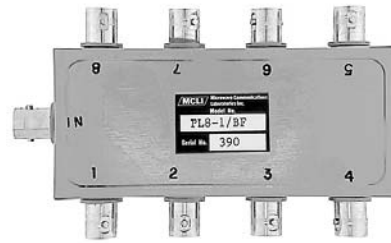
*Additional outline configurations available. Contact manufacturer for custom design options.

8-WAY LUMPED ELEMENT POWER DIVIDERS/COMBINERS

1 MHz to 2000 MHz, SMA and Type N Connectors

Features:

- Excellent Amplitude and Phase Tracking
- Low Insertion Loss, Low VSWR
- Ultra Broadband
- High Isolation



ELECTRICAL SPECIFICATIONS

Model* Number	Freq. Range (MHz)	Max Insertion Loss (dB)	Isolation (dB min)	Amplitude Balance ($\pm$ dB Max)	Phase Balance ($\pm$ Deg Max)	VSWR (Max)	Outline		
							SMA	Type N*	SMA
PL8-1	0.5-100	1.1	25	0.2	2.0	1.30:1	1	2	1A
PL8-2	5-500	1.4	25	0.3	4.0	1.30:1	1	2	1A
PL8-3	200-1000	1.6	25	0.5	7.0	1.30:1	1	2	1A
PL8-4	1-200	1.7	20	0.6	5.0	1.50:1	1	2	1A
PL8-5	50-500	1.9	25	0.5	4.0	1.35:1	1	2	1A
PL8-6	2-300	2.0	20	0.6	5.0	1.50:1	1	2	1A
PL8-7	20-1000	2.6	20	0.6	5.0	1.50:1	NA	NA	1A
PL8-8	20-1500	3.0	20	0.8	6.0	1.65:1	NA	NA	1A
PL8-9	20-2000	3.8	18	0.8	8.0	1.95:1	NA	NA	1A
PL8-16	90-110	1.8	20	0.2	6.0	1.35:1	1	2	1A
PL8-18	50-90	1.5	25	0.2	6.0	1.35:1	1	2	1A
PL8-31	40-200	1.9	20	0.2	7.0	1.40:1	1	2	2A

*Units with Type N Connectors: Multiply VSWR by 1.05, subtract 2.0 dB from isolation. Add suffix /NF for N Type, to model number.

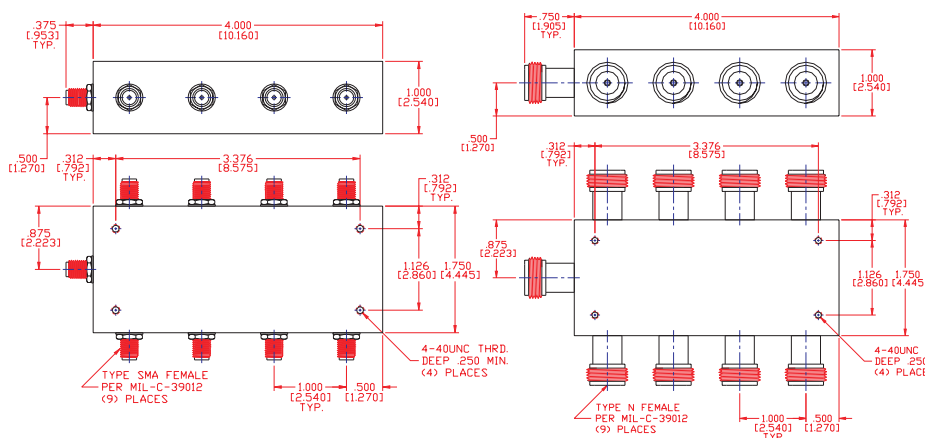
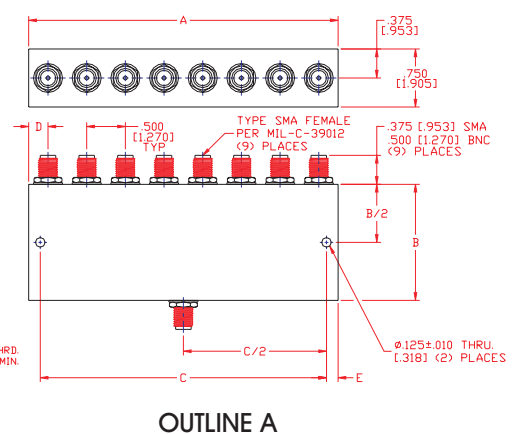


Figure 1

Figure 2



OUTLINE A

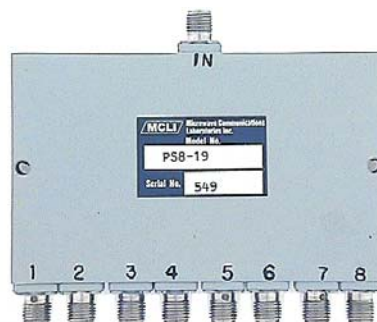
OUTLINE	A	B	C
1A (in)	4.50	1.30	4.25
(cm)	11.43	3.30	10.79
2A (in)	4.10	1.30	3.85
(cm)	10.41	3.30	9.78

8-WAY STRIPLINE POWER DIVIDERS / COMBINERS

0.5 - 18 GHz, SMA CONNECTORS

Features:

- Ultra Wide band
- Stripline Construction
- High Isolation
- Low Insertion Loss



ELECTRICAL SPECIFICATIONS

Model Number	Freq. Range (GHz)	Isolation* (dBmin)	VSWR(max)		Insertion Loss (dBmax)	Amplitude Bal. (±dBmax)	Phase Bal. (±Degrees) [Max]	Average Power (Watts) Load VSWR			Outline
			Input	Output				1.2	2.0	∞	
PS8-1	.5-1	18	1.35	1.30	0.7	0.40	8.0	30	20	1	1
PS8-2	0.9-1.3	18	1.35	1.30	0.7	0.40	8.0	30	20	1	2
PS8-3	1-2	18	1.45	1.35	0.6	0.40	8.0	30	10	1	2
PS8-4	2-4	18	1.45	1.35	0.7	0.40	8.0	30	10	1	3
PS8-5	3-4.2	18	1.45	1.35	0.7	0.40	8.0	30	10	1	2
PS8-6	3.7-6.4	17	1.45	1.34	0.8	0.50	8.0	30	10	1	2
PS8-7	5.8-6.4	18	1.40	1.30	0.7	0.40	9.0	30	10	1	3
PS8-8	2-8	16	1.60	1.60	1.4	0.70	10.0	10	5	1	4
PS8-9	4-8	17	1.60	1.60	1.4	0.60	10.0	10	5	1	3
PS8-10	8-12.4	16	1.70	1.70	1.3	0.50	12.0	30	10	1	3
PS8-11	6-18	15	1.80	1.70	2.2	0.90	15.0	10	5	1	3
PS8-12	12-18	15	1.80	1.70	2.2	0.60	15.0	10	5	1	3
PS8-13	2-18	15	1.80	1.70	3.4	0.80	18.0	10	5	1	5
PS8-14	0.5-18.0	16	1.60	1.45	3.8	1.2	18.0	10	5	1	1A
PS8-15	0.8-2.4	16	1.60	1.30	0.8	0.6	12.0	30	10	1	2
PS8-16	6.5-12.8	17	1.60	1.50	0.9	0.6	14.0	30	10	1	3
PS8-17	1.0-5.0	16	1.60	1.50	1.8	0.5	12.0	30	10	1	?
PS8-18	3.3-5.5	17	1.45	1.40	1.0	0.5	10.0	30	10	1	4
PS8-19	3.625-4.2	19	1.35	1.30	0.7	0.3	5.0	30	10	1	6
PS8-21	6.0-15.0	16	1.60	1.45	1.8	0.6	14.0	30	10	1	3
PS8-23	8.0-11.0	20	1.40	1.30	0.7	0.4	12.0	30	10	1	3
PS8-24	3.625-6.45	17	1.45	1.35	1.3	0.4	10.0	30	10	1	7
PS8-25	1.0-3.0	17	1.50	1.45	1.4	0.4	10.0	30	10	1	8
PS8-26	14.0-14.5	13	2.00	2.00	2.8	0.5	10.0	2	1	1	3
PS8-27	10.9-12.75	17	1.60	1.50	1.0	0.40	10.0	30	10	1	8
PS8-28	11.7-12.2	16	1.70	1.70	1.3	0.50	9.0	30	10	1	3
PS8-29	4.4-5.8	16	1.50	1.40	0.9	0.20	4.0	30	10	1	3
PS8-30	0.5-2.5	16	1.60	1.55	1.5	0.20	4.0	10	5	1	3
PS8-31	7.0-12.5	16	1.70	1.70	2.0	0.50	12.0	30	10	1	2
PS8-32	1.35-2.45	18	1.45	1.30	0.8	0.40	8.0	30	10	1	9
PS8-33	10.7-14.5	14	1.70	1.65	2.5	0.80	14.0	30	10	1	3
PS8-35	0.96-1.215	16	1.35	1.35	0.7	0.60	6.0	250	10	1	10
PS8-37	0.25-0.65	18	1.30	1.20	0.8	0.60	8.0	40	10	1	11
PS8-39	0.94-1.45	20	1.35	1.20	0.6	0.40	6.0	250	100	10	10
PS8-42	17.0-22.0	14	2.00	2.00	3.4	0.5	12.0	1	1	0.5	12
PS8-43	2.0-6.0	17	1.50	1.40	1.2	0.40	8.0	30	10	1	5
PS8-47	3.0-4.2	18	1.50	1.40	1.2	0.40	8.0	30	10	1	2
PS8-48	11.7-14.6	15	1.75	1.65	1.8	0.60	14.0	30	10	1	3
PS8-49	0.7-1.3	16	1.60	1.60	1.0	0.60	10.0	30	10	1	2
PS8-50	1.2-1.75	19	1.50	1.50	0.9	0.60	8.0	30	10	1	2

*Custom Design For Higher Isolation Available. Contact Manufacturer For Other Specifications.

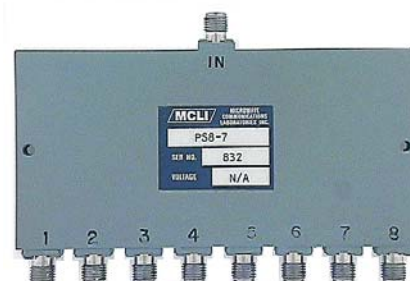
Mechanical Outline available on page 34

8-WAY STRIPLINE POWER DIVIDERS / COMBINERS

0.5 - 18 GHz, SMA CONNECTORS

Features:

- Ultra Wide band
- Stripline Construction
- High Isolation
- Low Insertion Loss



ELECTRICAL SPECIFICATIONS

Model Number	Frequency Range (Ghz)	Isolation* (dBmin)	VSWR(max)		Insertion Loss (dBmax)	Amplitude Bal. (±dBmax)	Phase Bal. (±Degrees) [Max]	Average Power (Watts) Load VSWR			Outline
			Input	Output				1.2	2.0	∞	
PS8-51	1.7-2.2	16	1.55	1.30	0.7	0.60	12.0	30	20	1	2
PS8-56	10.0-13.0	15	1.65	1.60	0.9	0.60	12.0	30	20	1	8
PS8-58	6.0-12.0	16	1.65	1.40	1.2	0.60	14.0	10	5	1	3
PS8-59	4.0-13.0	18	1.45	1.35	0.7	0.40	8.0	30	10	1	3
PS8-60	0.8-2.0	18	1.45	1.35	0.7	0.40	8.0	30	10	1	2
PS8-67	0.5-2.0	18	1.45	1.45	1.5	0.80	8.0	30	10	1	2
PS8-72	3.4-4.20	19	1.40	1.30	0.9	0.40	6.0	30	10	1	6
PS8-76	18.0-20.0	14	2.00	2.00	4.5	1.40	25.0	10	5	1	12
PS8-77	13.7-14.5	16	1.70	1.60	1.4	0.60	10.0	10	5	1	3
PS8-79	0.5-4.0	16	1.70	1.70	2.3	0.50	12.0	30	10	1	2A
PS8-81	3.0-6.0	17	1.65	1.65	1.8	0.70	10.0	10	5	1	4
PS8-88	1.0-28.0	12	2.00	2.00	4.2	0.80	15.0	10	5	1	N/A
PS8-91	8.0-18.0	14	1.90	1.90	3.8	0.80	15.0	10	5	1	3
PS8-100	1.0-18.0	14	1.95	1.95	6.5	0.80	14.0	10	5	1	N/A
PS8-101	0.8-2.4	16	1.60	1.30	0.8	0.6	12.0	30	10	1	8
PS8-106	3.0-5.0	18	1.45	1.35	0.9	0.6	14.0	30	10	1	4
PS8-107	0.40-1.1	18	1.45	1.35	0.9	0.5	12.0	10	5	1	1
PS8-121	11.7-12.75	16	1.70	1.65	1.5	0.60	14.0	30	10	1	3

*Custom Design For Higher Isolation Available. Contact Manufacturer For Other Specifications.

MECHANICAL OUTLINE - SMA CONNECTORS

OUTLINE	A	B	C	D	E
1 (in)	6.25	4.00	3.70	0.150	0.149
(cm)	15.87	10.16	9.39	0.381	0.378
2 (in)	2.15	4.10	3.76	0.170	0.125
(cm)	5.46	10.4	9.55	0.432	0.318
3 (in)	2.00	4.00	3.75	0.150	0.149
(cm)	5.08	10.16	9.39	0.381	0.378
4 (in)	4.00	4.00	3.70	0.150	0.149
(cm)	10.16	10.16	9.39	0.381	0.378
5 (in)	3.75	4.00	3.75	0.125	0.125
(cm)	9.52	10.16	9.52	0.318	0.318
6 (in)	2.00	3.20	2.80	0.200	0.149
(cm)	5.08	8.12	7.11	0.508	0.378
7 (in)	3.12	5.48	5.08	0.200	0.149
(cm)	7.94	13.92	12.9	0.508	0.378
8 (in)	2.70	4.00	3.70	0.150	0.149
(cm)	6.86	10.16	9.39	0.381	0.378
9 (in)	2.50	4.50	4.25	0.125	0.149
(cm)	6.35	11.43	10.79	0.318	0.378

MECHANICAL OUTLINE - SMA CONNECTORS

OUTLINE	A	B	C	D	E
10 (in)	2.88	4.00	3.75	0.125	0.149
(cm)	7.31	10.16	9.53	0.318	0.378
11 (in)	7.00	8.04	7.79	0.125	0.149
(cm)	17.78	20.42	19.78	0.318	0.378
12 (in)	1.50	4.00	3.75	0.125	0.149
(cm)	3.81	10.16	9.52	0.318	0.378

OUTLINE A

OUTLINE	A	B	C	D	E
1A (in)	6.50	6.40	6.15	0.149	4.500
(cm)	16.51	16.26	15.63	0.378	11.43
2A (in)	5.60	4.33	4.08	0.125	5.350
(cm)	14.24	11.00	10.36	0.318	13.59

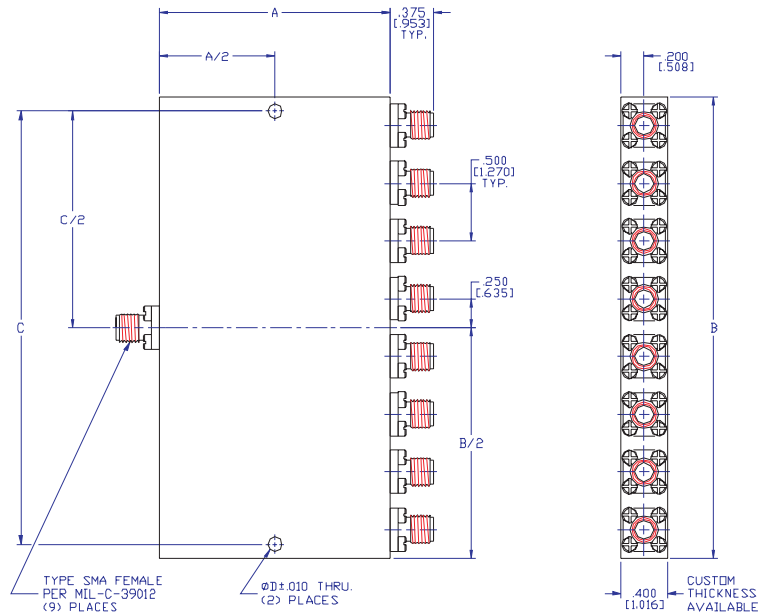
Mechanical Outline available on page 34

8-WAY STRIPLINE POWER DIVIDERS / COMBINERS

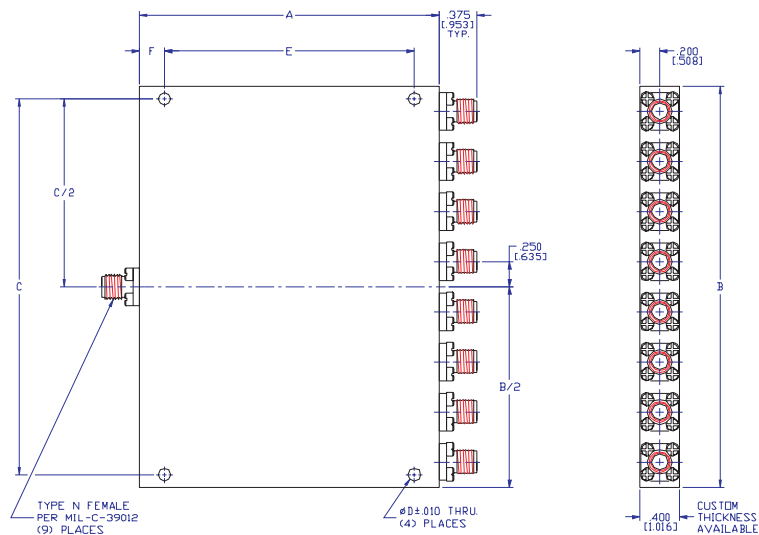
MECHANICAL OUTLINES*

TYPE SMA CONNECTORS

SMA OUTLINE



OUTLINE A



*Additional outline configurations available. Contact manufacturer for custom design options.

8-WAY STRIPLINE POWER DIVIDERS / COMBINERS

0.5 - 14 GHz, TYPE N CONNECTOR

Features:

- Ultra Wide band
- Stripline Construction
- High Isolation
- Low Insertion Loss



ELECTRICAL SPECIFICATIONS

Model Number	Freq. Range (GHz)	Isolation* (dBmin)	VSWR(max)		Insertion Loss (dBmax)	Amplitude Bal. (±dBmax)	Phase Bal. (±Degrees) [Max]	Average Power (Watts) Load VSWR			Outline
			Input	Output				1.2	2.0	∞	
PS8-1/NF	.5-1	17	1.40	1.30	0.8	0.35	5.0	30	20	1	1
PS8-2/NF	0.9-1.3	17	1.40	1.35	0.7	0.50	5.0	30	20	1	2
PS8-3/NF	1-2	17	1.50	1.35	0.9	0.35	6.0	30	10	1	2
PS8-4/NF	2-4	17	1.50	1.40	0.9	0.50	5.0	30	10	1	2
PS8-5/NF	3-4.2	16	1.45	1.40	0.9	0.40	5.0	30	10	1	2
PS8-6/NF	3.7-6.4	17	1.50	1.40	0.8	0.50	5.0	30	10	1	3
PS8-7/NF	5.8-6.4	19	1.40	1.35	0.8	0.40	10.0	30	10	1	2
PS8-8/NF	2-8	16	1.65	1.55	1.4	0.70	14.0	30	10	1	4
PS8-9/NF	4-8	16	1.60	1.50	1.4	0.60	12.0	30	10	1	2
PS8-10/NF	8-12.4	15	1.80	1.70	1.5	0.70	18.0	30	10	1	2
PS8-11/NF	6-14	14	1.80	1.70	2.5	1.0	15.0	30	20	1	2
PS8-12/NF	12-14	14	1.65	1.65	2.2	0.60	15.0	30	20	1	2
PS8-13/NF	2-14	14	1.85	1.75	3.4	0.80	18.0	30	10	1	5
PS8-22/NF	7.2-8.5	16	1.50	1.45	1.5	0.5	8.0	30	10	1	2
PS8-19/NF	3.625-4.25	19	1.35	1.30	0.7	0.5	6.0	30	10	1	6
PS8-20/NF	5.8-6.4	18	1.35	1.30	0.7	0.5	10.0	30	10	1	6
PS8-24/NF	3.625-6.45	18	1.35	1.35	1.2	0.5	10.0	30	10	1	6
PS8-25/NF	1-3	16	1.45	1.40	0.8	0.6	8.0	30	10	1	7
PS8-26/NF	14-14.5	15	1.65	1.50	1.6	0.6	10.0	30	10	1	2
PS8-27/NF	10.9-12.75	15	1.65	1.50	1.6	0.6	10.0	30	10	1	3
PS8-30/NF	0.5-2.5	15	1.65	1.50	1.6	0.6	10.0	30	10	1	4
PS8-33/NF	10.7-14.5	15	1.65	1.60	1.9	0.8	15.0	30	10	1	3
PS8-34/NF	7.1-7.70	17	1.55	1.50	0.9	0.6	12.0	30	10	1	2
PS8-44/NF	3.7-5.0	17	1.50	1.25	1.0	0.4	10.0	30	10	1	6
PS8-45/NF	5.8-8.5	17	1.40	1.25	1.0	0.4	10.0	30	10	1	6
PS8-46/NF	0.95-1.45	18	1.40	1.25	0.8	0.4	6.0	30	10	1	6
PS8-52/NF	11.7-12.2	15	1.80	1.75	1.8	0.6	12.0	30	10	1	3
PS8-69/NF	0.10-1.0	23	1.50	1.25	1.2	0.5	10.0	30	10	1	8
PS8-72/NF	3.4-4.2	17	1.45	1.30	0.8	0.4	8.0	30	10	1	6

*Custom Design For Higher Isolation Available. Contact Manufacturer For Other Specifications.

OUTLINE	A	B	C
1 (in)	3.20	8.00	7.70
(cm)	8.13	20.3	19.6
2 (in)	2.00	8.00	7.70
(cm)	5.08	20.3	19.6
3 (in)	2.50	8.00	7.70
(cm)	6.35	20.3	19.6
4 (in)	4.00	8.00	7.70
(cm)	10.1	20.3	19.6
5 (in)	3.70	8.00	7.70
(cm)	9.39	20.3	19.6
6 (in)	1.75	8.00	7.70
(cm)	4.44	20.3	19.6

OUTLINE	A	B	C
5 (in)	3.70	8.00	7.70
(cm)	9.39	20.3	19.6
6 (in)	1.75	8.00	7.70
(cm)	4.44	20.3	19.6
7 (in)	3.00	8.00	7.70
(cm)	7.62	20.3	19.6

Mechanical Outline available on page 36

TYPE N CONNECTORS



9-WAY STRIPLINE POWER DIVIDERS / COMBINERS

1.0 - 8.0 GHz, SMA CONNECTORS

Features:

- Ultra Wide band
- Stripline Construction
- High Isolation
- Low Insertion Loss



ELECTRICAL SPECIFICATIONS

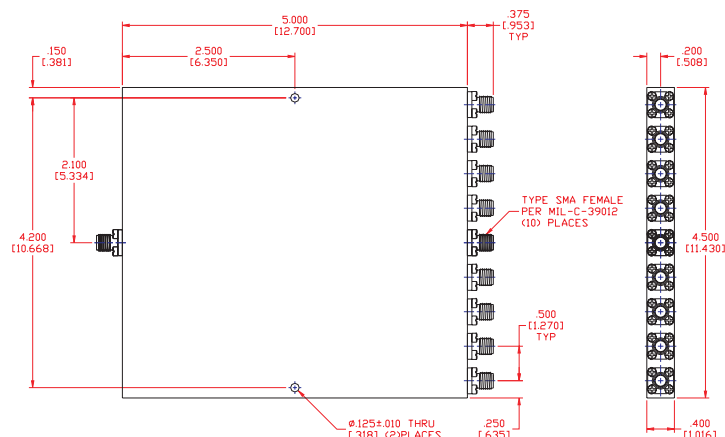
Model** Number	Freq. Range (GHz)	Isolation* (dBmin)	VSWR(max)		Insertion Loss (dBmax)	Amplitude Bal. (±dBmax)	Phase Bal. (Degrees) (±Max)	Average Power (Watts) Load VSWR			Outline***
			Input	Output				1.2	2.0	∞	
PS9-4	.824-.849	17	1.60	1.45	1.2	0.4	6.0	10	5	1	1
PS9-6	2.0-6.0	12	1.80	1.80	2.5	1.5	N/A	2	1	1	2

*Custom Design for Higher Isolation Available. Contact Manufacturer for other specifications.

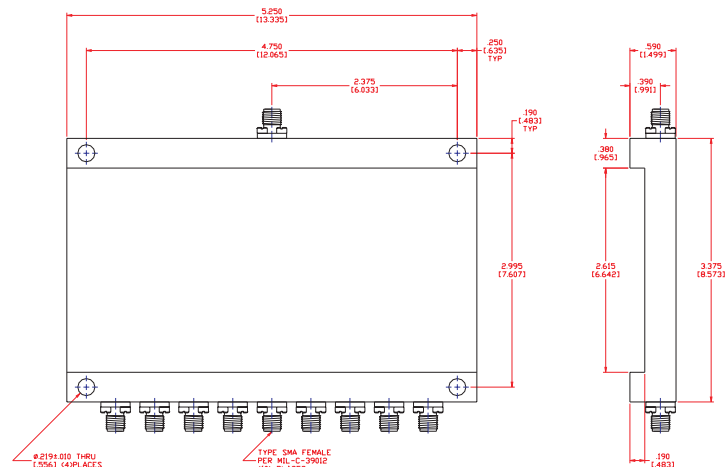
**Other models available at different frequency ranges by custom design. Contact manufacturer for details.

***Additional outline configurations available. Contact manufacturer for custom design options.

OUTLINE 1



OUTLINE 2



10-WAY STRIPLINE POWER DIVIDERS / COMBINERS

1.0 - 8.0 GHz, SMA CONNECTORS

Features:

- Ultra Wide band
- Stripline Construction
- High Isolation
- Low Insertion Loss



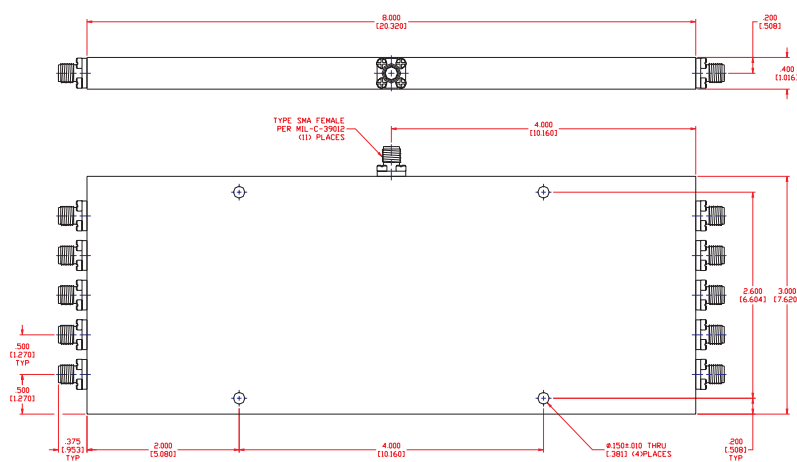
ELECTRICAL SPECIFICATIONS

Model*** Number	Freq. Range (GHz)	Isolation* (dBmin)	VSWR(max)		Insertion Loss (dBmax)	Amplitude Bal. ($\pm$ dBmax)	Phase Bal.** ($\pm$ Degrees) [Max]	Average Power (Watts) Load VSWR			Outline
			Input	Output				1.2	2.0	∞	
PS10-2	1.0-2.0	14	1.70	1.70	2.2	1.0	N/A	5	2	1	1
PS10-3	2.0-6.0	12	1.80	1.80	2.5	1.5	N/A	1	1	1	1
PS10-4	4.0-6.0	12	1.80	1.80	2.9	0.4	N/A	5	2	1	2
PS10-5	2.0-4.2	17	1.60	1.40	2.5	0.5	N/A	10	5	1	1
PS10-6	2.0-5.2	20	1.60	1.60	1.9	0.9	N/A	40	10	1	1
PS10-7	1.2-5.5	15	1.65	1.65	2.0	0.5	N/A	40	10	1	1
PS10-9	4.0-8.0	12	1.90	1.90	3.0	1.75	N/A	5	2	1	2
PS10-16	4.2 - 4.4	16	1.60	1.30	0.8	0.6	12.0	5	2	1	2

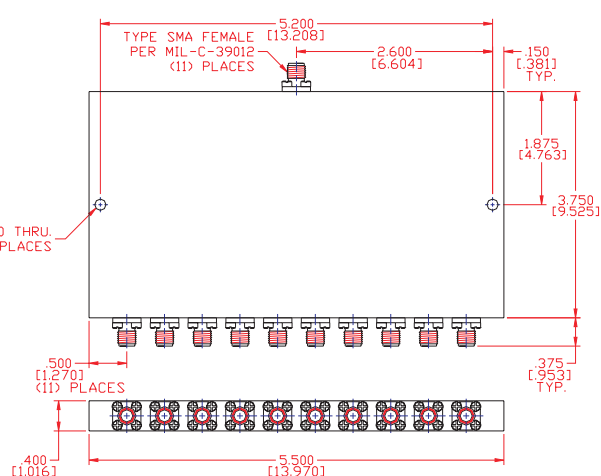
*Custom Design for Higher Isolation Available. Contact Manufacturer for other specifications.

**Other models available at different frequency ranges by custom design. Contact manufacturer for details.

***Additional outline configurations available. Contact manufacturer for custom design options.



Outline 1



Outline 2

11-WAY STRIPLINE POWER DIVIDERS / COMBINERS

0.440-0.770 GHz, SMA CONNECTORS

Features:

- Ultra Wide band
- Stripline Construction
- High Isolation
- Low Insertion Loss

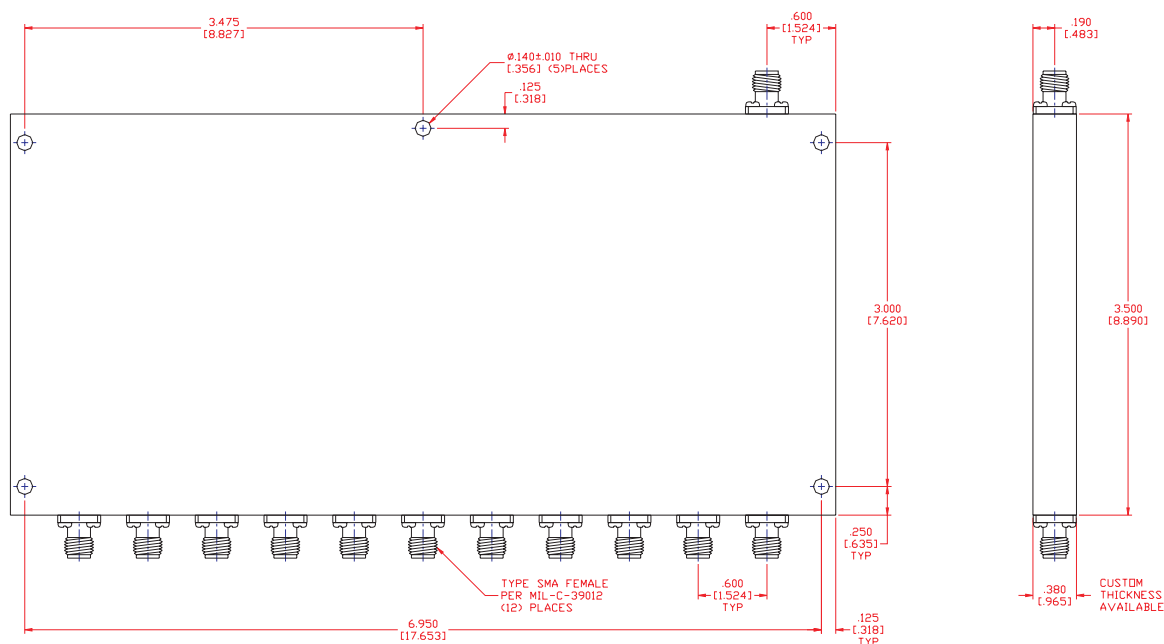


ELECTRICAL SPECIFICATIONS

Model Number**	Freq. Range (Ghz)	Isolation* (dBmin)	VSWR(max)		Insertion Loss (dBmax)	Amplitude Bal. (±dBmax)	Phase Bal. (Degrees) [±Max]	Average Power (Watts) Load VSWR			Outline
			Input	Output				1.2	2.0	∞	
PS11-1	0.440-0.770	15	1.55	1.45	1.6	0.5	6.0	2	1	1	1

*Custom Design For Higher Isolation Available. Contact Manufacturer For Other Specifications.

**Other models are available for different frequencies by custom design. Contact manufacturer for details.



12-WAY FERRITE POWER DIVIDERS/COMBINERS

5 MHz to 2000 MHz,

Features:

- Low Insertion Loss
- Low VSWR
- High Isolation
- True 12 Way Divider/Combiner

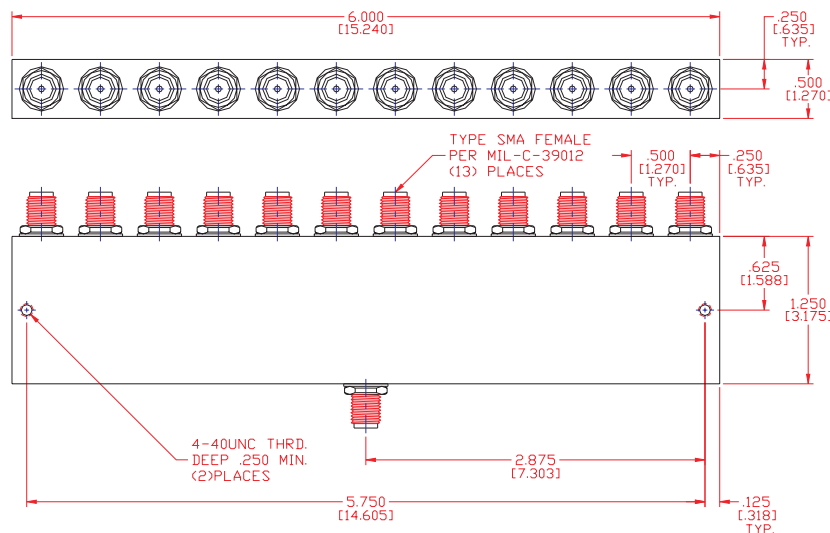


ELECTRICAL SPECIFICATIONS - LUMPED ELEMENT*

Model** Number	Freq. Range (MHz)	Insertion Loss (dB Max)	Isolation* (dB Min)	Amplitude Balance ($\pm$ dB Max)	Phase Balance ($\pm$ Deg Max)	VSWR (Max)	Outline
							SMA
PL12-1	5-100	1.2	25	0.2	3.0	1.40:1	1
PL12-2	20-500	1.7	25	0.3	4.0	1.40:1	1
PL12-3	100-1000	2.4	25	0.4	8.0	1.40:1	1
PL12-4	500-1500	3.5	20	0.6	9.0	2.20:1	1
PL12-5	20-1500	3.6	20	0.7	11.0	2.20:1	1
PL12-6	20-2000	4.0	20	0.8	12.0	2.50:1	1

*Custom Design For Higher Isolation Available. Contact Manufacturer For Other Specifications.

**Other models are available with different frequencies by custom design. Contact manufacturer for details.



16-WAY STRIPLINE POWER DIVIDERS /COMBINERS

0.950 - 16.2 GHz, TYPE SMA AND TYPE N CONNECTORS

Features:

- Low VSWR, Low Insertion Loss
- Stripline Construction
- Excellent Phase and Amplitude Balance
- High Isolation, High Reliability



ELECTRICAL SPECIFICATIONS

Model Number	Freq. Range (GHz)	Isolation* (dBmin)	VSWR(max)		Insertion Loss (dBmax)	Amplitude Bal. (±dBmax)	Phase Bal. (±Degrees) (Max)	Average Power (Watts) Load VSWR			Outline
			Input	Output				1.2	2.0	∞	
PS16-2/NF	1.0-2.0	18	1.75:1	1.65:1	2.2	1.00	12	30	10	1	1A
PS16-3	15.7-16.2	15	1.75:1	1.50:1	3.8	0.75	12	30	10	1	1
PS16-19	3.65-4.20	20	1.45:1	1.25:1	0.8	0.50	4	30	10	1	2
PS16-19/NF	3.65-4.20	16	1.60:1	1.60:1	1.7	0.75	9	30	10	1	2A
PS16-20	5.8-6.4	22	1.50:1	1.25:1	0.8	0.50	4	30	10	1	2
PS16-20/NF	5.8-6.4	18	1.60:1	1.60:1	1.5	0.55	7	30	10	1	2A
PS16-22	7.0-9.0	14	1.70:1	1.70:1	1.8	0.50	6	1	1	1	3
PS16-28	1.0-12.5	14	1.90:1	1.90:1	7.9	0.90	10	1	1	1	4
PS16-40/NF	0.95-1.45	16	2.00:1	2.00:1	1.9	0.75	10	10	5	1	3A
PS16-57	3.4-4.2	16	1.65:1	1.65:1	1.5	0.75	8	30	10	1	2
PS16-57/NF	3.4-4.2	16	1.70:1	1.70:1	1.8	1.00	10	30	10	1	4A

*Custom Design For Higher Isolation Available. Contact Manufacturer For Other Specifications.

TYPE SMA MECHANICAL OUTLINE

OUTLINE	A	B	C	D	E
1 [in]	2.50	8.10	7.75	0.500	0.175
	[cm]	20.07	6.35	5.74	0.378
2 [in]	2.85	6.40	6.00	0.400	0.200
	[cm]	7.24	16.25	15.24	1.016
3 [in]	2.00	8.00	7.70	0.500	0.150
	[cm]	5.08	20.32	19.56	0.378
4 [in]	12.0	9.00	8.75	11.75	0.125
	[cm]	30.48	22.86	22.22	29.84

TYPE N MECHANICAL OUTLINE A

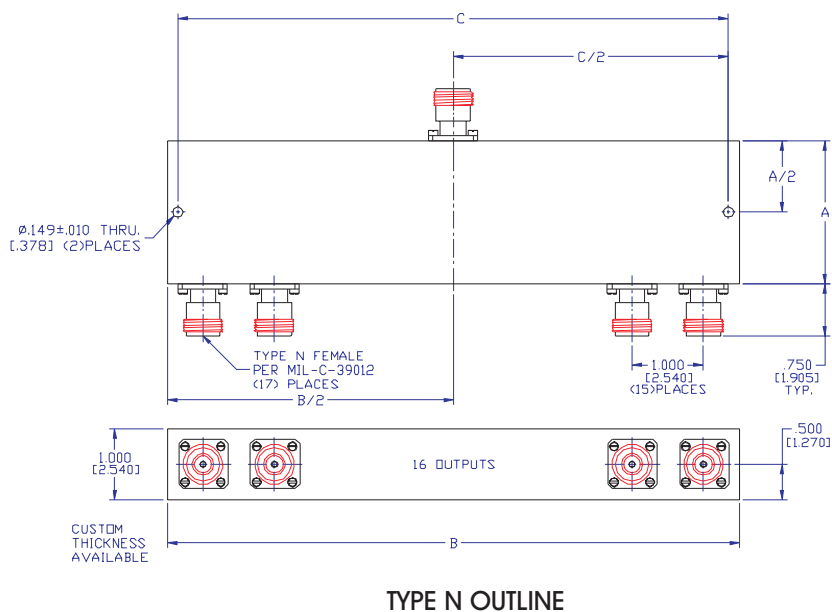
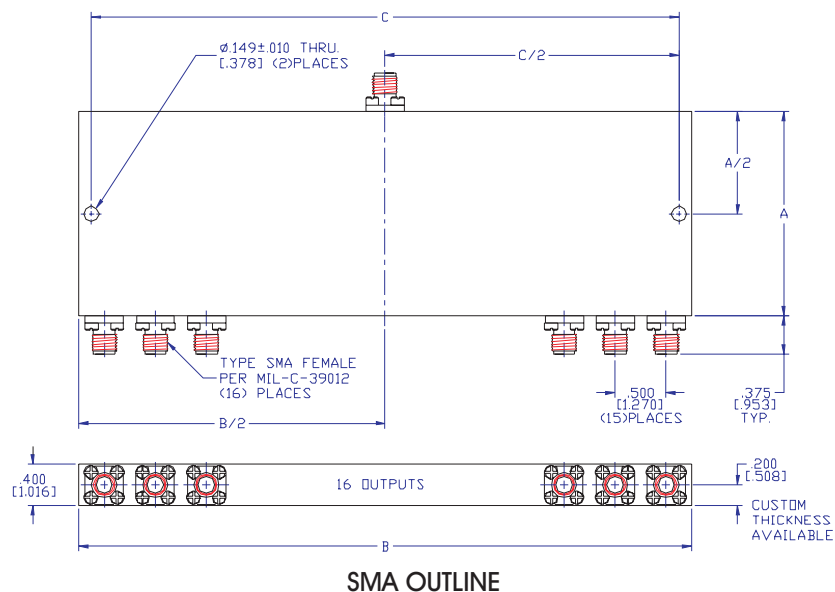
OUTLINE	A	B	C	D	E
1A [in]	2.30	16.00	15.75	1.000	0.125
	[cm]	5.84	40.64	40.00	2.540
2A [in]	2.90	16.00	15.60	1.000	0.200
	[cm]	7.36	40.64	39.62	2.540
3A [in]	2.20	15.76	15.51	1.000	0.125
	[cm]	8.89	3.175	6.858	2.540
4A [in]	4.00	16.00	15.50	1.000	0.250
	[cm]	10.16	40.64	39.37	2.54

Mechanical Outline available on page 42

16-WAY STRIPLINE POWER DIVIDERS /COMBINERS

TYPE SMA AND TYPE N CONNECTORS

MECHANICAL OUTLINES*



*Additional outline configurations available. Contact manufacturer for custom design options.

32-WAY STRIPLINE POWER DIVIDERS /COMBINERS

SATELLITE COMMUNICATION BANDS, TYPE N AND SMA CONNECTORS

Features:

- Low VSWR, Low Insertion Loss
- Stripline Construction
- Excellent Phase and Amplitude Balance
- High Isolation, High Reliability



ELECTRICAL SPECIFICATIONS

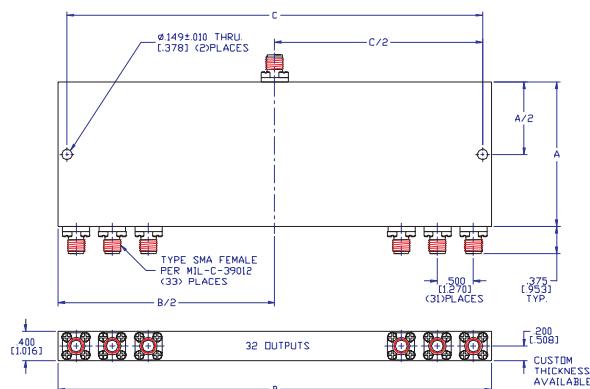
Model Number**	Freq. Range (GHz)	Isolation* (dBmin)	VSWR(max)		Insertion Loss (dBmax)	Amplitude Bal. ($\pm$ dBmax)	Phase Bal. ($\pm$ Degrees) [Max]	Average Power (Watts) Load VSWR			Outline
			Input	Output				1.2	2.0	∞	
PS32-19	3.7-4.2	20	1.60:1	1.25:1	1.10	0.8	6	30	10	1	1
PS32-19/NF	3.7-4.2	20	1.65:1	1.30:1	1.10	0.8	6	30	10	1	2
PS32-20	5.8-6.4	20	1.60:1	1.25:1	1.10	0.8	7	30	10	1	1
PS32-20/NF	5.8-6.4	20	1.65:1	1.30:1	1.10	0.8	7	30	10	1	2

*Custom Design For Higher Isolation Available. Contact Manufacturer For Other Specifications.

**Other models are available for different frequencies by custom design. Contact manufacturer for details.

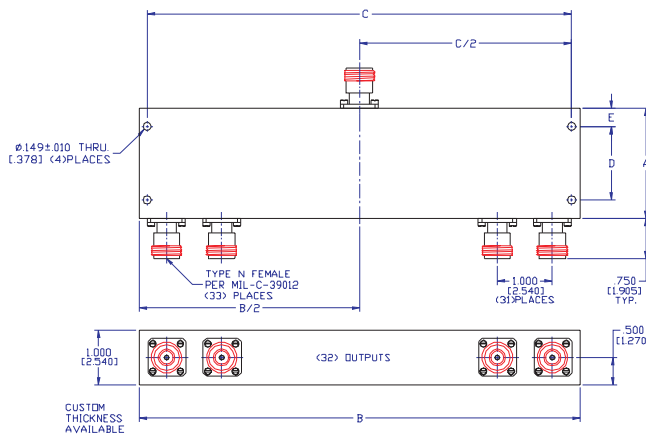
TYPE SMA MECHANICAL OUTLINE

OUTLINE	A	B	C
1 [in]	3.500	12.80	12.40
[cm]	8.890	32.51	31.49



TYPE N MECHANICAL OUTLINE

OUTLINE	A	B	C	D
2 [in]	3.600	32.00	31.60	3.200
[cm]	9.144	32.51	31.49	8.128



COUPLERS

LUMPED ELEMENT AND STRIPLINE

3 kHz - 26.5 GHz

GENERAL INFORMATION

MCLI offers one of the largest selections of couplers in the world. The directional coupler provides a convenient and accurate means for sampling microwave energy which is ideally suited for monitoring incident and reflected power. VSWR and attenuation measurements can be made more accurate through the directional power flow presented by the coupler. A typical MCLI directional coupler operation is as follows: (See Figure 1)

Energy is fed into the input port of the mainline. The majority of the energy will appear at the output port with a fraction of the energy flowing to the coupled port. That fraction of energy will depend on the design of the unit (6, 10, 20, 30 dB etc.) The energy applied from the output port to the input port will appear at the input port but virtually none of this energy will appear at the coupled port. The difference of energy from the input port to the output port and the output port to the input port is known as the directivity.

The MCLI family of Directional Couplers offers a wide range of models which are available in five different classes:

- 1) Three Port Directional Couplers
- 2) Four Port Bi-Directional Couplers
- 3) Four Port Dual Directional Coupler
- 4) Four Port High Power Directional Couplers
- 5) Four Port Directional Detector

The directional detector is a coupler combined with a detector.

All models offer high performance and quick delivery.

Consult your MCLI engineering team member for any custom application.

Frequency Range: The Frequency Range over which the coupler must meet the specifications listed.

Bandwidth: When selecting a broadband coupler, there are a few things to consider. Broad frequency coverage is usually accompanied by reduced coupling accuracy, reduced directivity, increased VSWR, increased frequency sensitivity, increased insertion loss and larger size. When a choice is available, it is better to specify the narrowest bandwidth possible.

Coupling: The difference in the power level measured at the coupled port, relative to the power level applied at the input port.

Frequency Sensitivity: The maximum variation in coupling level as measured over a specified frequency band.

Insertion Loss (Excluding Coupled Power): The calculated value based on what the insertion loss would be if no power were coupled to the auxiliary port or ports. This specification is given as a reference only.

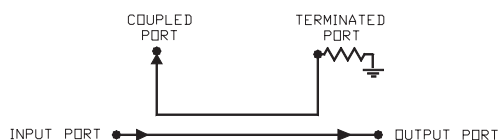
Insertion Loss(True): The difference in the measured power level at the output port of a coupler, relative to the power level applied at the input port, with all other ports adequately terminated. This measurement includes the power to the coupled port.

Directivity: The difference expressed in dB after applying power through the coupler in both the forward and reverse directions with all other ports terminated.

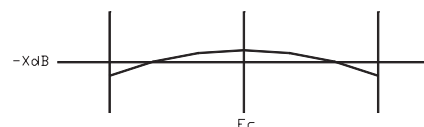
VSWR(Primary/Secondary Line): The voltage standing wave ratio specified for either the main line path (input to output) and/or the coupled output port.

Average Power: The maximum CW power level which may be applied at the input without potentially damaging the device.

Fig. 1) Typical Directional Coupler



Octave Coupled Port

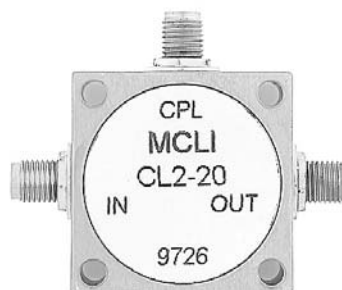


LUMPED ELEMENT DIRECTIONAL COUPLERS

100 KHz TO 2000 MHz, TYPE N AND SMA CONNECTORS

Features:

- High Directivity
- Low VSWR
- High Quality
- Temperature Range from -55° C to +85° C



ELECTRICAL SPECIFICATIONS

Model Number*	Frequency Range (MHz)	Coupling (dB)	Insertion Loss (dB) MAX.	Flatness (± dB)	Directivity** Min. (dB)	VSWR MAX.	Outline	
							SMA	N
CL1-10	0.1-10	10.0 ± 0.5	0.5	0.25	30	1.2:1	1	2
CL1-13	0.1-10	11.5 ± 0.5	0.5	0.25	30	1.2:1	1	2
CL1-16	0.1-10	15.0 ± 0.5	0.4	0.25	25	1.2:1	1	2
CL1-20	0.1-10	20.0 ± 0.5	0.4	0.25	20	1.2:1	1	2
CL1-30	0.1-10	30.0 ± 0.5	0.4	0.25	20	1.2:1	1	2
CL2-10	0.1-50	10.0 ± 0.5	0.6	0.25	30	1.2:1	3	2
CL2-13	0.1-50	11.5 ± 0.5	0.6	0.25	30	1.2:1	3	2
CL2-16	0.1-50	15.0 ± 0.5	0.5	0.25	25	1.2:1	3	2
CL2-20	0.1-50	20.0 ± 0.5	0.4	0.25	20	1.2:1	3	2
CL2-30	0.1-50	30.0 ± 0.5	0.4	0.25	20	1.2:1	3	2
CL3-6	10-100	6.5 ± 0.5	2.2	0.25	30	1.3:1	3	2
CL3-10	0.5-100	10.0 ± 0.5	0.8	0.25	30	1.3:1	1	2
CL3-13	0.5-100	11.5 ± 0.5	0.8	0.25	30	1.3:1	1	2
CL3-16	0.5-100	15.0 ± 0.5	0.5	0.25	25	1.3:1	1	2
CL3-20	0.5-100	20.0 ± 0.5	0.4	0.25	25	1.3:1	1	2
CL3-30	0.5-100	30.0 ± 0.5	0.4	0.25	20	1.3:1	1	2
CL4-10	1-500	10.0 ± 0.5	1.2	0.40	25	1.3:1	1	2
CL4-13	1-500	11.5 ± 0.5	1.0	0.40	25	1.3:1	1	2
CL4-16	1-500	15.0 ± 0.5	0.8	0.25	23	1.3:1	1	2
CL4-20	1-500	20.0 ± 0.5	0.7	0.25	22	1.3:1	1	2
CL4-30	1-500	30.0 ± 0.5	0.7	0.25	20	1.3:1	1	2
CL5-10	5-1000	10.0 ± 0.5	1.6	0.50	23	1.3:1	1	2
CL5-13	5-1000	11.5 ± 0.5	1.6	0.50	23	1.3:1	1	2
CL5-16	5-1000	15.0 ± 0.5	1.5	0.50	20	1.3:1	1	2
CL5-20	5-1000	20.0 ± 0.5	1.2	0.50	20	1.3:1	1	2
CL5-30	5-1000	30.0 ± 0.5	1.2	0.50	20	1.3:1	1	2
CL6-10	1-2000	10.0 ± 1.0	2.7	1.00	18	1.6:1	1	2

*Connector Options: For Type NF connectors please add "/NF"

Example: CL2-16/NF

BNC/TNC Connectors also available

**Custom Design for higher directivity available. Contact Manufacturer for details.

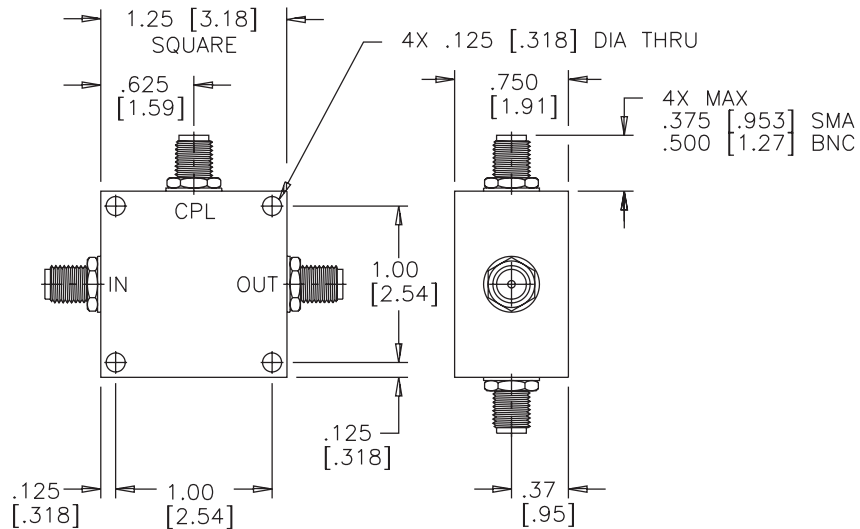
Mechanical Outline available on page 46

LUMPED ELEMENT DIRECTIONAL COUPLER

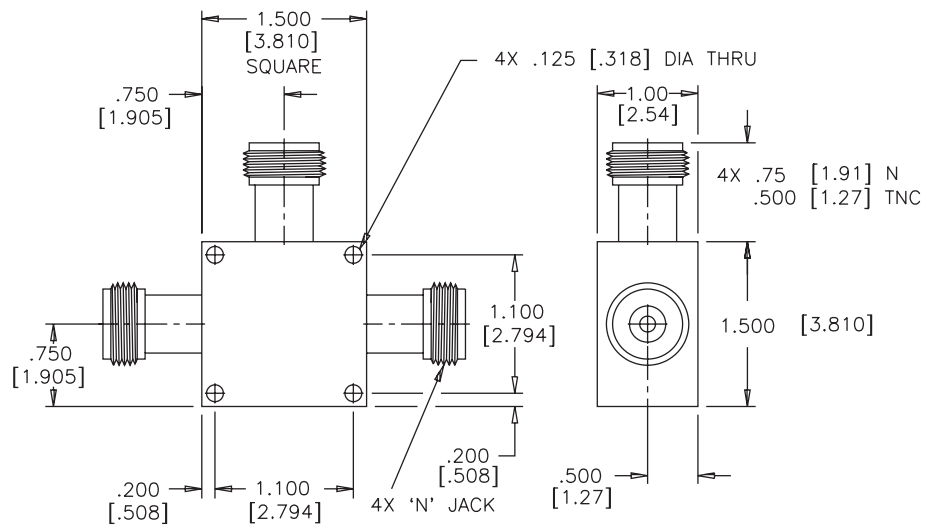
100 KHz TO 2000 MHz, TYPE N AND SMA CONNECTORS

MECHANICAL OUTLINES

TYPE SMA CONNECTORS



TYPE N CONNECTORS



DIRECTIONAL COUPLERS OCTAVE MODELS

0.5 - 26.5 GHz, SMA CONNECTORS

Features:

- Low VSWR
- Miniature Size
- High Directivity, High Reliability
- Low Insertion Loss



ELECTRICAL SPECIFICATIONS

Model Number	Freq. Range (GHz)	Coupling* (dB)	Freq. Sensitivity (dB)	Insertion Loss [dBMax]		Directivity** [dBmin]	VSWR [max]		Power			Outline
				Excluding Coupled Power	True		Pri. Line	Sec. Line	Average Incident (Watts)	Average Reflected (Watts)	Peak (kW)	
C1-6	0.5-1	6 ± 1.25	± 0.60	0.20	0.80	25	1.15	1.15	50	2	3	1
C1-10		10 ± 1.25	± 0.75	0.20	0.80	25	1.15	1.15	50	5	3	1
C1-20		20 ± 1.25	± 0.75	0.20	0.20	25	1.15	1.15	50	50	3	1
C1-30		30 ± 1.25	± 0.75	0.20	0.20	25	1.20	1.15	50	50	3	1
C2-6	1-2	6 ± 1.00	± 0.60	0.20	1.80	25	1.15	1.15	50	2	3	2
C2-10		10 ± 1.25	± 0.75	0.20	0.90	25	1.10	1.10	50	5	3	2
C2-20		20 ± 1.25	± 0.75	0.20	0.20	25	1.10	1.10	50	50	3	2
C2-30		30 ± 1.25	± 0.75	0.20	0.20	25	1.10	1.10	50	50	3	2
C3-6	2-4	6 ± 1.00	± 0.60	0.20	1.80	22	1.15	1.15	50	2	3	3
C3-10		10 ± 1.25	± 0.75	0.20	0.70	22	1.15	1.15	50	5	3	3
C3-20		20 ± 1.25	± 0.75	0.20	0.20	22	1.15	1.15	50	50	3	3
C3-30		30 ± 1.25	± 0.75	0.20	0.20	22	1.15	1.15	50	50	3	3
C4-6	2.6-5.2	6 ± 1.00	± 0.60	0.20	1.80	18	1.25	1.25	50	2	3	1A
C4-10		10 ± 1.25	± 0.75	0.20	0.80	20	1.25	1.25	50	5	3	1A
C4-20		20 ± 1.25	± 0.75	0.20	0.25	20	1.25	1.25	50	50	3	1A
C4-30		30 ± 1.25	± 0.75	0.20	0.25	20	1.25	1.25	50	50	3	1A
C5-6	4-8	6 ± 1.00	± 0.60	0.25	2.00	18	1.30	1.30	50	2	3	1A
C5-10		10 ± 1.25	± 0.75	0.25	1.00	20	1.30	1.30	50	5	3	1A
C5-20		20 ± 1.25	± 0.75	0.25	0.30	20	1.25	1.30	50	50	3	1A
C5-30		30 ± 1.25	± 0.75	0.25	0.25	20	1.25	1.30	50	50	3	1A
C6-6	7-12.4	6 ± 1.00	± 0.50	0.40	2.00	15	1.35	1.40	50	2	3	1A
C6-10		10 ± 1.25	± 0.50	0.40	1.00	17	1.35	1.40	50	5	3	1A
C6-20		20 ± 1.00	± 0.50	0.30	0.30	17	1.35	1.40	50	50	3	1A
C6-30		30 ± 1.00	± 0.50	0.30	0.30	17	1.35	1.40	50	50	3	1A
C7-6	7.5-16	6 ± 1.10	± 0.60	0.60	2.00	12	1.35	1.40	50	2	2	1A
C7-10		10 ± 1.50	± 0.75	0.60	1.00	12	1.35	1.40	50	5	2	1A
C7-20		20 ± 1.25	± 0.75	0.50	0.50	15	1.35	1.40	50	50	2	1A
C7-30		30 ± 1.25	± 0.75	0.50	0.50	15	1.35	1.40	50	50	2	1A
C8-6	12.4-18	6 ± 1.00	± 0.50	0.55	2.00	15	1.35	1.45	50	2	1	1A
C8-10		10 ± 1.00	± 0.50	0.55	1.10	15	1.35	1.40	50	5	1	1A
C8-20		20 ± 1.00	± 0.50	0.50	0.55	15	1.30	1.40	50	50	1	1A
C8-30		30 ± 1.00	± 0.50	0.50	0.55	15	1.30	1.40	50	50	1	1A
C9-6	18-26.5	6 ± 1.30	± 0.80	0.90	2.00	10	1.70	1.80	50	2	1	1A
C9-10		10 ± 1.20	± 0.70	0.90	1.50	11	1.60	1.70	50	5	1	1A
C9-20		20 ± 1.20	± 0.70	0.80	0.80	11	1.60	1.70	50	50	1	1A
C9-30		30 ± 1.20	± 0.70	0.80	0.80	11	1.60	1.70	50	50	1	1A
C11-6	11.7-12.2	6 ± 1.00	± 0.75	0.60	2.00	17	1.40	1.45	50	2	1	1A
C11-10		10 ± 1.00	± 0.75	0.60	1.00	17	1.40	1.45	50	5	1	1A
C11-20		20 ± 1.00	± 0.75	0.50	0.55	17	1.40	1.45	50	50	1	1A
C11-30		30 ± 1.00	± 0.75	0.50	0.55	17	1.40	1.45	50	50	1	1A
C13-6	1.5-3.0	6 ± 1.30	± 0.75	0.90	2.00	17	1.30	1.30	50	2	1	2A
C13-10		10 ± 1.00	± 0.75	0.90	1.50	17	1.30	1.30	50	5	1	2A
C13-20		20 ± 1.00	± 0.75	0.80	0.80	17	1.30	1.30	50	50	1	2A
C13-30		30 ± 1.00	± 0.75	0.50	0.55	17	1.30	1.30	50	50	1	2A
C15-6	0.225-0.4	6 ± 1.25	± 0.75	0.20	1.80	22	1.20	1.20	50	2	1	1
C15-10		10 ± 1.00	± 0.75	0.20	0.90	22	1.20	1.20	50	5	1	1
C15-20		20 ± 1.00	± 0.75	0.20	0.20	22	1.20	1.20	50	50	1	1
C15-30		30 ± 1.00	± 0.75	0.20	0.20	22	1.20	1.20	50	50	1	1

*Includes freq. sensitivity. Specifications subject to change without notice.

**Custom Design for higher Directivity available. Contact Manufacturer for details.

Mechanical Outline available on page 49

DIRECTIONAL COUPLERS OCTAVE MODELS

0.5 - 26.5 GHz, SMA CONNECTORS

Features:

- Low VSWR
- Miniature Size
- High Directivity, High Reliability
- Low Insertion Loss



ELECTRICAL SPECIFICATIONS

Model Number	Freq. Range (GHz)	Coupling* (dB)	Freq. Sensitivity (dB)	Insertion Loss [dBMax]		Directivity** [dBmin]	VSWR [max]		Power			Outline
				Excluding Coupled Power	True		Pri. Line	Sec. Line	Average Incident (Watts)	Average Reflected (Watts)	Peak (kW)	
C16-6	1.85-3.65	6 ± 1.25	± 0.75	0.20	1.80	20	1.25	1.25	50	2	3	3
C16-10		10 ± 1.25	± 0.75	0.20	0.70	20	1.25	1.25	50	5	3	3
C16-20		20 ± 1.25	± 0.75	0.20	2.00	20	1.25	1.25	50	50	3	3
C16-30		30 ± 1.25	± 0.75	0.20	2.00	20	1.25	1.25	50	50	3	3
C17-6	5.7-10.2	6 ± 1.25	± 0.75	0.40	2.00	15	1.40	1.40	50	2	3	1A
C17-10		10 ± 1.25	± 0.75	0.40	1.00	15	1.40	1.40	50	5	3	1A
C17-20		20 ± 1.25	± 0.75	0.40	0.45	15	1.40	1.40	50	50	3	1A
C17-30		30 ± 1.25	± 0.75	0.40	0.45	15	1.40	1.40	50	50	3	1A
C19-6	3.6-4.2	6 ± 1.00	± 0.30	0.55	2.00	15	1.35	1.45	50	2	3	1A
C19-10		10 ± 1.00	± 0.30	0.55	1.00	15	1.35	1.40	50	5	3	1A
C19-20		20 ± 1.00	± 0.30	0.50	0.55	15	1.30	1.40	50	50	3	1A
C19-30		30 ± 1.00	± 0.30	0.50	0.55	15	1.30	1.40	50	50	3	1A
C20-6	5.8-6.4	6 ± 1.00	± 0.30	0.55	2.00	15	1.35	1.45	50	2	3	1A
C20-10		10 ± 1.00	± 0.30	0.55	1.10	15	1.35	1.40	50	5	3	1A
C20-20		20 ± 1.00	± 0.30	0.50	0.55	15	1.30	1.40	50	50	3	1A
C20-30		30 ± 1.00	± 0.30	0.50	0.55	15	1.30	1.40	50	50	3	1A
C21-6	10.9-12.75	6 ± 1.25	± 0.75	0.55	2.00	15	1.35	1.45	50	2	3	1A
C21-10		10 ± 1.25	± 0.75	0.55	1.50	15	1.35	1.45	50	5	3	1A
C21-20		20 ± 1.25	± 0.75	0.50	0.55	15	1.35	1.45	50	50	3	1A
C21-30		30 ± 1.25	± 0.75	0.50	0.55	15	1.35	1.45	50	50	3	1A
C26-6	18.5-19.5	6 ± 1.25	± 0.75	0.75	2.30	10	1.70	1.70	50	2	3	1A
C26-10		10 ± 1.25	± 0.80	0.80	1.60	10	1.70	1.70	50	5	3	1A
C26-20		10 ± 1.25	± 0.80	0.80	0.85	10	1.70	1.70	50	50	3	1A
C26-30		10 ± 1.25	± 0.80	0.80	0.85	10	1.70	1.70	50	50	3	1A
C28-6	14-14.5	6 ± 1.00	± 0.30	0.55	2.00	15	1.35	1.45	50	2	2	1A
C28-10		10 ± 1.00	± 0.30	0.55	1.10	15	1.35	1.40	50	5	2	1A
C28-20		20 ± 1.00	± 0.30	0.50	0.55	15	1.30	1.40	50	50	2	1A
C28-30		30 ± 1.00	± 0.30	0.50	0.55	15	1.30	1.40	50	50	2	1A
C36-6	0.8-3.0	6 ± 1.25	± 0.50	0.35	2.00	15	1.30	1.40	50	2	1	4
C36-10		10 ± 1.25	± 0.50	0.35	1.00	16	1.30	1.30	50	5	1	4
C36-20		20 ± 1.25	± 0.50	0.35	0.45	16	1.30	1.30	50	50	1	5
C37-6	0.8-2.3	6 ± 1.25	± 0.50	0.35	2.00	20	1.25	1.25	50	2	1	4
C37-10		10 ± 1.25	± 0.50	0.35	1.00	20	1.25	1.25	50	5	1	4
C37-20		20 ± 1.25	± 0.50	0.35	0.45	20	1.25	1.25	50	50	1	5
C39-6	4.0-9.5	6 ± 1.50	± 0.75	0.50	2.00	16	1.50	1.50	50	2	1	1A
C39-10		10 ± 1.50	± 0.75	0.50	1.30	16	1.50	1.50	50	5	1	1A
C39-20		20 ± 1.50	± 0.75	0.40	0.45	16	1.50	1.50	50	50	1	1A
C39-30		30 ± 1.50	± 0.75	0.40	0.45	16	1.50	1.50	50	50	1	1A
C43-6	0.8-0.9	6 ± 0.75	± 0.50	0.50	1.80	20	1.25	1.25	50	2	1	1A
C43-10		10 ± 0.75	± 0.50	0.50	1.20	20	1.25	1.25	50	5	1	1A
C43-20		20 ± 0.75	± 0.50	0.50	0.55	20	1.25	1.25	50	50	1	1A
C43-30		30 ± 0.75	± 0.50	0.50	0.55	20	1.25	1.25	50	50	1	1A
C51-6	2.1 - 2.7	6 ± 1.00	± 0.60	0.20	1.80	22	1.15	1.15	50	2	1	3
C51-10		10 ± 1.25	± 0.75	0.20	0.70	22	1.15	1.15	50	5	1	3
C51-20		20 ± 1.25	± 0.75	0.20	0.20	22	1.15	1.15	50	50	1	3
C51-30		30 ± 1.25	± 0.75	0.20	0.20	22	1.15	1.15	50	50	1	3

*Includes freq. sensitivity. Specifications subject to change without notice.

**Custom Design for Directivity available. Contact Manufacturer for details.

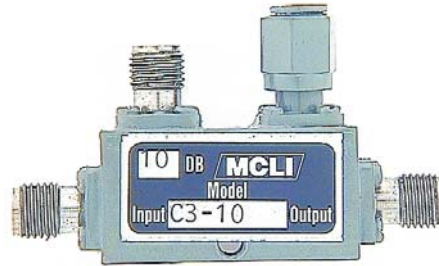
Mechanical Outline available on page 49

DIRECTIONAL COUPLERS OCTAVE MODELS

0.5 - 26.5 GHz, SMA CONNECTORS

Features:

- Low VSWR
- Miniature Size
- High Directivity, High Reliability
- Low Insertion Loss



ELECTRICAL SPECIFICATIONS

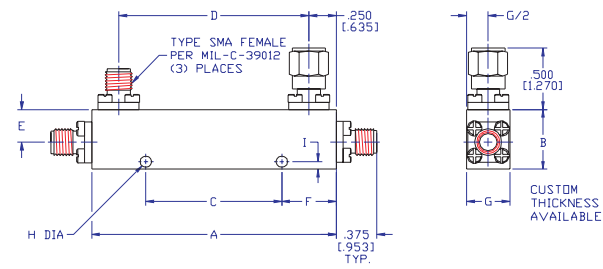
Model Number	Freq. Range (GHz)	Coupling* (dB)	Freq. Sensitivity (dB)	Insertion Loss [dBMax]		Directivity** [dBmin]	VSWR [max]		Power			Outline
				Excluding Coupled Power	True		Pri. Line	Sec. Line	Average Incident (Watts)	Average Reflected (Watts)	Peak (kW)	
C54-6	17 - 22	6 ± 1.00	± 0.50	0.70	2.50	10	1.80	1.80	50	2	3	1A
C54-10		10 ± 1.00	± 0.50	0.70	2.00	10	1.80	1.80	50	5	3	1A
C54-20		20 ± 1.00	± 0.50	0.70	0.75	10	1.80	1.80	50	50	3	1A
C54-30		30 ± 1.00	± 0.50	0.70	0.75	10	1.80	1.80	50	50	3	1A
C55-6	1.7-2.4	6 ± 1.00	± 0.50	0.35	2.00	22	1.30	1.30	50	2	3	2A
C55-10		10 ± 1.00	± 0.50	0.35	0.90	22	1.30	1.30	50	5	3	2A
C55-20		20 ± 1.00	± 0.50	0.35	0.40	22	1.30	1.30	50	50	3	2A
C55-30		30 ± 1.00	± 0.50	0.35	0.40	22	1.30	1.30	50	50	3	2A
C77-6	0.88-0.96	6 ± 1.00	± 0.50	0.20	1.80	25	1.25	1.25	50	2	3	6
C77-10		6 ± 1.00	± 0.50	0.20	0.80	25	1.25	1.25	50	5	3	6
C77-20		6 ± 1.00	± 0.50	0.20	0.20	25	1.25	1.25	50	50	3	6
C77-30		6 ± 1.00	± 0.50	0.20	0.20	25	1.25	1.25	50	50	3	6

*Includes freq. sensitivity. Specifications subject to change without notice.

**Custom Design for Directivity available. Contact Manufacturer for details.

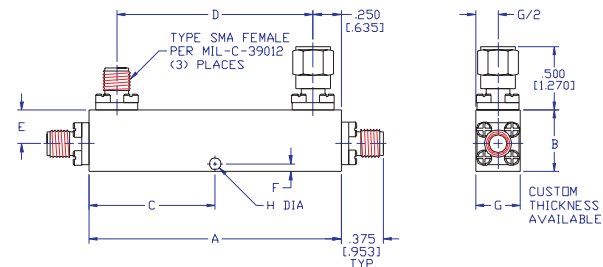
SMA CONNECTORS

OUTLINE	A	B	C	D	E	F	G	H	I
1 (in)	3.179	0.750	1.500	2.679	0.450	0.840	0.400	0.104	0.100
(cm)	8.075	1.905	3.810	6.805	1.143	2.133	1.016	0.264	0.254
2 (in)	1.899	0.750	0.700	1.399	0.450	0.600	0.400	0.104	0.100
(cm)	4.823	1.905	1.778	3.553	1.143	1.524	1.016	0.264	0.254
3 (in)	1.200	0.540	0.320	0.663	0.300	0.440	0.400	0.104	0.110
(cm)	3.048	1.372	0.813	1.684	0.762	0.762	1.016	0.264	0.279
4 (in)	2.900	0.680	2.000	2.400	0.340	0.450	0.380	0.149	0.150
(cm)	7.366	1.727	5.080	6.096	0.863	1.143	0.965	0.378	0.381
5 (in)	2.900	0.600	2.000	2.400	0.380	0.450	0.380	0.120	0.070
(cm)	7.366	1.524	5.080	6.096	0.965	1.143	0.965	0.305	0.178
6 (in)	2.662	0.590	1.749	2.162	0.350	0.456	0.400	0.104	0.091
(cm)	6.761	1.499	4.442	5.491	0.889	1.158	1.016	0.264	0.231



OUTLINE A

OUTLINE	A	B	C	D	E	F	G	H
1A (in)	1.000	0.500	0.500	0.500	0.300	0.080	0.400	0.100
(cm)	2.540	1.270	1.270	1.270	0.762	0.203	1.016	0.254
2A (in)	1.450	0.840	0.725	0.950	0.440	0.100	0.400	0.125
(cm)	3.683	2.134	1.842	2.413	1.118	0.254	1.016	0.317



DIRECTIONAL COUPLERS OCTAVE MODELS

0.5 - 13 GHz, TYPE N CONNECTORS

Features:

- Low VSWR
- Miniature Size
- High Directivity, High Reliability
- Low Insertion Loss



ELECTRICAL SPECIFICATIONS

Model Number	Freq. Range (GHz)	Coupling* (dB)	Freq. Sensitivity (dB)	Insertion Loss [dBMax]		Directivity [dBmin]	VSWR [max]		Power			Outline
				Excluding Coupled Power	True		Pri. Line	Sec. Line	Average Incident (Watts)	Average Reflected (Watts)	Peak (kW)	
C1-6/NF	0.5-1	6 ± 1.00	± 0.75	0.20	0.80	22	1.30	1.30	50	2	3	1
C1-10/NF		10 ± 1.25	± 0.75	0.20	0.80	22	1.30	1.30	50	5	3	1
C1-20/NF		20 ± 1.25	± 0.75	0.20	0.25	22	1.30	1.30	50	50	3	1
C1-30/NF		30 ± 1.25	± 0.75	0.20	0.25	22	1.30	1.30	50	50	3	1
C1-40/NF		40 ± 1.25	± 0.75	0.20	0.25	22	1.30	1.30	50	50	3	1
C2-6/NF	1-2	6 ± 1.25	± 0.75	0.20	2.00	20	1.22	1.25	50	2	3	2
C2-10/NF		10 ± 1.25	± 0.75	0.20	0.90	20	1.22	1.25	50	5	3	2
C2-20/NF		20 ± 1.25	± 0.75	0.20	0.20	20	1.22	1.25	50	50	3	2
C2-30/NF		30 ± 1.25	± 0.75	0.20	0.20	20	1.22	1.25	50	50	3	2
C2-40/NF		30 ± 1.25	± 0.75	0.20	0.20	20	1.22	1.25	50	50	3	2
C3-6/NF	2-4	6 ± 1.25	± 0.75	0.20	1.80	18	1.40	1.40	50	2	3	3
C3-10/NF		10 ± 1.25	± 0.75	0.20	0.90	18	1.40	1.40	50	5	3	3
C3-20/NF		20 ± 1.25	± 0.75	0.20	0.30	18	1.40	1.40	50	50	3	3
C3-30/NF		30 ± 1.25	± 0.75	0.20	0.30	18	1.40	1.40	50	50	3	3
C4-6/NF	2.6-5.2	6 ± 1.25	± 0.75	0.20	1.80	18	1.40	1.40	50	2	3	4
C4-10/NF		10 ± 1.25	± 0.75	0.20	0.80	18	1.40	1.40	50	5	3	4
C4-20/NF		20 ± 1.25	± 0.75	0.20	0.30	18	1.40	1.40	50	50	3	4
C4-30/NF		30 ± 1.25	± 0.75	0.20	0.30	18	1.40	1.40	50	50	3	4
C5-6/NF	4-8	6 ± 1.25	± 0.85	0.35	2.00	17	1.50	1.50	50	2	3	4
C5-10/NF		10 ± 1.25	± 0.85	0.35	1.20	17	1.50	1.50	50	5	3	4
C5-20/NF		20 ± 1.25	± 0.85	0.35	0.35	17	1.50	1.50	50	50	3	4
C5-30/NF		30 ± 1.25	± 0.85	0.35	0.35	17	1.50	1.50	50	50	3	4
C6-6/NF	7-12.4	6 ± 1.25	± 0.85	0.45	2.00	15	1.50	1.50	50	2	3	5
C6-10/NF		10 ± 1.25	± 0.85	0.45	1.20	15	1.50	1.50	50	5	3	5
C6-20/NF		20 ± 1.25	± 0.85	0.45	0.45	15	1.50	1.50	50	50	3	5
C6-30/NF		30 ± 1.25	± 0.85	0.45	0.45	15	1.50	1.50	50	50	3	5
C11-6/NF	11.7-12.2	6 ± 1.25	± 0.85	0.45	2.00	15	1.50	1.50	50	2	1	5
C11-10/NF		10 ± 1.25	± 0.85	0.45	1.20	15	1.50	1.50	50	5	1	5
C11-20/NF		20 ± 1.25	± 0.85	0.45	0.45	15	1.50	1.50	50	50	1	5
C11-30/NF		30 ± 1.25	± 0.85	0.45	0.45	15	1.50	1.50	50	50	1	5
C13-6/NF	1.5-3.0	6 ± 1.25	± 0.85	0.25	1.85	17	1.40	1.40	50	2	1	5
C13-10/NF		10 ± 1.25	± 0.85	0.25	0.75	17	1.40	1.40	50	5	1	5
C13-20/NF		20 ± 1.25	± 0.85	0.25	0.30	17	1.40	1.40	50	50	1	5
C13-30/NF		30 ± 1.25	± 0.85	0.25	0.30	17	1.40	1.40	50	50	1	5
C15-6/NF	.225-4.0	6 ± 1.00	± 0.75	0.25	1.85	19	1.30	1.30	50	2	1	6
C15-10/NF		10 ± 1.00	± 0.75	0.25	0.75	19	1.30	1.30	50	5	1	6
C15-15/NF		15 ± 1.00	± 0.75	0.25	0.30	19	1.30	1.30	50	50	1	6
C15-30/NF		30 ± 1.00	± 0.75	0.25	0.30	19	1.30	1.30	50	50	1	6
C16-6/NF	1.85-3.65	6 ± 1.25	± 0.85	0.35	1.20	18	1.35	1.35	50	2	3	3
C16-10/NF		6 ± 1.25	± 0.85	0.35	1.20	18	1.35	1.35	50	5	3	3
C16-20/NF		20 ± 1.25	± 0.85	0.20	0.30	18	1.35	1.35	50	50	3	3
C16-30/NF		30 ± 1.25	± 0.85	0.20	0.20	18	1.35	1.35	50	50	3	3
C17-6/NF	5.7-10.2	6 ± 1.50	± 0.85	0.60	2.20	13	1.50	1.50	50	2	3	5
C17-10/NF		10 ± 1.50	± 0.85	0.60	1.50	13	1.50	1.50	50	5	3	5
C17-20/NF		20 ± 1.50	± 0.85	0.60	0.75	13	1.50	1.50	50	50	3	5
C17-30/NF		30 ± 1.50	± 0.85	0.60	0.75	13	1.50	1.50	50	50	3	5
C19-6/NF	3.6-4.2	6 ± 1.00	± 0.85	0.55	2.00	14	1.40	1.40	50	2	3	5
C19-10/NF		10 ± 1.00	± 0.85	0.55	1.50	14	1.40	1.40	50	5	3	5
C19-20/NF		20 ± 1.00	± 0.85	0.55	0.55	14	1.40	1.40	50	50	3	5
C19-30/NF		30 ± 1.00	± 0.85	0.55	0.55	14	1.40	1.40	50	50	3	5
C19-45/NF		45 ± 1.00	± 0.85	0.55	0.55	14	1.40	1.40	50	50	3	5

*Includes freq. sensitivity. Specifications subject to change without notice.

**Custom Design for Directivity available. Contact Manufacturer for details.

Mechanical Outline available on page 51

DIRECTIONAL COUPLERS OCTAVE MODELS

0.5 - 13 GHz, TYPE N CONNECTORS

Features:

- Low VSWR
- Miniature Size
- High Directivity, High Reliability
- Low Insertion Loss



ELECTRICAL SPECIFICATIONS

Model Number	Freq. Range (GHz)	Coupling* (dB)	Freq. Sensitivity (dB)	Insertion Loss [dBMax]		Directivity** [dBmin]	VSWR [max]		Power			Outline
				Excluding Coupled Power	True		Pri. Line	Sec. Line	Average Incident (Watts)	Average Reflected (Watts)	Peak (kW)	
C20-6/NF	5.8-6.4	6 ± 1.00	± 0.85	0.55	2.00	14	1.40	1.40	50	2	3	4
C20-10/NF		10 ± 1.00	± 0.85	0.55	1.50	14	1.40	1.40	50	5	3	4
C20-20/NF		20 ± 1.00	± 0.85	0.55	0.55	14	1.40	1.40	50	50	3	4
C20-30/NF		30 ± 1.00	± 0.85	0.55	0.55	14	1.40	1.40	50	50	3	4
C21-6/NF	10.9-12.75	6 ± 1.50	± 0.85	0.70	2.30	14	1.70	1.70	50	2	3	4
C21-10/NF		10 ± 1.50	± 0.85	0.70	1.80	14	1.70	1.70	50	5	3	4
C21-20/NF		20 ± 1.50	± 0.85	0.70	0.75	14	1.70	1.70	50	50	3	4
C21-30/NF		30 ± 1.50	± 0.85	0.70	0.75	14	1.70	1.70	50	50	3	4
C47-6/NF	2.4-2.5	6 ± 1.00	± 0.75	0.30	1.90	20	1.25	1.25	50	2	1	5
C47-10/NF		10 ± 1.00	± 0.75	0.30	0.30	20	1.25	1.25	50	5	1	5
C47-20/NF		20 ± 1.00	± 0.75	0.30	0.30	20	1.25	1.25	50	50	1	5
C47-30/NF		30 ± 1.00	± 0.75	0.30	0.30	20	1.25	1.25	50	50	1	5
C49-6/NF	0.8-1.2	6 ± 1.00	± 0.75	0.30	1.90	20	1.25	1.25	50	2	1	7
C49-10/NF		10 ± 1.00	± 0.75	0.30	0.30	20	1.25	1.25	50	5	1	7
C49-20/NF		20 ± 1.00	± 0.75	0.30	0.30	20	1.25	1.25	50	50	1	7
C49-30/NF		30 ± 1.00	± 0.75	0.30	0.30	20	1.25	1.25	50	50	1	7
C51-6/NF	2.1-2.7	6 ± 1.00	± 0.75	0.30	1.90	20	1.30	1.30	100	2	1	8
C51-10/NF		10 ± 1.00	± 0.75	0.30	0.30	20	1.30	1.30	100	5	1	8
C51-20/NF		20 ± 1.00	± 0.75	0.30	0.30	20	1.30	1.30	100	50	1	8
C51-30/NF		30 ± 1.00	± 0.75	0.30	0.30	20	1.30	1.30	100	50	1	8
C52-6/NF	2.0-3.0	6 ± 1.25	± 0.85	0.50	2.10	18	1.35	1.35	100	2	1	3
C52-8/NF		10 ± 1.25	± 0.85	0.50	1.30	18	1.35	1.35	100	5	1	3
C52-10/NF		20 ± 1.25	± 0.85	0.50	0.55	18	1.35	1.35	100	50	1	3
C52-20/NF		30 ± 1.25	± 0.85	0.50	0.55	18	1.35	1.35	100	50	1	3
C82-6/NF	10-13	6 ± 1.25	± 0.85	0.60	2.20	14	1.65	1.65	50	2	1	5
C82-10/NF		10 ± 1.25	± 0.85	0.60	1.40	14	1.65	1.65	50	5	1	5
C82-20/NF		20 ± 1.25	± 0.85	0.60	0.65	14	1.65	1.65	50	50	1	5
C82-30/NF		30 ± 1.25	± 0.85	0.60	0.65	14	1.65	1.65	50	50	1	5
C101-6/NF	10-13	6 ± 1.25	± 0.85	0.60	2.20	14	1.65	1.65	50	2	1	9
C101-10/NF		10 ± 1.25	± 0.85	0.60	1.40	14	1.65	1.65	50	5	1	9
C101-20/NF		20 ± 1.25	± 0.85	0.60	0.65	14	1.65	1.65	50	50	1	9
C101-30/NF		30 ± 1.25	± 0.85	0.60	0.65	14	1.65	1.65	50	50	1	9

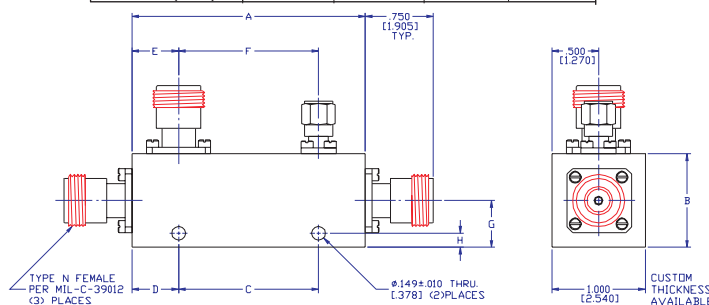
*Includes freq. sensitivity. Specifications subject to change without notice.

**Custom Design for higher Directivity available. Contact Manufacturer for details.

TYPE N CONNECTORS

OUTLINE	A	B	C	D
1 (in)	3.878	1.000	2.678	0.125
(cm)	9.850	2.540	6.802	0.318
2 (in)	2.598	1.000	1.398	0.125
(cm)	6.599	2.540	3.551	0.318
3 (in)	1.941	1.000	0.741	0.125
(cm)	4.930	2.540	1.882	0.318
4 (in)	1.900	1.000	0.700	0.150
(cm)	4.826	2.540	1.778	0.381
5 (in)	2.200	1.000	1.000	0.150
(cm)	5.588	2.540	2.540	0.381
6 (in)	1.90	1.30	0.95	1.000
(cm)	4.83	4.29	2.41	2.540
7 (in)	3.253	1.000	2.553	0.350
(cm)	8.255	2.540	6.484	0.889

OUTLINE	A	B	C	D
8 (in)	2.500	1.480	1.500	0.150
(cm)	6.350	3.759	3.810	0.381
9 (in)	2.620	1.000	1.420	0.150
(cm)	6.655	2.540	3.607	0.381



DIRECTIONAL COUPLER BROADBAND MODELS

0.5 - 26.5 GHz, SMA CONNECTORS

Features:

- Low VSWR
- Compact Size
- Low Insertion Loss
- High Directivity



ELECTRICAL SPECIFICATIONS

Model Number	Freq. Range (GHz)	Coupling* (dB)	Freq. Sensitivity (dB)	Insertion Loss [dBMax]		Directivity** [dBmin]	VSWR [max]		Power			Outline**
				Excluding Coupled Power	True		Pri. Line	Sec. Line	Average Incident (Watts)	Average Reflected (Watts)	Peak (kW)	
CB1-6	0.5-2	6 ± 1	± 0.75	0.35	2.00	23	1.20	1.20	50	2	3	1
CB1-10		10 ± 1	± 0.75	0.35	0.90	23	1.20	1.20	50	5	3	1
CB1-20		20 ± 1	± 0.75	0.35	0.40	23	1.20	1.20	50	50	3	2
CB2-6	1-3.5	6 ± 1	± 0.50	0.35	2.00	23	1.20	1.20	50	2	3	3
CB2-10		10 ± 1	± 0.50	0.35	0.90	23	1.20	1.20	50	5	3	3
CB2-20		20 ± 1	± 0.50	0.40	0.45	23	1.20	1.20	50	50	3	4
CB3-6	2-8	6 ± 1	± 0.30	0.50	2.20	20	1.25	1.25	50	2	3	5
CB3-10		10 ± 1	± 0.30	0.35	1.00	20	1.25	1.25	50	5	3	5
CB3-20		20 ± 1	± 0.40	0.40	0.45	20	1.25	1.25	50	50	3	6
CB4-6	4-12.4	6 ± 1	± 0.30	0.50	2.20	17	1.30	1.30	50	2	3	7
CB4-10		10 ± 1	± 0.30	0.50	1.20	17	1.30	1.30	50	5	3	7
CB4-20		20 ± 1	± 0.40	0.50	0.55	17	1.30	1.30	50	50	3	8
CB5-10	7-18	10 ± 1.25	± 0.75	0.60	1.10	15	1.35	1.40	50	5	3	1A
CB6-10	0.6-4.0	10 ± 1	± 0.75	0.40	0.90	18	1.25	1.30	25	5	3	9
CB7-10	1-18	10 ± 1	± 0.50	0.90	1.50	12	1.40	1.50	25	5	3	1B
CB7-16		16 ± 1	± 0.50	0.80	0.90	12	1.40	1.50	25	20	3	1B
CB7-20		20 ± 1	± 0.50	0.80	0.90	12	1.40	1.50	25	25	3	1B
CB8-6	2-18	6 ± 1	± 0.50	0.90	2.00	12	1.35	1.50	25	2	3	10
CB8-10		10 ± 1	± 0.50	0.80	1.30	12	1.35	1.50	25	5	3	10
CB8-16		16 ± 1	± 0.50	0.80	0.90	12	1.35	1.40	25	20	3	11
CB8-20		20 ± 1	± 0.50	0.80	0.90	12	1.35	1.40	25	25	3	11
CB9-6	4.0-18.0	6 ± 1	± 0.50	0.90	2.00	12	1.35	1.40	25	2	3	12
CB9-10		10 ± 1	± 0.50	0.80	1.00	12	1.35	1.40	25	5	3	12
CB9-20		20 ± 1	± 0.50	0.60	0.70	12	1.40	1.40	25	25	3	13
CB11-10	0.5-18.0	10 ± 1	± 0.70	0.80	1.60	12	1.35	1.35	20	5	3	2B
CB11-16		16 ± 1	± 0.70	0.80	1.20	12	1.35	1.35	20	5	3	2B
CB12-10	2.0-20.0	10 ± 0.5	± 0.30	0.80	1.30	16	1.40	1.40	20	5	3	1C
CB12-16		10 ± 0.5	± 0.30	0.70	1.00	16	1.40	1.40	20	5	3	1C
CB12-20		20 ± 0.5	± 0.30	0.60	0.90	16	1.40	1.40	20	5	3	1C
CB13-10	1.0-12.4	10 ± 0.8	± 0.40	0.80	1.10	15	1.35	1.35	20	5	3	3B
CB24-10	3.65-6.4	10 ± 1.00	± 0.70	0.80	1.20	17	1.30	1.30	50	25	3	2A
CB24-20		20 ± 1.00	± 0.70	0.80	0.90	17	1.30	1.30	50	25	3	2A
CB24-30		30 ± 1.00	± 0.70	0.80	0.90	17	1.30	1.30	50	25	3	2A
CB24-40		40 ± 1.00	± 0.70	0.80	0.90	17	1.30	1.30	50	25	3	2A
CB40-6	4.0-20.0	6 ± 0.5	± 0.50	0.70	1.90	15	1.35	1.35	20	5	3	2C
CB40-10		10 ± 0.5	± 0.50	0.70	1.00	15	1.35	1.35	20	5	3	2C
CB40-20		20 ± 0.5	± 0.50	0.60	0.60	15	1.35	1.35	20	5	3	2C
CB43-10	2.0-26.5	6 ± 1	± 0.60	0.50	1.50	14	1.45	1.45	20	5	3	3C
CB43-16		10 ± 1	± 0.60	0.50	1.20	14	1.45	1.45	20	5	3	3C
CB52-10	1.0-26.5	10 ± 1.00	± 0.75	0.90	1.60	14	1.40	1.40	20	5	3	4B
CB52-20		20 ± 1.00	± 0.75	0.80	1.20	14	1.40	1.40	20	5	3	4B

*Includes frequency sensitivity. Coupling relative to output power.

**Custom Design for higher Directivity available. Contact Manufacturer for details.

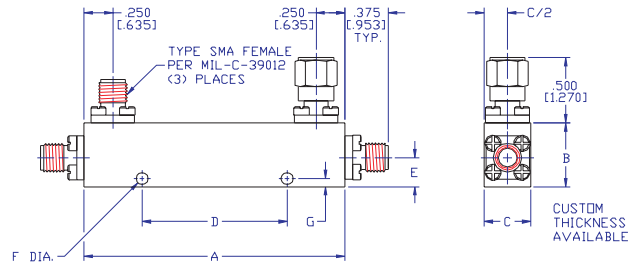
Mechanical Outline available on page 53

DIRECTIONAL COUPLER BROADBAND MODELS

MECHANICAL OUTLINES*

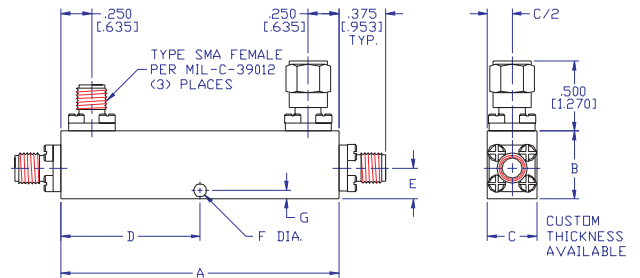
SMA CONNECTORS

OUTLINE		A	B	C	D	E
1	(in)	3.60	0.53	0.38	2.60	0.22
	(cm)	9.14	1.35	0.96	6.60	0.56
2	(in)	3.60	0.60	0.38	2.60	0.22
	(cm)	9.14	1.52	0.96	6.60	0.56
3	(in)	2.90	0.68	0.38	2.00	0.34
	(cm)	7.36	1.72	0.96	5.08	0.86
4	(in)	2.90	0.60	0.38	2.00	0.22
	(cm)	7.36	1.52	0.96	5.08	0.56
5	(in)	1.78	0.68	0.38	0.88	0.34
	(cm)	4.52	1.72	0.96	2.23	0.86
6	(in)	1.88	0.60	0.38	1.00	0.22
	(cm)	4.77	1.52	0.96	2.54	0.56
7	(in)	1.22	0.55	0.38	0.38	0.22
	(cm)	3.09	1.40	0.96	0.96	0.56
8	(in)	1.22	0.60	0.38	0.38	0.22
	(cm)	3.09	1.52	0.96	0.96	0.56
9	(in)	4.40	0.60	0.38	3.40	0.24
	(cm)	11.1	1.52	0.96	8.63	0.61
10	(in)	2.10	0.70	0.38	1.00	0.22
	(cm)	5.33	1.77	0.96	2.54	0.56
11	(in)	2.09	0.70	0.50	1.00	0.26
	(cm)	5.31	1.77	1.27	2.54	0.66
12	(in)	1.36	0.60	0.38	0.50	0.26
	(cm)	3.45	1.52	0.96	1.27	0.66
13	(in)	1.36	0.66	0.38	0.50	0.26
	(cm)	3.45	1.68	0.96	1.27	0.66



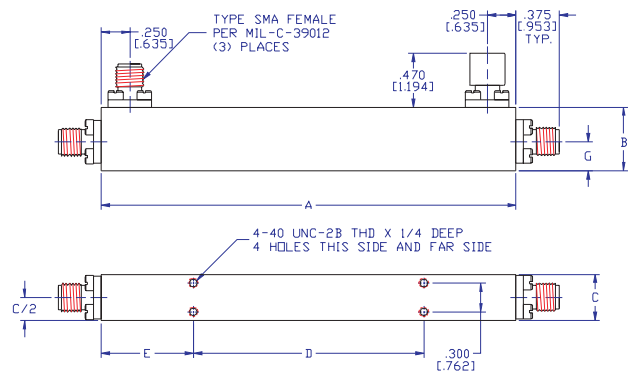
OUTLINE	A	B	C	D	E
1A (in)	1.00	0.50	0.38	0.50	0.22
	(cm)	2.54	1.27	0.96	1.27
2A (in)	1.00	0.70	0.40	0.50	0.36
	(cm)	2.54	1.78	1.01	1.27

OUTLINE A



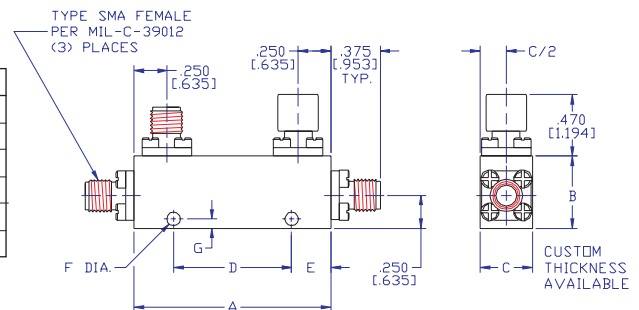
OUTLINE B

OUTLINE	A	B	C	D	E
1B (in)	3.50	0.73	0.53	1.25	1.00
	(cm)	8.89	1.85	1.34	3.17
2B (in)	4.40	0.73	0.53	2.40	1.00
	(cm)	11.1	1.85	1.34	6.09
3B (in)	4.35	0.73	0.53	2.10	1.00
	(cm)	11.0	1.85	1.34	5.33
4B (in)	2.90	0.65	0.53	1.00	0.97
	(cm)	7.36	1.65	1.34	2.54



OUTLINE C

OUTLINE	A	B	C	D	E	F**	G
1C (in)	2.08	0.69	0.53	0.96	0.56	2-56	0.340
	(cm)	5.28	1.75	1.34	2.44	N/A	0.863
2C (in)	1.40	0.66	0.40	0.50	0.45	0.104	0.110
	(cm)	3.55	1.67	1.01	1.27	1.14	0.264
3C (in)	2.40	0.71	0.53	1.02	0.68	2-56	0.345
	(cm)	6.09	1.80	1.34	2.74	1.73	N/A



**2-56 Thread Mounting Hole

* Additional outline configurations available. Contact manufacturer for your custom design.

HIGH POWER DIRECTIONAL COUPLERS 600 WATTS CW, 10 KW PEAK, TYPE N CONNECTORS

Features:

- Frequency Range 0.5 - 12 GHz
- Custom Coupling Value From -30 to -50 dB
- Flat Frequency Response
- Monitoring High Power Amplifiers



ELECTRICAL SPECIFICATIONS:

Model* Number	Frequency Range (GHz)	Coupling** (dB)	Frequency Sensitivity (dB)	Insertion Loss (dB Max.)	Directivity (dB Min.)	VSWR (Max) Primary Line	Power Capability (Watts)	Outline
HC-1-X	0.5-2.0	X $\pm$ 1.0	$\pm$ 0.75	0.2	18	1.15:1	600	1
HC-2-X	1.0-2.0	X $\pm$ 1.0	$\pm$ 0.75	0.2	18	1.15:1	600	2
HC-3-X	2.0-4.0	X $\pm$ 1.0	$\pm$ 0.75	0.2	18	1.15:1	600	3
HC-4-X	1.0-4.0	X $\pm$ 1.0	$\pm$ 0.60	0.2	15	1.15:1	600	4
HC-5-X	2.6-5.2	X $\pm$ 1.0	$\pm$ 0.75	0.2	18	1.20:1	600	3
HC-6-X	4.0-8.0	X $\pm$ 1.0	$\pm$ 0.75	0.2	18	1.30:1	600	5
HC-7-X	1.5-4.5	X $\pm$ 1.0	$\pm$ 0.60	0.2	18	1.20:1	600	2
HC-8-X	2.0-8.0	X $\pm$ 1.0	$\pm$ 0.60	0.2	16	1.30:1	400	6
HC-9-X	7.0-11.0	X $\pm$ 1.0	$\pm$ 0.50	0.2	16	1.30:1	300	5
HC-10-X	5.0-11.0	X $\pm$ 1.0	$\pm$ 0.75	0.2	15	1.30:1	250	5
HC-11-X	4.0-12.0	X $\pm$ 1.0	$\pm$ 0.60	0.2	15	1.30:1	250	7
HC-12-X	1.0-11.0	X $\pm$ 1.0	$\pm$ 1.90	0.2	15	1.30:1	250	4
HC-13-X	8.0-12.4	X $\pm$ 1.2	$\pm$ 0.75	0.4	14	1.40:1	250	8
HC-14-X	12.0-14.0	X $\pm$ 1.5	$\pm$ 1.00	0.6	12	1.70:1	100	4
HC-15-X	6.0-12.0	X $\pm$ 1.7	$\pm$ 1.50	1.0	12	1.80:1	100	4
HC-16-X	4.0-6.0	X $\pm$ 1.0	$\pm$ 0.50	0.25	18	1.25:1	400	4
HC-17-X	0.01-0.20	X $\pm$ 1.2	$\pm$ 0.50	0.25	20	1.25:1	400	4
HC-18-X	1.0-8.0	X $\pm$ 1.2	$\pm$ 0.90	0.25	20	1.25:1	300	8

* X to be selected by customer (-30 to -50 dB)

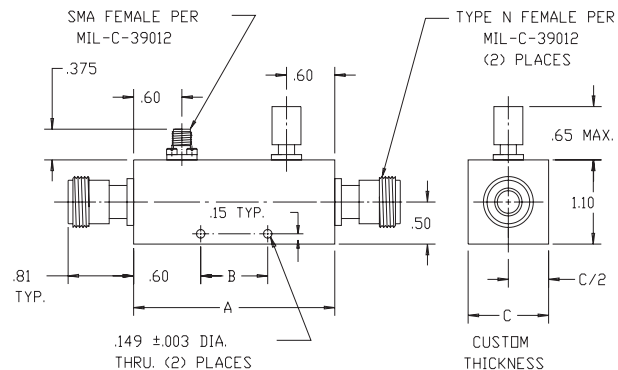
**Includes frequency sensitivity.

Mechanical Outline Type N Connectors***

OUTLINE	A	B	C**
1 [in]	6.00	4.80	1.00
1 [cm]	15.24	12.19	2.54
2 [in]	3.50	2.30	1.00
2 [cm]	8.89	5.84	2.54
3 [in]	2.50	1.30	1.00
3 [cm]	6.35	3.30	2.54
4 [in]	3.85	2.65	1.00
4 [cm]	9.78	6.73	2.54
5 [in]	3.35	2.15	1.00
5 [cm]	8.51	5.46	2.54
6 [in]	3.00	1.80	1.00
6 [cm]	7.62	4.57	2.54
7 [in]	1.87	0.67	1.00
7 [cm]	4.75	1.70	2.54

***Custom mounting location available

OUTLINE	A	B	C**
8 [in]	2.04	0.84	1.00
8 [cm]	5.18	2.13	2.54



NOTE : TNC CONNECTORS ARE AVAILABLE

HIGH POWER DUAL DIRECTIONAL COUPLERS 600 WATTS CW, 10 KW PEAK, TYPE N CONNECTORS

Features:

- Frequency Range 0.5 - 18 GHz
- Custom Coupling Value From -30 to -50 dB
- Flat Frequency Response
- Monitoring High Power Amplifiers



ELECTRICAL SPECIFICATIONS:

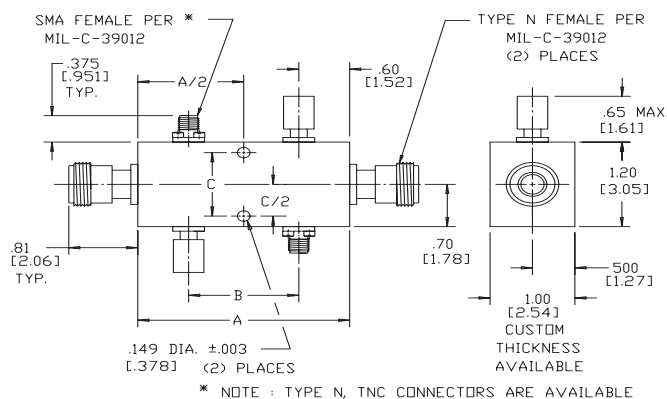
Model* Number	Freq. Range (GHz)	Coupling** (dB)	Freq. Sensitivity (dB)	Insertion Loss (dB Max.)	Directivity (dB Min.)	VSWR (Max) Primary Line	Power Capabilities (Watts)	Outline
HD-1-X	0.5-2.0	X $\pm$ 1.0	$\pm$ 0.75	0.4	18	1.20:1	600	1
HD-2-X	1.0-2.0	X $\pm$ 1.0	$\pm$ 0.75	0.4	18	1.20:1	600	2
HD-3-X	2.0-4.0	X $\pm$ 1.0	$\pm$ 0.75	0.4	18	1.20:1	600	3
HD-4-X	1.0-4.0	X $\pm$ 1.0	$\pm$ 0.60	0.4	15	1.20:1	600	4
HD-5-X	2.6-5.2	X $\pm$ 1.0	$\pm$ 0.75	0.4	18	1.25:1	600	3
HD-6-X	4.0-8.0	X $\pm$ 1.0	$\pm$ 0.75	0.4	18	1.35:1	600	5
HD-7-X	1.5-4.5	X $\pm$ 1.0	$\pm$ 0.60	0.4	18	1.25:1	600	2
HD-8-X	2.0-8.0	X $\pm$ 1.0	$\pm$ 0.60	0.4	16	1.35:1	400	5
HD-9-X	7.0-11.0	X $\pm$ 1.0	$\pm$ 0.50	0.5	16	1.35:1	300	4
HD-10-X	5.0-11.0	X $\pm$ 1.0	$\pm$ 0.80	0.5	15	1.35:1	250	4
HD-11-X	4.0-12.0	X $\pm$ 1.0	$\pm$ 0.80	0.5	15	1.35:1	200	3
HD-12-X	1.0-11.0	X $\pm$ 1.0	$\pm$ 2.00	0.5	15	1.35:1	250	4
HD-13-X	8.0-12.4	X $\pm$ 1.0	$\pm$ 0.75	0.7	14	1.45:1	200	4
HD-14-X	12.0-18.0	X $\pm$ 1.0	$\pm$ 1.00	1.0	12	1.70:1	100	4
HD-15-X	6.0-18.0	X $\pm$ 1.0	$\pm$ 1.30	1.2	12	1.80:1	100	4
HD-18-X	1.0-8.0	X $\pm$ 1.0	$\pm$ 1.30	1.2	12	1.80:1	300	6
HD-20-X	5.8 - 6.40	X $\pm$ 1.0	$\pm$ 1.30	1.2	12	1.80:1	500	5

* X to be selected by customer (-30 to -50 dB)

**Includes freq. sensitivity.

Mechanical Outline Type N Connectors

OUTLINE	A	B	C**
1 [in] [cm]	6.00 15.24	4.80 12.19	1.00 2.54
2 [in] [cm]	2.50 6.35	1.30 3.30	1.00 2.54
3 [in] [cm]	3.00 7.62	1.80 4.57	1.00 2.54
4 [in] [cm]	3.85 9.78	2.65 6.73	1.00 2.54
5 [in] [cm]	3.35 8.51	2.15 5.46	1.00 2.54
6 [in] [cm]	5.16 13.1	3.96 10.05	1.00 2.54



HIGH POWER DUAL DIRECTIONAL COUPLERS 30 dB COUPLING, 30-3000 WATTS CW

Features:

- Frequency Range 0.01 - 1000 MHz
- Low Insertion Loss
- Flat Frequency Response
- Monitoring High Power Amplifiers



ELECTRICAL SPECIFICATIONS:

Model* Number	Freq. Range (MHz)	Freq. Sensitivity (dB)	Insertion Loss (dB Max.)	Directivity (dB Min.)	VSWR (Max) Primary Line	Power (Watts)	Connectors (Mainline/ Coupled Ports)	Figure
HDL-1-30	10-1000	±0.50	1.0	20	1.30:1	30	N/BNC	1
HDL-2-30	10-1000	±0.50	1.0	20	1.30:1	50	N/BNC	1
HDL-3-30	0.01-250	±0.50	0.8	20	1.25:1	100	N/BNC	2
HDL-4-30	200-1000	±0.50	0.4	20	1.15:1	100	N/BNC	3
HDL-5-30	1-200	±0.50	0.2	20	1.25:1	250	N/N	4
HDL-6-30	20-200	±0.50	0.3	20	1.10:1	250	N/N	4
HDL-7-30	100-500	±0.75	0.3	20	1.25:1	250	N/N	5
HDL-8-30	400-1000	±0.25	0.2	20	1.15:1	400	N/BNC	3
HDL-9-30	800-1000	±0.20	0.4	25	1.15:1	500	N/BNC	3
HDL-10-30	1.5-80	±0.20	0.2	25	1.10:1	750	N/N	4
HDL-11-30	1.5-100	±0.20	0.2	25	1.15:1	750	N/N	4
HDL-12-30	20-100	±0.50	0.2	25	1.15:1	750	N/N	4
HDL-13-30	2-32	±0.20	0.3	25	1.10:1	1000	N/N	4
HDL-14-30	0.5-32	±0.30	0.3	25	1.05:1	1500	N/N	6
HDL-15-30	0.5-32	±0.30	0.3	25	1.05:1	3000	N/N	6

* Alternate connector configurations available for each model.

Contact the manufacturer for further details

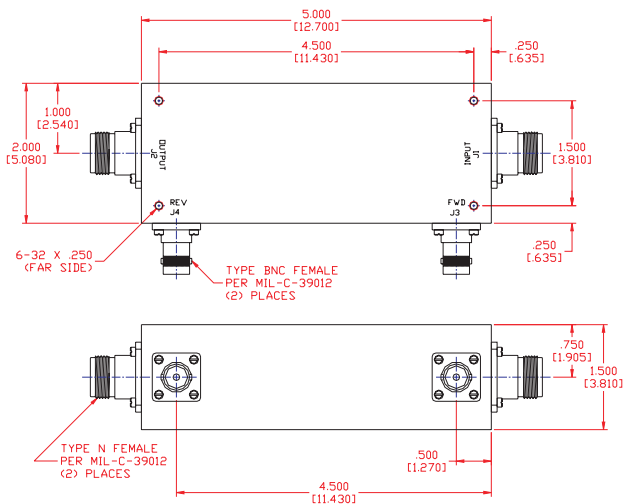


Figure 1

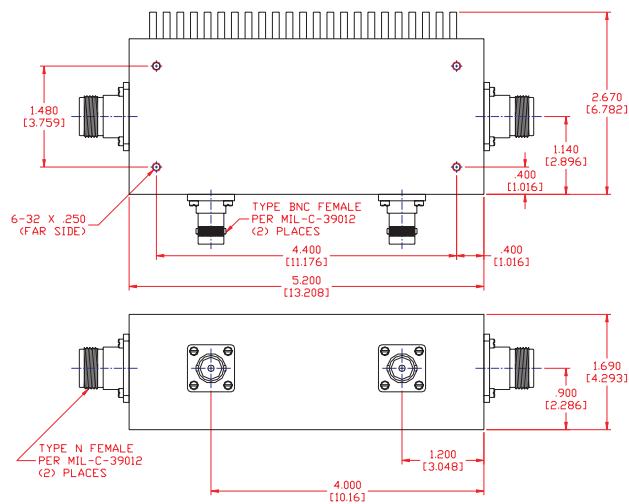


Figure 2

Mechanical Outline for figures 3, 4, 5, and 6 are available on page 57

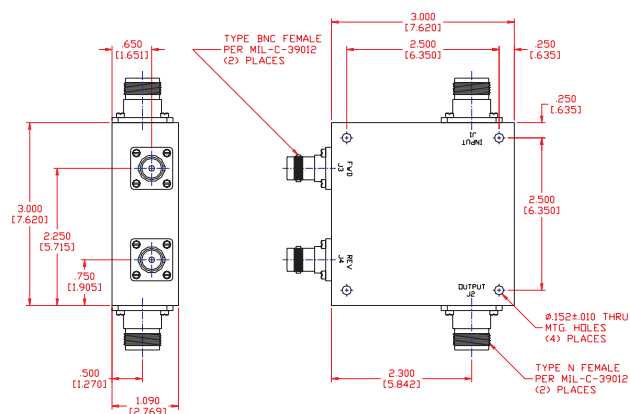


Figure 3

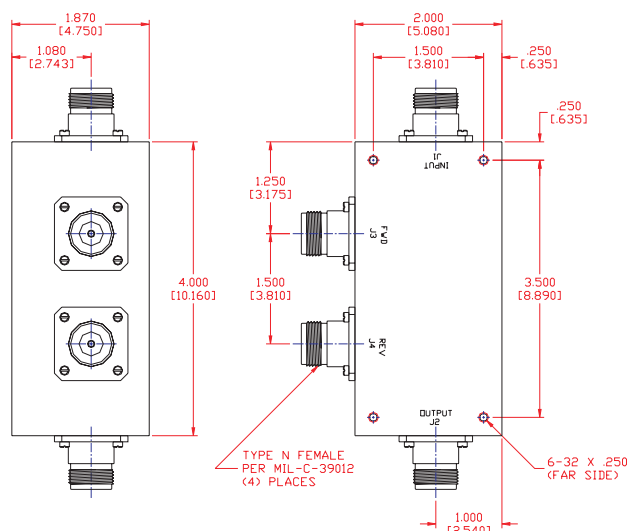


Figure 4

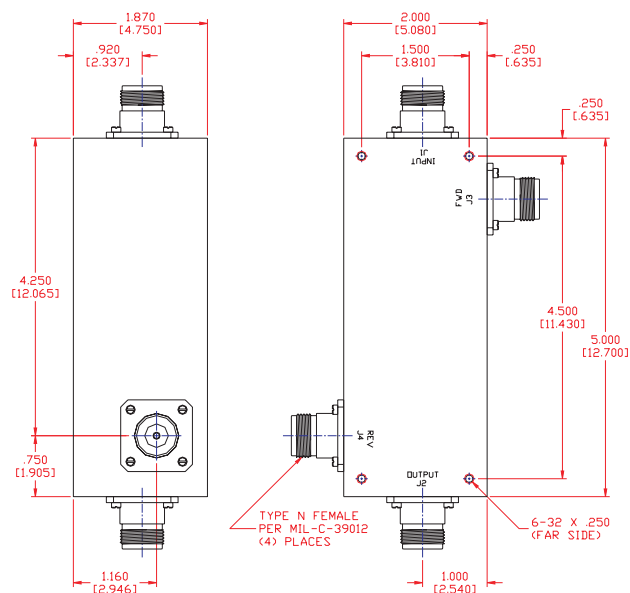


Figure 5

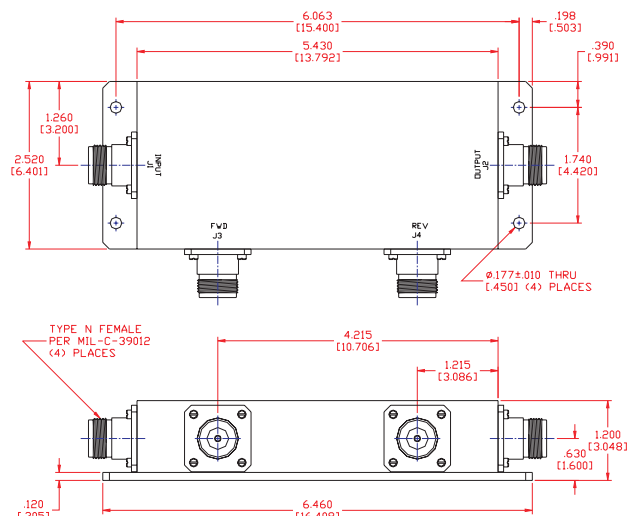


Figure 6

HIGH POWER DUAL DIRECTIONAL COUPLERS 40 dB COUPLING, 100-3000 WATTS CW

Features:

- Frequency Range 0.01 - 2400 MHz
- Low Insertion Loss
- Flat Frequency Response
- Monitoring High Power Amplifiers



ELECTRICAL SPECIFICATIONS:

Model Number*	Freq. Range (MHz)	Freq. Sensitivity (dB)	Insertion Loss (dB Max.)	Directivity (dB Min.)	VSWR (Max) Primary Line	Power (Watts)	Connectors (Mainline/ Coupled Ports)	Figure
HDL-1-40	0.1-1000	±0.50	1.0	20	1.30:1	100	N/BNC	1
HDL-2-40	1000-2000	±0.30	0.2	20	1.20:1	100	N/BNC	2
HDL-3-40	0.01-250	±0.50	0.5	20	1.10:1	200	N/BNC	1
HDL-4-40	0.1-1000	±0.50	0.6	20	1.30:1	200	N/BNC	3
HDL-5-40	80-1000	±0.50	0.2	20	1.15:1	200	N/BNC	2
HDL-6-40	0.01-250	±0.50	0.5	20	1.10:1	250	N/BNC	3
HDL-7-40	20-200	±0.50	0.3	20	1.20:1	250	N/N	4
HDL-8-40	800-1000	±0.50	0.2	20	1.20:1	350	N/BNC	2
HDL-9-40	1000-2000	±0.30	0.3	20	1.120:1	400	N/BNC	2
HDL-10-40	0.01-250	±0.75	0.5	20	1.10:1	500	N/BNC	5
HDL-11-40	1-150	±1.00	0.3	20	1.30:1	500	N/N	4
HDL-12-40	10-100	±0.50	0.2	25	1.10:1	500	N/N	4
HDL-13-40	20-200	±0.50	0.3	20	1.20:1	500	N/N	6
HDL-14-40	800-2400	±0.50	0.3	25	1.20:1	500	N/BNC	7
HDL-15-40	100-500	±0.50	0.2	20	1.15:1	1000	SC/SMA	8
HDL-16-40	20-100	±0.50	0.2	20	1.15:1	1500	N/N	9
HDL-15-40	0.5-50	±0.50	0.2	20	1.10:1	2000	N/N	10
HDL-15-40	0.5-32	±0.30	0.2	25	1.10:1	3000	N/N	10

* Alternate connector configurations available for each model.
Contact the manufacturer for details.

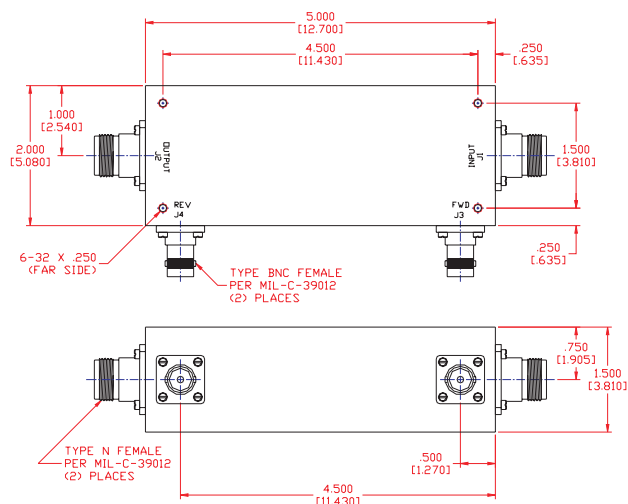


Figure 1

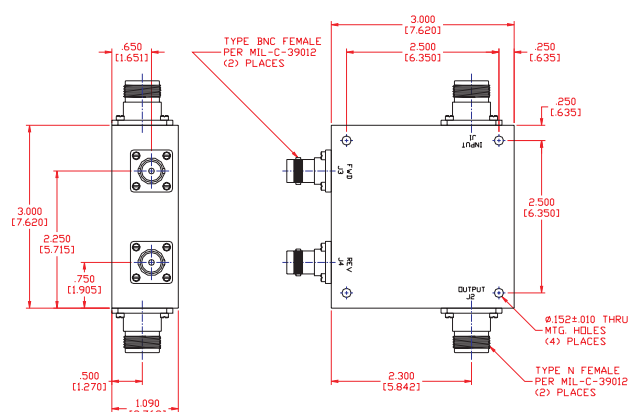


Figure 2

Mechanical Outlines for figures 3-10 are available on pages 59 and 60.

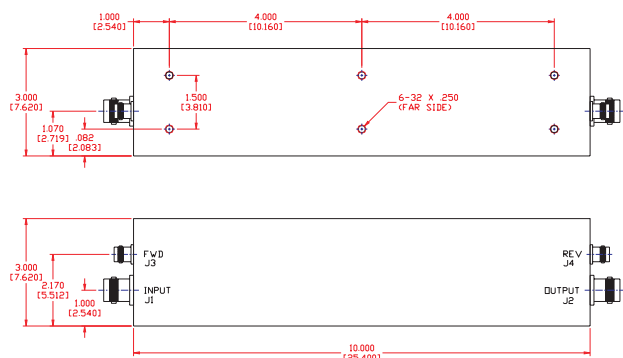


Figure 3

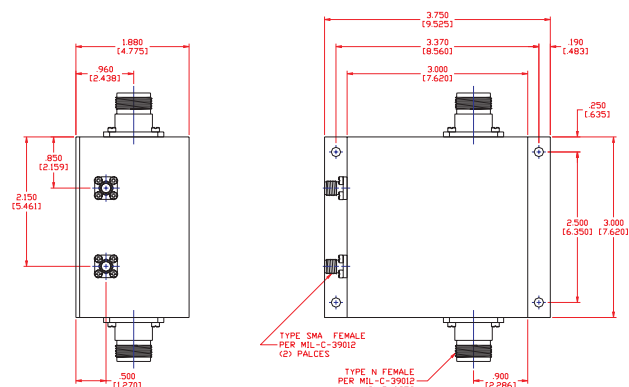


Figure 4

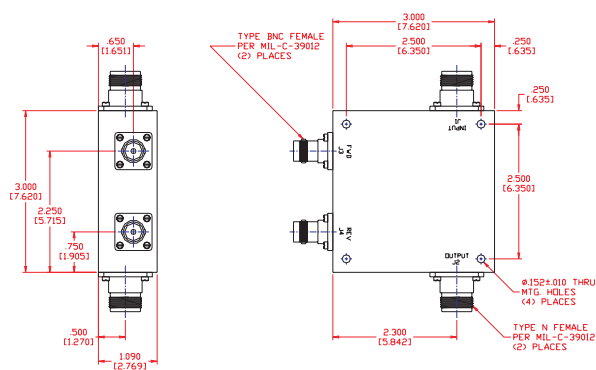


Figure 5

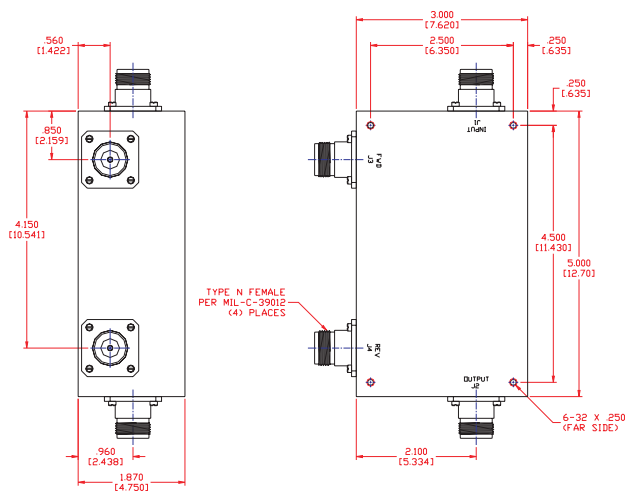


Figure 6

* Additional outline configurations available. Contact manufacturer for your custom design.

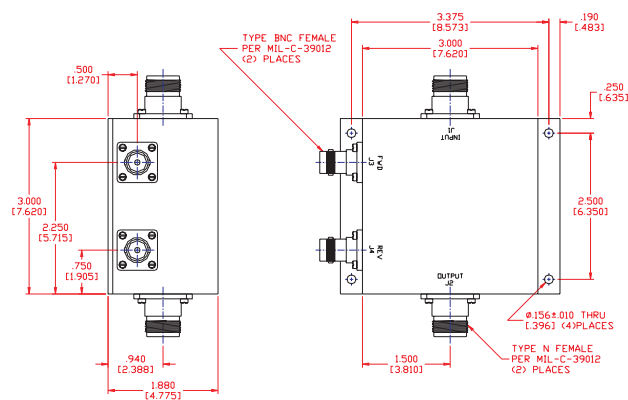


Figure 7

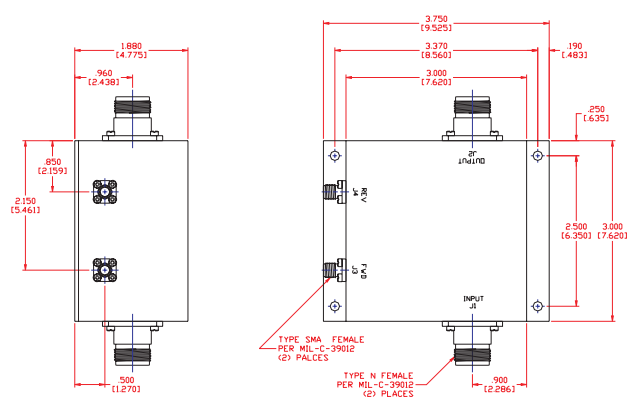


Figure 8

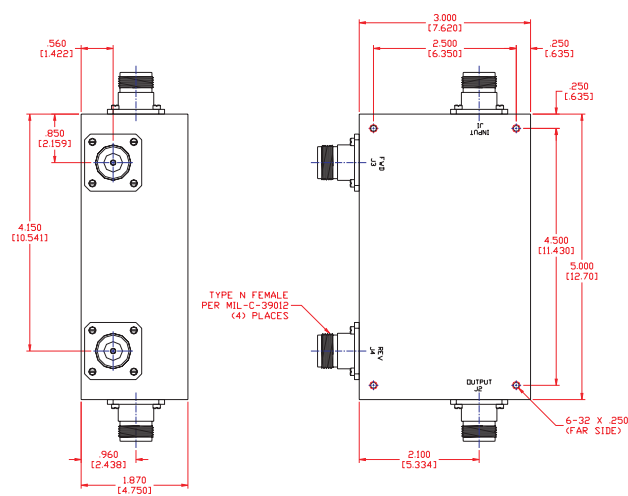


Figure 9

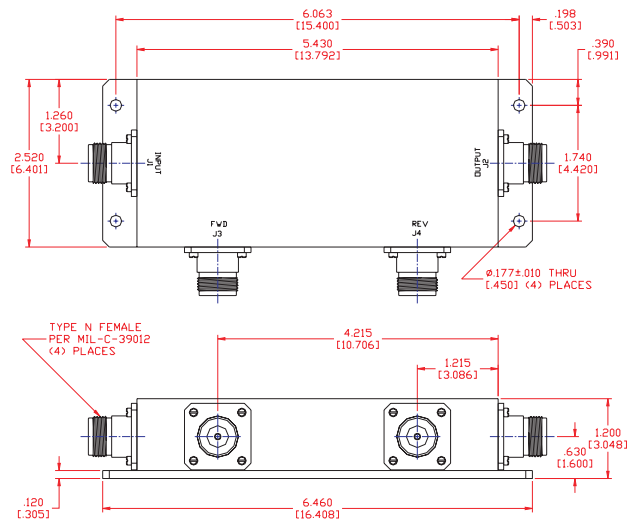


Figure 10

- Frequency Range 0.01 - 2800 MHz
- Low Insertion Loss
- Flat Frequency Response
- Monitoring High Power Amplifiers

Model Number	Freq. Range (MHz)	Freq. Sensitivity (dB)	Insertion Loss (dB Max.)	Directivity (dB Min.)	VSWR (Max) Primary Line	Power (Watts)	Connectors (Mainline/ Coupled Ports)	Figure
HDL-1-50	20-100	±0.50	0.2	20	1.15:1	1500	N/N	1
HDL-2-50	80-1000	±0.50	0.2	20	1.20:1	1500	N/BNC	2
HDL-3-50	20-230	±0.50	0.2	20	1.10:1	2000	N/SMA	3
HDL-4-50	0.5-32	±0.50	0.1	20	1.15:1	5000	N/N	4

* Alternate connector configurations available for each model

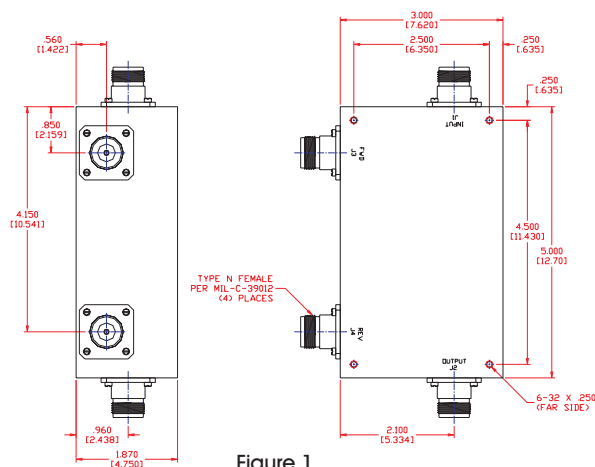


Figure 1

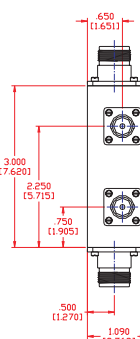


Figure 2

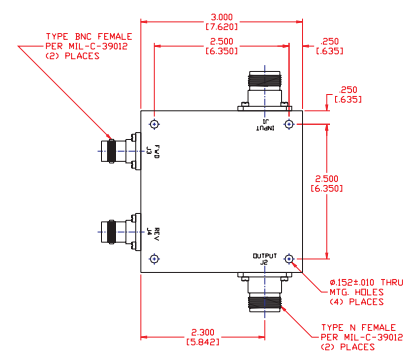


Figure 3

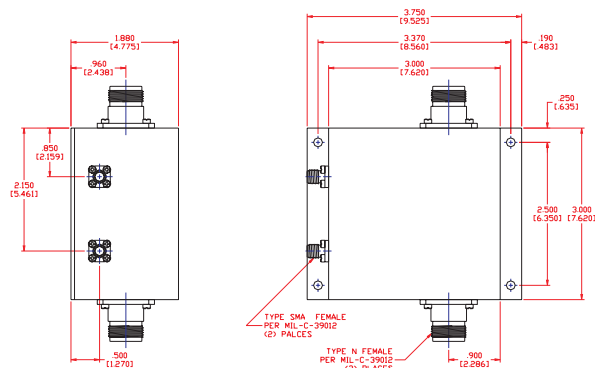


Figure 4

ZERO-BIAS DIODE DETECTORS

100 KHz - 26.5 GHz

Features:

- BROADBAND
- NO BIAS REQUIRED
- HIGH QUALITY
- FLAT FREQUENCY RESPONSE

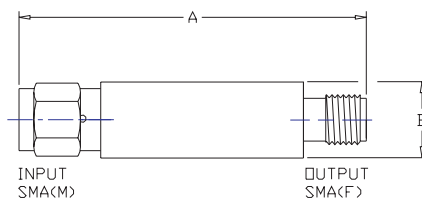


ELECTRICAL SPECIFICATIONS

Model Number**	Frequency Range (GHz)	VSWR (Max.)	Flatness (Max.) ($\pm$ dB)	Low Level Sensitivity (mV/uW)	Connector		Outline
					Input	Output	
ZD-1-X	0.01 - 12.4	1.25:1	0.3	0.5	SMA (M)	SMA (F)	1
ZD-2-X	0.01 - 12.4	1.25:1	0.3	0.5	SMA (M)	SMC (M)	1A
ZD-3-X	0.01 - 18.5	1.25:1	0.5	0.5	SMA (M)	SMA (F)	1
ZD-4-X	0.01 - 18.5	1.25:1	0.5	0.5	SMA (M)	SMC (M)	1A
ZD-5-X	0.01 - 26.5	1.30:1	1.0	0.5	SMA (M)	SMA (F)	1
ZD-6-X	0.01 - 26.5	1.30:1	1.0	0.5	SMA (M)	SMC (M)	1A
ZD-7-X	0.001 - 2.0	1.30:1	0.3	0.5	BNC (M)	BNC (F)	2
ZD-8-X	0.001 - 4.0	1.30:1	0.3	0.5	BNC (M)	BNC (F)	2
ZD-9-X	0.01 - 12.4	1.40:1	0.5	0.5	SMA (M)	BNC (F)	3
ZD-10-X	0.01 - 12.4	1.40:1	0.5	0.5	TYPE N (M)	BNC (F)	4
ZD-11-X	0.01 - 18.5	1.50:1	0.5	0.5	SMA (M)	BNC (F)	3
ZD-12-X	0.01 - 18.5	1.50:1	0.5	0.5	TYPE N (M)	BNC (F)	4

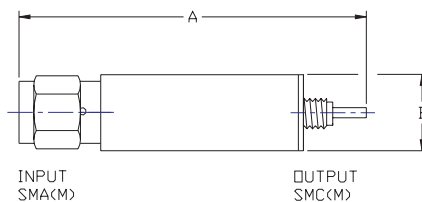
** Replace (X) with (N) for Negative Polarity or (P) for Positive Polarity

OUTLINE	A	B
1 (in)	1.05	0.32
(cm)	2.67	0.82
2 (in)	2.48	0.51
(cm)	6.30	1.29
3 (in)	2.50	0.56
(cm)	6.35	1.42
4 (in)	2.46	0.75
(cm)	6.25	1.90



OUTLINE A

OUTLINE	A	B
1 (in)	1.47	0.32
(cm)	3.73	0.82



DIRECTIONAL DETECTORS

0.5 - 26.5 GHz

Features:

- No Bias Required
- Low Video Resistance
- Broadband Performance
- Temperature Stability



ELECTRICAL SPECIFICATIONS:

Model Number*	Frequency Range (GHz)	Minimum Sensitivity** (mV / mW)	Minimum Directivity (dB)	Max Insertion Loss (dB)	Flatness ($\pm$ dB)	VSWR ($\pm$ dB) (Max)	Outline
DD-1-X	0.5-1.0	700	25	0.80	0.2	1.15:1	1
DD-2-X	1.0-2.0	700	25	0.80	0.2	1.15:1	2
DD-3-X	2.0-4.0	700	25	0.90	0.2	1.15:1	3
DD-4-X	2.0-8.0	500	20	0.90	0.3	1.25:1	4
DD-5-X	4.0-8.0	600	20	1.00	0.3	1.25:1	1A
DD-6-X	7.0-12.4	500	17	1.00	0.4	1.30:1	1A
DD-7-X	12.0-18.0	400	15	1.10	0.3	1.30:1	1A
DD-8-X	6-18	500	15	1.20	0.7	1.50:1	5
DD-9-X	18-26.5	300	13	1.60	1.0	2.00:1	1A

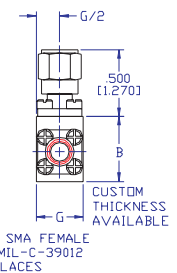
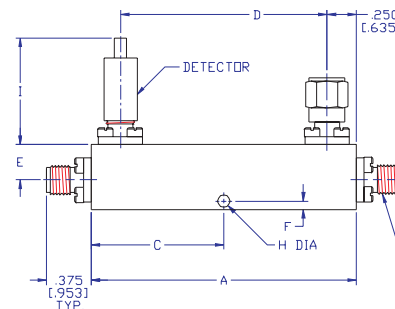
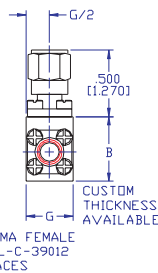
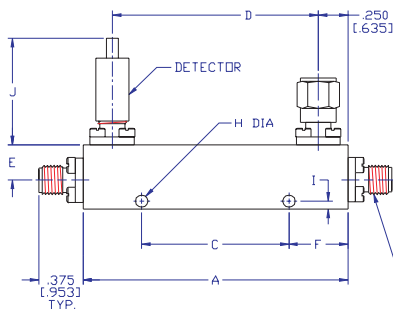
* X: Add Suffix "N" For Negative, "P" For Positive

**All directional couplers offer a -20 dB coupling.

The Sensitivity specification will vary depending on the coupling values.

SMA CONNECTORS

OUTLINE	A	B	C	D	E	F	G	H	I	J
1 (in)	3.179	0.750	1.500	2.679	0.450	0.840	0.400	0.104	0.100	1.250
(cm)	8.075	1.905	3.810	6.805	1.143	2.133	1.016	0.264	0.254	3.175
2 (in)	1.899	0.750	0.700	1.399	0.450	0.600	0.400	0.104	0.100	1.250
(cm)	4.823	1.905	1.778	3.497	1.143	1.524	1.016	0.264	0.254	3.175
3 (in)	1.200	0.540	0.320	0.663	0.300	0.440	0.400	0.104	0.110	1.250
(cm)	3.048	1.372	0.813	1.684	0.762	1.117	1.016	0.264	0.279	3.175
4 (in)	1.780	0.680	0.880	1.280	0.340	0.450	0.380	0.149	0.150	1.250
(cm)	4.521	1.727	2.235	3.251	0.863	1.143	0.965	0.378	0.381	3.175
5 (in)	2.100	0.700	1.000	1.600	0.440	0.550	0.380	0.120	0.100	1.250
(cm)	5.334	1.778	2.540	4.064	1.117	1.397	0.965	0.305	0.254	3.175



OUTLINE A

OUTLINE A

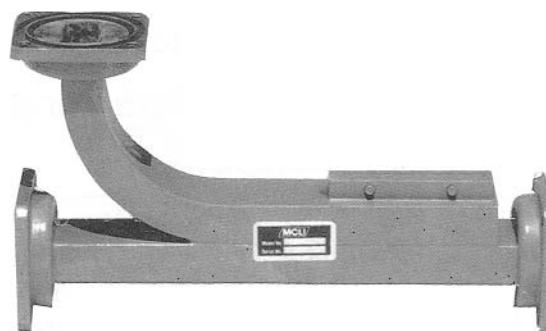
OUTLINE	A	B	C	D	E	F	G	H	I
1A (in)	1.000	0.500	0.500	0.500	0.300	0.080	0.400	0.100	1.250
(cm)	2.540	1.270	1.270	1.270	0.762	0.203	1.016	0.254	3.175

WAVEGUIDE CROSSGUIDE COUPLERS

3 PORT, TERMINATED

Features:

- Excellent Performance Over Entire Waveguide Frequency Range
- Units Pressurized to 30 PSI
- Precision Internal Termination For Optimum Directivity
- Standard Exterior Finish Is Gray Semi-Gloss Polyurethane Enamel Color 26440 Per FED-STD-595



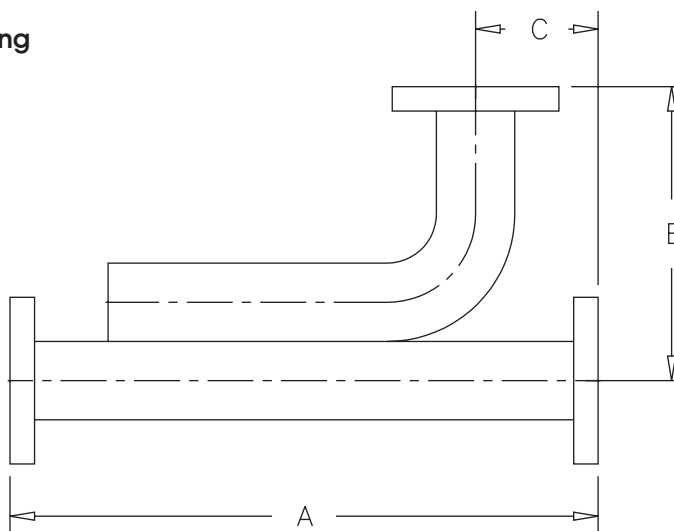
ELECTRICAL SPECIFICATIONS

MODEL * NUMBER	FREQ. RANGE (GHz)	EIA DESIGN	VSWR (max.)		NOM. COUP. (dB)	FREQ. SENS. (dB)	DIREC- TIVITY (dB)	DIMENSION Inches/Centimeters		
			PRI.	SEC.				A	B	C
WS1-X-	1.12-1.7	WR650	1.05	1.15	± 0.5	± 0.6	40	37/94	8/20.3	4/10.2
WS2-X-	1.7-2.6	WR430	1.05	1.15	± 0.5	± 0.6	40	35/88.9	6/15.2	4/10.2
WS3-X-	12.6-3.95	WR284	1.05	1.15	± 0.5	± 0.6	40	50.2/127.5	9.18/23.32	2.66/6.76
WS4-X-	3.3-4.9	WR229	1.05	1.15	± 0.5	± 0.6	40	42.0/106.7	6.81/17.30	1.00/2.54
WS5-X-	3.95-5.85	WR187	1.05	1.15	± 0.5	± 0.6	40	34.62/87.93	6.44/16.36	1.81/4.60
WS6-X-	4.9-7.05	WR159	1.05	1.15	± 0.5	± 0.6	40	32.50/82.55	5.25/13.33	0.88/2.24
WS7-X-	5.85-8.2	WR137	1.05	1.15	± 0.5	± 0.6	40	26.50/67.31	3.06/7.77	1.56/3.96
WS8-X-	7.05-10	WR112	1.05	1.15	± 0.5	± 0.6	40	18.62/47.29	3.06/7.77	0.94/2.39
WS9-X-	8.2-12.4	WR90	1.05	1.15	± 0.5	± 0.6	40	16.68/42.37	1.94/4.93	0.81/2.06
WS10-X-	10-15	WR75	1.05	1.15	± 0.5	± 0.6	40	15.00/38.10	2.50/6.35	1.25/3.18
WS11-X-	12.4-18	WR62	1.05	1.15	± 0.5	± 0.6	40	13.75/34.93	2.18/5.38	0.66/1.68
WS12-X-	18-26.5	WR42	1.10	1.15	± 0.75	± 0.75	40	9.50/24.13	1.25/3.18	0.75/1.91
WS13-X-	26.5-40	WR28	1.10	1.15	± 0.75	± 0.75	40	8.00/20.32	1.12/2.85	0.75/1.91

*"X" is to be replaced with 3, 6, 10, 20, 30, or 40 dB coupling

Example: Frequency 5.85 to 8.2 GHz, 30 dB coupler,
flange is choke, material aluminum, finish silver
order part: WS7-30-4-A-2.

FLANGE	MAT'L	FINISH
1 - CPRF	A - ALUM	1 - IRDITE
2 - CPRG	B - BRASS	2 - SILVER
3 - COVER	C - COPPER	3 - SPECIAL
4 - CHOKE	S - SPECIAL	
5 - SPECIAL		

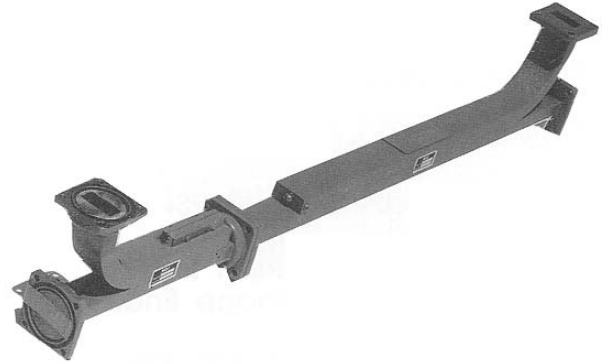


WAVEGUIDE CROSSGUIDE COUPLERS

4 PORT, UNTERMINATED

Features:

- Full Waveguide Frequency Range
- Units Pressurized To 30 PSI
- Ideal For High Power Combined/Divider Application
- Standard Exterior Finish Is Gray, Semi-Gloss Polyurethane Enamel Color 26440 Per FED-STD-595

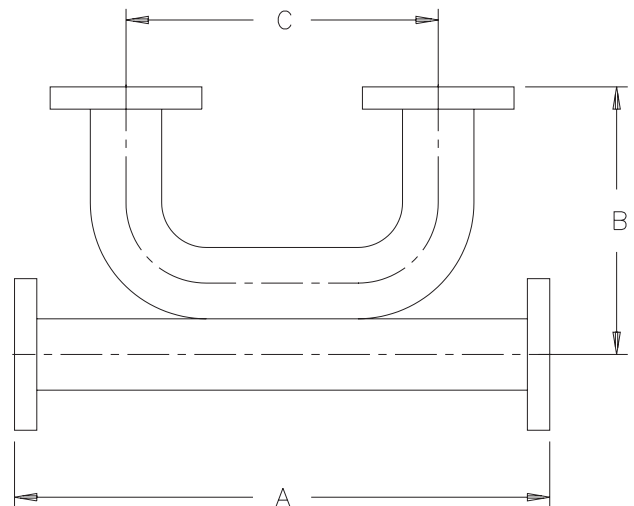


ELECTRICAL SPECIFICATIONS

MODEL * NUMBER	FREQ. RANGE (GHz)	EIA DESIGN	VSWR (max.)		NOM. COUP.	FREQ. SENS.	DIREC- TIVITY	DIMENSION Inches/Centimeters		
			PRI.	SEC.				A	B	C
WD1-X	1.12-1.7	WR650	1.05	1.10	±.5	±.6	20	37/94	8/20.3	29/73.7
WD2-X	1.7-2.6	WR430	1.05	1.10	±.5	±.6	20	35/88.9	6/15.2	27/68.6
WD3-X	12.6-3.95	WR284	1.05	1.10	±.5	±.6	20	31/78.7	6/15.2	24/61
WD4-X	3.3-4.9	WR229	1.05	1.10	±.5	±.6	20	28/71.1	5/12.7	21/53.3
WD5-X	3.95-5.85	WR187	1.05	1.10	±.5	±.6	20	25/64.5	4/10.2	19/48.3
WD6-X	4.9-7.05	WR159	1.05	1.10	±.5	±.6	20	23/58.4	3/7.6	17.5/44.5
WD7-X	5.85-8.2	WR137	1.05	1.10	±.5	±.6	20	20/50.8	3/7.6	15.5/39.4
WD8-X	7.05-10	WR112	1.05	1.10	±.5	±.6	20	18/45.7	2.5/6.4	14/35.6
WD9-X	8.2-12.4	WR90	1.05	1.10	±.5	±.6	20	17/43.2	2/5.1	13.5/34.3
WD10-X	10-15	WR75	1.05	1.10	±.5	±.6	20	15/38.1	1.5/3.8	12/30.5
WD11-X	12.4-18	WR62	1.05	1.10	±.5	±.6	20	13/33	1.25/3.2	10.5/26.7
WD12-X	18-26.5	WR42	1.10	1.15	±.75	±.75	20	11/27.9	1.25/3.2	8.5/21.6
WD13-X	26.5-40	WR28	1.10	1.15	±.75	±.75	20	10/25.4	1/2.54	8/20.3

*"X" is to be replaced with 3, 6, 10, 20, 30, or 40 dB coupling
Example: Frequency 5.85 to 8.2 GHz, 30 dB coupler,
flange is choke, material aluminum, finish silver
order part: WD7-30-4-A-2.

FLANGE	MAT'L	FINISH
1-CPRF 2-CPRG 3-COVER 4-CHOKE 5-SPECIAL	1-ALUM 2-BRASS 3-COPPER 4-SPECIAL	1-IRDITE 2-SILVER 3-SPECIAL



90°/180° HYBRIDS

LUMPED ELEMENT AND STRIPLINE

10 MHz - 26.0 GHz

GENERAL INFORMATION

MCLI offers a large selection of 90° and 180° hybrids in a wide variety of packages.

The 90° and 180° degree hybrids in this catalog are designed using either lumped element circuit synthesis or stripline technology. The lumped element designs are generally for frequencies as low as 10 kHz and offer smaller packages. The stripline designs are appropriate for frequencies above 0.5 GHz and permit higher power usage with low insertion loss. Both components offer a similar theoretical insertion loss (3 dB) of a two-way power divider/combiner.

90° Hybrid (See Figure 1.)

A 90° Hybrid Junction is a network which has the electrical characteristics of a 3 dB directional coupler which is not terminated. Although the 90° hybrid has many uses, it displays two main functions. The first function is to split an input signal into two equal amplitude, isolated, quadrature (90°) phased outputs. The second function is to combine two quadrature phased, equal amplitude signal inputs to a single output. A primary advantage of a hybrid junction is its power handling capability. Since the isolated port (conjugate of the input port) is terminated externally, the only limitations to power handling are heat generated by internal dissipation losses and the power capability of the external terminations for the stripline design.

180° Hybrid

A 180° hybrid functions in the same manner as a 90° hybrid since it is also a reciprocal four port device. Equal amplitude outputs result when a signal is fed to one of the input ports. Opposite ports of the 180° hybrid are also isolated. The different phase relationship of the 180° hybrid does cause important functional differences. The 180° hybrid provides two equal amplitude in-phase signals when fed from its sum port and two equal 180° out-of-phase signals when fed from its difference port.

Coupling: The 90° and 180° hybrids offer a nominal 3 dB coupling which is similar to that of a two-way power divider.

Insertion Loss: The difference in excess of theoretical splitting loss (see chart) in dB between the amplitude of any output signal and the amplitude of the input signal. The net unrecoverable power dissipated within the circuit.

Amplitude Balance: The maximum peak to peak amplitude difference in dB between the output ports over the specified frequency range.

Isolation: The difference in dB that the signal level is measured at one output port is below the signal level into the adjacent output port, with the input port terminated in 50 ohms.

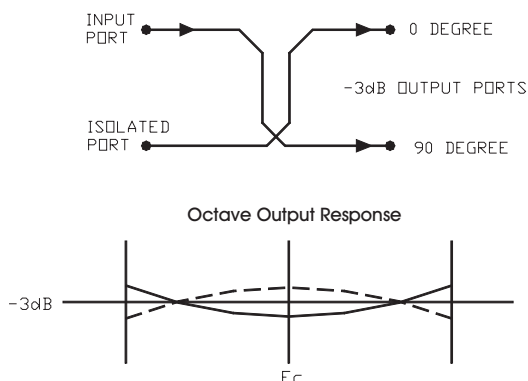
Phase Balance: The maximum peak-to-peak difference in phase (degrees) between the output ports over the specified frequency range.

VSWR (Input): The maximum voltage standing wave ratio at the input port assuming matched terminations at all other ports.

VSWR (Output): The maximum voltage standing wave ratio any one of the output ports assuming matched terminations at all other ports.

Average Power: The maximum power that may be applied to the common or input port with the output ports terminated in a load with the VSWR's listed.

Figure 1) Typical 90° Hybrid Coupler

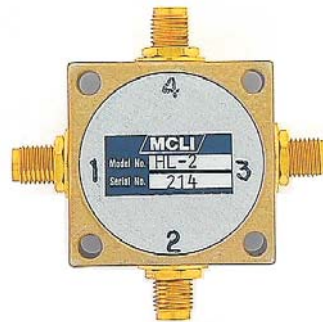


90° DEGREE HYBRID 10% BANDWIDTH

10 MHz TO 1500 MHz, SMA AND TYPE N CONNECTORS

Features:

- Uniform Phase Tracking
- Low VSWR
- Low Insertion Loss
- Operating Temperature from -55° C to +85° C



ELECTRICAL SPECIFICATIONS

Model Number	Frequency Range (MHz)	Insertion Loss (dB) MAX.	Isolation (dB) Min.	Amplitude Balance (±dB) Max.	Phase Balance ±Degrees (Max.)	VSWR MAX.	Figure	
							SMA	TYPE N
HL-1	10.7	0.5	25	0.2	2.0	1.2:1	1	2
HL-2	20.0	0.5	25	0.2	2.0	1.2:1	1	2
HL-3	21.4	0.5	25	0.2	2.0	1.2:1	1	2
HL-4	30.0	0.5	25	0.2	2.0	1.2:1	1	2
HL-5	40.0	0.5	25	0.2	2.0	1.2:1	1	2
HL-6	60.0	0.5	25	0.2	2.0	1.2:1	1	2
HL-7	63.0	0.5	25	0.3	2.0	1.2:1	1	2
HL-8	70.0	0.5	20	0.3	2.0	1.2:1	1	2
HL-9	80.0	0.5	20	0.3	2.5	1.2:1	1	2
HL-10	120.0	0.5	20	0.3	2.5	1.2:1	1	2
HL-11	140.0	0.5	20	0.3	2.5	1.2:1	1	2
HL-12	200.0	0.5	20	0.5	3.0	1.3:1	1	2
HL-13	300.0	0.5	20	0.5	3.0	1.3:1	1	2
HL-14	450.0	0.5	20	0.9	3.0	1.3:1	1	2
HL-15	750.0	0.5	20	1.0	3.0	1.3:1	1	2
HL-14	820.0	0.5	20	1.0	3.0	1.3:1	1	2
HL-14	1500.0	0.5	18	1.0	5.0	1.5:1	1	2

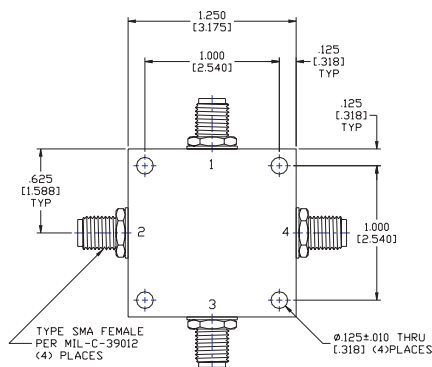


Figure 1

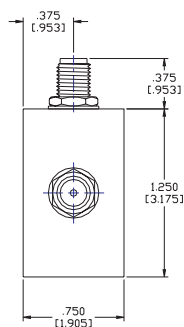


Figure 2

PORT CONFIGURATION				
Input	90° Out	Isolated	0° Out	
1	2	3	4	

90° HYBRID, OCTAVE MODELS

10 MHz TO 1500 MHz, TYPE N AND SMA CONNECTORS

Features:

- Low Insertion Loss
- Excellent Amplitude and Phase Tracking
- Low VSWR
- Compact Size



ELECTRICAL SPECIFICATIONS

Model* Number	Frequency** Range (MHz)	Insertion Loss (dB Max)	Isolation (dB Min)	Amplitude Balance (± dB Max)	Phase Balance (± Deg Max)	VSWR Max	Figure	
							SMA	N
BL-1	10-20	0.6	20	0.6	2.0	1.30:1	1	2
BL-2	20-40	0.6	20	0.6	2.0	1.30:1	1	2
BL-3	40-80	0.6	20	0.6	2.0	1.30:1	1	2
BL-4	50-100	0.6	20	0.6	2.0	1.30:1	1	2
BL-5	60-120	0.6	20	0.6	3.0	1.30:1	1	2
BL-6	80-160	0.6	20	0.6	3.0	1.30:1	1	2
BL-7	100-200	0.6	20	0.75	3.0	1.30:1	1	2
BL-8	200-400	0.6	20	1.0	3.0	1.30:1	1	2
BL-9	500-1000	1.0	18	1.3	5.0	1.45:1	1	2
BL-10	750-1500	1.3	18	1.5	5.0	1.50:1	1	2

** Custom Design For Different Frequency Available, Contact Manufacture For Other Specifications.

* Unit with Type N Connector: Multiply VSWR by 1.05, subtract 2.0 dB from Isolation. Add suffix /NF to model No.

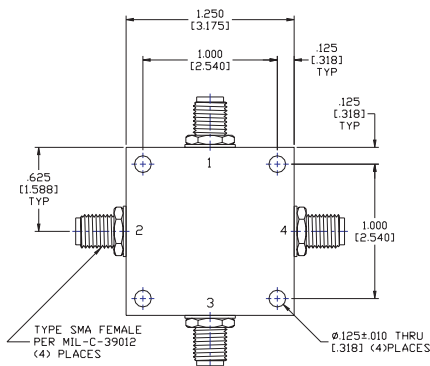


Figure 1

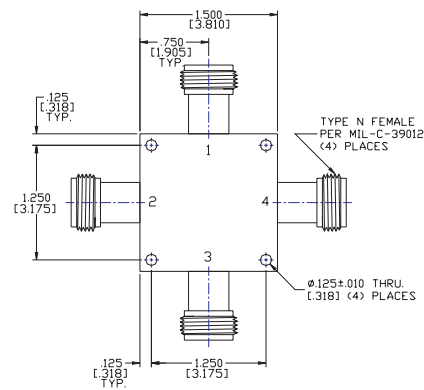
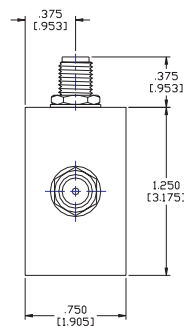


Figure 2

PORT CONFIGURATION			
Input	90° Out	Isolated	0° Out
1	2	3	4

90° HYBRIDS

0.5 - 26.5 GHz, SMA CONNECTORS

Features:

- Miniature Size
- RF Shielded
- High Isolation
- Low VSWR



ELECTRICAL SPECIFICATIONS

Model Number	Freq. Range (Ghz)	Coupling* or Thru Loss (dB)	Frequency Sensitivity (db)	Isolation (dB min.)	VSWR (max.)	Power Average (Watts)**	Peak (KW)	Outline
HB-1	0.5-1	3.1 ± 0.6	± 0.5	28	1.10	50	3	1A
HB-2	1-2	3.1 ± 0.6	± 0.5	28	1.10	50	3	2A
HB-3	2-4	3.1 ± 0.6	± 0.5	22	1.20	50	3	1
HB-4	2.6-5.2	3.1 ± 0.6	± 0.5	20	1.25	50	3	2
HB-5	4-8	3.2 ± 0.7	± 0.5	18	1.25	50	3	3A
HB-6	7-12.4	3.2 ± 0.7	± 0.5	18	1.30	50	3	3
HB-7	7.5-16	3.4 ± 0.9	± 0.6	15	1.40	40	2	3
HB-8	12-18	3.4 ± 1.0	± 0.7	15	1.40	40	3	3
HB-9	2-18	3.3 ± 0.6	± 0.4	17	1.30	30	3	4
HB-10	4-12.4	3.3 ± 1.0	± 0.4	17	1.35	20	2	4
HB-11	6.0 - 18.0	3.3 ± 1.0	± 0.4	17	1.35	20	2	4A
HB-12	6.0 - 13.0	3.3 ± 1.0	± 0.4	17	1.35	20	2	5
HB-16	2.0 - 8.0	3.5 ± 0.6	± 0.4	15	1.50	50	3	6
HB-17	1.8 - 2.2	3.2 ± 0.3	± 0.4	20	1.25	50	3	7
HB-18	7.2-8.5	3.4 ± 0.9	± 0.4	18	1.30	50	3	5A
HB-19	3.6-4.2	3.2 ± 0.3	± 0.4	20	1.25	50	3	8
HB-20	5.8-6.4	3.2 ± 0.3	± 0.4	20	1.25	50	3	6A
HB-22	1.5 - 1.7	3.1 ± 0.6	± 0.3	28	1.20	30	3	2A
HB-23	6.0 - 26.0	4.5 ± 1.0	± 1.0	12	1.80	1	0.5	7A
HB-27	11.0 - 13.0	3.4 ± 0.9	± 0.5	15	1.40	20	3	3
HB-28	14-14.5	3.5 ± 0.3	± 0.4	15	1.40	50	3	8A
HB-31	19.6 ± 0.5	3.3 ± 0.5	± 0.5	14	1.50	10	1	9
HB-32	0.75 - 1.5	3.1 ± 0.6	± 0.5	22	1.20	30	3	1A
HB-33	1.5 - 3.0	3.1 ± 0.6	± 0.5	22	1.20	30	3	10
HB-34	0.575 - 1.14	3.5 ± 0.8	± 0.8	20	1.30	30	3	1A
HB-39	8.0 - 18.0	4.5 ± 1.0	± 1.0	12	1.80	10	3	4A
HB-46	1.8 - 8.0	3.5 ± 0.7	± 0.5	14	1.50	20	2	6

*Includes freq. sensitivity. Specifications subject to change without notice.

**Higher Power Handling available. Contact the manufacturer for further details

Mechanical Outline available on page 70

90° HYBRIDS

MECHANICAL OUTLINES*

SMA CONNECTORS

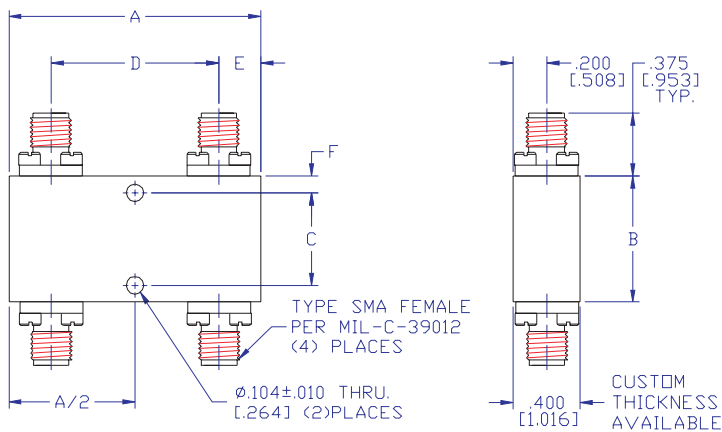
MECHANICAL OUTLINE - SMA CONNECTORS

OUTLINE	A	B	C	D	E
1	[in]	1.262	0.500	0.300	0.762
	[cm]	3.205	1.270	0.762	1.935
2	[in]	1.300	0.550	0.350	0.800
	[cm]	3.302	1.397	0.953	2.032
3	[in]	1.000	0.500	0.300	0.500
	[cm]	2.540	1.270	0.762	1.270
4	[in]	2.639	1.195	0.895	1.739
	[cm]	6.703	3.035	2.273	4.417
5	[in]	1.771	1.195	0.895	1.171
	[cm]	4.498	3.035	2.273	2.974
6	[in]	2.600	0.750	0.510	2.030
	[cm]	6.604	1.905	1.295	5.156
7	[in]	1.539	1.195	0.895	0.989
	[cm]	4.036	3.035	2.273	2.512
8	[in]	1.750	0.500	0.300	1.250
	[cm]	4.445	1.270	0.762	3.175
9	[in]	1.000	0.500	0.340	0.500
	[cm]	2.540	1.270	0.864	1.270
10	[in]	1.373	0.510	0.300	0.883
	[cm]	3.487	1.295	0.762	2.242

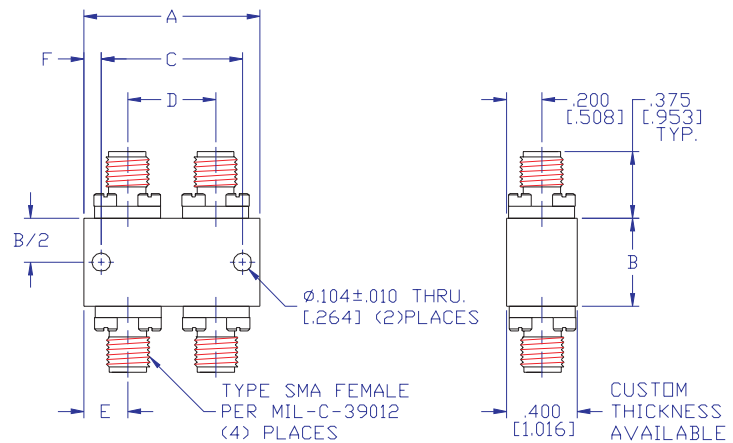
OUTLINE A

OUTLINE	A	B	C	D	E
1A	[in]	3.73	0.750	3.234	2.734
	[cm]	9.48	1.905	8.214	6.944
2A	[in]	2.326	0.750	1.826	1.326
	[cm]	5.908	1.905	4.638	3.368
3A	[in]	2.000	0.750	1.500	1.000
	[cm]	5.080	1.905	3.810	2.540
4A	[in]	1.350	0.862	0.375	0.810
	[cm]	3.429	2.189	0.953	2.057
5A	[in]	1.051	0.500	0.843	0.551
	[cm]	2.670	1.270	2.141	1.400
6A	[in]	1.020	0.500	0.820	0.520
	[cm]	2.591	1.270	2.083	1.321
7A	[in]	1.720	0.862	0.578	1.220
	[cm]	4.368	2.189	1.468	3.098
8A	[in]	2.760	0.750	2.260	1.760
	[cm]	7.010	1.905	5.740	4.470

SMA CONNECTORS



OUTLINE A



* Additional outline configurations available. Contact manufacturer for your custom design.

90° HYBRIDS

0.5 - 12.4 GHz, TYPE N CONNECTORS

Features:

- Miniature Size
- RF Shielded
- High Isolation
- Low VSWR



ELECTRICAL SPECIFICATIONS

Model Number	Freq. Range (GHz)	Coupling* or Thru Loss (dB)	Freq. Sensitivity (db)	Isolation (dB min.)	VSWR (max.)	Power Average (Watts)**	Peak (KW)	Outline
HB-1/NF	0.5-1	3.1 ± 0.6	± 0.5	25	1.20	50	3	1A
HB-2/NF	1-2	3.1 ± 0.6	± 0.5	28	1.20	50	3	1
HB-3/NF	2-4	3.1 ± 0.6	± 0.5	22	1.30	50	3	2
HB-4/NF	2.6-5.2	3.1 ± 0.6	± 0.5	20	1.35	50	3	2
HB-5/NF	4-8	3.2 ± 0.7	± 0.5	18	1.35	50	3	2
HB-6/NF	7-12.4	3.2 ± 0.7	± 0.5	18	1.40	50	3	2
HB-18/NF	7.2-8.5	3.4 ± 0.9	± 0.4	18	1.40	50	3	2
HB-19/NF	3.6-4.2	3.2 ± 0.3	± 0.4	20	1.35	50	3	2
HB-20/NF	5.8-6.4	3.2 ± 0.3	± 0.4	20	1.35	50	3	2
HB-21/NF	0.4-4.5	3.2 ± 0.3	± 0.4	18	1.45	50	3	1B
HB-29/NF	0.750-1.50	3.1 ± 0.6	± 0.3	25	1.30	30	3	2A
HB-34/NF	0.575-1.145	4.5 ± 1.0	± 1.0	22	1.40	1	3	4
HB-41/NF	0.824-1.825	3.4 ± 0.9	± 0.5	22	1.40	20	3	5
HB-45/NF	1.90-2.00	3.5 ± 0.3	± 0.4	22	1.40	50	3	2
HB-47/NF	0.80-2.00	3.5 ± 0.3	± 0.4	18	1.40	50	3	1

*Includes freq. sensitivity. Specifications subject to change without notice.

**Higher Power Handling available. Contact the manufacturer for further details

MECHANICAL OUTLINE - TYPE N CONNECTORS

OUTLINE	A	B	C	D	E
1 [in]	2.326	0.750	0.450	1.326	1.163
[cm]	5.908	1.905	1.143	3.368	2.954
2 [in]	2.000	0.750	0.450	1.000	1.000
[cm]	5.080	1.905	1.143	2540	2.540
3 [in]	1.000	0.500	0.300	0.500	0.500
[cm]	2.540	1.270	0.762	1.270	1.270
4 [in]	3.000	0.750	0.500	2.015	0.494
[cm]	7.620	1.905	1.270	5.118	1.254
5 [in]	2.502	0.750	0.500	1.324	0.589
[cm]	6.355	1.905	1.270	3.363	1.496

OUTLINE A

OUTLINE	A	B	C	D	E
1A [in]	3.734	0.750	3.234	2.734	0.500
[cm]	9.484	1.905	8.214	6.944	1.270
2A [in]	2.760	0.750	2.260	1.760	0.500
[cm]	7.010	1.905	5.740	4.470	1.270

OUTLINE B

OUTLINE	A	B	C	D	E
1B [in]	6.310	1.500	5.510	0.700	4.960
[cm]	16.02	5.715	13.99	1.778	12.98

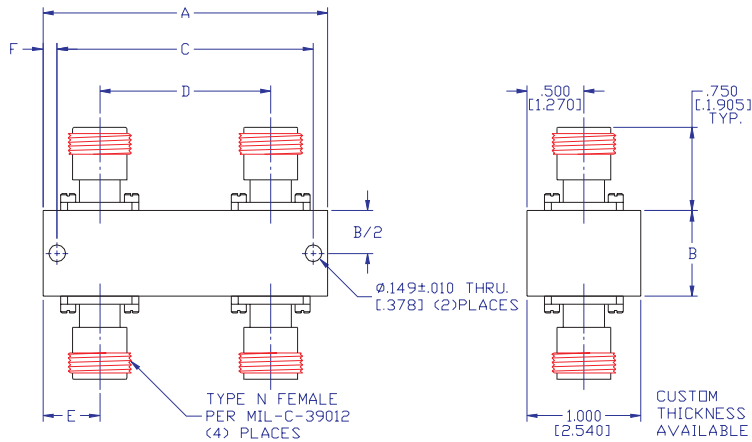
Mechanical Outline available on page 72

90° HYBRIDS

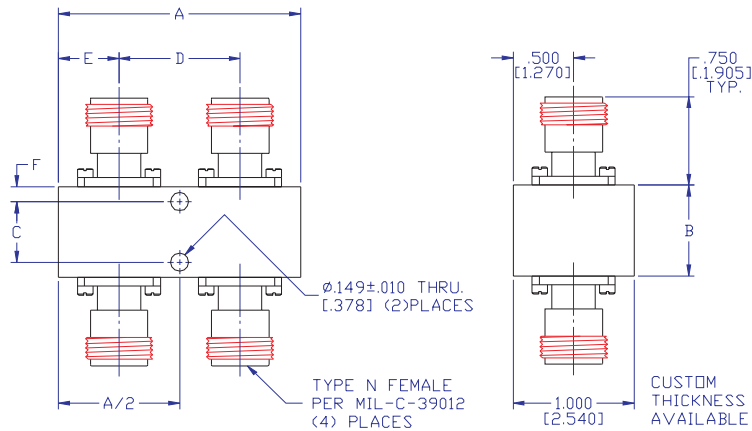
MECHANICAL OUTLINES*

TYPE N CONNECTORS

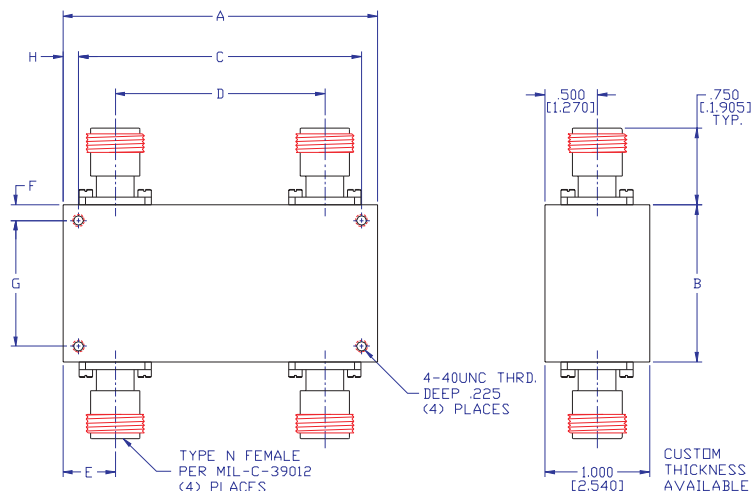
TYPE N CONNECTORS



OUTLINE A



OUTLINE B



* Additional outline configurations available. Contact manufacturer for your custom design.

180° 4 PORT HYBRID

10 MHz TO 1000 MHz, SMA AND TYPE N CONNECTORS

Features:

- Low Insertion Loss
- Excellent Amplitude and Phase Tracking
- Low VSWR
- Compact Size



ELECTRICAL SPECIFICATIONS

Model* Number	Frequency** Range (MHz)	Insertion Loss (dB Max)	Isolation (dB Min)	Amplitude Balance (± dB Max)	Phase Balance (± Deg Max)	VSWR Max	Figure	
							SMA	N
JL-1	10-20	0.8	20	0.2	2.0	1.30:1	1	2
JL-2	20-40	0.8	20	0.2	2.0	1.30:1	1	2
JL-3	40-80	1.0	20	0.6	2.0	1.30:1	1	2
JL-4	50-100	1.0	20	0.6	3.0	1.30:1	1	2
JL-5	60-120	1.0	20	0.6	3.0	1.30:1	1	2
JL-6	80-160	1.2	20	0.6	3.0	1.30:1	1	2
JL-7	100-200	1.2	20	0.75	3.0	1.35:1	1	2
JL-8	200-400	1.5	20	1.0	4.0	1.50:1	1	2
JL-9	500-1000	1.9	18	1.3	5.0	1.65:1	1	2

** Custom Design For Different Frequency Available, Contact Manufacture For Other Specifications.

* Unit with Type N Connector: Multiply VSWR by 1.05,
subtract 2.0 dB from Isolation. Add suffix /NF to model No.

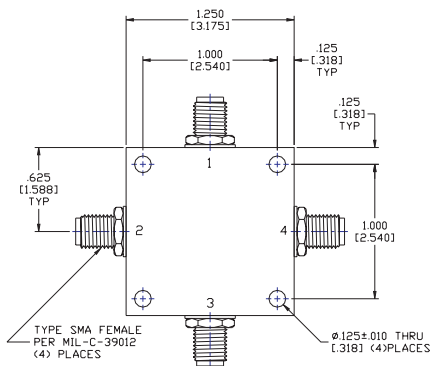


Figure 1

PORT CONFIGURATION			
0° Out	SUM	180° Out	DELTA
1	2	3	4

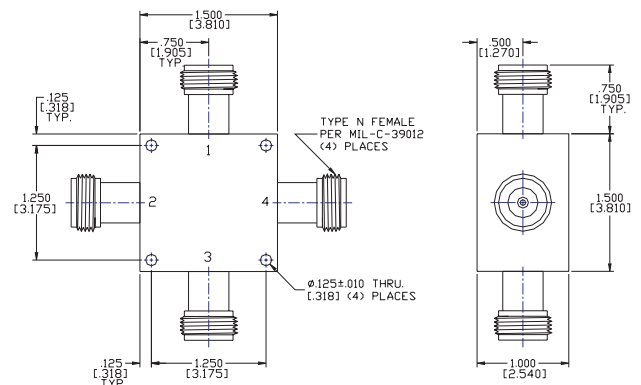


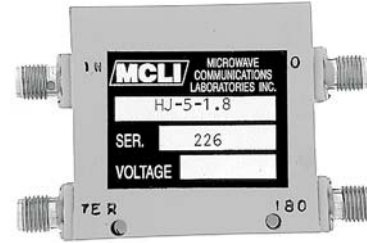
Figure 2

180° HYBRID COUPLERS

Features:

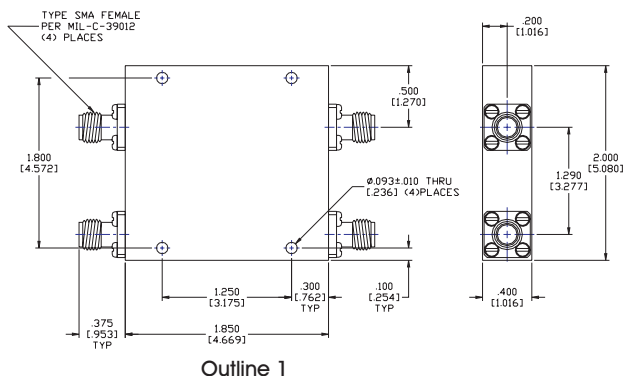
0.2 - 20 GHz, SMA CONNECTORS

- High Isolation
- Low VSWR
- Stripline Construction
- Excellent Amplitude and Phase Balance

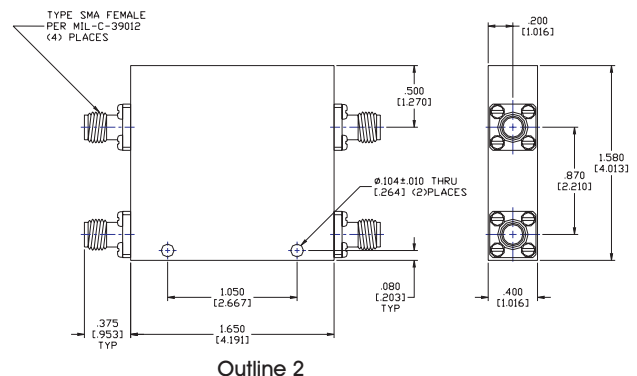


ELECTRICAL SPECIFICATIONS

Model Number	Frequency Range (GHz)	Nominal Coupling (dB)	Max. Dev. From Nominal Coupling (dB)	Insertion Loss Max (dB)	Isolation Min. (dB)	VSWR Max	Phase Balance (Deg) Max	Min. Power * Capability		Outline
								Peak (kW)	Ave (Watts)	
HJ-4	1.0-2.0	3	± 0.50	0.40	20	1.30	± 3.5	3	30	1
HJ-5	1.5-3.00	3	± 0.50	0.50	18	1.30	± 4.0	3	20	2
HJ-6	2.0-4.0	3	± 0.55	0.60	18	1.35	± 4.0	3	20	1A
HJ-7	3.0-5.0	3	± 0.55	0.70	17	1.40	± 4.0	3	20	2A
HJ-8	4.0-8.0	3	± 0.60	0.70	17	1.45	± 4.0	3	20	2A
HJ-9	7.0-11.0	3	± 0.60	0.70	16	1.45	± 4.0	3	20	3A
HJ-10	7.0-12.4	3	± 0.60	0.80	15	1.50	± 5.0	3	20	3A
HJ-11	8.0-16.0	3	± 0.80	0.80	13	1.60	± 6.0	2	20	3
HJ-12	12.0-18.0	3	± 0.80	0.80	12	1.70	± 7.5	2	10	3
HJ-13	7.2-8.5	3	± 0.60	0.60	16	1.50	± 4.0	3	20	3A
HJ-14	3.6-4.2	3	± 0.50	0.50	18	1.40	± 4.0	3	20	1A
HJ-15	5.8-6.4	3	± 0.50	0.50	18	1.40	± 4.0	3	20	2A
HJ-16	14.0-14.5	3	± 0.70	0.70	14	1.55	± 6.0	3	20	3
HJ-17	1.0-12.4	3	± 1.00	2.20	17	1.60	± 10.0	3	20	1B
HJ-18	1.0-18.0	3	± 1.00	2.90	15	1.70	± 12.0	3	20	1B
HJ-19	2.0-8.0	3	± 1.00	1.50	18	1.40	± 8.0	3	20	2B
HJ-20	2.0-18.0	3	± 1.00	1.70	15	2.00	± 14.0	3	20	3B
HJ-21	4.0-12.4	3	± 1.00	1.00	17	1.60	± 8.0	3	20	1C
HJ-22	6.0-20.0	3	± 1.00	1.30	15	1.80	± 10.0	3	20	1D
HJ-25	6.0-18.0	3	± 0.70	0.70	14	2.20	± 15.0	3	20	4



Outline 1

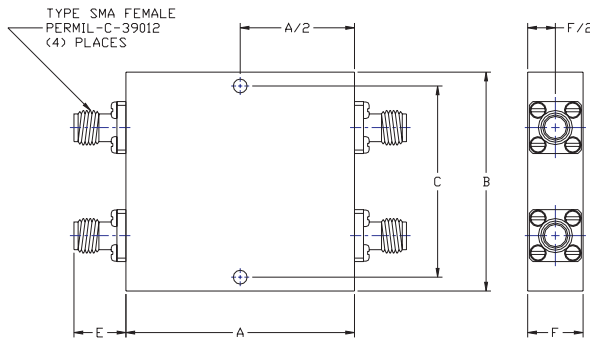


Outline 2

See pages 75 and 76 for outlines 3,4, A, B, C, and D

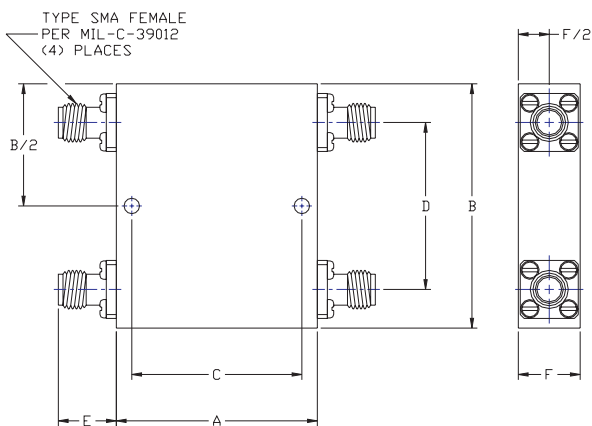
180° HYBRID COUPLERS

MECHANICAL OUTLINES*



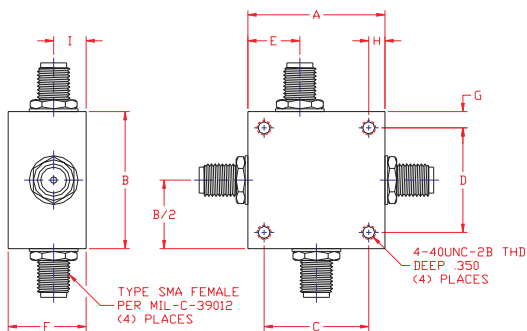
Outline 3

OUTLINE	A	B	C	D	E	F
3 [in]	1.250	1.250	0.750	0.620	0.350	0.500
[cm]	3.175	3.175	1.905	1.574	0.889	1.270



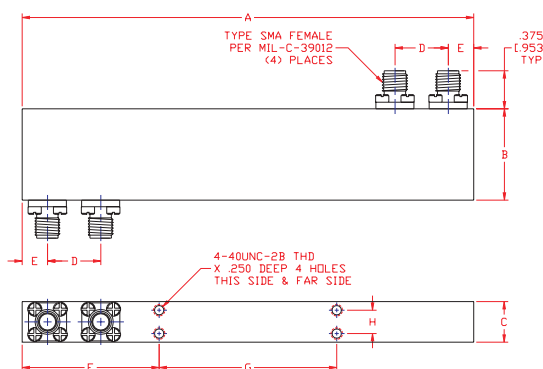
Outline 4

OUTLINE	A	B	C	D	E	F
4 [in]	2.200	1.930	1.950	0.750	0.350	0.370
[cm]	5.588	4.902	4.953	1.905	0.889	0.940



Outline A

OUTLINE	A	B	C	D	E	F	G	H
1A [in]	2.035	2.035	1.785	1.785	0.500	0.600	0.125	0.125
[cm]	5.169	5.169	4.533	4.533	1.270	1.524	0.318	0.318
2A [in]	1.250	1.250	1.000	1.000	0.400	0.595	0.125	0.125
[cm]	3.175	3.175	2.540	2.540	1.016	1.511	0.318	0.318
3A [in]	4.70	3.00	2.700	0.149	2.700	2.700	2.700	2.700
[cm]	8.89	3.175	6.858	0.378	6.858	6.858	6.858	6.858



Outline B

OUTLINE	A	B	C	D	E	F	G	H
1B [in]	5.500	1.350	0.400	0.525	0.250	1.750	2.000	0.230
[cm]	13.97	3.429	1.016	1.333	0.635	4.445	5.080	0.584
2B [in]	3.260	1.350	0.400	0.525	0.250	1.270	1.000	0.230
[cm]	8.280	3.429	1.016	1.333	0.635	3.225	2.540	0.584
3B [in]	3.040	1.350	0.400	0.525	0.250	1.270	1.000	0.230
[cm]	8.89	3.429	1.016	1.333	0.635	3.225	2.540	0.584

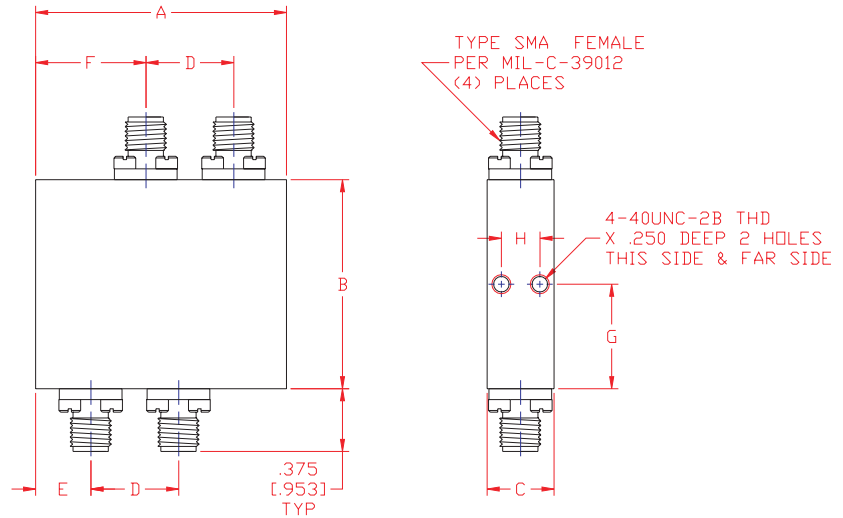
*Outlines C and D continued on page 76.

180° HYBRID COUPLERS

MECHANICAL OUTLINES

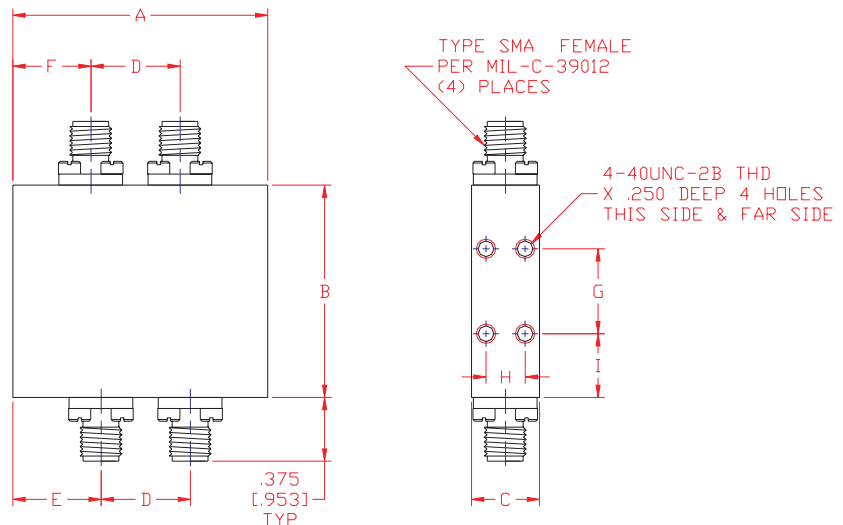
OUTLINE	A	B	C	D	E	F	G	H
1C [in]	1.900	1.250	0.400	0.525	0.520	0.860	0.625	0.230
[cm]	4.826	3.175	1.016	1.333	1.320	2.184	1.587	0.584

Outline C



OUTLINE	A	B	C	D	E	F	G	H	I
1D [in]	1.500	1.250	0.400	0.525	0.520	0.460	0.500	0.230	0.380
[cm]	4.826	3.175	1.016	1.333	1.320	2.184	1.587	0.584	0.965

Outline D



WAVEGUIDE TO COAXIAL ADAPTORS

TYPE SMA AND TYPE N CONNECTORS

Features:

- Full Waveguide Frequency Range
- 1.05 VSWR Over 15% Bandwidth
- Units Pressurized To 30 PSI
- Standard Exterior Finish Is Gray Semi-Gloss Polyurethane Enamel
- Color 26440 Per FED-STD-595



ELECTRICAL SPECIFICATIONS

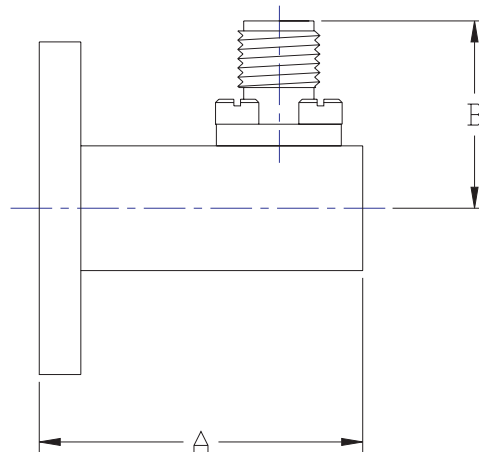
MODEL NUMBER	FREQ. RANGE (GHz)	EIA DESIGN		VSWR		Insertion Loss		DIMENSION			
		SMA	TYPE N	SMA	TYPE N	SMA	TYPE N	SMA		TYPE N	
								A	B	A	B
WC1-C-X	1.12-1.70	WR650	WR650	1.25	1.25	0.10	0.10	6.00	2.20	6.00	2.60
WC2-C-X	1.70-2.60	WR430	WR430	1.25	1.25	0.10	0.10	4.00	1.53	4.00	2.01
WC3-C-X	2.60-3.95	WR284	WR284	1.25	1.25	0.10	0.10	2.50	1.125	2.50	1.61
WC4-C-X	3.30-4.90	WR229	WR229	1.25	1.25	0.10	0.10	2.25	1.011	2.25	1.50
WC5-C-X	3.95-5.85	WR187	WR187	1.25	1.25	0.10	0.10	2.57	1.125	2.25	1.36
WC6-C-X	4.90-7.05	WR159	WR159	1.25	1.25	0.10	0.10	2.04	0.945	2.25	1.32
WC7-C-X	5.85-8.20	WR137	WR137	1.25	1.25	0.10	0.10	1.70	1.00	2.00	1.23
WC8-C-X	7.05-10.0	WR112	WR112	1.25	1.25	0.10	0.10	1.28	0.875	1.88	1.17
WC9-C-X	8.20-12.4	WR90	WR90	1.25	1.25	0.15	0.15	1.22	0.830	1.63	1.11
WC10-C-X	10.0-15.0	WR75	WR75	1.25	1.25	0.15	0.15	1.30	0.70	1.63	1.10
WC11-C-X	12.4-18.0	WR62	WR62	1.25	1.25	0.18	0.20	1.31	0.810	1.63	1.10
WC12-C-X	18.0-26.5	WR42	N/A	1.25	N/A	0.20	N/A	1.25	0.70	N/A	N/A
WC13-C-X	26.5-40.0	WR28	N/A	1.25	N/A	0.22	N/A	1.25	0.70	N/A	N/A

The Suffix "C" is to determine the connectors types:
Replace "C" with "S" for SMA; "N" for Type N

The Suffix "X" is to determine the Flange
Replace "X" with "1" for CPRF; "2" for COVER

Example: WC9-S-2
WR90 Size, SMA Connector, COVER Flange

**Custom Design for High Power Output Available



COAXIAL TERMINATIONS

Features:

- 50 Ohm Impedance
- Low VSWR
- Operating Temperature from -55° to +125° C
- Gold Plating Available



ELECTRICAL SPECIFICATIONS

MODEL NUMBER	FREQUENCY RANGE (GHz)	CONNECTOR TYPE	VSWR MAX.	POWER* HANDLING	OUTLINE
TSM-1	DC-12	SMA MALE	1.15:1	1 WATT	1
TSM-2	DC-18	SMA MALE	1.15:1	1 WATT	1
TSM-3	DC-12	SMA MALE	1.25:1	2 WATTS	1
TSM-4	DC-18	SMA MALE	1.25:1	2 WATTS	1
TSM-5	DC-8	SMA MALE	1.20:1	5 WATTS	2
TSM-6	DC-12	SMA MALE	1.25:1	5 WATTS	2
TSM-7	DC-18	SMA MALE	1.30:1	5 WATTS	2
TSM8	DC-8	SMA MALE	1.20:1	15 WATTS	3
TSM-9	DC-12	SMA MALE	1.25:1	15 WATTS	3
TSM-10	DC-18	SMA MALE	1.30:1	15 WATTS	3
TNF-1	DC-12	TYPE N FEMALE	1.15:1	5 WATTS	4
TNF-2	DC-18	TYPE N FEMALE	1.25:1	5 WATTS	4
TNM-1	DC-12	TYPE N MALE	1.15:1	5 WATTS	4
TNM-2	DC-18	TYPE N MALE	1.25:1	5 WATTS	4
TNM-3	DC-4	TYPE N MALE	1.15:1	10 WATTS	5
TNM-4	DC-8	TYPE N MALE	1.20:1	10 WATTS	5
TNM-5	DC-12	TYPE N MALE	1.25:1	10 WATTS	5
TNM-6	DC-18	TYPE N MALE	1.30:1	10 WATTS	5
TNM-7	DC-4	TYPE N MALE	1.15:1	15 WATTS	6
TNM-8	DC-8	TYPE N MALE	1.20:1	15 WATTS	6
TNM-9	DC-12	TYPE N MALE	1.30:1	15 WATTS	6
TNM-10	DC-18	TYPE N MALE	1.30:1	15 WATTS	6
TNM-11	DC-4	TYPE N MALE	1.15:1	25 WATTS	7
TNM-12	DC-8	TYPE N MALE	1.20:1	25 WATTS	7
TNM-13	DC-12	TYPE N MALE	1.30:1	25 WATTS	7
TNM-14	DC-18	TYPE N MALE	1.30:1	25 WATTS	7
TTM-1	DC-12	TNC MALE	1.15:1	5 WATTS	8
TTM-2	DC-18	TNC MALE	1.25:1	5 WATTS	8
TTF-1	DC-12	TNC FEMALE	1.15:1	5 WATTS	8
TTF-2	DC-18	TNC FEMALE	1.25:1	5 WATTS	8
TBM-1	DC-12	BNC MALE	1.15:1	5 WATTS	9
TBM-2	DC-18	BNC MALE	1.25:1	5 WATTS	9
TBF-1	DC-12	BNC FEMALE	1.15:1	5 WATTS	9
TBF-2	DC-18	BNC FEMALE	1.25:1	5 WATTS	9

- Peak Power* : 1 KWatt
Impedance : 50 Ohms
- Power Rating : The power is from -65 C to +125 C, case temperature derated linear to zero at 150 C.
- Material : Thin film, 1 watt model is Aluminum, all others are Beryllium
- Connector Interface: Conform to MIL-C-39012
- Connector Body : SMA - passivated Stainless Steel
- TNC, N, BNC : Nickel Plated Brass
- BNC Power Rate up to 20 Watts CW, 6 KW peak.

Figure 1

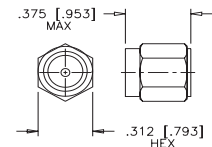


Figure 2

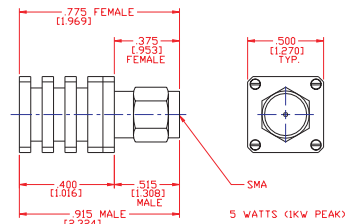
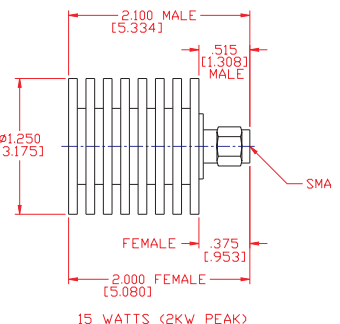


Figure 3



* Higher Power Handling Available, Contact Manufacturer for Custom Needs.

Mechanical Outlines 4-9 are available on page 79

COAXIAL TERMINATIONS

MECHANICAL OUTLINES

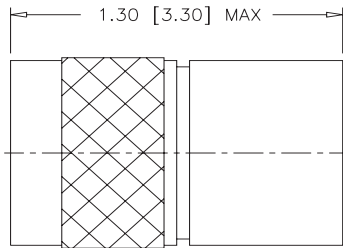


Figure 4

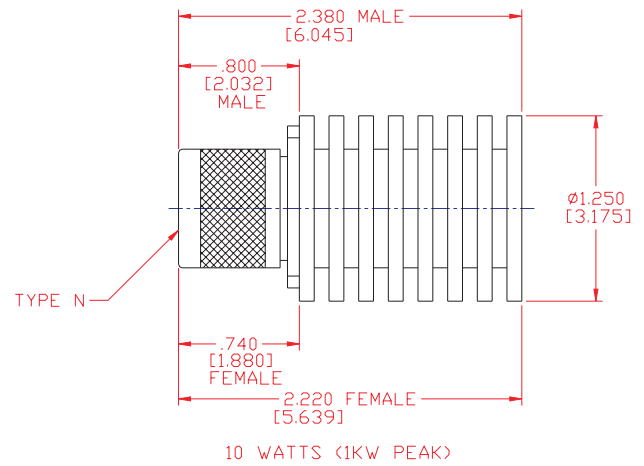


Figure 5

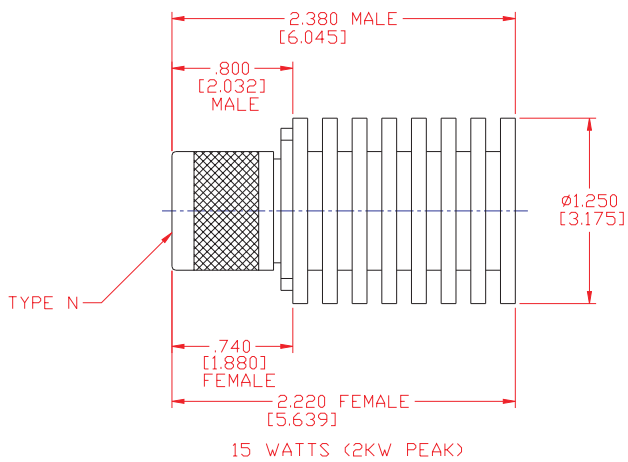


Figure 6

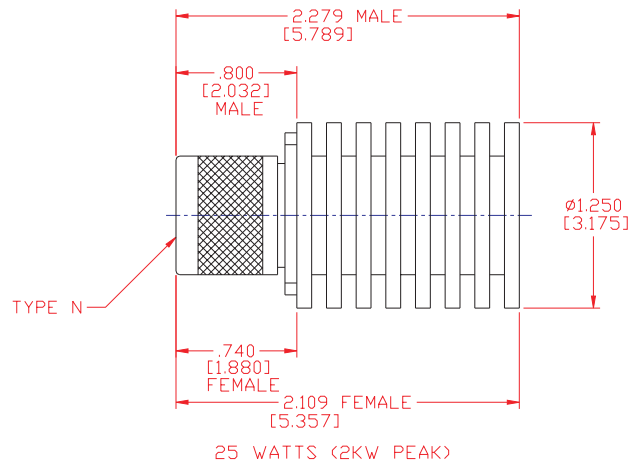


Figure 7

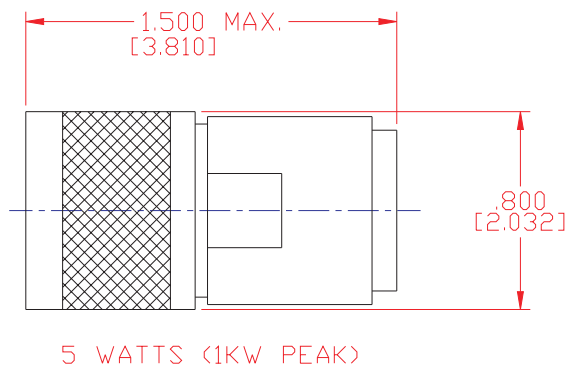


Figure 8

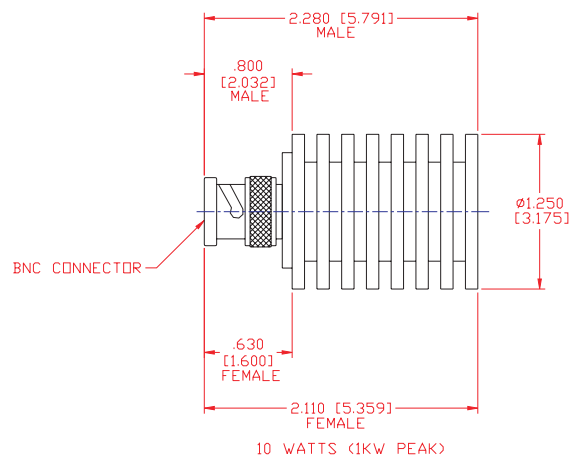


Figure 9

WAVEGUIDE TERMINATIONS

LOW AND MEDIUM POWER APPLICATIONS

Features:

- Full Waveguide Frequency Range
- 1.05 VSWR Over 15% Bandwidth
- Units Pressurized To 30 PSI
- Standard Exterior Finish Is Gray Semi-Gloss Polyurethane Enamel
- Color 26440 Per FED-STD-595



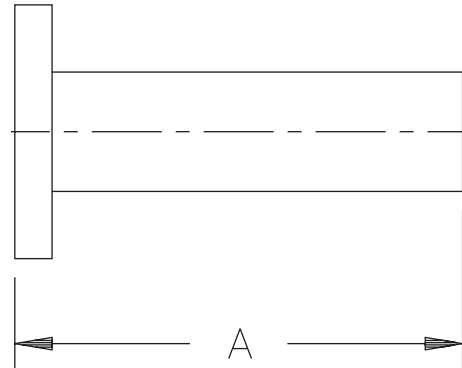
ELECTRICAL SPECIFICATIONS

MODEL NUMBER	FREQ. RANGE (GHz)	EIA DESIGN	VSWR	Standard Flange	Power Watts (Avg.)	DIMENSION "A" [inches / centimeter]
WT-1	1.12-1.7	WR650	1.05	CPRF (2)	25	12.5/31.75
WT-2	1.7-2.6	WR430	1.05	CPRF (2)	15	11.0/27.94
WT-3	2.20-3.30	WR340	1.05	CPRF (2)	12	10.75/27.30
WT-4	2.6-3.95	WR284	1.05	COVER (4)	10	10.50/26.67
WT-5	3.3-4.9	WR229	1.05	CPRF (2)	10	7.50/19.05
WT-6	3.95-5.85	WR187	1.05	COVER (4)	8	6.25/15.87
WT-7	4.9-7.05	WR159	1.05	CPRF (2)	7	6.00/15.24
WT7-8	5.85-8.2	WR137	1.05	CPRF (2)	6	5.50/13.97
WT-9	7.05-10	WR112	1.05	COVER (4)	4	5.00/12.70
WT-10	7.05-10	WR102	1.05	COVER (4)	3	4.00/10.16
WT-11	8.2-12.4	WR90	1.05	COVER (4)	4	4.00/10.16
WT-12	10-15	WR75	1.05	COVER (4)	2	4.00/10.16
WT-13	12.4-18	WR62	1.05	COVER (4)	1.5	4.00/10.16
WT-14	18-26.5	WR42	1.05	COVER (4)	0.5	2.50/6.35
WT-15	26.5-40	WR28	1.05	COVER (4)	0.5	2.00/5.08
WT-16	33.0-50.0	WR22	1.05	COVER (4)	0.5	1.50/3.81

(*) To be determined "L" is low power "M" is medium power

EXAMPLE: Frequency is 5.85-8.2, Medium power
 Flange is Choke, material is Aluminum,
 Finish Iridite.
 ORDER PART: WT7-M-4-A-1

FLANGE	MAT'L	FINISH
1. CPRF	A. ALUMINUM	1. IRIDITE
2. CPRG	B. BRASS	2. SILVER
3. COVER		3. SPECIAL
4. CHOKE		
5. SPECIAL		

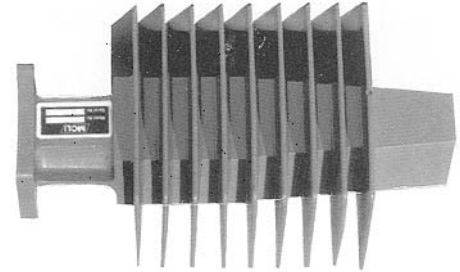


WAVEGUIDE TERMINATIONS

HIGH POWER APPLICATIONS

Features:

- Full Waveguide Frequency Range
- 1.10 VSWR Over 15% Bandwidth
- Units Pressurized To 30 PSI
- Standard Exterior Finish Is Gray Semi-Gloss Polyurethane Enamel
- Color 26440 Per FED-STD-595

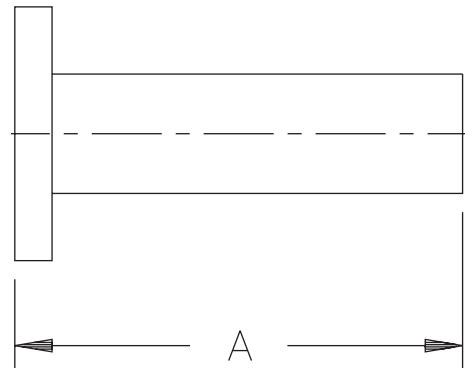


ELECTRICAL SPECIFICATIONS

MODEL NUMBER	FREQ. RANGE (GHz)	EIA DESIGN	VSWR	Standard Flange	Power Watts (Avg.)	DIMENSION "A" [inches / centimeter]
WM-1	1.12-1.7	WR650	1.10	CPRF (2)	1500	13.0/33.02
WMT-2	1.7-2.6	WR430	1.10	CPRF (2)	1200	12.0/30.48
WM-3	2.20-3.30	WR340	1.10	CPRF (2)	1200	12.0/30.48
WM-4	2.6-3.95	WR284	1.10	COVER (4)	1200	11.0/13.54
WM-5	3.3-4.9	WR229	1.10	CPRF (2)	1000	9.75/24.76
WM-6	3.95-5.85	WR187	1.10	COVER (4)	750	8.38/21.28
WM-7	4.9-7.05	WR159	1.10	CPRF (2)	625	8.00/20.32
WM-8	5.85-8.2	WR137	1.10	CPRF (2)	500	8.00/20.32
WM-9	7.05-10	WR112	1.10	COVER (4)	425	7.00/17.78
WM-10	7.05-10	WR102	1.10	COVER (4)	325	6.50/16.54
WM-11	8.2-12.4	WR90	1.10	COVER (4)	225	5.50/13.97
WM-12	10-15	WR75	1.10	COVER (4)	200	4.50/11.43
WM-13	12.4-18	WR62	1.10	COVER (4)	100	3.25/8.255
WM-14	18-26.5	WR42	1.10	COVER (4)	100	3.50/8.890
WM-15	26.5-40	WR28	1.10	COVER (4)	75	4.00/10.16
WM-16	33.0-50.0	WR22	1.10	COVER (4)	25	2.50/6.350

EXAMPLE: Frequency is 5.85-8.2, Medium power
 Flange is Choke, material is Aluminum,
 Finish Iridite.
 ORDER PART: WM-8-4-A-1

FLANGE	MAT'L	FINISH
1. CPRF	A. ALUMINUM	1. IRIDITE
2. CPRG	B. BRASS	2. SILVER
3. COVER		3. SPECIAL
4. CHOKE		
5. SPECIAL		

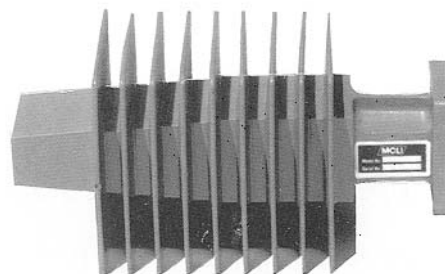


WAVEGUIDE TERMINATIONS

VERY HIGH POWER APPLICATIONS

Features:

- Full Waveguide Frequency Range
- 1.10 VSWR Over 15% Bandwidth
- Units Pressurized To 30 PSI
- Standard Exterior Finish Is Gray Semi-Gloss Polyurethane Enamel
- Color 26440 Per FED-STD-595



ELECTRICAL SPECIFICATIONS

MODEL NUMBER	FREQ. RANGE (GHz)	EIA DESIGN	VSWR	Standard Flange	Power Watts (Avg.)	DIMENSIONS (inches/centimeters)		
						A	B	C
WL-1	1.12-1.7	WR650	1.10	CPRF (2)	2500	13.0/33.02	8.00/20.32	8.00/20.32
WL-2	1.7-2.6	WR430	1.10	CPRF (2)	2500	9.00/5.08	6.00/15.24	6.00/15.24
WL-3	2.20-3.30	WR340	1.10	CPRF (2)	2500	12.0/30.48	6.00/15.24	6.00/15.24
WL-4	2.6-3.95	WR284	1.10	COVER (4)	2400	12.0/30.48	6.00/15.24	6.00/15.24
WL-5	3.3-4.9	WR229	1.10	CPRF (2)	2000	9.75/24.76	5.00/12.70	5.00/12.70
WL-6	3.95-5.85	WR187	1.10	COVER (4)	1500	9.00/22.86	4.50/11.43	4.50/11.43
WL-7	4.9-7.05	WR159	1.10	CPRF (2)	1300	9.00/22.86	4.50/11.43	4.50/11.43
WL-8	5.85-8.2	WR137	1.10	CPRF (2)	1000	8.50/21.59	4.00/10.16	4.00/10.16
WL-9	7.05-10	WR112	1.10	COVER (4)	850	8.00/20.32	4.00/10.16	4.00/10.16
WL-10	7.05-10	WR102	1.10	COVER (4)	500	6.50/16.51	3.50/8.890	3.50/8.890
WL-11	8.2-12.4	WR90	1.10	COVER (4)	500	5.50/13.97	3.50/8.890	3.50/8.890
WL-12	10-15	WR75	1.10	COVER (4)	350	5.00/12.70	3.50/8.890	3.50/8.890
WL-13	12.4-18	WR62	1.10	COVER (4)	250	4.50/11.43	3.00/7.62	3.00/7.62
WL-14	18-26.5	WR42	1.10	COVER (4)	250	4.50/11.43	2.25/5.715	2.25/5.715
WL-15	26.5-40	WR28	1.10	COVER (4)	175	4.00/10.16	2.00/5.080	2.00/5.080
WL-16	33.0-50.0	WR22	1.10	COVER (4)	100	3.00/7.620	1.50/3.810	1.50/3.810

EXAMPLE: Frequency is 5.85-8.2, Medium power
 Flange is Choke, material is Aluminum,
 Finish Iridite.
 ORDER PART: WL-8-4-A-1

FLANGE

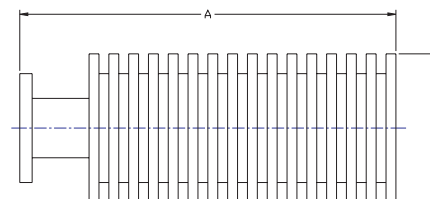
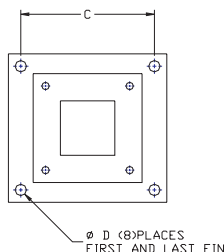
1. CPRF
2. CPRG
3. COVER
4. CHOKE
5. SPECIAL

MAT'L

- A. ALUMINUM
- B. BRASS

FINISH

1. IRIDITE
2. SILVER
3. SPECIAL



COAXIAL ATTENUATORS

Features:

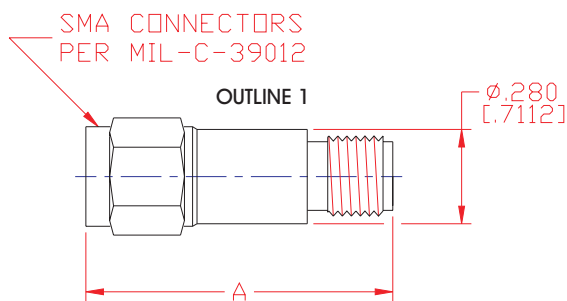
- 50 Ohm Impedance
- Low VSWR
- -65°C to +125°C
- Connector interface conforms MIL-C-39012



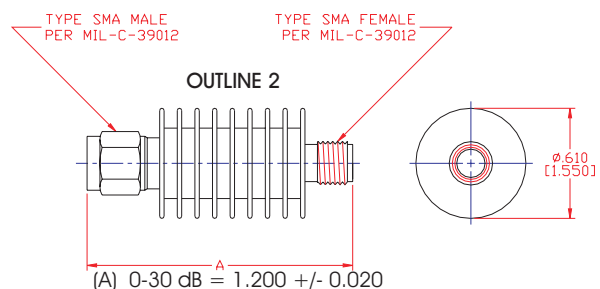
ELECTRICAL SPECIFICATIONS

MODEL NUMBER	FREQUENCY RANGE (GHz)	CONNECTOR TYPE	VSWR MAX.	POWER HANDLING	Attenuation Accuracy (dB to Attenuation dB)	Figure
FAS-1	DC-4	SMA	1.15:1	2 WATTS	0.3 to 6, 0.5 to 20, 0.75 to 30	1
FAS-2	DC-8	SMA	1.20:1	2 WATTS	0.3 to 6, 0.5 to 20, 0.75 to 30	1
FAS-3	DC-12	SMA	1.25:1	2 WATTS	0.3 to 6, 0.5 to 20, 0.75 to 30	1
FAS-4	DC-18	SMA	1.35:1	2 WATTS	0.3 to 6, 0.5 to 20, 0.75 to 30	1
FAS-5	DC-4	SMA	1.15:1	5 WATTS	0.3 to 6, 0.5 to 20, 0.75 to 30	2
FAS-6	DC-8	SMA	1.20:1	5 WATTS	0.3 to 6, 0.5 to 20, 0.75 to 30	2
FAS-7	DC-12	SMA	1.25:1	5 WATTS	0.3 to 6, 0.5 to 20, 0.75 to 30	2
FAS-8	DC-18	SMA	1.35:1	5 WATTS	0.3 to 6, 0.5 to 20, 0.75 to 30	2
FAS-9	DC-6	SMA	1.20:1	10 WATTS	0.3 to 6, 0.5 to 20, 0.75 to 30	3
FAS-10	DC-12	SMA	1.30:1	10 WATTS	0.3 to 6, 0.5 to 20, 0.75 to 30	3
FAS-11	DC-18	SMA	1.40:1	10 WATTS	0.5 to 6, 0.7 to 20, 1.00 to 30	3
FAS-12	DC-26.5	SMA	1.40:1	2 WATTS	0.4 to 6, 0.6 to 20, 0.80 to 30	4
FAS-13	DC-26.5	SMA	1.45:1	10 WATTS	0.75 to 6, 1.0 to 10, 1.5 to 30	5
FAN-1	DC-2	TYPE N	1.15:1	10 WATTS	0.3 to 30	6
FAN-2	DC-4	TYPE N	1.25:1	10 WATTS	0.5 to 30	6
FAN-3	DC-6	TYPE N	1.35:1	10 WATTS	0.75 to 30	6
FAN-4	DC-2	TYPE N	1.15:1	20 WATTS	0.3 to 30	7
FAN-5	DC-4	TYPE N	1.25:1	20 WATTS	0.5 to 30	7
FAN-6	DC-6	TYPE N	1.35:1	20 WATTS	0.75 to 30	7
FAN-7	DC-3	TYPE N	1.20:1	50 WATTS	0.75 to 30	8
FAN-8	DC-5	TYPE N	1.30:1	50 WATTS	0.75 to 30	8
FAN-9	DC-1.5	TYPE N	1.15:1	100 WATTS	0.75 to 30	9
FAN-10	DC-2.0	TYPE N	1.20:1	150 WATTS	0.75 to 30	10

HIGHER POWER HANDLING AVAILABLE, CONTACT MANUFACTURER FOR CUSTOM NEEDS



(A) 0-12 dB = 0.855 +/- .020
13-30 dB = 0.980 +/- .025

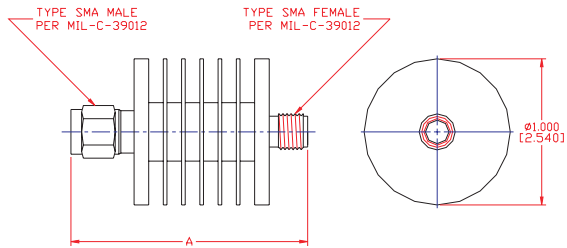


Mechanical Outlines 3-10 are available on page 84

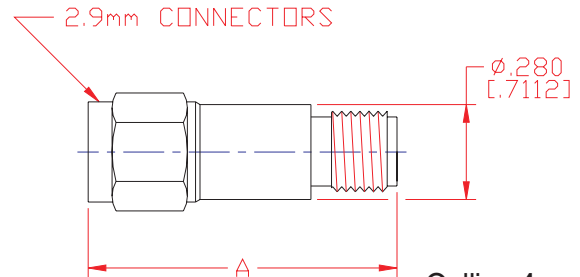
COAXIAL ATTENUATORS

TYPE SMA AND TYPE N CONNECTORS

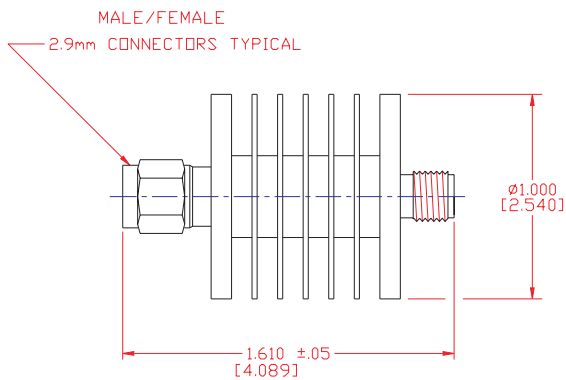
2 - 150 WATTS



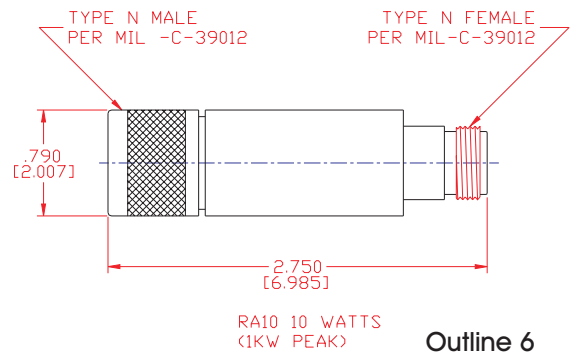
Outline 3



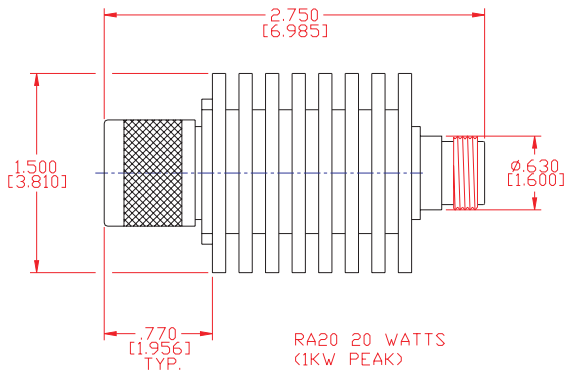
Outline 4



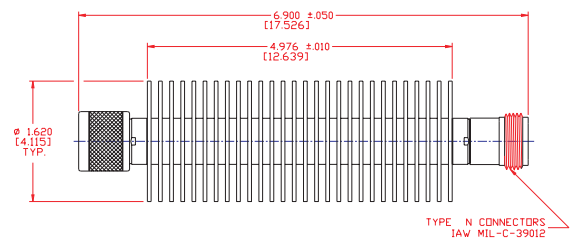
Outline 5



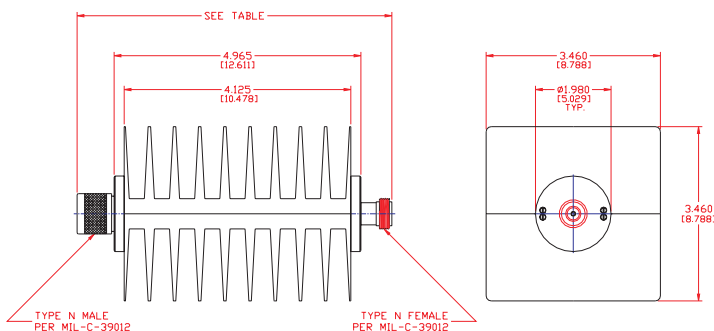
Outline 6



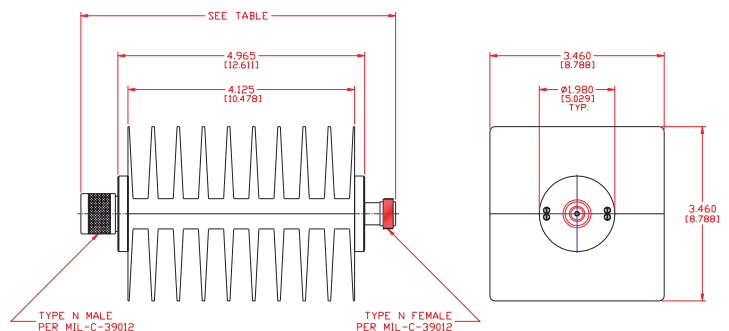
Outline 7



Outline 8



Outline 9



Outline 10

CONTINUOUSLY VARIABLE ATTENUATORS

1.0 - 18.5 GHz, FREQUENCY FLAT MODELS

Features:

- Direct Reading of Attenuation Value
- Low VSWR, Low Insertion Loss
- Excellent Linearity, Monotonicity
- Frequency Flat Models



ELECTRICAL SPECIFICATIONS

Model Number*	Frequency Range (GHz)	Attenuation Range (dB)	Insertion Loss (dB Max)	VSWR (Max.)	Attenuation Vs. Frequency ($\pm$ dB)	Outline	
						SMA	SMA W/DIAL
CA1-10	3.0-4.0	10	0.5	1.5:1	1.50	1	1A
CA2-20	3.6-4.3	20	0.5	1.5:1	0.50	1	1A
CA3-20	5.4-5.9	20	0.5	1.5:1	1.00	1	1A
CA4-20	5.9-6.5	20	0.5	1.5:1	1.00	1	1A
CA5-30	7.2-7.8	30	0.5	1.5:1	0.50	1	1A
CA6-10	4.0-8.0	20	0.5	1.5:1	2.00	1	1A
CA6-20	4.0-8.0	20	0.5	1.5:1	1.00	1	1A
CA7-30	7.2-8.4	30	0.5	1.5:1	0.50	1	1A
CA8-10	12.4-18.0	10	0.5	1.5:1	1.00	1	1A
CA8-20	12.4-18.0	20	0.5	1.5:1	1.00	1	1A
CA9-30	7.9-8.4	30	0.5	1.5:1	0.75	1	1A
CA10-10	8.0-12.4	10	0.5	1.5:1	1.00	1	1A
CA10-20	8.0-12.4	20	0.5	1.5:1	1.00	1	1A
CA11-10	8.0-18.0	10	1.0	1.5:1	1.50	1	1A
CA12-20	8.5-10.5	20	0.5	1.5:1	1.00	1	1A
CA13-20	10.5-12.4	20	0.8	1.5:1	0.80	1	1A
CA14-10	1.0-1.3	10	0.5	1.5:1	1.50	1	1A
CA15-10	1.5-2.0	10	0.5	1.5:1	1.50	1	1A
CA16-10	2.0-4.0	10	0.5	1.5:1	1.50	1	1A
CA16-20	2.0-4.0	20	0.5	1.5:1	1.50	1	1A
CA17-20	3.6-6.5	20	0.5	1.5:1	0.80	1	1A
CA18-20	2.8-6.5	20	0.5	1.5:1	0.50	1	1A
CA19-15	1.80-2.15	15	0.5	1.5:1	1.00	1	1A
CA20-20	10.7-12.7	20	0.5	1.5:1	0.80	1	1A
CA21-20	10.7-14.5	20	0.5	1.5:1	1.00	1	1A
CA22-20	17.0-18.6	20	0.5	1.5:1	1.00	1	1A
CA29-10	1.5-1.7	10	0.5	1.5:1	1.00	1	1A
CA35-10	3.4-4.2	10	0.5	1.5:1	1.00	1	1A
CA49-25	1.5-2.0	25	0.5	1.5:1	1.00	1	1A

General Specifications

- Impedance 50 Ohms
- Connector SMA Female Standard; Option: Type N, TNC
- Shaft: Locking Screwdriver adjust or panel mount furnished
- Attenuation vs. Frequency: $\pm$ 10% of Max. Attenuation

* ADD "/D" FOR TURN DIAL OPTION

- Power Rating 5 Watts Average, 3 KW peak
- Environment MIL-A-3933

Mechanical Outline available on page 87

CONTINUOUSLY VARIABLE ATTENUATORS

0.8 - 26.5 GHz, LEVEL ADJUST MODELS

Features:

- Broad Frequency Range
- Low VSWR, Low Insertion Loss
- Attenuation up to 60 dB
- Level Adjust Models



ELECTRICAL SPECIFICATIONS

Model Number**	Frequency Range (GHz)	Attenuation Range (dB)	Insertion Loss (dB Max)	VSWR (Max.)	Attenuation Vs. Frequency ($\pm$ dB)*	Outline	
						SMA	SMA W/DIAL
CVA1-15	0.8-1.6	15	0.5	1.5:1	N/A	1	1A
CVA2-15	0.9-1.75	15	0.5	1.5:1	N/A	1	1A
CVA3-15	1.5-2.0	15	0.5	1.5:1	N/A	1	1A
CVA4-20	2.0-4.0	20	0.5	1.5:1	N/A	1	1A
CVA5-20	2.0-4.2	10	0.5	1.5:1	N/A	1	1A
CVA5-20	2.0-4.2	20	0.5	1.5:1	N/A	1	1A
CVA6-20	3.7-4.2	20	0.5	1.5:1	N/A	1	1A
CVA6-30	3.7-4.2	30	0.5	1.5:1	N/A	1	1A
CVA7-30	3.6-4.3	10	0.5	1.5:1	N/A	1	1A
CVA8-30	4.0-8.0	30	0.5	1.5:1	N/A	1	1A
CVA9-40	6.0-11.0	40	0.5	1.5:1	N/A	1	1A
CVA10-40	8.0-12.4	40	0.5	1.5:1	N/A	1	1A
CVA11-30	7.9-12.7	30	0.5	1.5:1	N/A	1	1A
CVA12-30	11.7-18.0	30	1.0	1.5:1	N/A	1	1A
CVA13-40	8.0-18.0	40	0.5	1.5:1	N/A	1	1A
CVA14-20	14.0-26.5	20	0.8	1.5:1	N/A	1	1A
CVA15-20	0.9-8.0	20	0.5	1.5:1	N/A	1	1A
CVA16-20	1.0-4.0	20	0.5	1.5:1	N/A	1	1A
CVA17-30	1.0-8.0	30	0.5	1.5:1	N/A	1	1A
CVA18-20	2.0-8.0	20	0.5	1.5:1	N/A	1	1A
CVA19-10	2.0-18.0	10	0.5	1.5:1	N/A	1	1A
CVA20-20	4.0-12.4	20	0.5	1.5:1	N/A	1	1A
CVA21-20	4.0-18.0	20	0.5	1.5:1	N/A	1	1A
CVA22-30	6.0-18.0	30	0.5	1.5:1	N/A	1	1A
CVA23-60	6.0-18.0	60	0.5	1.5:1	N/A	1	1A

*Please see page 85 for Frequency Flat Models

General Specifications

- Impedance 50 Ohms
- Connector SMA Female Standard; Option: Type N, TNC
- Shaft: Locking Screwdriver adjust or panel mount furnished
- Attenuation vs. Frequency: $\pm$ 10% of Max. Attenuation

* * ADD "/D" FOR TURN DIAL OPTION

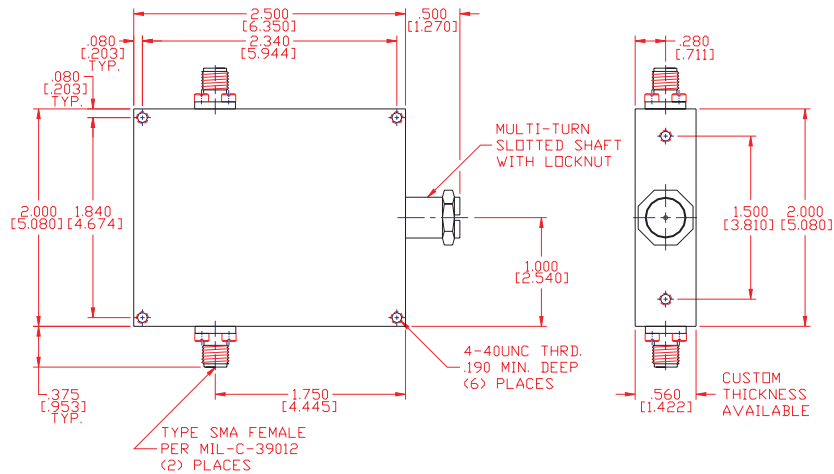
- Power Rating 5 Watts Average, 3 KW peak
- Environment MIL-A-3933

Mechanical Outline available on page 87

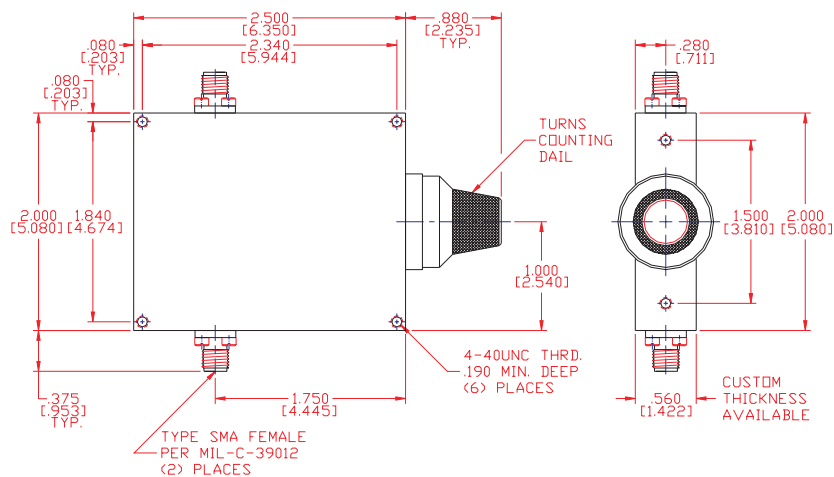
CONTINUOUSLY VARIABLE ATTENUATORS

FREQUENCY FLAT/LEVEL ADJUST MODELS

MECHANICAL OUTLINES



Outline 1

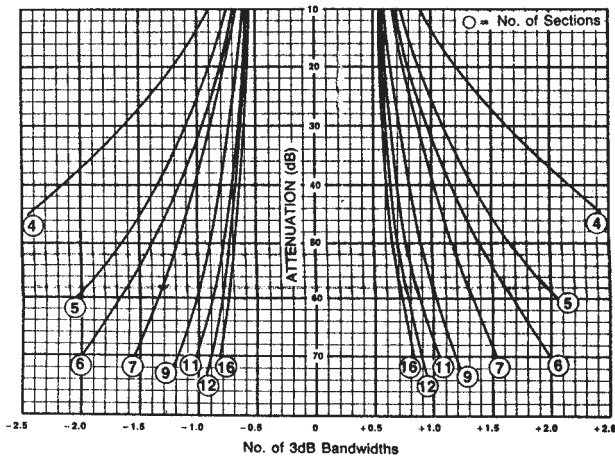


Outline 1A

FILTER DATA GRAPHS

GRAPH 1

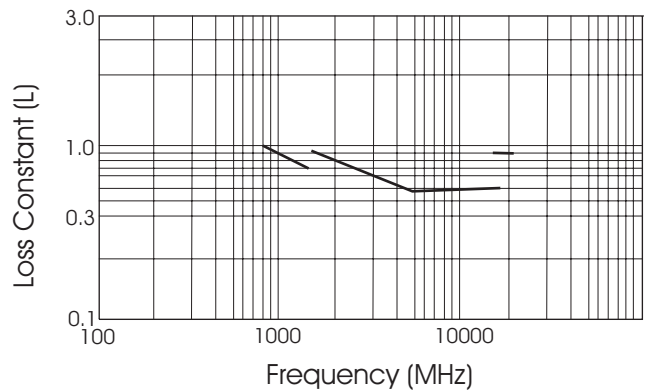
STOPBAND ATTENUATION



GRAPH 2

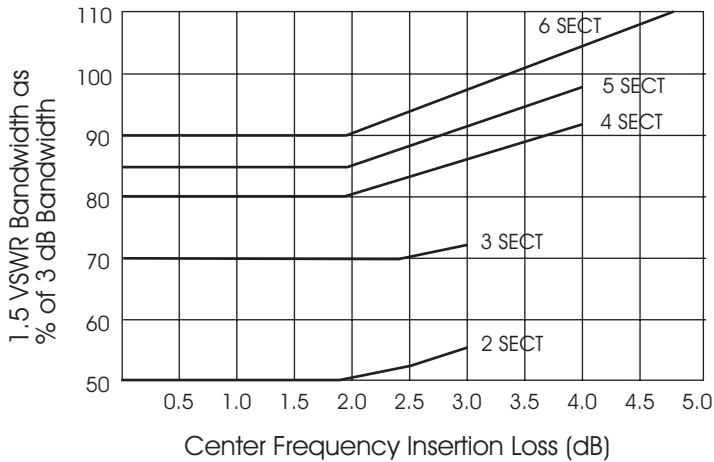
Insertion Loss

$$\text{Insertion Loss} = \frac{L \times (\text{number of sections} + .5)}{\% \text{ 3dB bandwidth}} + 0.2\text{dB}$$



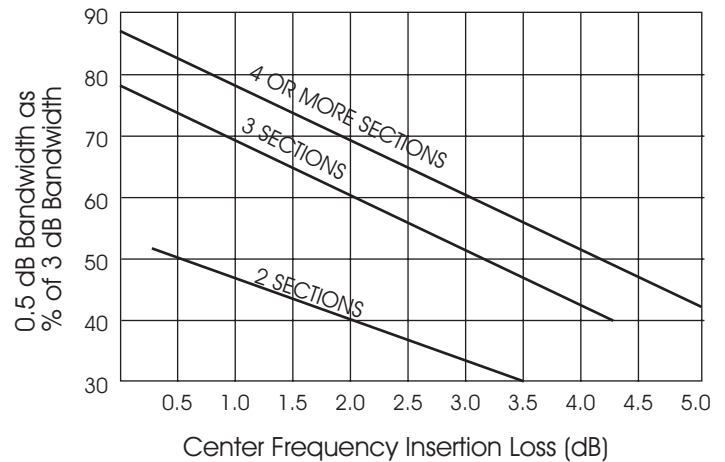
GRAPH 3

1.5 VSWR Bandwidth



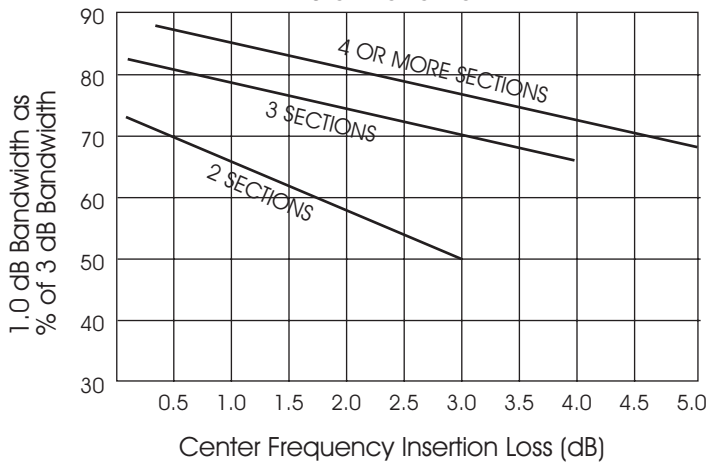
GRAPH 4

0.5 dB Bandwidth



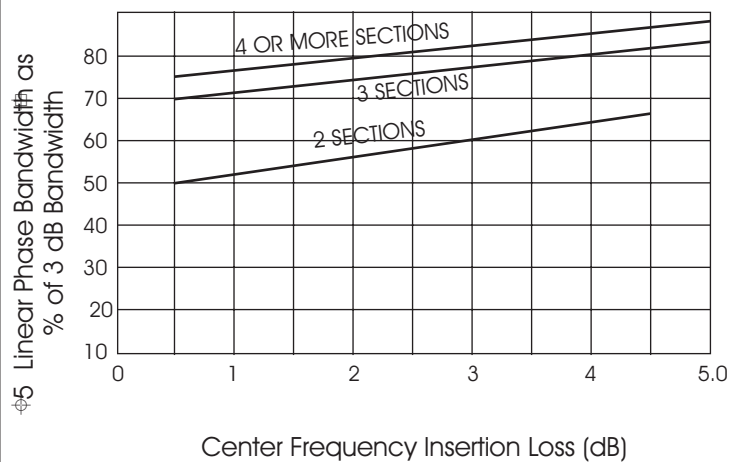
GRAPH 5

1.0 dB Bandwidth



GRAPH 6

±5 Linear Phase Bandwidth



Specifications Subject to Change Without Notice

INTERDIGITAL BANDPASS FILTERS 500 MHz TO 18 GHz

FEATURES:

- Low Insertion Loss
- Low VSWR
- Flat Frequency Response
- 2% TO 40% BANDWIDTH



ELECTRICAL SPECIFICATIONS

Model	Frequency* Range (GHz)	3 dB* Bandwidth % of Fc	Number of* Sections	VSWR Over* BandWidth	Temperature Range*
FI SERIES	1.0 To 18.0 GHz	2% To 40%	4 To 15	1.50:1 To 12.4 GHz 1.80:1 To 18.0 GHz *See Graph 2 - Page	0° C TO +50° C

*Custom Design Available. Contact Manufacturer For Detailed Specifications

GENERAL SPECIFICATIONS :

- Impedance : 50 Ohms
- Power Handling : 50 Watts
- The Maximum Insertion Loss at center frequency can be determined using the following formula :

$$\text{Insertion Loss} = \frac{(K) (0.5 + \text{No. of Sections})}{3 \text{ dB BandWidth}} + 0.1$$

Where The Insertion Loss Constant (K) = 0.85 Up To 18.0 Ghz
 Example : Center Frequency = 8000 MHz,
 3 dB BandWidth = 1700 MHz
 Number of Sections = 8
 The 3 dB BandWidth = $\frac{(100) (1700)}{8000}$
 Therefore Insertion Loss = $\frac{(0.85) (0.5 + 8)}{21.25} + 0.1 = 0.44 \text{ dB}^*$

*Refer to Graph 2, Page 88

- The Attenuation Range can be determined using the following formula :

$$\text{Attenuation Range} = 3\text{dB BW @ Fc} = \frac{\text{Reject Freq.} - \text{Fc}}{3 \text{ dB BandWidth}}$$
- Example: Center Frequency = 8000 Mhz, 3 dB Bandwidth = 1700 Mhz
 Number of sections = 7
 To Find the Attenuation at 5900 and 9000 Mhz:
 The 3 dB BandWidth from Fc = $\frac{5800 - 8000}{1700} = -1.294$
 and
 The 3 dB BandWidth from Fc = $\frac{10200 - 5800}{1700} = +1.294$
 Graph 1 Illustrates that $\pm 1.294 \text{ B.W.}$
 from Fc @ 7 Sections gives 58 dB
 Attenuation Min.
- VSWR BandWidth : Refer to Graph 3, Page 45

ORDERING INSTRUCTIONS FI-XXXXX-XXXX-XX-XX

Combine Interdigital _____

Center Frequency (Fc) _____

Minimum 3 dB BandWidth _____

Number Of Sections _____

Input Connector _____

Output Connector _____

MECHANICAL OUTLINE :

Consult Manufacturer For Specific
Configurations and Mounting Hole Locations

COMBLINE BANDPASS FILTERS 1 GHz TO 18 GHz

FEATURES:

- Low Insertion Loss
- Low VSWR
- Flat Frequency Response
- 2% TO 40% BANDWIDTH



ELECTRICAL SPECIFICATIONS

Model	Frequency* Range (GHz)	3 dB* Bandwidth % of Fc	Number of* Sections	VSWR Over* BandWidth	Temperature Range*
FC SERIES	1.0 To 18.0 GHz	3% to 1 OCTAVE	4-17	1.50:1 To 12.4 GHz 1.80:1 To 18.0 GHz *See Graph 2 - Page	-55° C TO +125° C

*Custom Design Available. Contact Manufacturer For Detailed Specifications

GENERAL SPECIFICATIONS:

Impedance: 50 Ohms

Power Handling: 50 Watts

Insertion Loss: 0.5 dB Bandwidth - See graph 4, pg

Insertion Loss: 1.0 dB Bandwidth - See graph 5, pg

Phase Linearity: @ 5 Bandwidth - See graph 6, pg

MECHANICAL OUTLINE:

Consult Manufacturer for Specific Configurations and
Mounting Hole Locations

ORDERING INSTRUCTIONS

FS-XXXXX-XXXX-XX-XX

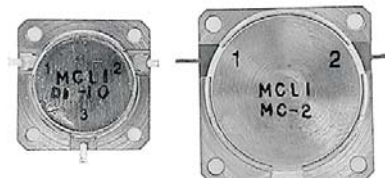
Comblaine Passband	_____	_____	_____	_____	_____
Center Frequency (Fc)	_____	_____	_____	_____	_____
Minimum 3 dB BandWidth	_____	_____	_____	_____	_____
Number Of Sections	_____	_____	_____	_____	_____
Input Connector	_____	_____	_____	_____	_____
Output Connector	_____	_____	_____	_____	_____

DROP-IN

ISOLATORS/CIRCULATORS, 0.860 - 18.0 GHz

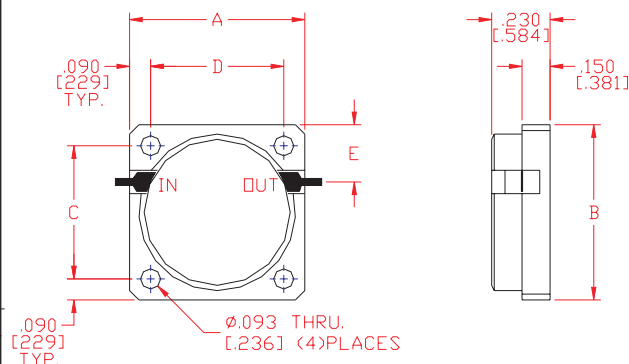
Features:

- Surface Mount Package
- Low VSWR
- Low Insertion Loss
- Load Handling 1 Watt



ELECTRICAL SPECIFICATIONS

Isolator Model Number*	Circulator Model Number	Frequency Range	Isolation dB	VSWR (Max)	Insertion Loss (dB) (Max)	Outline
DI-1	MC-1	0.935-0.960	20	1.25:1	0.5	1
DI-2	MC-2	1.20-1.40	20	1.25:1	0.5	2
DI-3	MC-3	1.43-1.53	18	1.25:1	0.5	3
DI-4	MC-4	1.40-1.60	20	1.25:1	0.5	3
DI-5	MC-5	1.60-2.00	20	1.25:1	0.5	3
DI-6	MC-6	2.00-2.30	20	1.25:1	0.5	3
DI-7	MC-7	2.30-2.50	20	1.25:1	0.5	3
DI-8	MC-8	3.70-4.20	20	1.25:1	0.5	4
DI-9	MC-9	4.20-4.40	20	1.25:1	0.5	5
DI-10	MC-10	4.40-5.00	20	1.25:1	0.5	6
DI-11	MC-11	5.00-6.00	20	1.25:1	0.5	5
DI-12	MC-12	5.50-6.50	20	1.25:1	0.5	5
DI-13	MC-13	6.40-7.80	20	1.25:1	0.5	6
DI-14	MC-14	7.00-8.50	20	1.25:1	0.5	6
DI-15	MC-15	8.50-11.5	20	1.25:1	0.5	7
DI-16	MC-16	11.5-14.0	20	1.25:1	0.5	7
DI-17	MC-17	13.0-16.5	18	1.30:1	0.5	7
DI-18	MC-18	14.0-14.5	23	1.25:1	0.5	7
DI-19	MC-19	9.0-10.0	20	1.25:1	0.5	7
DI-20	MC-20	10.7-11.7	20	1.25:1	0.5	7
DI-24	MC-24	1.62-1.66	20	1.25:1	0.5	3
DI-26	MC-26	0.930-0.970	20	1.25:1	0.5	1
DI-29	MC-29	2.50-2.70	20	1.25:1	0.5	3
DI-31	MC-31	9.2-10.0	20	1.25:1	0.5	7
DI-32	MC-32	9.37-10.10	20	1.25:1	0.5	7
DI-35	MC-35	10.95-12.75	20	1.25:1	0.5	7
DI-37	MC-37	13.2-13.4	20	1.25:1	0.5	7
DI-38	MC-38	0.860-0.960	20	1.25:1	0.5	8
DI-39	MC-39	7.10-8.50	20	1.25:1	0.5	6
DI-40	MC-40	7.25-7.75	20	1.25:1	0.5	6
DI-41	MC-41	7.90-8.40	20	1.25:1	0.5	6
DI-42	MC-42	7.25-8.40	20	1.25:1	0.5	6
DI-43	MC-43	6.40-7.20	20	1.25:1	0.5	6
DI-44	MC-44	12.75-13.25	20	1.25:1	0.5	7
DI-45	MC-45	14.40-15.35	20	1.25:1	0.5	9
DI-51	MC-51	14.0-18.0	19	1.25:1	0.5	9
DI-52	MC-52	9.80-10.20	20	1.25:1	0.5	7



Mechanical Outlines

Outline	A	B	C	D	E
1 [in]	1.00	1.25	0.820	0.820	0.093
[cm]	2.54	3.17	2.082	2.082	0.236
2 [in]	1.00	1.00	0.820	0.820	0.093
[cm]	2.54	2.54	2.082	2.082	0.236
3 [in]	0.75	0.75	0.570	0.570	0.080
[cm]	1.90	1.90	1.448	1.448	0.2032
4 [in]	0.75	0.825	0.570	0.570	0.080
[cm]	1.90	2.095	1.448	1.448	0.2032
5 [in]	0.375	0.500	0.390	0.265	0.067
[cm]	0.952	1.270	0.991	0.673	0.170
6 [in]	0.500	0.575	0.465	0.390	0.067
[cm]	1.270	1.460	1.181	0.991	0.170
7 [in]	0.350	0.475	0.375	0.250	0.067
[cm]	0.889	1.206	0.952	0.635	0.170
8 [in]	1.240	1.300	1.120	1.060	0.093
[cm]	3.149	3.302	2.844	2.692	0.236
9 [in]	0.250	0.500	0.380	N/A	0.087
[cm]	0.635	1.270	0.965	N/A	0.221

*Custom Design For Higher Power Handling Available. Contact Manufacturer For Other Specifications.
Standard Models are provided with a 1 watt termination.

Connectorized Isolators/Circulators

Octave and Multi-Octave, 800 MHz to 18 GHz

Features:

- Connectorized Package
- Low VSWR
- Low Insertion Loss
- 1, 10, or 15 Watts Load Handling**



ELECTRICAL SPECIFICATIONS

Isolator Model Number**	Circulator Model Number.	Frequency Range (GHz)	Isolation dB (Min.)	VSWR (Max)	Insertion Loss (dB) (Max)	Circulator Power (Watts)*		Operating Temp °C	Outline
						Peak	Average		
IS-1-X	CS-1	0.9-1.7	17	1.30:1	0.6	100	50	0 TO + 55	1
IS-2-X	CS-2	0.98-2.05	17	1.35:1	0.6	100	50	0 TO + 55	1
IS-3-X	CS-3	1.0-2.0	17	1.35:1	0.5	100	50	0 TO + 55	2
IS-4-X	CS-4	1.0-2.6	15	1.50:1	0.9	100	50	0 TO + 55	1
IS-5-X	CS-5	1.12-2.24	17	1.35:1	0.5	100	50	0 TO + 55	2
IS-6-X	CS-6	1.3-2.6	17	1.35:1	0.5	100	50	0 TO + 55	2
IS-7-X	CS-7	1.5-3.0	17	1.35:1	0.6	100	50	0 TO + 55	2
IS-8-X	CS-8	1.7-4.2	15	1.50:1	0.9	100	50	0 TO + 55	3
IS-9-X	CS-9	1.9-3.6	17	1.35:1	0.5	250	50	0 TO + 55	3
IS-10-X	CS-10	2.0-4.0	18	1.35:1	0.5	250	50	-30 TO +70	4
IS-11-X	CS-11	2.0-4.5	16	1.40:1	0.7	250	50	-30 TO +70	4
IS-12-X	CS-12	2.4-4.7	18	1.35:1	0.5	250	25	-30 TO +70	4
IS-13-X	CS-13	2.6-5.2	18	1.35:1	0.5	250	25	-30 TO +70	5
IS-14-X	CS-14	2.6-5.5	16	1.40:1	0.7	250	25	-30 TO +70	5
IS-15-X	CS-15	2.7-5.4	17	1.35:1	0.5	250	25	-30 TO +70	5
IS-16-X	CS-16	3.0-6.0	17	1.35:1	0.6	250	25	-30 TO +70	5
IS-17-X	CS-17	3.2-6.5	17	1.35:1	0.5	250	25	-30 TO +70	5
IS-18-X	CS-18	3.7-8.2	16	1.40:1	0.7	250	25	-30 TO +70	6
IS-19-X	CS-19	4.0-8.0	18	1.35:1	0.5	250	25	-30 TO +70	6
IS-20-X	CS-20	4.5-9.0	17	1.35:1	0.5	250	25	-30 TO +70	6
IS-21-X	CS-21	4.8-9.6	17	1.35:1	0.6	250	25	-30 TO +70	6
IS-22-X	CS-22	5.0-10.0	17	1.35:1	0.6	250	25	-54 to +85	6
IS-23-X	CS-23	5.2-10.4	17	1.35:1	0.6	250	25	-54 to +85	7
IS-24-X	CS-24	6.0-12.0	17	1.35:1	0.7	250	25	-54 to +85	8
IS-25-X	CS-25	6.5-13.0	17	1.35:1	0.7	250	25	-54 to +85	8
IS-26-X	CS-26	7.5-15.0	16	1.40:1	0.7	250	25	-54 to +85	8
IS-27-X	CS-27	7.9-16.2	16	1.40:1	0.7	250	25	-54 to +85	8
IS-28-X	CS-28	8.0-16.0	17	1.35:1	0.6	250	25	-54 to +85	8
IS-29-X	CS-29	8.0-18.0	16	1.45:1	0.8	250	25	-54 to +85	8
IS-30-X	CS-30	9.0-18.0	17	1.35:1	0.7	250	25	-54 to +85	8
IS-32-X	CS-32	0.890-0.910	20	1.22:1	0.35	250	25	-54 to +85	9
IS-33-X	CS-33	8.5-10.5	20	1.25:1	0.5	250	25	-54 to +85	8
IS-34-X	CS-34	12.0-18.0	18	1.30:1	0.6	250	25	-54 to +85	8
IS-36-X	CS-36	0.82-0.86	20	1.22:1	0.3	250	25	-54 to +85	9
IS-37-X	CS-37	1.2-1.4	20	1.25:1	0.5	250	25	-54 to +85	9
IS-39-X	CS-39	5.8-6.40	20	1.25:1	0.5	250	25	-30 to +70	10
IS-40-X	CS-40	0.92-0.96	20	1.22:1	0.4	250	25	-30 to +70	9
IS-42-X	CS-42	2.3	20	1.22:1	0.35	250	25	-30 to +70	11
IS-43-X	CS-43	2.5-2.7	20	1.22:1	0.4	250	25	-30 to +70	12
IS-45-X	CS-45	0.95-1.05	20	1.22:1	0.4	250	25	-54 to +85	9
IS-46-X	CS-46	0.800-1.0	17	1.35:1	0.6	250	25	-54 to +85	1
IS-47-X	CS-47	1.8-1.9	20	1.22:1	0.4	250	25	-54 to +85	11
IS-48-X	CS-48	14.0-14.5	17	1.22:1	0.4	250	25	-54 to +85	8
IS-52-X	CS-52	1.3-1.5	20	1.25:1	0.4	250	25	-20 to +70	9
IS-53-X	CS-53	1.2-1.5	20	1.25:1	0.5	250	25	-20 to +70	9

*Custom Design For Higher Power Handling Available. Contact Manufacturer For Other Specifications.

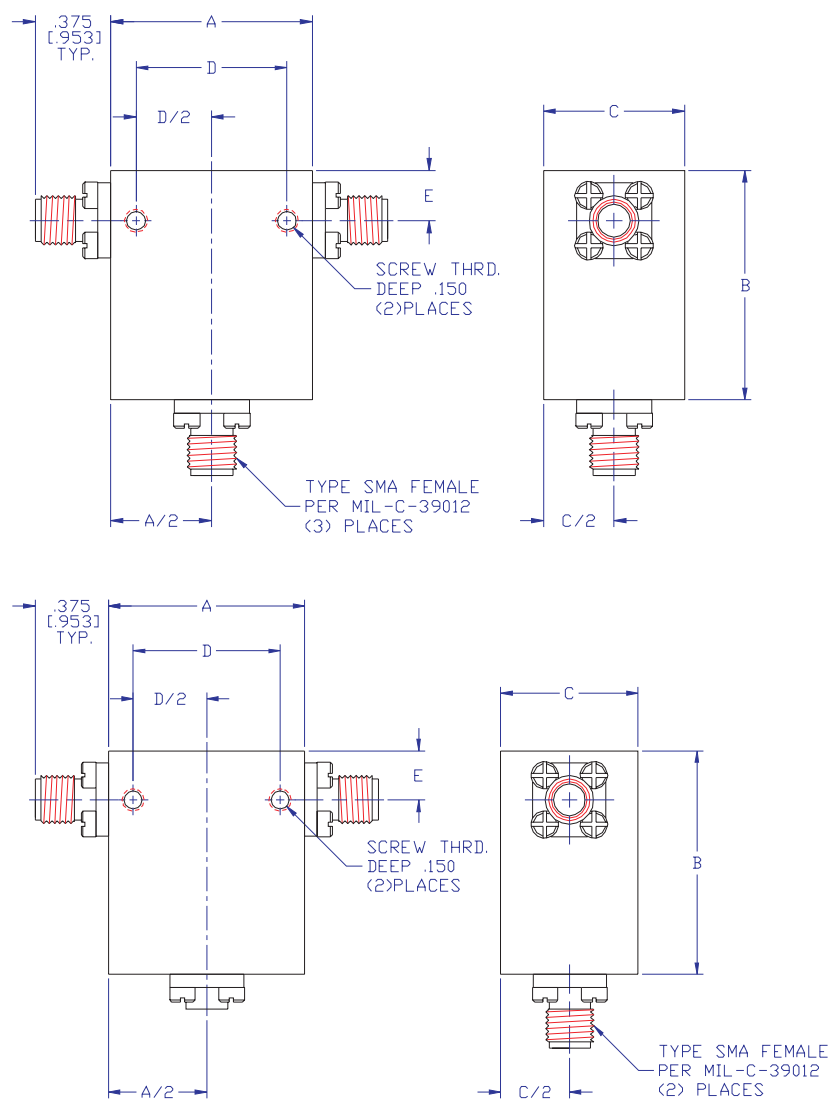
**"X" is to be replaced by "-1, -10, or -15" for Isolator models to determine load handling power.

Example: IS-3-15 (2.0 - 4.0 GHz, 15 Watt Load)

Mechanical Outline available on page 93

CONNECTORIZED ISOLATORS/CIRCULATORS

MECHANICAL OUTLINES*



SMA CONNECTORS

OUTLINE	A	B	C	D	E
1 (in)	2.756	2.756	0.866	1.968	0.394
(cm)	7.000	7.000	2.200	5.000	1.000
2 (in)	2.362	2.362	0.866	1.575	0.315
(cm)	6.000	6.000	2.200	4.000	0.800
3 (in)	1.968	1.968	0.827	1.575	0.256
(cm)	5.000	5.000	2.100	4.000	0.650
4 (in)	1.614	1.653	0.787	0.984	0.256
(cm)	4.100	4.200	2.000	2.500	0.650
5 (in)	1.260	1.338	0.748	0.945	0.256
(cm)	4.200	3.400	1.900	2.400	0.650
6 (in)	0.984	1.142	0.709	0.748	0.256
(cm)	2.500	2.900	1.800	1.900	0.650
7 (in)	0.748	0.945	0.669	0.433	0.256
(cm)	1.900	2.400	1.700	1.100	0.650
8 (in)	0.630	0.827	0.669	0.394	0.256
(cm)	1.600	2.100	1.700	1.000	0.650

*Additional outline configurations available. Contact manufacturer for custom design options.

Connectorized Isolators/Circulators

Narrow Band, 0.800 - 15.0 GHz

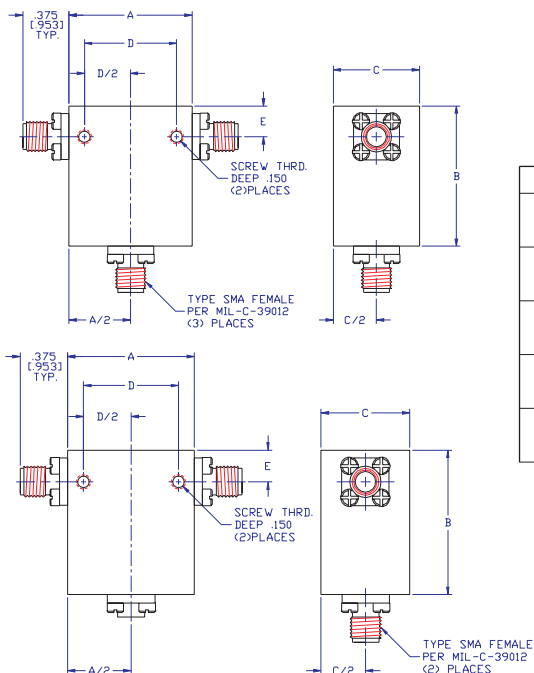
Features:

- Connectorized Package
- Low VSWR
- Low Insertion Loss
- Load Handling 5 Watts



ELECTRICAL SPECIFICATIONS

Isolator Model Number	Circulator Model Number	Frequency Range (GHz)	Isolation dB (Min.)	VSWR (Max)	Insertion Loss (dB) (Max)	Average Power (W)*	Operating Temp C	Outline
ISN-1	CSN-1	0.800-0.850	20	1.25:1	0.5	12	-45 TO +85	1
ISN-2	CSN-2	0.960-1.200	20	1.25:1	0.5	12	-45 TO +85	2
ISN-3	CSN-3	1.20-1.40	20	1.25:1	0.5	12	-45 TO +85	2
ISN-4	CSN-4	1.435-1.535	20	1.25:1	0.5	12	-45 TO +85	3
ISN-5	CSN-5	1.60-1.80	20	1.25:1	0.5	12	-45 TO +85	3
ISN-6	CSN-6	1.80-2.10	20	1.25:1	0.5	12	-45 TO +85	3
ISN-7	CSN-7	2.20-2.40	20	1.25:1	0.5	12	-45 TO +85	3
ISN-8	CSN-8	2.50-2.70	20	1.25:1	0.5	12	-45 TO +85	3
ISN-9	CSN-9	2.70-3.10	20	1.25:1	0.5	12	-45 TO +85	3
ISN-10	CSN-10	3.00-3.50	20	1.25:1	0.5	12	-45 TO +85	3
ISN-11	CSN-11	3.70-4.20	20	1.25:1	0.5	12	-45 TO +85	4
ISN-12	CSN-12	4.20-4.40	20	1.25:1	0.5	5	-45 TO +85	5
ISN-13	CSN-13	5.20-5.90	20	1.25:1	0.5	5	-45 TO +85	5
ISN-14	CSN-14	5.90-6.50	20	1.25:1	0.5	5	-45 TO +85	5
ISN-15	CSN-15	6.50-7.20	20	1.25:1	0.5	5	-45 TO +85	5
ISN-16	CSN-16	8.0-10.0	20	1.25:1	0.5	5	-45 TO +85	5
ISN-17	CSN-17	10.0-12.0	20	1.25:1	0.5	5	-45 TO +85	5
ISN-18	CSN-18	12.0-15.0	20	1.25:1	0.5	5	-45 TO +85	5



SMA FEMALE CONNECTORS

OUTLINE	A	B	C	D	E
1 (in)	2.000	2.000	0.375	1.968	0.394
(cm)	5.080	5.080	0.952	5.000	1.000
2 (in)	1.000	1.000	0.375	1.575	0.315
(cm)	2.540	2.540	0.952	4.000	0.800
3 (in)	0.750	0.750	0.375	1.575	0.256
(cm)	1.905	1.905	0.952	4.000	0.650
4 (in)	0.750	0.875	0.500	0.984	0.256
(cm)	1.905	2.222	1.270	2.500	0.650
5 (in)	0.500	0.500	0.375	0.945	0.256
(cm)	1.270	1.270	0.952	2.400	0.650

*Custom Design For Higher Power Handling Available. Contact Manufacturer For Other Specifications.

HIGH POWER ISOLATORS TYPE N CONNECTORS

Features:

- HIGH ISOLATION
- REMOVABLE TERMINATIONS
- HIGH QUALITY
- TEMPERATURE RANGE FROM -30 TO + 60 °C



ELECTRICAL SPECIFICATIONS

MODEL NUMBER	FREQUENCY RANGE (MHz)	ISOLATION (dB min)	INSERTION LOSS (dB) Max	VSWR (Max)	LOAD* POWER(Watts)	INPUT POWER (Max) (Watts)	DIMENSIONS (Inches)** L/W/H
ISH-1	118-174	30	0.4	1.25:1	35	150	3 x 3 x 2
ISH-2	216-250	60	0.8	1.25:1	35	150	3 x 3 x 2
ISH-3	400-512	30	0.4	1.25:1	35	150	2.5 x 3 x 1.5
ISH-4	806-960	30	3.0	1.25:1	35	150	3 x 3 x 2

HIGH POWER DUAL ISOLATORS TYPE N CONNECTORS

ELECTRICAL SPECIFICATIONS

MODEL NUMBER	FREQUENCY RANGE (MHz)	ISOLATION (dB min)	INSERTION LOSS (dB) Max	VSWR (Max)	LOAD* POWER(Watts)	INPUT POWER (Max) (Watts)	DIMENSIONS (Inches)** L/W/H
ISHD-1	118-174	60	0.8	1.25:1	35	150	3 x 5.5 x 2
ISHD-2	216-250	30	0.4	1.25:1	35	150	3 x 5.5 x 2
ISHD-3	400-512	60	8.0	1.25:1	35	150	3 x 2 x 5.5
ISHD-4	806-960	60	5.0	1.25:1	35	150	3 x 2 x 5.5

* The terminations supplied are removable and can be replaced with a 50 Watt, 100 Watt, or 150 Watt Load on request.

** The dimension size excludes the connectors.

VOLTAGE CONTROLLED PIN DIODE ATTENUATORS 0.5 - 18 GHz

Features:

- Wide Band
- Monotonic
- Low Insertion Loss
- Dynamic Attenuation Range



ELECTRICAL SPECIFICATIONS

Model Number	Frequency Range [GHz]	Insertion Loss [dB Max]	VSWR Max	FLATNESS				Outline
				10 dB*	20 dB*	40 dB*	60 dB*	
VC-1	0.5-1	1.5	2.0:1	± 0.5	± 1.0	± 1.7	± 2.2	1
VC-2	1-2	1.5	1.5:1	± 0.4	± 1.0	± 1.6	± 1.8	2
VC-3	2-4	1.5	1.5:1	± 0.4	± 1.0	± 1.6	± 1.8	1A
VC-4	1.5-4.5	2.0	2.0:1	± 0.75	± 1.4	± 3.0	± 3.5	1A
VC-5	4-8	2.2	1.7:1	± 0.4	± 1.0	± 1.6	± 1.8	2A
VC-6	2.6-5.2	1.8	1.7:1	± 0.4	± 0.8	± 1.6	± 1.8	1A
VC-7*	2-8	3.2	1.9:1	± 0.5	± 0.8	± 1.6	± 1.8	1B
VC-8*	2-18	4.5	2.2:1	± 1.0	± 1.3	± 1.8	± 3.0	1B
VC-9	4.5-12	2.8	2.2:1	± 0.9	± 1.5	± 3.0	± 3.5	2A
VC-10	5-10	2.4	1.7:1	± 0.5	± 1.0	± 1.7	± 1.8	2A
VC-11	6-12	2.5	1.8:1	± 0.8	± 1.0	± 1.7	± 1.8	2A
VC-12	6-18	3.6	2.0:1	± 0.9	± 1.5	± 3.0	± 3.5	3A
VC-13	8-12	2.6	1.8:1	± 0.75	± 1.2	± 1.5	± 1.6	2A
VC-14	8-18	3.6	2.0:1	± 0.7	± 1.2	± 1.7	± 1.8	3A

RF Impedance : 50 Ohms
DC Voltage : +12 Volts @ 100 mA Max. -12 Volts @ 25 mA Max.
Attenuation Range : 0 - 30 dB or 0 - 60 dB
Power Handling : +10 dBm CW (Survival Power +30 dBm)
Switching Speed : 10 Microseconds†
Control Characteristic Range : 0 to +6 Volts
Transfer function : 10 dB Per Volt @ 10 K Ohms
Monotonicity: Guaranteed
Attenuation Variance With Temperature: 0.025 dB / °C Max for all Models
Operating Temperature : Units can withstand -55° to +85° C but will not maintain attenuation values. Units with built-in temperature compensation available upon request.

Switching speed : ON Time 1.0 usec. max.
 OFF Time 0.5 usec. Max.
Survival Power: +30 dBm from -65 to + 25 C

*Custom Designs For Attenuation Accuracy and Flatness Available.
 Contact Manufacturer for Other Specifications

SMA CONNECTORS

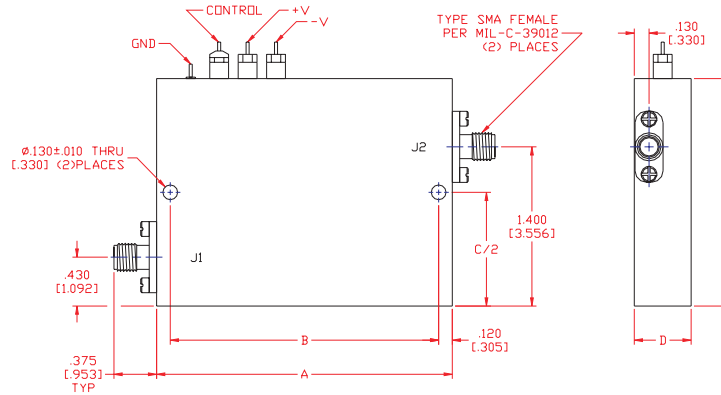
OUTLINE	A	B	C	D
1 [in]	2.60	2.35	2.00	0.70
[cm]	6.60	5.97	5.08	1.778
2 [in]	2.60	2.35	2.00	0.50
[cm]	6.60	5.97	5.08	1.270

OUTLINE	A	B	C	D	E	F	G
1A [in]	1.80	1.20	1.67	0.50	1.475	0.10	1.230
[cm]	4.572	3.048	4.242	1.270	3.746	0.254	3.124
2A [in]	1.30	1.14	1.40	0.50	0.800	0.30	0.950
[cm]	3.302	2.896	3.556	1.270	2.032	0.762	2.413
3A [in]	1.25	1.05	1.25	0.50	0.650	0.30	0.750
[cm]	3.175	2.667	3.175	1.270	1.651	0.762	1.905

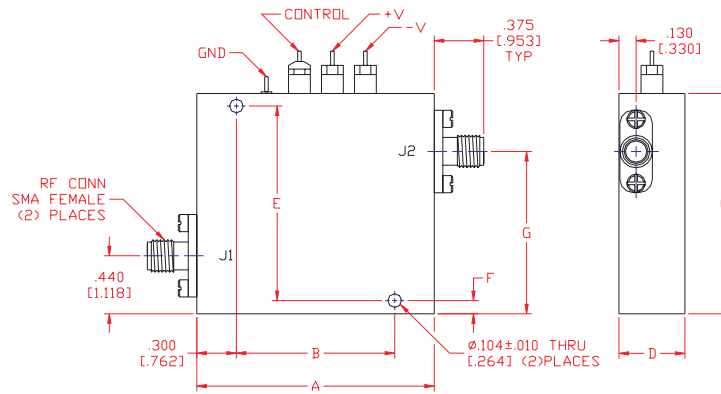
Mechanical Outline available on page 97

VOLTAGE CONTROLLED PIN DIODE ATTENUATORS 0.5 - 18 GHz MECHANICAL OUTLINES*

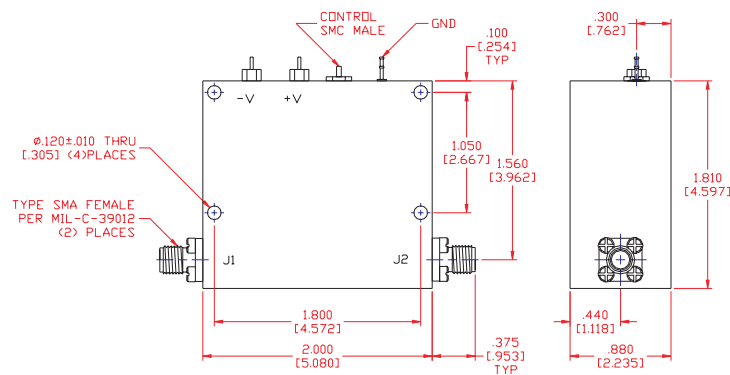
OUTLINE 1,2



OUTLINE A



OUTLINE 1B



*Additional outline configurations available. Contact manufacturer for custom design options.

DIGITALLY CONTROLLED ANALOG PIN DIODE ATTENUATORS 0.5 - 18 GHz

Features:

- Wide Band
- Monotonic
- Low Insertion Loss
- Dynamic Attenuation Range



ELECTRICAL SPECIFICATIONS

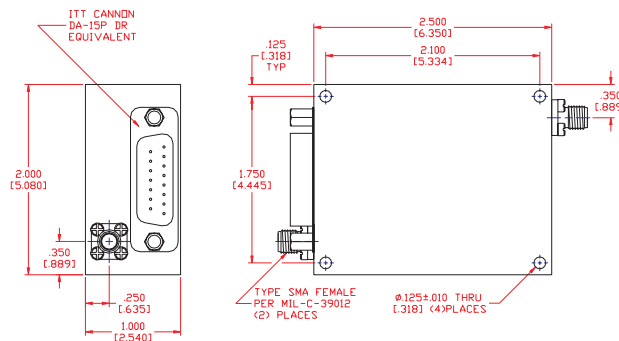
Model Number	Frequency Range [GHz]	Insertion Loss [dB Max]	VSWR Max	FLATNESS				Outline
				10 dB*	20 dB*	40 dB*	60 dB*	
LC-1	0.5-1.0	1.7	1.5:1	± 0.5	± 1.0	± 1.7	± 2.0	1
LC-2	1.0-2.0	1.8	1.5:1	± 0.4	± 1.7	± 1.7	± 2.0	1
LC-3	2.0-4.0	2.0	1.5:1	± 0.5	± 1.0	± 1.7	± 2.0	1
LC-4	0.5-2.0	2.5	1.8:1	± 0.75	± 1.25	± 2.00	± 2.5	1
LC-5	4.0-8.0	2.6	1.7:1	± 0.50	± 1.0	± 1.7	± 2.0	2
LC-6	2.6-5.2	2.2	1.7:1	± 0.50	± 1.0	± 1.5	± 1.8	2
LC-7*	2.0-8.0	3.2	1.9:1	± 0.5	± 1.0	± 1.8	± 1.7	3
LC-8*	2.0-18.0	4.5	2.2:1	± 0.8	± 1.2	± 2.0	± 3.0	3
LC-9	4.5-13.5	3.0	2.2:1	± 1.0	± 1.7	± 3.0	± 3.8	2
LC-10	5.0-10.0	2.8	1.7:1	± 0.7	± 1.0	± 1.7	± 2.0	2
LC-11	6.0-12.0	2.8	1.8:1	± 0.8	± 1.0	± 1.7	± 1.8	2
LC-12	6.0-18.0	4.0	2.0:1	± 1.0	± 1.7	± 3.2	± 3.6	2
LC-13	8.0-12.0	2.6	1.8:1	± 0.8	± 1.0	± 1.5	± 1.6	2
LC-14	8.0-18.0	4.0	2.0:1	± 0.9	± 1.1	± 1.6	± 1.8	2

*Custom Designs For Attenuation Accuracy and Flatness Available.
Contact Manufacturer for Other Specifications

RF Impedance: 50 Ohms
DC Voltage: Models LC-1, LC-2, LC-3, LC-4
 ±15 Volts @ ±50 mA Max.
 Models LC-5, LC-6, LC-9, LC-10, LC-11, LC-12, LC-13, LC-14
 +12 to +15V, 120 mA
 -12 to +12V, 50 mA
 Models LC-7, LC-8
 +12V to +15V, 80 mA
 -12V to -15V, 60 mA
Attenuation Range: 0 - 30 dB or 0 - 60 dB
Power Handling: LC-1, LC-2, LC-3, LC-4 +10 dBm CW (Survival Power +30 dBm)
 LC-5, LC-6, LC-9, LC-10, LC-11, LC-12, LC-13, LC-14
 100 mW CW (Survival Power +30 dBm -65 C to +25 C)
 LC-7, LC-8 50 mW CW (Survival Power +33 dBm -65 to +25 C)
Switching Speed: LC-1, LC-2, LC-3, LC-4
 10 Microseconds
 LC-5, LC-6, LC-9, LC-10, LC-11, LC-12, LC-13, LC-14
 500 nsec max.
ON TIME 1.0 usec max.
OFF TIME 0.5 usec max.
Control Characteristic Range: 0 to +6 Volts
Transfer function: LC-1, LC-2, LC-3, LC-4
 10 dB Per Volt @ 10 K Ohms
 LC-5, LC-6, LC-9, LC-10, LC-11, LC-12, LC-13, LC-14
 10 dB Per Volt @ 6 K Ohms
 LC-8, LC-9 N/A
Monotonicity: Guaranteed
Attenuation Variance With Temperature: 0.025 dB / °C Max for all Models
Operating Temperature: Units can withstand -55° to +85° C but will not maintain attenuation values. Units with built-in temperature compensation available upon request.

SMA CONNECTORS

POWER/LOGIC CONNECTIONS	
PIN	FUNCTIONS
1-12	Logic Inputs
13	+ 15 VDC
14	-15 VDC
15	Ground
Pin 1 is the least significant	



Mechanical Outlines 2, 3 are available on page 99

HIGH ISOLATION ABSORPTIVE AND REFLECTIVE 225 MHz TO 26.5 GHz

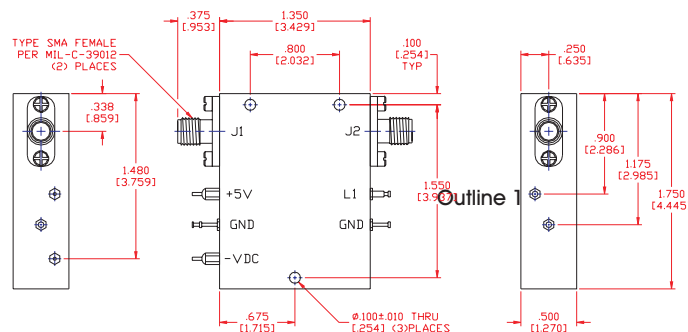
- Low Loss
- Low VSWR
- Compact Size



Model Number	Frequency Range (GHz)	Insertion Loss dB (Max.)		VSWR** (Max.)	Outline
		Abs./Ref			
D1-1	.225-.400	1.00	0.90	1.50:1	1
D1-2	0.5-1	0.80	0.70	1.50:1	1
D1-3	0.5-2	1.00	0.80	1.50:1	1
D1-4	0.5-2.5	1.20	1.00	1.60:1	1
D1-5	1-2	0.80	0.70	1.50:1	1
D1-6	1-3	0.80	0.90	1.50:1	1
D1-7	2-4	0.80	0.70	1.50:1	1
D1-8	2-8	1.30	1.10	1.50:1	1
D1-9	2-18	2.80	2.60	2.10:1	1
D1-10	3.625-4.25	1.00	0.90	1.60:1	1
D1-11	4-8	1.20	1.00	1.50:1	1
D1-12	5.8-6.45	1.20	1.00	1.50:1	1
D1-13	6-18	2.70	2.50	2.50:1	1
D1-14	7.2-8.5	1.90	1.70	1.60:1	1
D1-15	8-12.4	1.80	1.60	1.60:1	1
D1-16	12-18	2.80	2.60	2.00:1	1
D1-17	14-14.5	2.70	2.50	1.80:1	1
D1-18	18-26.5	3.70	3.60	2.50:1	1

- 60 dB Isolation Standard*
- RF Impedance: 50 Ohms
- RF Power: +25 dBm
- Switching Speed: 90% to 10% or
10% to 90% of RF.
Additional 50 nanoseconds of driver delay.
- Operating Temperature from -55 to +85 C
- Environmental: Per MIL E-5400
- Connectors: RF connectors are SMA.
Other connectors: Type N, BNC, TNC available
- DC Power Requirements: ± 5 Volts @ 70 mA
- Logic is TTL "0" when "On" and "1" when "Off"
- Standard Speed is 100 nanoseconds
- All models are provided without Drivers
- Driver Option Add Suffix /D

Obsortive: VSWR means "ON" Input and Output, Also "OFF" Output Position.



SP2T MODEL

OCTAVE AND BROADBAND PIN DIODE SWITCHES

HIGH ISOLATION ABSORPTIVE AND REFLECTIVE 225 MHz TO 26.5 GHz

Features:

- Low Loss
- Low VSWR
- Compact Size



ELECTRICAL PERFORMANCE

Model Number	Frequency Range (GHz)	Insertion Loss dB (Max.)		VSWR** (Max.)	Outline
		Abs./Ref			
D2-1	.225-.400	1.00	0.90	1.65:1	1
D2-2	0.5-1	1.00	0.80	1.65:1	1
D2-3	0.5-2	1.10	1.00	1.65:1	1
D2-4	0.5-2.5	1.30	1.10	1.65:1	1
D2-5	1-2	1.00	0.80	1.65:1	1
D2-6	1-3	1.00	0.90	1.65:1	1
D2-7	2-4	1.20	1.10	1.65:1	1
D2-8	2-8	1.40	1.20	1.70:1	1
D2-9	2-18	3.00	2.80	2.60:1	1
D2-10	3.625-4.25	1.10	1.00	1.60:1	1
D2-11	4-8	1.30	1.20	1.75:1	1
D2-12	5.8-6.45	1.30	1.20	1.70:1	1
D2-13	6-18	3.00	2.80	2.50:1	1
D2-14	7.2-8.5	1.90	1.80	2.00:1	1
D2-15	8-12.4	2.00	1.90	1.80:1	1
D2-16	12-18	3.00	2.80	2.30:1	1
D2-17	14-14.5	2.60	2.40	2.00:1	1
D2-18	18-26.5	3.70	3.40	2.60:1	1

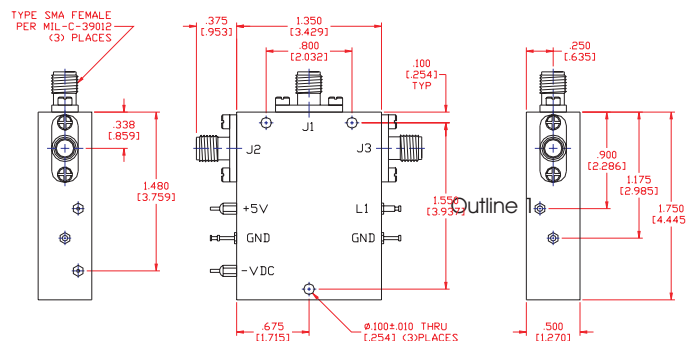
GENERAL INFORMATION

- 60 dB Isolation Standard*
- RF Impedance: 50 Ohms
- RF Power: +25 dBm
- Switching Speed: 90% to 10% or 10% to 90% of RF.
Additional 50 nanoseconds of driver delay.
- Operating Temperature from -55 to +85 C
- Environmental: Per MIL E-5400
- Connectors: RF connectors are SMA.
Other connectors: Type N, BNC, TNC available
- DC Power Requirements: ± 5 Volts @ 70 mA
- Logic is TTL "0" when "On" and "1" when "Off"
- Standard Speed is 100 nanoseconds
- All models are provided without Drivers
- Driver Option add suffix /D

* Custom Design For Higher Isolation Available. Contac* Manufacturer For Other Specifications.

** Reflective: VSWR means "ON" Input and Output Position.

Absorptive: VSWR means "ON" Input and Output, Also "OFF" Output Position.



SP3T MODEL

OCTAVE AND BROADBAND PIN DIODE SWITCHES

HIGH ISOLATION ABSORTIVE AND REFLECTIVE 225 MHz TO 26.5 GHz

Features:

- Low Loss
- Low VSWR
- Compact Size



ELECTRICAL PERFORMANCE

Model Number	Frequency Range (GHz)	Insertion Loss dB (Max.)		VSWR** (Max.)
		Abs./Ref		
D3-1	.225-.400	1.10	1.00	1.70:1
D3-2	0.5-1	1.00	0.90	1.70:1
D3-3	0.5-2	1.10	1.00	1.70:1
D3-4	0.5-2.5	1.25	1.15	1.70:1
D3-5	1-2	1.00	0.90	1.70:1
D3-6	1-3	1.10	1.00	1.70:1
D3-7	2-4	1.30	1.20	1.70:1
D3-8	2-8	1.40	1.35	1.70:1
D3-9	2-18	3.10	3.00	2.50:1
D3-10	3.625-4.25	1.20	1.10	1.70:1
D3-11	4-8	1.40	1.30	1.70:1
D3-12	5.8-6.45	1.40	1.30	1.70:1
D3-13	6-18	3.10	3.00	2.50:1
D3-14	7.2-8.5	2.00	1.90	1.70:1
D3-15	8-12.4	2.30	2.10	1.80:1
D3-16	12-18	3.20	3.00	2.50:1
D3-17	14-14.5	2.90	2.70	2.00:1
D3-18	18-26.5	3.70	3.60	2.50:1

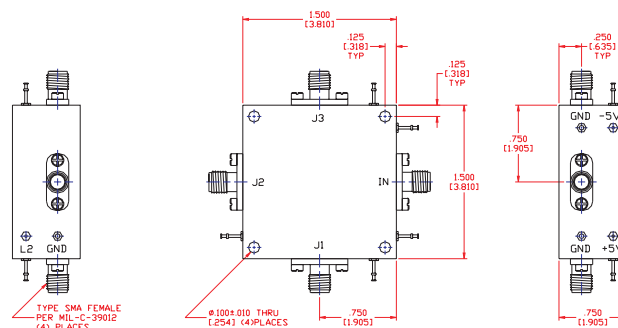
GENERAL INFORMATION

- 60 dB Isolation Standard*
- RF Impedance: 50 Ohms
- RF Power: +25 dBm
- Switching Speed: 90% to 10% or 10% to 90% of RF.
Additional 50 nanoseconds of driver delay.
- Operating Temperature from -55 to +85 C
- Environmental: Per MIL E-5400
- Connectors: RF connectors are SMA.
Other connectors: Type N, BNC, TNC available
- Standard Models provided with Power/Logic
DC Power Requirements: ± 5 Volts @ 70 mA
- Logic is TTL "0" when "On" and "1" when "Off"
- Standard Speed is 100 nanoseconds
- All models are provided without Drivers
- Driver Option add suffix /D

* Custom Design For Higher Isolation Available. Contact Manufacturer For Other Specifications.

** Reflective: VSWR means "ON" Input and Output Position.

Obsortive: VSWR means "ON" Input and Output, Also "OFF" Output Position.



SP4T MODEL

OCTAVE AND BROADBAND PIN DIODE SWITCHES

HIGH ISOLATION ABSORPTIVE AND REFLECTIVE 225 MHz TO 26.5 GHz

Features:

- Low Loss
- Low VSWR
- Compact Size



ELECTRICAL PERFORMANCE

Model Number	Frequency Range (GHz)	Insertion Loss dB (Max)		VSWR (Max.)**
		Abs./Ref.		
D4-1	.225-.400	1.20	1.10	1.75:1
D4-2	0.5-1	1.10	1.00	1.75:1
D4-3	0.5-2	1.20	1.10	1.75:1
D4-4	0.5-2.5	1.30	1.20	1.75:1
D4-5	1-2	1.10	1.00	1.75:1
D4-6	1-3	1.20	1.10	1.75:1
D4-7	2-4	1.30	1.20	1.75:1
D4-8	2-8	1.50	1.40	1.75:1
D4-9	2-18	3.20	3.10	2.50:1
D4-10	3.625-4.25	1.20	1.10	1.75:1
D4-11	4-8	1.50	1.40	1.80:1
D4-12	5.8-6.45	1.50	1.40	1.80:1
D4-13	6-18	3.20	3.10	2.50:1
D4-14	7.2-8.5	2.00	1.80	1.90:1
D4-15	8-12.4	2.20	2.10	1.90:1
D4-16	12-18	3.30	3.20	2.50:1
D4-17	14-14.5	3.00	2.90	2.50:1
D4-18	18-26.5	3.70	3.70	2.50:1

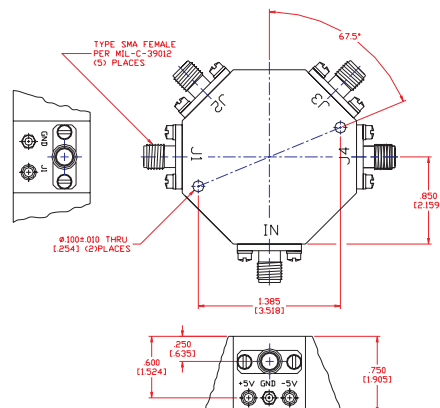
GENERAL INFORMATION

- 60 dB Isolation Standard*
- RF Impedance: 50 Ohms
- RF Power: +25 dBm
- Switching Speed: 90% to 10% or 10% to 90% of RF.
Additional 50 nanoseconds of driver delay.
- Operating Temperature from -55 to +85 C
- Environmental: Per MIL E-5400
- Connectors: RF connectors are SMA.
Other connectors: Type N, BNC, TNC available
- Standard Models provided with Power/Logic
DC Power Requirements: ± 5 Volts @ 70 mA
- Logic is TTL "0" when "On" and "1" when "Off"
- Standard Speed is 100 nanoseconds
- All models are provided without Drivers
- Driver Option add suffix /D
- Solder Terminal Option add Suffix /S
- Solder Terminal with Driver add Suffix /SD

* Custom Design For Higher Isolation Available. Contact Manufacturer For Other Specifications.

** Reflective: VSWR means "ON" Input and Output Position.

Absorptive: VSWR means "ON" Input and Output, Also "OFF" Output Position.



SP5T MODEL

OCTAVE AND BROADBAND PIN DIODE SWITCHES

HIGH ISOLATION ABSORPTIVE AND REFLECTIVE 225 MHz TO 26.5 GHz

Features:

- Low Loss
- Low VSWR
- Compact Size



ELECTRICAL PERFORMANCE

Model Number	Frequency Range (GHz)	Insertion Loss dB (Max)		VSWR (Max.)**
		Abs./Ref.		
D5-1	.225-.400	1.30	1.20	1.80:1
D5-2	0.5-1	1.20	1.10	1.80:1
D5-3	0.5-2	1.30	1.20	1.80:1
D5-4	0.5-2.5	1.50	1.40	1.85:1
D5-5	1-2	1.20	1.10	1.80:1
D5-6	1-3	1.30	1.20	1.80:1
D5-7	2-4	1.40	1.30	1.80:1
D5-8	2-8	1.60	1.50	1.80:1
D5-9	2-18	3.30	3.20	2.50:1
D5-10	3.625-4.25	1.30	1.20	1.80:1
D5-11	4-8	1.60	1.50	1.90:1
D5-12	5.8-6.45	1.60	1.50	1.90:1
D5-13	6-18	3.30	3.20	2.50:1
D5-14	7.2-8.5	2.30	2.20	1.90:1
D5-15	8-12.4	2.30	2.20	2.00:1
D5-16	12-18	3.30	3.10	2.50:1
D5-17	14-14.5	3.10	2.90	2.50:1
D5-18	18-26.5	3.80	3.60	2.70:1

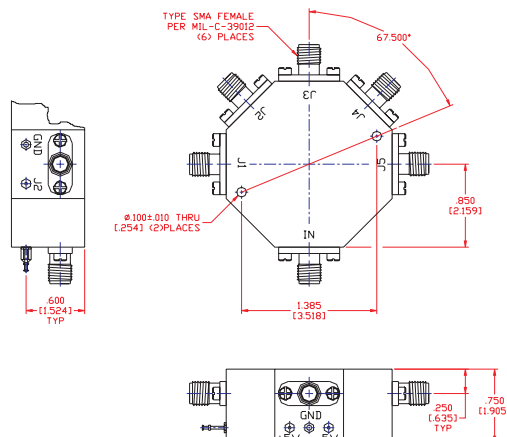
GENERAL INFORMATION

- 60 dB Isolation Standard*
- RF Impedance: 50 Ohms
- RF Power: +25 dBm
- Switching Speed: 90% to 10% or 10% to 90% of RF.
Additional 50 nanoseconds of driver delay.
- Operating Temperature from -55 to +85 C
- Environmental: Per MIL E-5400
- Connectors: RF connectors are SMA.
Other connectors: Type N, BNC, TNC available
- Standard Models provided with Power/Logic
DC Power Requirements: ± 5 Volts @ 70 mA
- Logic is TTL "0" when "On" and "1" when "Off"
- Standard Speed is 100 nanoseconds
- All models are provided without Drivers
- Driver Option add suffix /D
- Solder Terminal Option add Suffix /S
- Solder Terminal with Driver add Suffix /SD

* Custom Design For Higher Isolation Available. Contact Manufacturer For Other Specifications.

** Reflective: VSWR means "ON" Input and Output Position.

Absorptive: VSWR means "ON" Input and Output, Also "OFF" Output Position.



SP6T MODEL

OCTAVE AND BROADBAND PIN DIODE SWITCHES

HIGH ISOLATION ABSORPTIVE AND REFLECTIVE 225 MHz TO 26.5 GHz

Features:

- Low Loss
- Low VSWR
- Compact Size



ELECTRICAL PERFORMANCE

Model Number	Frequency Range (GHz)	Insertion Loss dB (Max.)		VSWR (Max.)**
		Abs./Ref.		
D6-1	.225-.400	1.40	1.30	1.85:1
D6-2	0.5-1	1.30	1.20	1.85:1
D6-3	0.5-2	1.40	1.30	1.85:1
D6-4	0.5-2.5	1.50	1.40	1.85:1
D6-5	1-2	1.30	1.20	1.85:1
D6-6	1-3	1.40	1.30	1.85:1
D6-7	2-4	1.50	1.40	1.85:1
D6-8	2-8	1.70	1.60	1.85:1
D6-9	2-18	3.40	3.30	2.50:1
D6-10	3.625-4.25	1.40	1.30	1.85:1
D6-11	4-8	1.70	1.60	1.85:1
D6-12	5.8-6.45	1.70	1.60	1.85:1
D6-13	6-18	3.40	3.30	2.50:1
D6-14	7.2-8.5	2.40	2.30	2.10:1
D6-15	8-12.4	2.40	2.30	2.10:1
D6-16	12-18	3.50	3.30	2.50:1
D6-17	14-14.5	3.40	3.30	2.50:1
D6-18	18-26.5	3.90	3.80	2.70:1

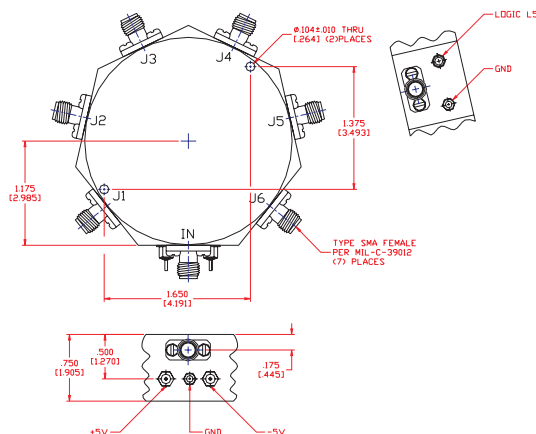
GENERAL INFORMATION

- 60 dB Isolation Standard*
- RF Impedance: 50 Ohms
- RF Power: +25 dBm
- Switching Speed: 90% to 10% or 10% to 90% of RF.
Additional 50 nanoseconds of driver delay.
- Operating Temperature from -55 to +85 C
- Environmental: Per MIL E-5400
- Connectors: RF connectors are SMA.
Other connectors: Type N, BNC, TNC available
- Standard Models provided with Power/Logic
DC Power Requirements: ± 5 Volts @ 70 mA
- Logic is TTL "0" when "On" and "1" when "Off"
- Standard Speed is 100 nanoseconds
- All models are provided without Drivers
- Driver Option add suffix /D
- Solder Terminal Option add Suffix /S
- Solder Terminal with Driver add Suffix /SD

* Custom Design For Higher Isolation Available. Contact Manufacturer For Other Specifications.

** Reflective: VSWR means "ON" Input and Output Position.

Absorptive: VSWR means "ON" Input and Output, Also "OFF" Output Position.



SP7T MODEL

OCTAVE AND BROADBAND PIN DIODE SWITCHES

HIGH ISOLATION ABSORTIVE AND REFLECTIVE 225 MHz TO 26.5 GHz

Features:

- Low Loss
- Low VSWR
- Compact Size



ELECTRICAL PERFORMANCE

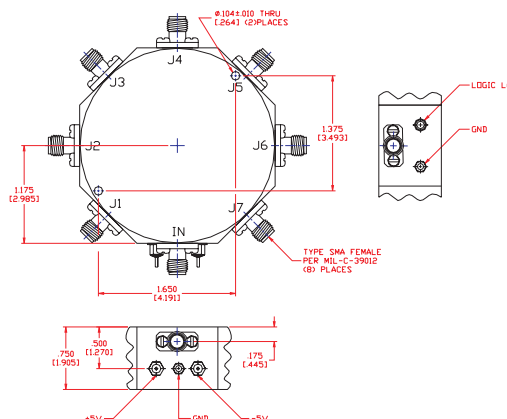
Model Number	Frequency Range (GHz)	Insertion Loss dB (Max.)		VSWR** (Max.)
		Abs./Ref.		
D7-1	.225-.400	1.50	1.40	1.90:1
D7-2	0.5-1	1.40	1.30	1.85:1
D7-3	0.5-2	1.50	1.40	1.85:1
D7-4	0.5-2.5	1.60	1.50	1.85:1
D7-5	1-2	1.40	1.30	1.85:1
D7-6	1-3	1.50	1.40	1.85:1
D7-7	2-4	1.60	1.50	1.85:1
D7-8	2-8	1.80	1.70	1.85:1
D7-9	2-18	3.50	3.40	2.50:1
D7-10	3.625-4.25	1.50	1.40	1.90:1
D7-11	4-8	1.80	1.60	1.90:1
D7-12	5.8-6.45	1.80	1.70	1.90:1
D7-13	6-18	3.50	3.40	2.50:1
D7-14	7.2-8.5	2.50	2.40	2.00:1
D7-15	8-12.4	2.50	2.40	2.20:1
D7-16	12-18	3.50	3.40	2.50:1
D7-17	14-14.5	3.50	3.40	2.50:1
D7-18	18-26.5	4.20	4.00	2.50:1

GENERAL INFORMATION

- 60 dB Isolation Standard*
- RF Impedance: 50 Ohms
- RF Power: +25 dBm
- Switching Speed: 90% to 10% or 10% to 90% of RF.
Additional 50 nanoseconds of driver delay.
- Operating Temperature from -55 to +85 C
- Environmental: Per MIL E-5400
- Connectors: RF connectors are SMA.
Other connectors: Type N, BNC, TNC available
- Standard Models provided with Power/Logic
DC Power Requirements: ± 5 Volts @ 70 mA
- Logic is TTL "0" when "On" and "1" when "Off"
- Standard Speed is 100 nanoseconds
- All models are provided without Drivers
- Driver Option add suffix /D
- Solder Terminal Option add Suffix /S
- Solder Terminal with Driver add Suffix /SD

* Custom Design For Higher Isolation Available. Contact Manufacturer For Other Specifications.

** Reflective: VSWR means "ON" Input and Output Position.
Absorptive: VSWR means "ON" Input and Output, Also "OFF" Output Position.



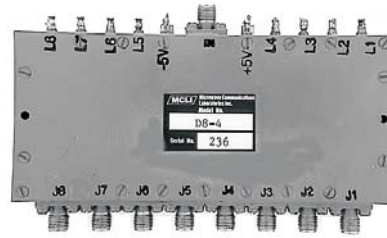
SP8T MODEL

OCTAVE AND BROADBAND PIN DIODE SWITCHES

HIGH ISOLATION ABSORPTIVE AND REFLECTIVE 225 MHz TO 26.5 GHz

Features:

- Low Loss
- Low VSWR
- Compact Size



ELECTRICAL PERFORMANCE

Model Number	Frequency Range (GHz)	Insertion Loss dB (Max.)		VSWR** (Max.)	Outline
		Abs./Ref.			
D8-1	.225-.400	1.60	1.50	1.95:1	1,2
D8-2	0.5-1	1.50	1.40	1.95:1	1,2
D8-3	0.5-2	1.60	1.50	1.95:1	1,2
D8-4	0.5-2.5	1.80	1.70	1.95:1	1,2
D8-5	1-2	1.50	1.40	1.95:1	1,2
D8-6	1-3	1.60	1.50	1.95:1	1,2
D8-7	2-4	1.70	1.60	1.95:1	1,2
D8-8	2-8	1.90	1.80	1.95:1	1,2
D8-9	2-18	3.80	3.60	2.50:1	1,2
D8-10	3.625-4.25	1.60	1.50	1.95:1	1,2
D8-11	4-8	1.90	1.80	1.95:1	1,2
D8-12	5.8-6.45	1.90	1.80	1.95:1	1,2
D8-13	6-18	3.80	3.60	2.50:1	1,2
D8-14	7.2-8.5	2.60	2.50	2.20:1	1,2
D8-15	8-12.4	2.60	2.50	2.20:1	1,2
D8-16	12-18	3.60	3.50	2.50:1	1,2
D8-17	14-14.5	3.60	3.50	2.50:1	1,2
D8-18	18-26.5	4.30	4.20	2.70:1	1,2

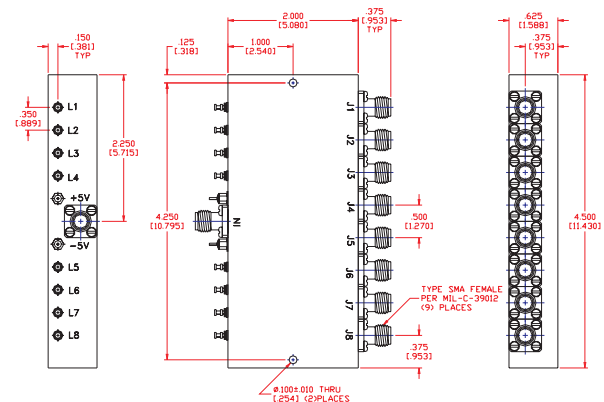
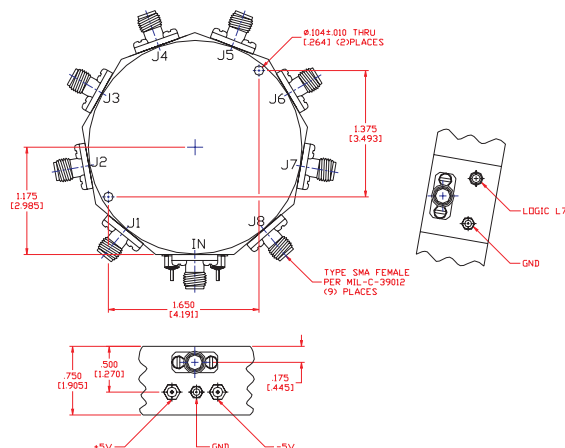
GENERAL INFORMATION

- 60 dB Isolation Standard*
- RF Impedance: 50 Ohms
- RF Power: +25 dBm
- Switching Speed: 90% to 10% or 10% to 90% of RF.
Additional 50 nanoseconds of driver delay.
- Operating Temperature from -55 to +85 C
- Environmental: Per MIL E-5400
- Connectors: RF connectors are SMA.
Other connectors: Type N, BNC, TNC available
- Standard Models provided with Power/Logic
DC Power Requirements: ± 5 Volts @ 70 mA
- Logic is TTL "0" when "On" and "1" when "Off"
- Standard Speed is 100 nanoseconds
- All models are provided without Drivers
- Driver Option add suffix /D
- Solder Terminal Option add Suffix /S
- Solder Terminal with Driver add Suffix /SD

* Custom Design For Higher Isolation Available. Contact Manufacturer For Other Specifications.

** Reflective: VSWR means "ON" Input and Output Position.

Absorptive: VSWR means "ON" Input and Output, Also "OFF" Output Position.



ELECTRO-MECHANICAL SWITCHES

INTRODUCTION

MCLI's line of electro-mechanical switches utilize a non-molded cavity design in order to achieve high performance.

The switches are available in a variety of mechanical and electrical configurations tailored to meet any system's requirements.

COMMON SPECIFICATIONS FOR ALL MODELS

- RF Impedance: 50 Ohms
- Switching Speed: 20 Microseconds Max.
- Switching RF Contact: Break Before Make
- Actuator Voltage: +24 to +32 VDC @ +28 VDC Nominal
- Operating Temperature: -54° C to +90° C
- Storage Temperature: -65° C to +125° C
- Sine Vibration: 30 G's RMS
- Random Vibration: 30 G's RMS
- Operating Life: 1 Million Cycles per Position
- Power Handling: See Chart - Page: 109
- Finishing:
 - RF Cavity: Aluminum, Electroless Nickel Plated Per MIL-C-26074, Class 4
 - Enclosure: Aluminum, Black
 - Connector Shell: CRES, Passivated per QQ-P-35, or BeCu, Gold Plated Per MIL-G-45204
 - Contact: Beryllium Copper, Gold Plated Per MIL-G-45204

ACTUATOR TERMINOLOGY

Momentary (Normally Open)	- All output ports of the switch are disconnected from the input port until a voltage is applied to as selected position.
Pulse Latching	- The switch remains in a preselected position whenever the actuating voltage is removed or interrupted, and holds that preselected position until a voltage is applied to another position. Polarity is commonly positive. This configuration must be pulse controlled with a pulse width of 20 ms to 100 ms.
Failsafe	- The switch moves to the closed position when the actuating voltage is applied and always returns to a predetermined position when the voltage is removed.

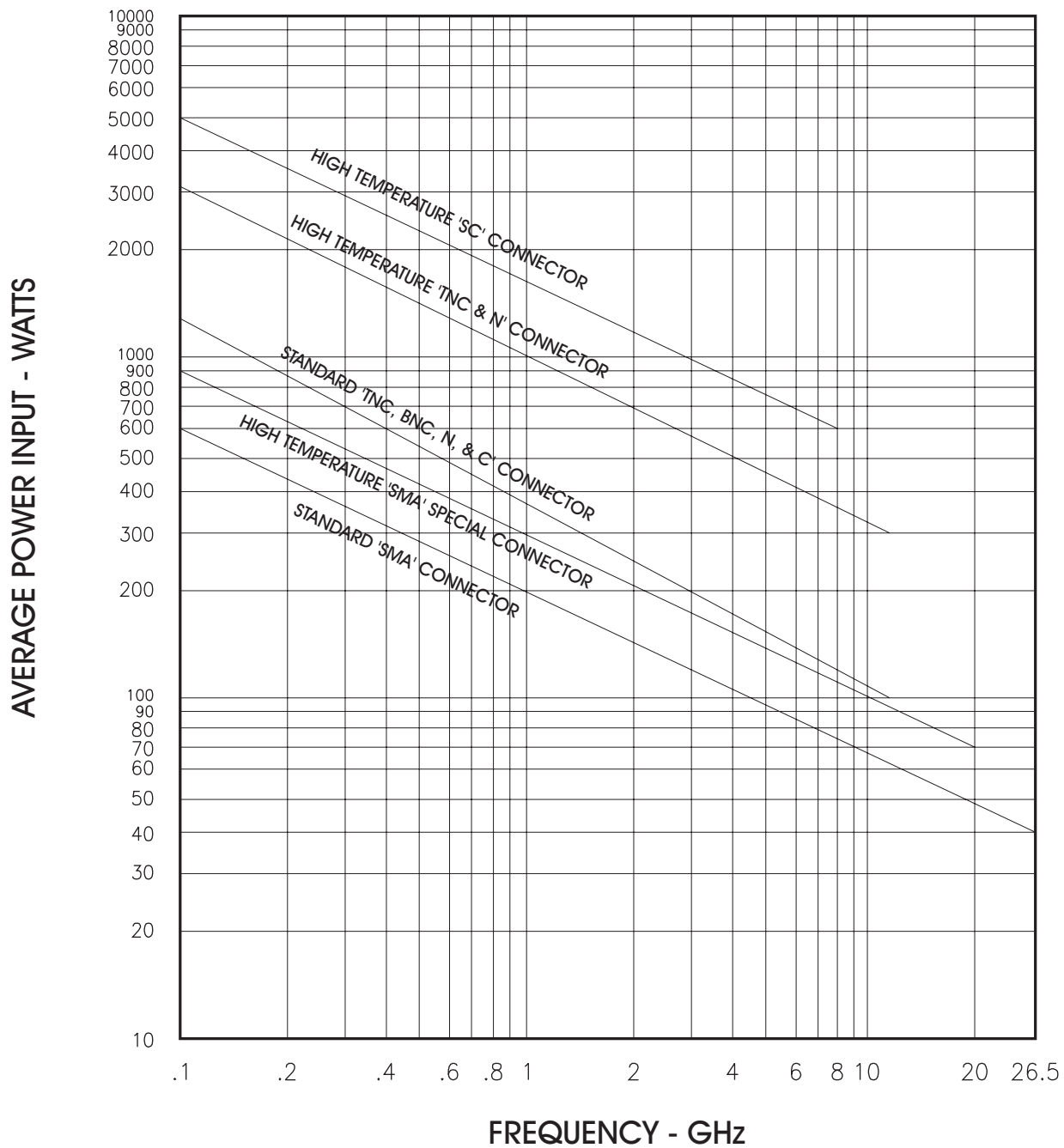
ORDERING OPTIONS TERMINOLOGY

Termination Units	Each unused open RF port internally terminated in a 50 ohm resistive load.
TTL Units	- Transistor-transistor-Logic driver circuitry enables the status of the switch to be controlled by the level of the TTL logic input.
Suppression Diodes	- All TTL models are equipped with fast-recovery silicon rectifiers (diodes) connected in parallel with the coils of the switch to suppress any transient voltage that may be generated by the coils.
Indicator Circuitry	- of internal mounted contact mechanically connected to the switch actuator allows external of switch RF h

SWITCH TYPE TERMINOLOGY

Multiposition Switch	- A multiposition switch has one input port and more than two selectable output ports.
SP5T	- A single pole, five throw switch has one input port and five selectable output ports
Transfer Switch	- A transfer switch has two independent paths that operate simultaneously in one of the two selectable ports.

POWER HANDLING VS. FREQUENCY CHART



CAPABILITY OF POWER HANDLING IS BASED ON THE FOLLOWING CONDITIONS:

AMBIENT TEMPERATURE = 25° C

ALTITUDE = SEA LEVEL

LOAD VSWR = 1:1 RATIO

Electromechanical Switch

Part Number & Ordering Information

XX-X-XXXX/XXX



Example: O6-1-FS ("O6" = SP6T, "-1" = DC - 1.0 GHz, "F" = Failsafe, "S" = Suppression Diode)

TABLE ① SWITCH MODEL

K1	SPDT, 50 Ohms IMPEDANCE, MINIATURE, (SMA)
K2	SPDT, 50 Ohms IMPEDANCE, MINIATURE, (SMA)
K3	SPDT, 50 Ohms IMPEDANCE, MINIATURE, (SMA)
K5	SPDT, 50 Ohms IMPEDANCE, FULL SIZE, (N)
K6	SPDT, 50 Ohms IMPEDANCE, OPENED PORTS TERMINATED, FULLSIZE, (N)
K7***	SPDT, 50 Ohms IMPEDANCE, FULL SIZE, (SC) *** This model is available by request as a special order item.
C1	DPDT, 50 Ohms IMPEDANCE, MINIATURE, (SMA)
C2	DPDT, 50 Ohms IMPEDANCE, FULL SIZE, (N)
C3***	DPDT, 50 Ohms IMPEDANCE, MINIATURE, (TNC) ***This model is available by request as a special order item.
C6***	DPDT, 50 Ohms IMPEDANCE, FULL SIZE, (SC) ***This model is available by request as a special order item.
A3-A6	SP3T-SP6T, MOMENTARY, MINIATURE, (SMA)
E3-E6	SP3T-SP6T, LATCHING & FAILSAFE, MINIATURE, (SMA)
O3-O6	SP3T-SP6T, LATCHING & FAILSAFE, MINIATURE, (SMA)
V3-V6	SP3T-SP6T, LATCHING & FAILSAFE, OPENED PORTS TERMINATED, (SMA)
W3-W6	SP3T-SP6T, LATCHING & FAILSAFE, OPENED PORTS TERMINATED, (SMA)
D3-D6	SP3T-SP6T, MOMENTARY, LATCHING & FAILSAFE, FULL SIZE, (N)

TABLE ② FREQUENCY

1	DC - 1.0 GHz
2	DC - 2.0 GHz
3	DC - 4.0 GHz
4	DC - 6.0 GHz
5	DC - 8.0 GHz
6	DC - 12.4 GHz
7	DC - 18.0 GHz
8	DC - 26.5 GHz
9	OTHER (SPECIFIED)

TABLE ③ ELECTROMECHANICAL

M	MOMENTARY	I	INDICATOR
L	LATCHING	S	SUPPRESSION DIODE
F	FAILSAFE	L	TTL LOGIC

TABLE ④ OPTIONS

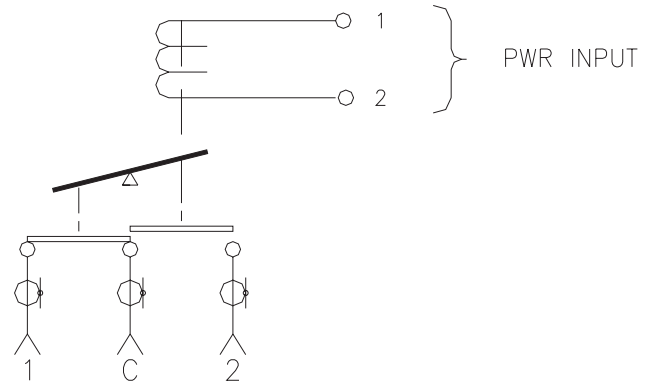
B	MOUNTING BRACKET	12	12.0 Vdc WITH COM -
C	ELECTRICAL CONNECTOR *	12P	12.0 Vdc WITH COM +
28P	STD 28.0 V WITH COM + **	15	15.0 Vdc WITH COM -
X	SPECIAL REQUIREMENT	15P	15.0 Vdc WITH COM +

* STANDARD SWITCH SUPPLIED WITH SOLDER TERMINALS.
MIL-STANDARD (MS) OR D-SUB CONN AVAILABLE AS OPTIONS

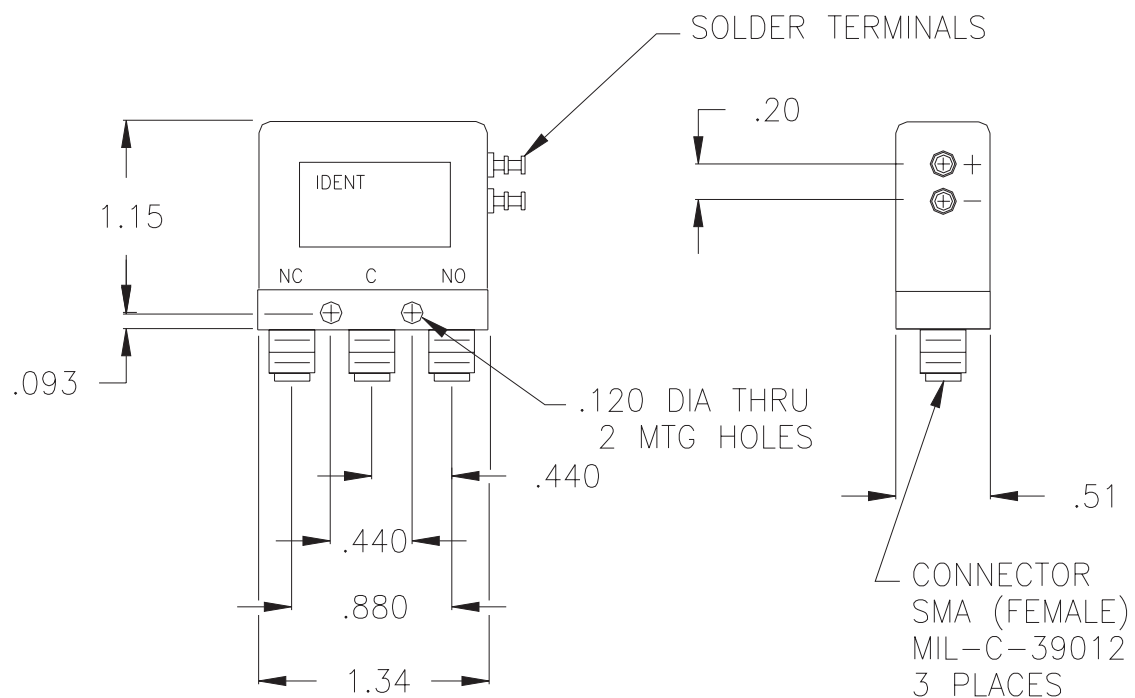
** STANDARD SWITCH EQUIPED AND 28.0 Vdc WITH NEGATIVE COM.

MODEL K1 SPDT

SCHEMATIC
FAILSAFE



OUTLINE DRAWING



K1 SPECIFICATIONS

FREQUENCY : GHz	DC - 2.0	2.0 - 4.0	4.0 - 8.0	8.0 - 12.4	12.4 - 18.0	18.0 -26.5
VSWR	1.20 : 1	1.25 :1	1.30 : 1	1.40 : 1	1.50 : 1	1.60 : 1
INSERTION LOSS	0.20	0.25	0.30	0.40	0.50	.070
ISOLATION	90	80	80	70	60	50
IMPEDANCE	50 Ohms					

MECHANICAL

CONTACT : BREAK BEFORE MAKE
 ACTUATOR : FAILSAFE **
 SWITCHING SPEED : 20 mSEC MAX

ELECTRICAL

ACTUATOR VOLTAGE : 28.0 Vdc (22.0-32.0 Vdc) *
 ACTUATOR CURRENT : .100 A MAX @ 28.0 Vdc
 POWER HANDLING : 200 WCW @ 1.0 Ghz

ENVIRONMENTAL

OPERATING TEMP : -54 DEG C TO 90 DEG C : SINE VIBRATION : 30 G'S rms
 LIFE : 1,000,000 CYCLES : RANDOM VIBRATION : 20 G'S rms

FINISH

RF CAVITY : ALUMINUM,ELECTROLESS NICKEL PLATED PER MIL-C-26074, CLASS 4
 ENCLOSURE : ALUMINUM, BLACK
 CONTACT : BERYLLIUM COPPER, GOLD PLATED PER MIL-G-45204
 CONNECTOR SHELL : CRES, PASSIVATED PER QQ-P-35 OR BRASS, ELECTROLESS NICKEL PLATED PER MIL-C-26074

DESIGNED TO MEET MIL-S-3928 AND MIL-E-5400

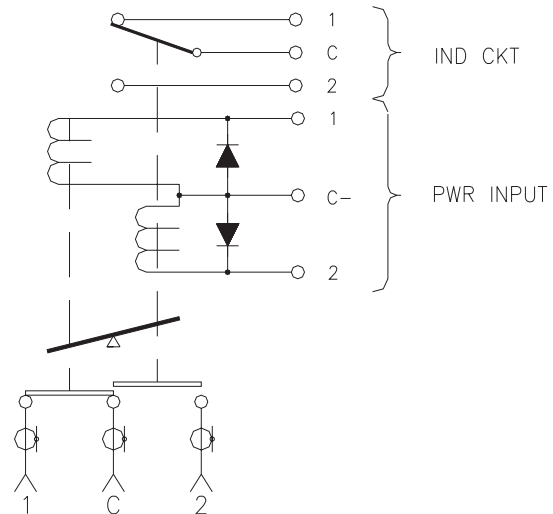
* ALSO AVAILABLE WITH 12.0, 15.0 AND 24.0 Vdc

QUICK SELECTIONS TABLE

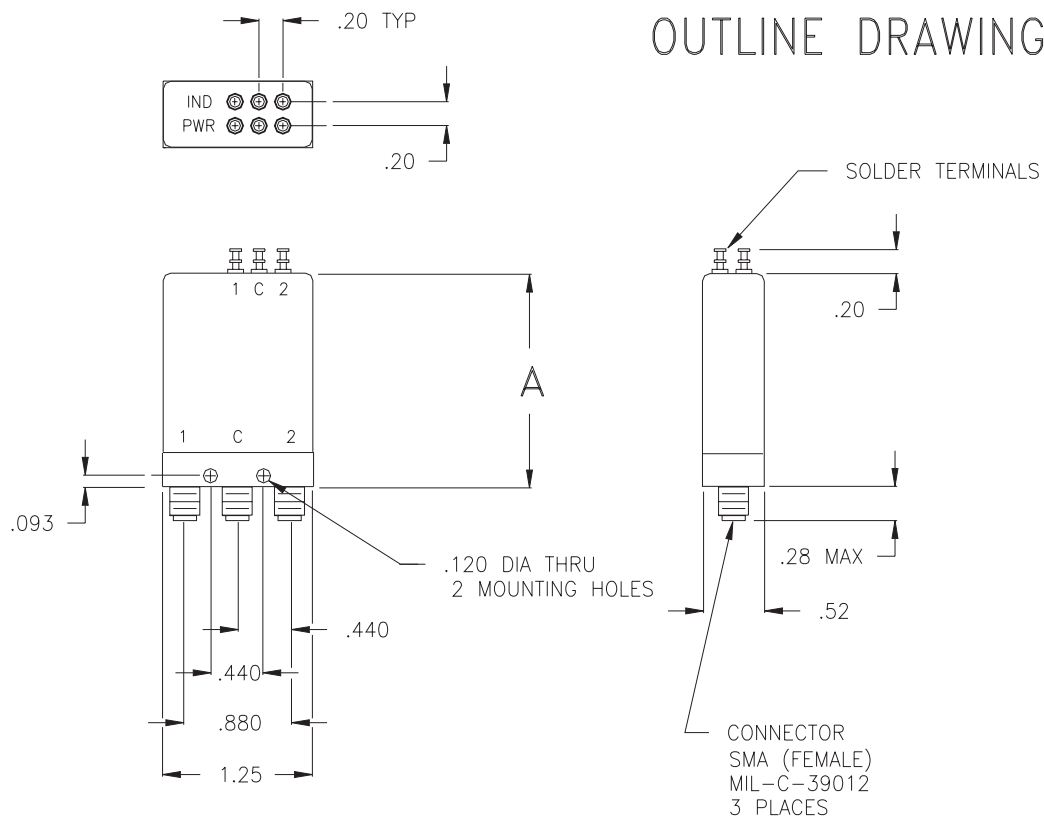
PART No.	CONN	FREQ Ghz MAX	VOLTAGE DC	VOLTAGE COM (+,-)	CURRENT MA	DIODES	IND.	ACTUATOR	DIMENSION - A -
K1-2-F	SMA	2.0	28.0	-	100	NO	NO	FAILSAFE	1.15
K1-2-FS	SMA	2.0	28.0	-	100	YES	NO	FAILSAFE	1.30
K1-3-F	SMA	4.0	28.0	-	100	NO	NO	FAILSAFE	1.15
K1-3-FS	SMA	4.0	28.0	-	100	YES	NO	FAILSAFE	1.30
K1-4-F	SMA	6.0	28.0	-	100	NO	NO	FAILSAFE	1.15
K1-4-FS	SMA	6.0	28.0	-	100	YES	NO	FAILSAFE	1.30
K1-5-F	SMA	8.0	28.0	-	100	NO	NO	FAILSAFE	1.15
K1-5-FS	SMA	8.0	28.0	-	100	YES	NO	FAILSAFE	1.30
K1-6-F	SMA	12.4	28.0	-	100	NO	NO	FAILSAFE	1.15
K1-6-FS	SMA	12.4	28.0	-	100	YES	NO	FAILSAFE	1.30
K1-7-F	SMA	18.0	28.0	-	100	NO	NO	FAILSAFE	1.15
K1-7-FS	SMA	18.0	28.0	-	100	YES	NO	FAILSAFE	1.30
K1-8-F	SMA	26.5	28.0	-	100	NO	NO	FAILSAFE	1.15
K1-8-FS	SMA	26.5	28.0	-	100	YES	NO	FAILSAFE	1.30

MODEL K2 SPDT

SCHEMATIC
LATCHING, SUPPRESSION DIODES & INDICATORS



OUTLINE DRAWING



K2 SPECIFICATIONS

FREQUENCY : GHz	DC - 2.0	2.0 - 4.0	4.0 - 8.0	8.0 - 12.4	12.4 - 18.0	18.0 -26.5
VSWR	1.20 : 1	1.25 :1	1.30 : 1	1.40 : 1	1.50 : 1	1.60 : 1
INSERTION LOSS	0.20	0.25	0.30	0.40	0.50	.070
ISOLATION	90	80	80	70	60	50
IMPEDANCE	50 Ohms					

MECHANICAL

CONTACT : BREAK BEFORE MAKE
 ACTUATOR : PULSE LATCHING **
 SWITCHING SPEED : 20 mSEC MAX

ELECTRICAL

ACTUATOR VOLTAGE : 28.0 Vdc (22.0-32.0 Vdc) *
 ACTUATOR CURRENT : .075 A MAX @ 28.0 Vdc
 POWER HANDLING : 200 WCW @ 1.0 Ghz

ENVIRONMENTAL

OPERATING TEMP : -54 DEG C TO 90 DEG C : SINE VIBRATION : 30 G'S rms
 LIFE : 1,000,000 CYCLES : RANDOM VIBRATION : 20 G'S rms

FINISH

RF CAVITY : ALUMINUM,ELECTROLESS NICKEL PLATED PER MIL-C-26074, CLASS 4
 ENCLOSURE : ALUMINUM, BLACK
 CONTACT : BERYLLIUM COPPER, GOLD PLATED PER MIL-G-45204
 CONNECTOR SHELL : CRES, PASSIVATED PER QQ-P-35 OR BRASS, ELECTROLESS NICKEL PLATED PER MIL-C-26074

DESIGNED TO MEET MIL-S-3928 AND MIL-E-5400

* ALSO AVAILABLE WITH 12.0, 15.0 AND 24.0 Vdc

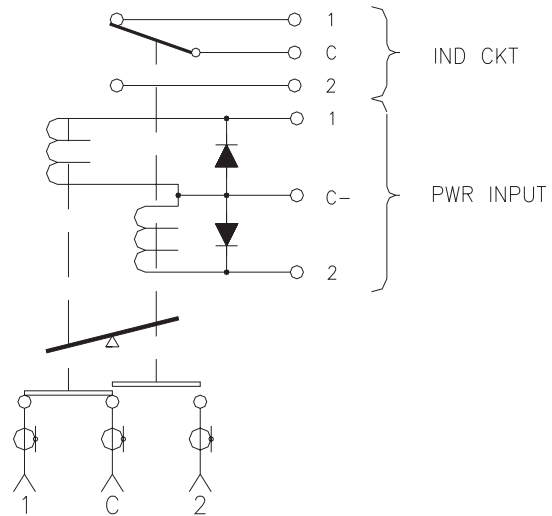
** ALSO AVAILABLE WITH FAILSAFE AND MOMENTARY

QUICK SELECTIONS TABLE

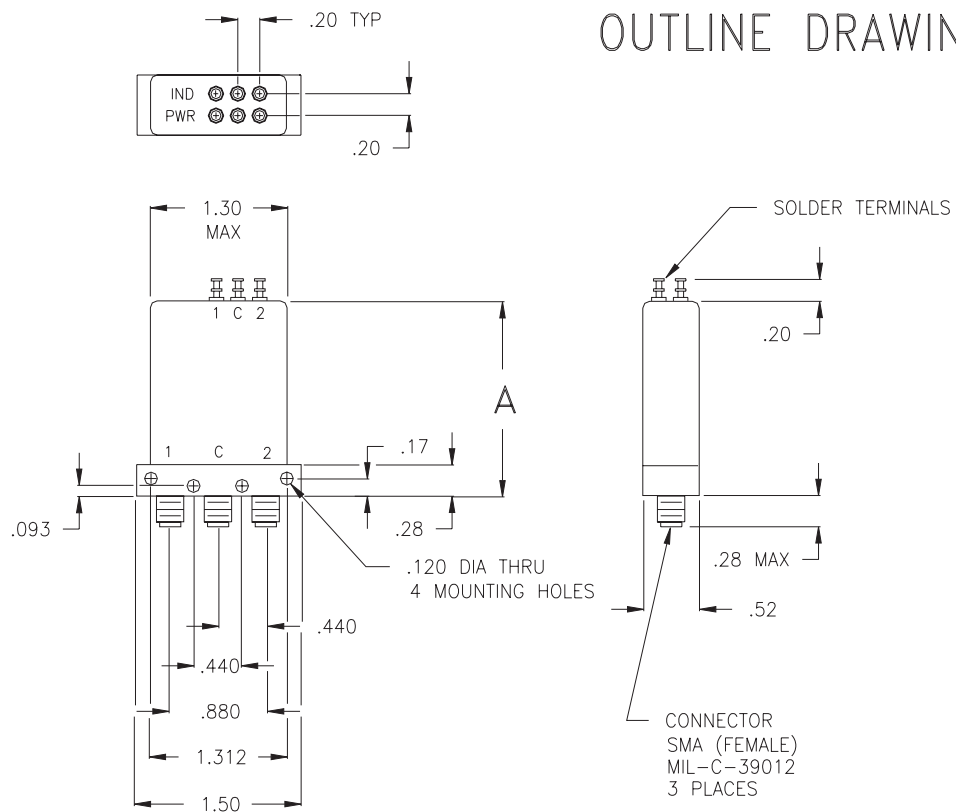
PART No.	CONN	FREQ Ghz MAX	VOLTAGE DC	VOLTAGE COM (+,-)	CURRENT MA	DIODES	IND.	ACTUATOR	DIMENSION - A -
K2-8-L	SMA	26.5	28.0	-	75	NO	NO	LATCHING	1.50
K2-8-LI	SMA	26.5	28.0	-	75	NO	YES	LATCHING	1.80
K2-8-LIS	SMA	26.5	28.0	-	75	YES	YES	LATCHING	1.80
K2-8-F	SMA	26.5	28.0	-	100	NO	NO	FAILSAFE	1.50
K2-8-FI	SMA	26.5	28.0	-	100	NO	YES	FAILSAFE	1.80
K2-8-FIS	SMA	26.5	28.0	-	100	YES	YES	FAILSAFE	1.80
K2-8-L/28P	SMA	26.2	28.0	+	75	NO	NO	LATCHING	1.50
K2-8-LIS/28P	SMA	26.5	28.0	+	75	YES	YES	LATCHING	1.80
K2-8-L/12	SMA	26.5	12.0	-	110	NO	NO	LATCHING	1.50
K2-8-LI/12	SMA	26.5	12.0	-	110	NO	YES	LATCHING	1.80
K2-8-LIS/12	SMA	26.5	12.0	-	110	YES	YES	LATCHING	1.80
K2-8-L/12P	SMA	26.5	12.0	+	110	NO	NO	LATCHING	1.50
K2-8-LI/12P	SMA	26.5	12.0	+	110	NO	YES	LATCHING	1.80
K2-8-LIS/12P	SMA	26.5	12.0	+	110	YES	YES	LATCHING	1.80

MODEL K3 SPDT

*SCHEMATIC
LATCHING, SUPPRESSION DIODES & INDICATORS*



OUTLINE DRAWING



K3 SPECIFICATIONS

FREQUENCY : GHz	DC - 2.0	2.0 - 4.0	4.0 - 8.0	8.0 - 12.4	12.4 - 18.0	18.0 -26.5
VSWR	1.20 : 1	1.25 :1	1.30 : 1	1.40 : 1	1.50 : 1	1.60 : 1
INSERTION LOSS	0.20	0.25	0.30	0.40	0.50	.070
ISOLATION	90	80	80	70	60	50
IMPEDANCE	50 Ohms					

MECHANICAL

CONTACT : BREAK BEFORE MAKE
 ACTUATOR : PULSE LATCHING **
 SWITCHING SPEED : 20 mSEC MAX

ELECTRICAL

ACTUATOR VOLTAGE : 28.0 Vdc (22.0-32.0 Vdc) *
 ACTUATOR CURRENT : .075 A MAX @ 28.0 Vdc
 POWER HANDLING : 200 WCW @ 1.0 Ghz

ENVIRONMENTAL

OPERATING TEMP : -54 DEG C TO 90 DEG C : SINE VIBRATION : 30 G'S rms
 LIFE : 1,000,000 CYCLES : RANDOM VIBRATION : 20 G'S rms

FINISH

RF CAVITY : ALUMINUM,ELECTROLESS NICKEL PLATED PER MIL-C-26074, CLASS 4
 ENCLOSURE : ALUMINUM, BLACK
 CONTACT : BERYLLIUM COPPER, GOLD PLATED PER MIL-G-45204
 CONNECTOR SHELL : CRES, PASSIVATED PER QQ-P-35 OR BRASS, ELECTROLESS NICKEL PLATED PER MIL-C-26074

DESIGNED TO MEET MIL-S-3928 AND MIL-E-5400

* ALSO AVAILABLE WITH 12.0, 15.0 AND 24.0 Vdc

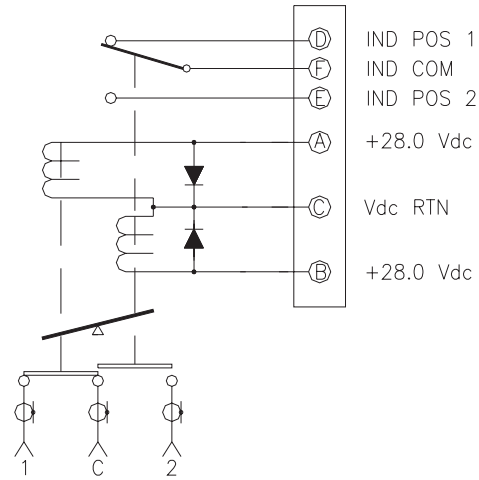
** ALSO AVAILABLE WITH FAILSAFE AND MOMENTARY

QUICK SELECTIONS TABLE

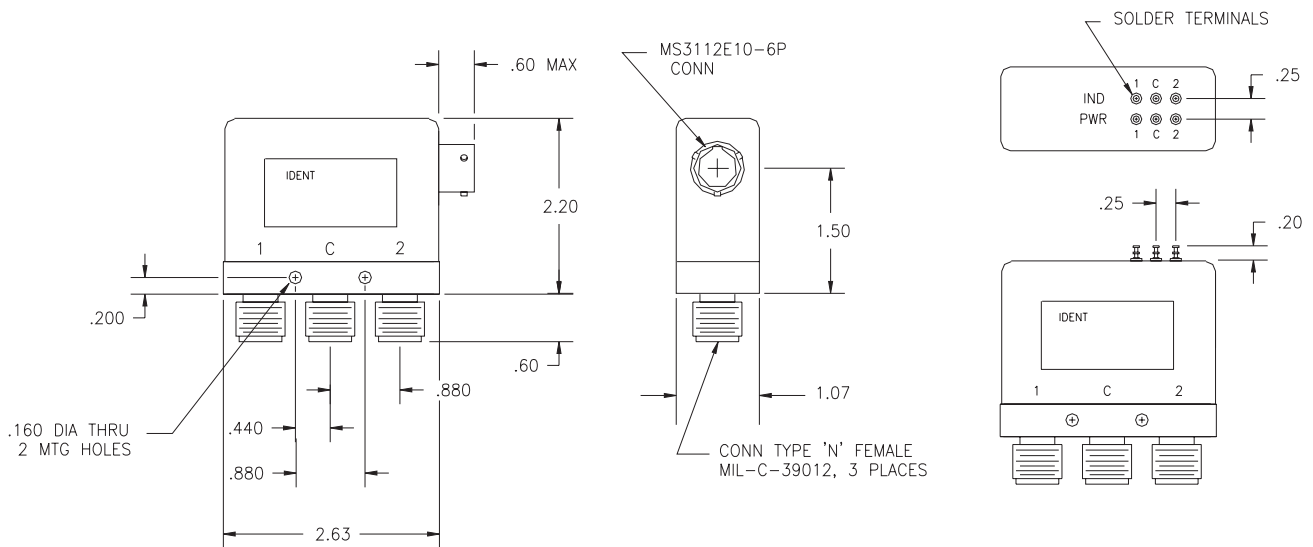
PART No.	CONN	FREQ Ghz MAX	VOLTAGE DC	VOLTAGE COM (+,-)	CURRENT MA	DIODES	IND.	ACTUATOR	DIMENSION - A -
K3-8-L	SMA	26.5	28.0	-	75	NO	NO	LATCHING	1.50
K3-8-LI	SMA	26.5	28.0	-	75	NO	YES	LATCHING	1.80
K3-8-LIS	SMA	26.5	28.0	-	75	YES	YES	LATCHING	1.80
K3-8-F	SMA	26.5	28.0	-	100	NO	NO	FAILSAFE	1.50
K3-8-FI	SMA	26.5	28.0	-	100	NO	YES	FAILSAFE	1.80
K3-8-FIS	SMA	26.5	28.0	-	100	YES	YES	FAILSAFE	1.80
K3-8-L/28P	SMA	26.2	28.0	+	75	NO	NO	LATCHING	1.50
K3-8-LIS/28P	SMA	26.5	28.0	+	75	YES	YES	LATCHING	1.80
K3-8-L/12	SMA	26.5	12.0	-	110	NO	NO	LATCHING	1.50
K3-8-LI/12	SMA	26.5	12.0	-	110	NO	YES	LATCHING	1.80
K3-8-LIS/12	SMA	26.5	12.0	-	110	YES	YES	LATCHING	1.80
K3-8-L/12P	SMA	26.5	12.0	+	110	NO	NO	LATCHING	1.50
K3-8-LI/12P	SMA	26.5	12.0	+	110	NO	YES	LATCHING	1.80
K3-8-LIS/12P	SMA	26.5	12.0	+	110	YES	YES	LATCHING	1.80

MODEL K5 SPDT

SCHEMATIC
LATCHING, SUPPRESSION DIODES & INDICATORS



OUTLINE DRAWING



K5 SPECIFICATIONS

FREQUENCY : GHz	DC - 2.0	2.0 - 4.0	4.0 - 8.0	8.0 - 12.4
VSWR	1.20 : 1	1.30 : 1	1.40 : 1	1.50 : 1
INSERTION LOSS	0.20	0.30	0.40	0.50
ISOLATION	80	70	70	60
IMPEDANCE	50 Ohms			

MECHANICAL

CONTACT : BREAK BEFORE MAKE
 ACTUATOR : PULSE LATCHING **
 SWITCHING SPEED : 20 mSEC MAX

ELECTRICAL

ACTUATOR VOLTAGE : 28.0 Vdc (22.0-32.0 Vdc) *
 ACTUATOR CURRENT : .100 A MAX @ 28.0 Vdc
 POWER HANDLING : 350 WCW @ 1.0 Ghz

ENVIRONMENTAL

OPERATING TEMP : -54 DEG C TO 90 DEG C : SINE VIBRATION : 30 G'S rms
 LIFE : 1,000,000 CYCLES : RANDOM VIBRATION : 20 G'S rms

FINISH

RF CAVITY : ALUMINUM, ELECTROLESS NICKEL PLATED PER MIL-C-26074, CLASS 4
 ENCLOSURE : ALUMINUM, BLACK
 CONTACT : BERYLLIUM COPPER, GOLD PLATED PER MIL-G-45204
 CONNECTOR SHELL : CRES, PASSIVATED PER QQ-P-35 OR BRASS, ELECTROLESS NICKEL PLATED PER MIL-C-26074

DESIGNED TO MEET MIL-S-3928 AND MIL-E-5400

* ALSO AVAILABLE WITH 12.0, 15.0 AND 24.0 Vdc

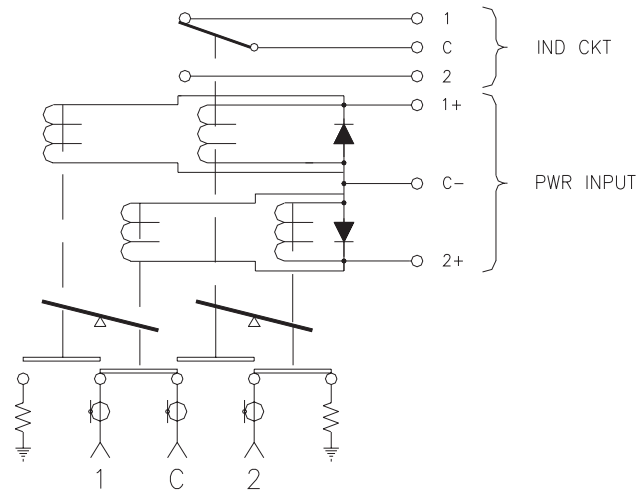
** ALSO AVAILABLE WITH FAILSAFE AND MOMENTARY

QUICK SELECTIONS TABLE

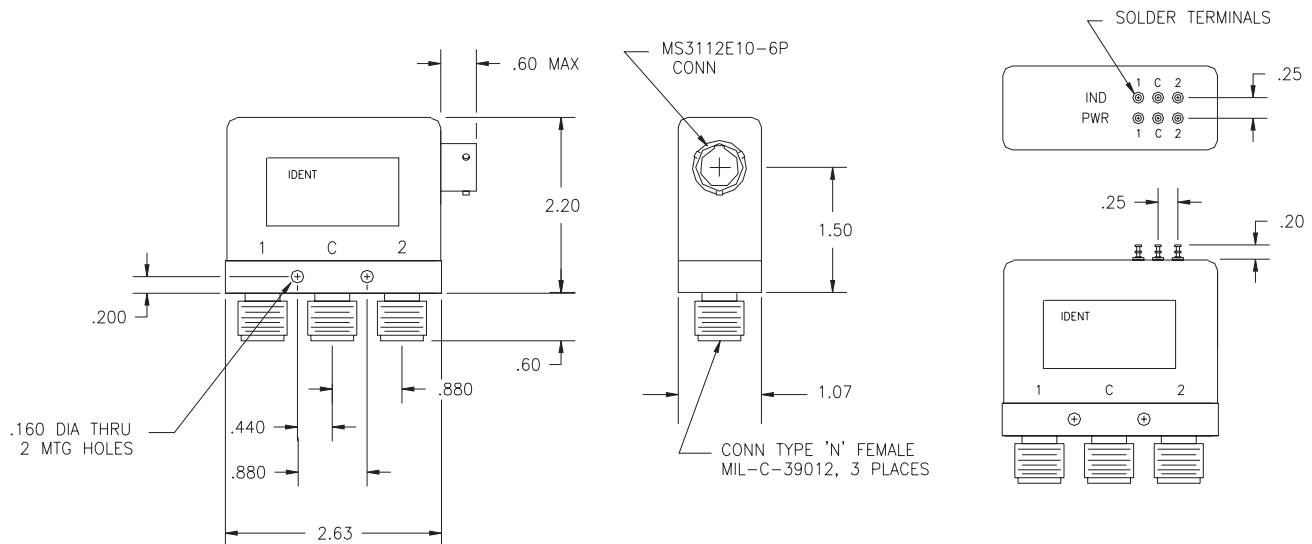
PART No.	CONN	FREQ GHz MAX	VOLTAGE DC	VOLTAGE COM (+,-)	CURRENT MA	DIODES	IND.	ACTUATOR	DIMENSION - A -
K5-2-L	N	2.0	28.0	-	100	NO	NO	LATCHING	2.20
K5-2-LI	N	2.0	28.0	-	100	NO	YES	LATCHING	2.20
K5-2-LIS	N	2.0	28.0	-	100	YES	YES	LATCHING	2.20
K5-2-F	N	2.0	28.0	-	125	NO	NO	FAILSAFE	2.20
K5-2-FI	N	2.0	28.0	-	125	NO	YES	FAILSAFE	2.20
K5-2-FIS	N	2.0	28.0	-	125	YES	YES	FAILSAFE	2.20
K5-2-L/28P	N	2.0	28.0	+	100	NO	NO	LATCHING	2.20
K5-2-LIS/28P	N	2.0	28.0	+	100	YES	YES	LATCHING	2.20
K5-2-L/12	N	2.0	12.0	-	125	NO	NO	LATCHING	2.20
K5-2-LI/12	N	2.0	12.0	-	125	NO	YES	LATCHING	2.20
K5-2-LIS/12	N	2.0	12.0	-	125	YES	YES	LATCHING	2.20
K5-2-L/12P	N	2.0	12.0	+	125	NO	NO	LATCHING	2.20
K5-2-LI/12P	N	2.0	12.0	+	125	NO	YES	LATCHING	2.20
K5-2-LIS/12P	N	2.0	12.0	+	125	YES	YES	LATCHING	2.20

MODEL K6 SPDT

SCHEMATIC
LATCHING, SUPPRESSION DIODES & INDICATORS
OPEN PORT TERMINATED



OUTLINE DRAWING



K6 SPECIFICATIONS

FREQUENCY : GHz	DC - 2.0	2.0 - 4.0	4.0 - 8.0	8.0 - 12.4
VSWR	1.20 : 1	1.30 : 1	1.40 : 1	1.50 : 1
INSERTION LOSS	0.20	0.30	0.40	0.50
ISOLATION	80	70	70	60
IMPEDANCE	50 Ohms			

MECHANICAL

CONTACT : BREAK BEFORE MAKE
 ACTUATOR : PULSE LATCHING **
 SWITCHING SPEED : 20 mSEC MAX

ELECTRICAL

ACTUATOR VOLTAGE : 28.0 Vdc (22.0-32.0 Vdc) *
 ACTUATOR CURRENT : .200 A MAX @ 28.0 Vdc
 POWER HANDLING : 350 WCW @ 1.0 Ghz

ENVIRONMENTAL

OPERATING TEMP : -54 DEG C TO 90 DEG C : SINE VIBRATION : 30 G'S rms
 LIFE : 1,000,000 CYCLES : RANDOM VIBRATION : 20 G'S rms

FINISH

RF CAVITY : ALUMINUM, ELECTROLESS NICKEL PLATED PER MIL-C-26074, CLASS 4
 ENCLOSURE : ALUMINUM, BLACK
 CONTACT : BERYLLIUM COPPER, GOLD PLATED PER MIL-G-45204
 CONNECTOR SHELL : CRES, PASSIVATED PER QQ-P-35 OR BRASS, ELECTROLESS NICKEL PLATED PER MIL-C-26074

DESIGNED TO MEET MIL-S-3928 AND MIL-E-5400

* ALSO AVAILABLE WITH 12.0, 15.0 AND 24.0 Vdc

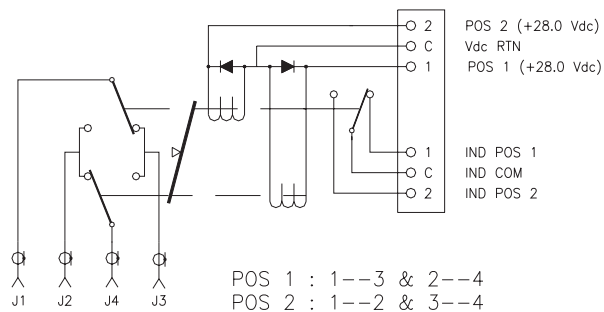
** ALSO AVAILABLE WITH FAILSAFE AND MOMENTARY

QUICK SELECTIONS TABLE

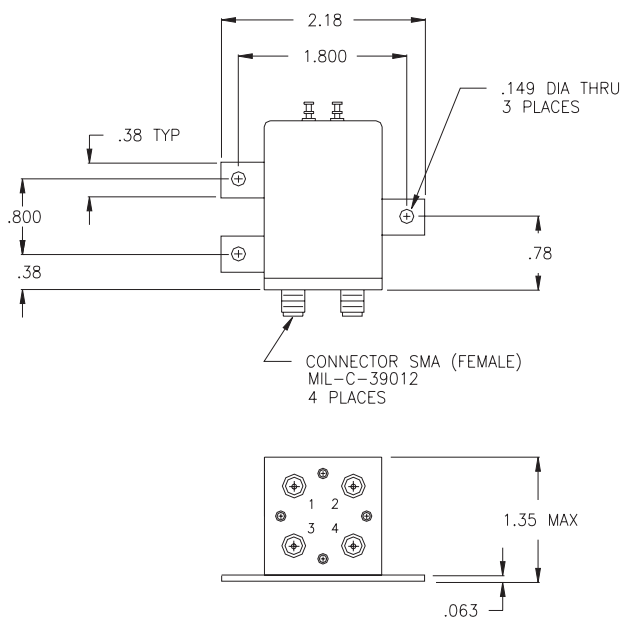
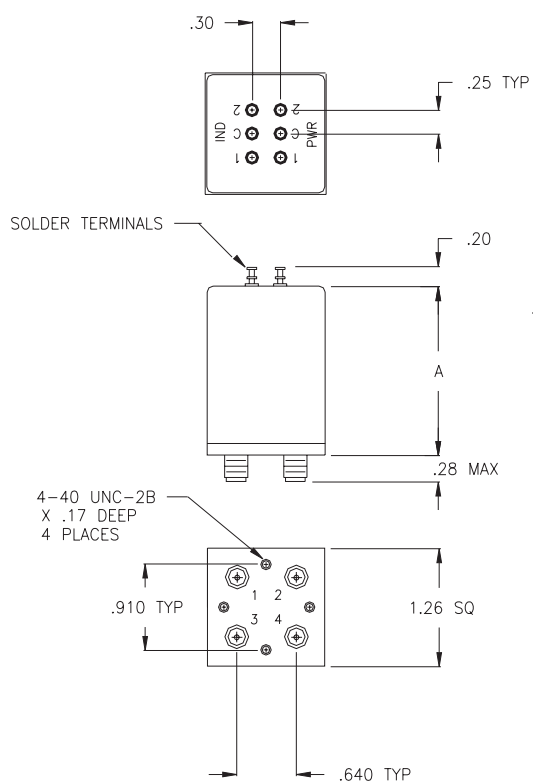
PART No.	CONN	FREQ Ghz MAX	VOLTAGE DC	VOLTAGE COM (+,-)	CURRENT MA	DIODES	IND.	ACTUATOR	DIMENSION - A -
K6-2-L	N	2.0	28.0	-	200	NO	NO	LATCHING	2.20
K6-2-LI	N	2.0	28.0	-	200	NO	YES	LATCHING	2.20
K6-2-LIS	N	2.0	28.0	-	200	YES	YES	LATCHING	2.20
K6-2-F	N	2.0	28.0	-	250	NO	NO	FAILSAFE	2.20
K6-2-FI	N	2.0	28.0	-	250	NO	YES	FAILSAFE	2.20
K6-2-FIS	N	2.0	28.0	-	250	YES	YES	FAILSAFE	2.20
K6-2-L/28P	N	2.0	28.0	+	200	NO	NO	LATCHING	2.20
K6-2-LIS/28P	N	2.0	28.0	+	200	YES	YES	LATCHING	2.20
K6-2-L/12	N	2.0	12.0	-	250	NO	NO	LATCHING	2.20
K6-2-LI/12	N	2.0	12.0	-	250	NO	YES	LATCHING	2.20
K6-2-LIS/12	N	2.0	12.0	-	250	YES	YES	LATCHING	2.20
K6-2-L/12P	N	2.0	12.0	+	250	NO	NO	LATCHING	2.20
K6-2-LI/12P	N	2.0	12.0	+	250	NO	YES	LATCHING	2.20
K6-2-LIS/12P	N	2.0	12.0	+	250	YES	YES	LATCHING	2.20

MODEL C1 DPDT

SCHEMATIC
LATCHING, SUPPRESSION DIODES & INDICATORS



OUTLINE DRAWING



C1 SPECIFICATIONS

FREQUENCY : GHz	DC - 2.0	2.0 - 4.0	4.0 - 8.0	8.0 - 12.4	12.4 - 18.0	18.0 -26.5
VSWR	1.20 : 1	1.25 :1	1.30 : 1	1.40 : 1	1.50 : 1	1.65 : 1
INSERTION LOSS	0.20	0.25	0.30	0.40	0.50	.070
ISOLATION	90	80	80	70	60	50
IMPEDANCE	50 Ohms					

MECHANICAL

CONTACT : BREAK BEFORE MAKE
 ACTUATOR : PULSE LATCHING **
 SWITCHING SPEED : 20 mSEC MAX

ELECTRICAL

ACTUATOR VOLTAGE : 28.0 Vdc (22.0-32.0 Vdc) *
 ACTUATOR CURRENT : .125 A MAX @ 28.0 Vdc
 POWER HANDLING : 200 WCW @ 1.0 Ghz

ENVIRONMENTAL

OPERATING TEMP : -54 DEG C TO 90 DEG C : SINE VIBRATION : 30 G'S rms
 LIFE : 1,000,000 CYCLES : RANDOM VIBRATION : 20 G'S rms

FINISH

RF CAVITY : ALUMINUM,ELECTROLESS NICKEL PLATED PER MIL-C-26074, CLASS 4
 ENCLOSURE : ALUMINUM, BLACK
 CONTACT : BERYLLIUM COPPER, GOLD PLATED PER MIL-G-45204
 CONNECTOR SHELL : CRES, PASSIVATED PER QQ-P-35 OR BRASS, ELECTROLESS NICKEL PLATED PER MIL-C-26074

DESIGNED TO MEET MIL-S-3928 AND MIL-E-5400

* ALSO AVAILABLE WITH 12.0, 15.0 AND 24.0 Vdc

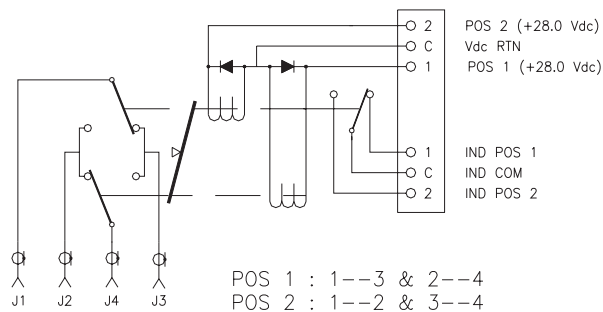
** ALSO AVAILABLE WITH FAILSAFE AND MOMENTARY

QUICK SELECTIONS TABLE

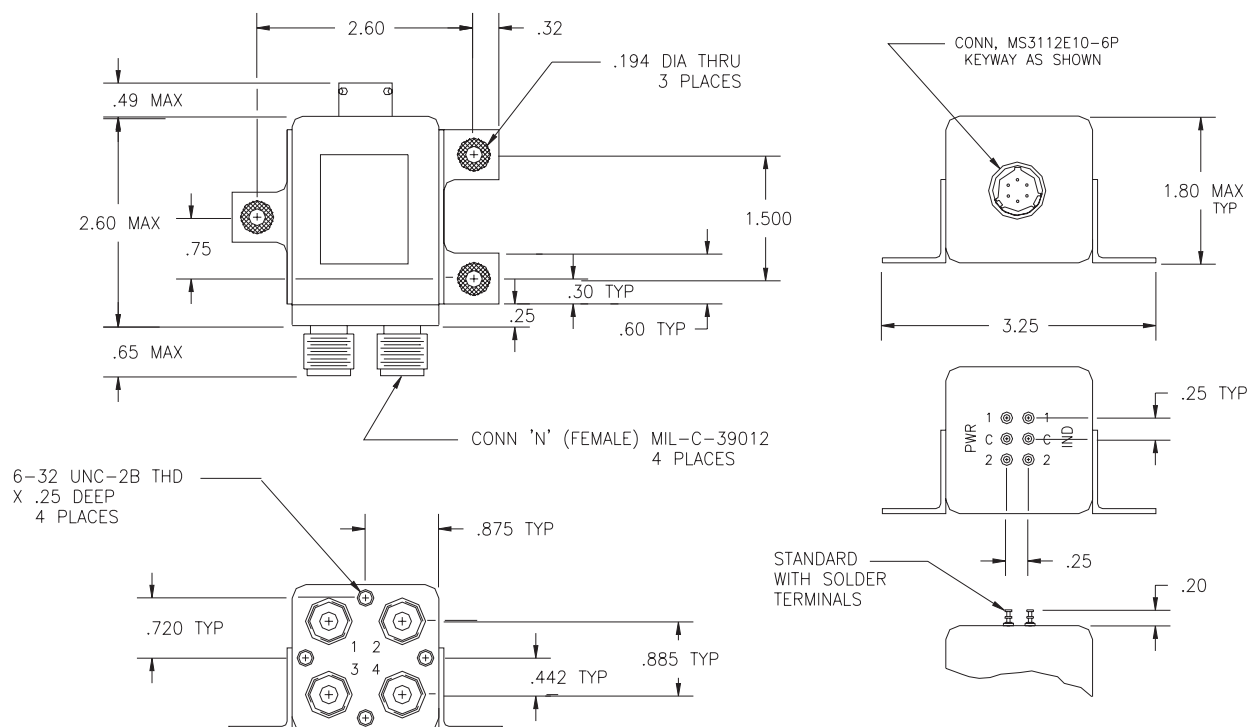
PART No.	CONN	FREQ GHz MAX	VOLTAGE DC	VOLTAGE COM (+,-)	CURRENT MA	DIODES	IND.	ACTUATOR	DIMENSION - A -
C1-7-L	SMA	18.0	28.0	-	125	NO	NO	LATCHING	1.50
C1-7-LI	SMA	18.0	28.0	-	125	NO	YES	LATCHING	1.80
C1-7-LIS	SMA	18.0	28.0	-	125	YES	YES	LATCHING	1.80
C1-7-F	SMA	18.0	28.0	-	190	NO	NO	FAILSAFE	1.50
C1-7-FI	SMA	18.0	28.0	-	190	NO	YES	FAILSAFE	1.80
C1-7-FIS	SMA	18.0	28.0	-	190	YES	YES	FAILSAFE	1.80
C1-7/28P	SMA	18.0	28.0	+	125	NO	NO	LATCHING	1.50
C1-7-LIS/28P	SMA	18.0	28.0	+	125	YES	YES	LATCHING	1.80
C1-7-L/12	SMA	18.0	12.0	-	200	NO	NO	LATCHING	1.50
C1-7-LI/12	SMA	18.0	12.0	-	200	NO	YES	LATCHING	1.80
C1-7-LIS/12	SMA	18.0	12.0	-	200	YES	YES	LATCHING	1.80
C1-7-L/12P	SMA	18.0	12.0	+	200	NO	NO	LATCHING	1.50
C1-7-LI/12P	SMA	18.0	12.0	+	200	NO	YES	LATCHING	1.80
C1-7-LIS/12P	SMA	18.0	12.0	+	200	YES	YES	LATCHING	1.80

MODEL C2 DPDT

*SCHEMATIC
LATCHING, SUPPRESSION DIODES & INDICATORS*



OUTLINE DRAWING



C2 SPECIFICATIONS

FREQUENCY : GHz	DC - 2.0	2.0 - 4.0	4.0 - 8.0	8.0 - 12.4
VSWR	1.20 : 1	1.30 : 1	1.40 : 1	1.50 : 1
INSERTION LOSS	0.20	0.30	0.40	0.50
ISOLATION	80	70	70	60
IMPEDANCE	50 Ohms			

MECHANICAL

CONTACT : BREAK BEFORE MAKE
 ACTUATOR : PULSE LATCHING **
 SWITCHING SPEED : 20 mSEC MAX

ELECTRICAL

ACTUATOR VOLTAGE : 28.0 Vdc (22.0-32.0 Vdc) *
 ACTUATOR CURRENT : .200 A MAX @ 28.0 Vdc
 POWER HANDLING : 350 WCW @ 1.0 Ghz

ENVIRONMENTAL

OPERATING TEMP : -54 DEG C TO 90 DEG C : SINE VIBRATION : 30 G'S rms
 LIFE : 1,000,000 CYCLES : RANDOM VIBRATION : 20 G'S rms

FINISH

RF CAVITY : ALUMINUM, ELECTROLESS NICKEL PLATED PER MIL-C-26074, CLASS 4
 ENCLOSURE : ALUMINUM, BLACK
 CONTACT : BERYLLIUM COPPER, GOLD PLATED PER MIL-G-45204
 CONNECTOR SHELL : CRES, PASSIVATED PER QQ-P-35 OR BRASS, ELECTROLESS NICKEL PLATED PER MIL-C-26074

DESIGNED TO MEET MIL-S-3928 AND MIL-E-5400

* ALSO AVAILABLE WITH 12.0, 15.0 AND 24.0 Vdc

** ALSO AVAILABLE WITH FAILSAFE AND MOMENTARY

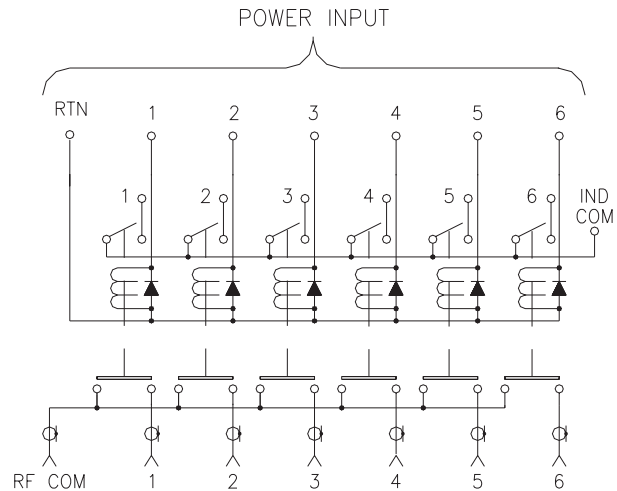
QUICK SELECTIONS TABLE

PART No.	CONN	FREQ GHz MAX	VOLTAGE DC	VOLTAGE COM (+,-)	CURRENT MA	DIODES	IND.	ACTUATOR	DIMENSION - A -
C2-2-L	N	2.0	28.0	-	200	NO	NO	LATCHING	2.60
C2-2-LI	N	2.0	28.0	-	200	NO	YES	LATCHING	2.60
C2-2-LIS	N	2.0	28.0	-	200	YES	YES	LATCHING	2.60
C2-2-F	N	2.0	28.0	-	250	NO	NO	FAILSAFE	2.60
C2-2-FI	N	2.0	28.0	-	250	NO	YES	FAILSAFE	2.60
C2-2-FIS	N	2.0	28.0	-	250	YES	YES	FAILSAFE	2.60
C2-2-L/28P	N	2.0	28.0	+	200	NO	NO	LATCHING	2.60
C2-2-LIS/28P	N	2.0	28.0	+	200	YES	YES	LATCHING	2.60
C2-3-L	N	4.0	12.0	-	250	NO	NO	LATCHING	2.60
C2-3-LI	N	4.0	12.0	-	250	NO	YES	LATCHING	2.60
C2-3-LIS	N	4.0	12.0	-	250	YES	YES	LATCHING	2.60
C2-3-L/28P	N	4.0	12.0	+	250	NO	NO	LATCHING	2.60
C2-3-LI/28P	N	4.0	12.0	+	250	NO	YES	LATCHING	2.60
C2-3-LIS/28P	N	4.0	12.0	+	250	YES	YES	LATCHING	2.60

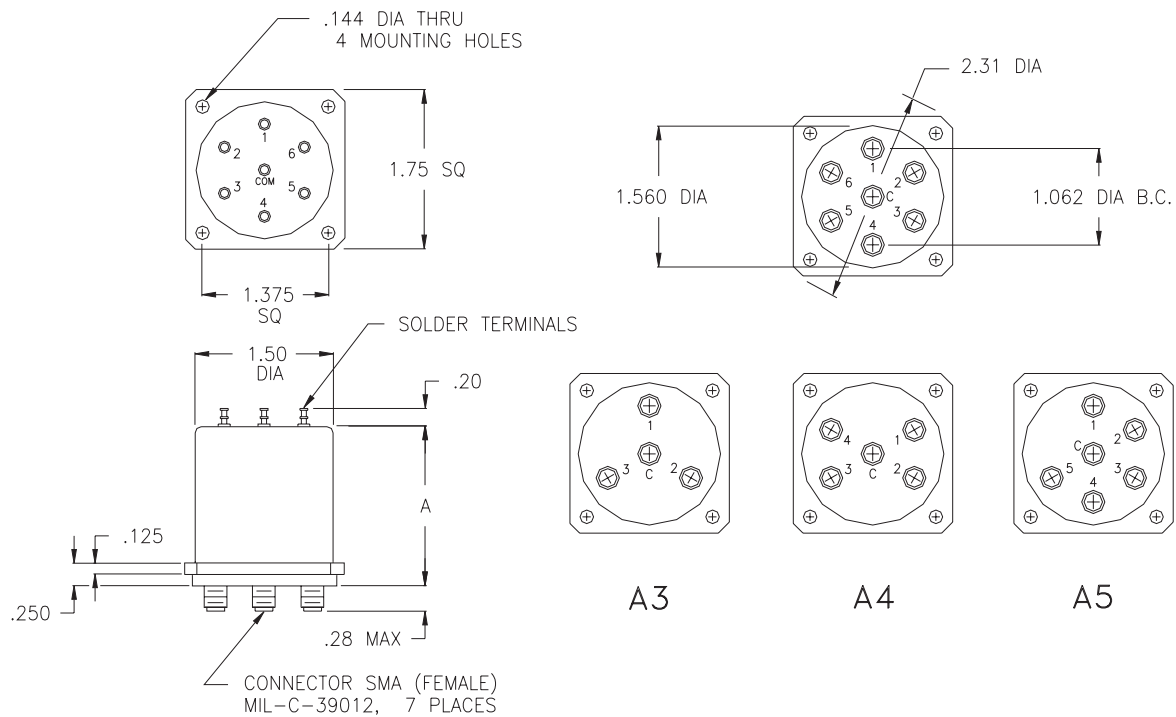
MODELS A3 - A6

SP6T

SCHEMATIC
MOMENTARY, SUPPRESSION DIODES & INDICATORS



OUTLINE DRAWING



A3 - A6 SPECIFICATIONS

FREQUENCY : GHz	DC - 2.0	2.0 - 4.0	4.0 - 8.0	8.0 - 12.4	12.4 - 18.0	18.0 -26.5
VSWR	1.20 : 1	1.25 :1	1.30 : 1	1.40 : 1	1.50 : 1	1.65 : 1
INSERTION LOSS	0.20	0.25	0.30	0.40	0.50	.070
ISOLATION	90	80	80	70	60	50
IMPEDANCE	50 Ohms					

MECHANICAL

CONTACT : BREAK BEFORE MAKE
 ACTUATOR : MOMENTARY
 SWITCHING SPEED : 20 mSEC MAX

ELECTRICAL

ACTUATOR VOLTAGE : 28.0 Vdc (22.0-32.0 Vdc) *
 ACTUATOR CURRENT : .150 A MAX @ 28.0 Vdc
 POWER HANDLING : 200 WCW @ 1.0 Ghz

ENVIRONMENTAL

OPERATING TEMP : -54 DEG C TO 90 DEG C : SINE VIBRATION : 30 G'S rms
 LIFE : 1,000,000 CYCLES : RANDOM VIBRATION : 20 G'S rms

FINISH

RF CAVITY : ALUMINUM,ELECTROLESS NICKEL PLATED PER MIL-C-26074, CLASS 4
 ENCLOSURE : ALUMINUM, BLACK
 CONTACT : BERYLLIUM COPPER, GOLD PLATED PER MIL-G-45204
 CONNECTOR SHELL : CRES, PASSIVATED PER QQ-P-35 OR BRASS, ELECTROLESS NICKEL PLATED PER MIL-C-26074

DESIGNED TO MEET MIL-S-3928 AND MIL-E-5400

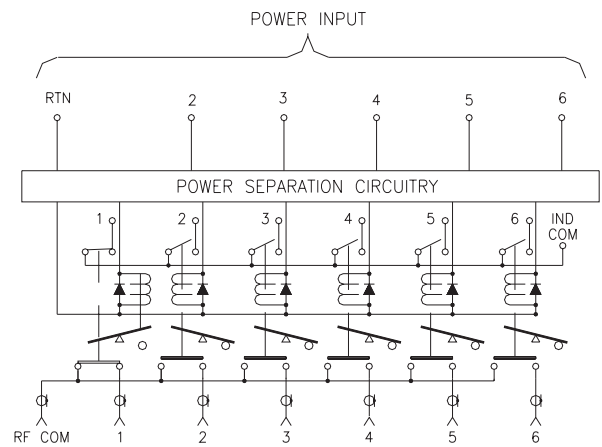
* ALSO AVAILABLE WITH 12.0, 15.0 AND 24.0 Vdc

QUICK SELECTIONS TABLE

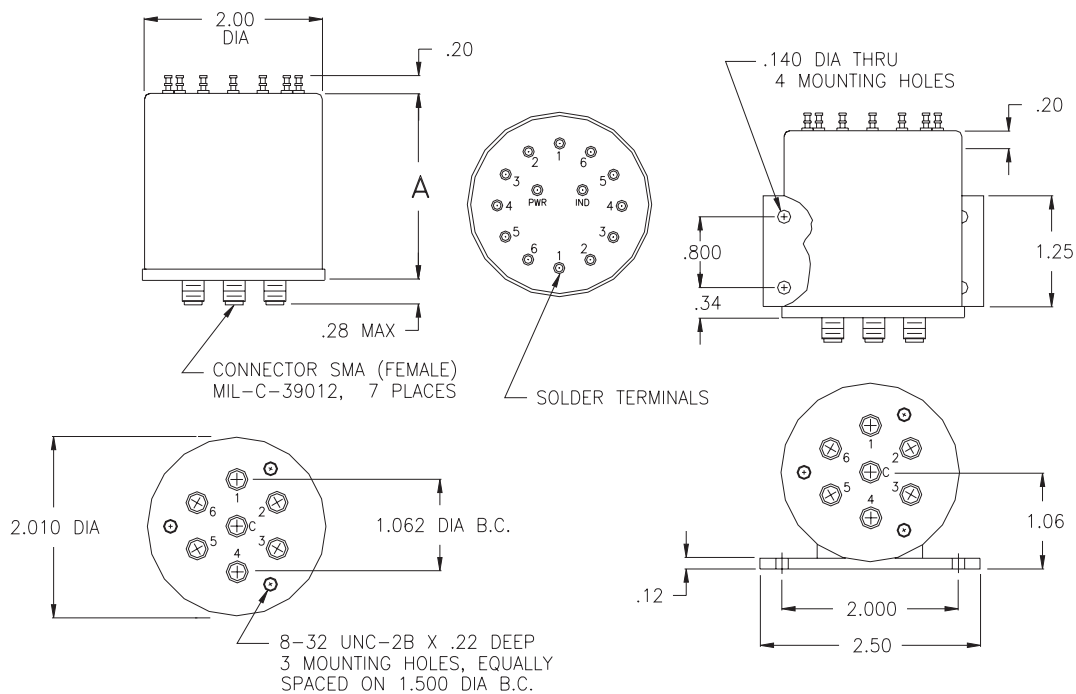
PART No.	CONN	FREQ GHz MAX	VOLTAGE DC	VOLTAGE COM (+,-)	CURRENT MA	DIODES	IND.	ACTUATOR	DIMENSION - A -
A3-7-M	SMA	18.0	28.0	N/A	150	NO	NO	MOMENTARY	1.90
A3-7-MS	SMA	18.0	28.0	-	150	YES	NO	MOMENTARY	1.90
A3-7-MIS	SMA	18.0	28.0	-	150	YES	YES	MOMENTARY	1.90
A4-7-M	SMA	18.0	28.0	N/A	150	NO	NO	MOMENTARY	1.90
A4-7-MS	SMA	18.0	28.0	-	150	YES	NO	MOMENTARY	1.90
A4-7-MIS	SMA	18.0	28.0	-	150	YES	YES	MOMENTARY	1.90
A5-7-M	SMA	18.0	28.0	N/A	150	NO	NO	MOMENTARY	1.90
A5-7-MS	SMA	18.0	28.0	-	150	YES	NO	MOMENTARY	1.90
A5-7-MIS	SMA	18.0	28.0	-	150	YES	YES	MOMENTARY	1.90
A6-7-M	SMA	18.0	28.0	N/A	150	NO	NO	MOMENTARY	1.90
A6-7-MS	SMA	18.0	28.0	-	150	YES	NO	MOMENTARY	1.90
A6-7-MIS	SMA	18.0	28.0	-	150	YES	YES	MOMENTARY	1.90
A6-7-MS/28P	SMA	18.0	28.0	+	150	YES	NO	MOMENTARY	1.90
A6-7-MIS/28P	SMA	18.0	28.0	+	150	YES	YES	MOMENTARY	1.90

MODEL E3-E6 SP6T

*SCHEMATIC
FAILSAFE, SUPPRESSION DIODES & INDICATORS*



OUTLINE DRAWING



E3 - E6 SPECIFICATIONS

FREQUENCY : GHz	DC - 2.0	2.0 - 4.0	4.0 - 8.0	8.0 - 12.4	12.4 - 18.0
VSWR	1.20 : 1	1.25 : 1	1.30 : 1	1.40 : 1	1.50 : 1
INSERTION LOSS	0.20	0.25	0.30	0.40	0.50
ISOLATION	90	80	80	70	60
IMPEDANCE	50 Ohms				

MECHANICAL

CONTACT : BREAK BEFORE MAKE
 ACTUATOR : LATCHING **
 SWITCHING SPEED : 20 mSEC MAX

ELECTRICAL

ACTUATOR VOLTAGE : 28.0 Vdc (22.0-32.0 Vdc) *
 ACTUATOR CURRENT : SEE TABLE BELOW
 POWER HANDLING : 200 WCW @ 1.0 Ghz

ENVIRONMENTAL

OPERATING TEMP : -54 DEG C TO 90 DEG C : SINE VIBRATION : 30 G'S rms
 LIFE : 1,000,000 CYCLES : RANDOM VIBRATION : 20 G'S rms

FINISH

RF CAVITY : ALUMINUM, ELECTROLESS NICKEL PLATED PER MIL-C-26074, CLASS 4
 ENCLOSURE : ALUMINUM, BLACK
 CONTACT : BERYLLIUM COPPER, GOLD PLATED PER MIL-G-45204
 CONNECTOR SHELL : CRES, PASSIVATED PER QQ-P-35 OR BRASS, ELECTROLESS NICKEL PLATED PER MIL-C-26074

DESIGNED TO MEET MIL-S-3928 AND MIL-E-5400

* ALSO AVAILABLE WITH 12.0, 15.0 AND 24.0 Vdc

** ALSO AVAILABLE WITH FAILSAFE AND MOMENTARY

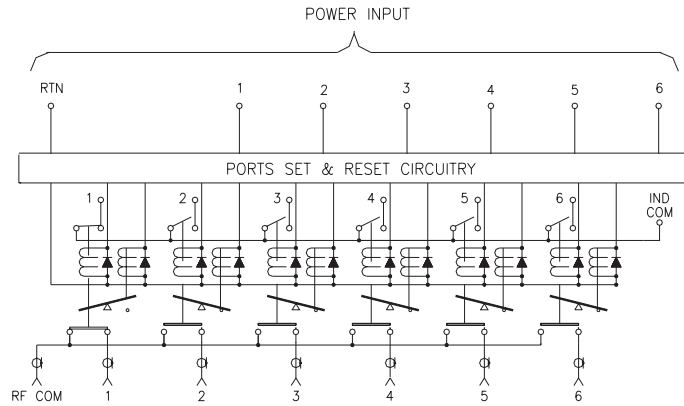
QUICK SELECTIONS TABLE

PART No.	CONN	FREQ GHz MAX	VOLTAGE DC	VOLTAGE COM (+,-)	CURRENT MA	DIODES	IND.	ACTUATOR	DIMENSION - A -
E3-7-L	SMA	18.0	28.0	-	300	NO	NO	LATCHING	2.20
E3-7-LI	SMA	18.0	28.0	-	300	NO	YES	LATCHING	2.20
E3-7-LIS	SMA	18.0	28.0	-	300	YES	YES	LATCHING	2.20
E4-7-F	SMA	18.0	28.0	-	250	NO	NO	FAILSAFE	2.20
E4-7-FI	SMA	18.0	28.0	-	250	NO	YES	FAILSAFE	2.20
E4-7-FIS	SMA	18.0	28.0	-	250	YES	YES	FAILSAFE	2.20
E5-7-L/28P	SMA	18.0	28.0	+	500	NO	NO	LATCHING	2.20
E5-7-LIS/28P	SMA	18.0	28.0	+	500	YES	YES	LATCHING	2.20
E6-7-L	SMA	18.0	28.0	-	600	NO	NO	LATCHING	2.20
E6-7-LI	SMA	18.0	28.0	-	600	NO	YES	LATCHING	2.20
E6-7-LIS	SMA	18.0	28.0	-	600	YES	YES	LATCHING	2.20
E6-7-L/28P	SMA	18.0	28.0	+	600	NO	NO	LATCHING	2.20
E6-7-LI/28P	SMA	18.0	28.0	+	600	NO	YES	LATCHING	2.20
E6-7-LIS/28P	SMA	18.0	28.0	+	600	YES	YES	LATCHING	2.20

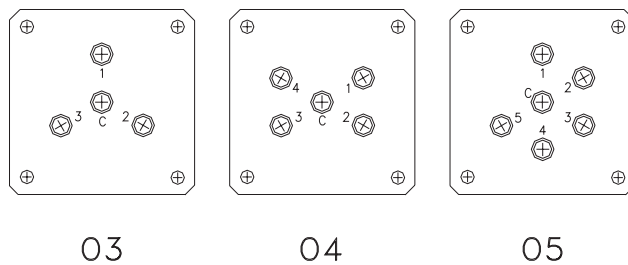
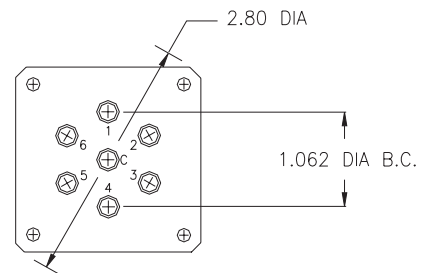
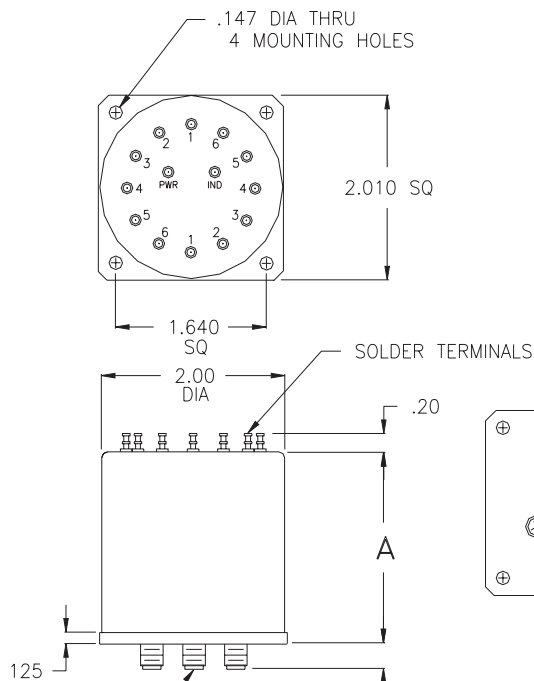
MODELS O3 - O6

SP6T

SCHEMATIC
LATCHING, SUPPRESSION DIODES & INDICATORS



OUTLINE DRAWING



O3 - O6 SPECIFICATIONS

FREQUENCY : GHz	DC - 2.0	2.0 - 4.0	4.0 - 8.0	8.0 - 12.4	12.4 - 18.0
VSWR	1.20 : 1	1.25 : 1	1.30 : 1	1.40 : 1	1.50 : 1
INSERTION LOSS	0.20	0.25	0.30	0.40	0.50
ISOLATION	90	80	80	70	60
IMPEDANCE	50 Ohms				

MECHANICAL

CONTACT : BREAK BEFORE MAKE
 ACTUATOR : LATCHING **
 SWITCHING SPEED : 20 mSEC MAX

ELECTRICAL

ACTUATOR VOLTAGE : 28.0 Vdc (22.0-32.0 Vdc) *
 ACTUATOR CURRENT : SEE TABLE BELOW
 POWER HANDLING : 200 WCW @ 1.0 Ghz

ENVIRONMENTAL

OPERATING TEMP : -54 DEG C TO 90 DEG C : SINE VIBRATION : 30 G'S rms
 LIFE : 1,000,000 CYCLES : RANDOM VIBRATION : 20 G'S rms

FINISH

RF CAVITY : ALUMINUM, ELECTROLESS NICKEL PLATED PER MIL-C-26074, CLASS 4
 ENCLOSURE : ALUMINUM, BLACK
 CONTACT : BERYLLIUM COPPER, GOLD PLATED PER MIL-G-45204
 CONNECTOR SHELL : CRES, PASSIVATED PER QQ-P-35 OR BRASS, ELECTROLESS NICKEL PLATED PER MIL-C-26074

DESIGNED TO MEET MIL-S-3928 AND MIL-E-5400

* ALSO AVAILABLE WITH 12.0, 15.0 AND 24.0 Vdc

** ALSO AVAILABLE WITH FAILSAFE AND MOMENTARY

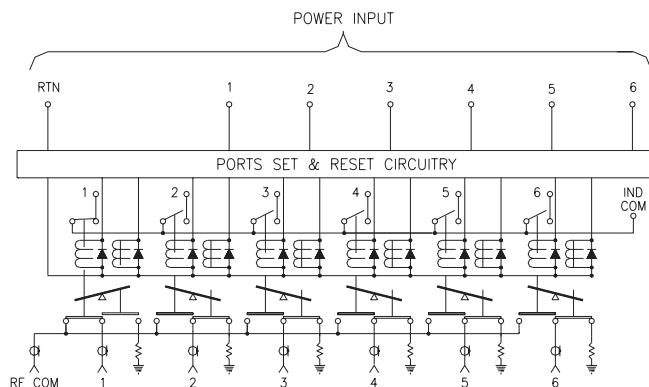
QUICK SELECTIONS TABLE

PART No.	CONN	FREQ GHz MAX	VOLTAGE DC	VOLTAGE COM (+,-)	CURRENT MA	DIODES	IND.	ACTUATOR	DIMENSION - A -
O3-7-L	SMA	18.0	28.0	-	300	NO	NO	LATCHING	2.20
O3-7-LI	SMA	18.0	28.0	-	300	NO	YES	LATCHING	2.20
O3-7-LIS	SMA	18.0	28.0	-	300	YES	YES	LATCHING	2.20
O4-7-F	SMA	18.0	28.0	-	250	NO	NO	FAILSAFE	2.20
O4-7-FI	SMA	18.0	28.0	-	250	NO	YES	FAILSAFE	2.20
O4-7-FIS	SMA	18.0	28.0	-	250	YES	YES	FAILSAFE	2.20
O5-7-L/28P	SMA	18.0	28.0	+	500	NO	NO	LATCHING	2.20
O5-7-LIS/28P	SMA	18.0	28.0	+	500	YES	YES	LATCHING	2.20
O6-7-L	SMA	18.0	28.0	-	600	NO	NO	LATCHING	2.20
O6-7-LI	SMA	18.0	28.0	-	600	NO	YES	LATCHING	2.20
O6-7-LIS	SMA	18.0	28.0	-	600	YES	YES	LATCHING	2.20
O6-7-L/28P	SMA	18.0	28.0	+	600	NO	NO	LATCHING	2.20
O6-7-LI/28P	SMA	18.0	28.0	+	600	NO	YES	LATCHING	2.20
O6-7-LIS/28P	SMA	18.0	28.0	+	600	YES	YES	LATCHING	2.20

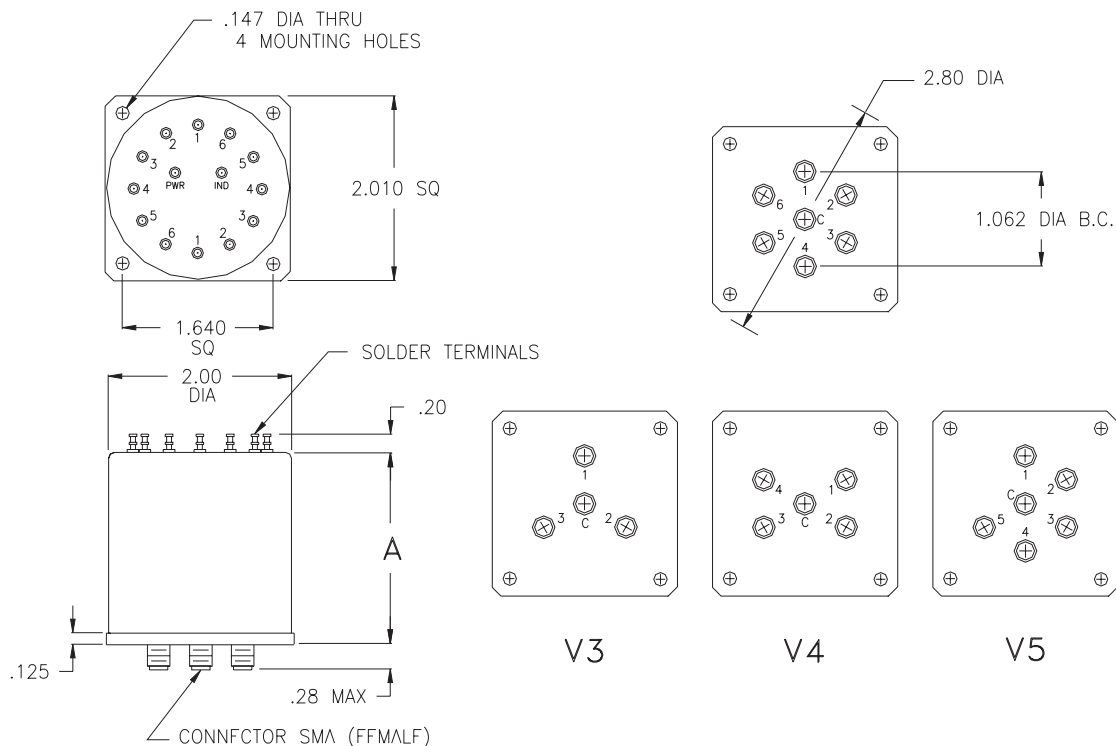
MODEL V3 - V6

SP6T

SCHEMATIC
LATCHING, SUPPRESSION DIODES & INDICATORS
OPEN PORTS TERMINATED



OUTLINE DRAWING



V3 - V6 SPECIFICATIONS

FREQUENCY : GHz	DC - 2.0	2.0 - 4.0	4.0 - 8.0	8.0 - 12.4	12.4 - 18.0
VSWR	1.20 : 1	1.25 : 1	1.30 : 1	1.40 : 1	1.50 : 1
INSERTION LOSS	0.20	0.25	0.30	0.40	0.50
ISOLATION	90	80	80	70	60
IMPEDANCE	50 Ohms				

MECHANICAL

CONTACT : BREAK BEFORE MAKE
 ACTUATOR : LATCHING **
 SWITCHING SPEED : 20 mSEC MAX

ELECTRICAL

ACTUATOR VOLTAGE : 28.0 Vdc (22.0-32.0 Vdc) *
 ACTUATOR CURRENT : SEE TABLE BELOW
 POWER HANDLING : 200 WCW @ 1.0 Ghz (THRU)

ENVIRONMENTAL

OPERATING TEMP : -54 DEG C TO 90 DEG C : SINE VIBRATION : 30 G'S rms
 LIFE : 1,000,000 CYCLES : RANDOM VIBRATION : 20 G'S rms

FINISH

RF CAVITY : ALUMINUM, ELECTROLESS NICKEL PLATED PER MIL-C-26074, CLASS 4
 ENCLOSURE : ALUMINUM, BLACK
 CONTACT : BERYLLIUM COPPER, GOLD PLATED PER MIL-G-45204
 CONNECTOR SHELL : CRES, PASSIVATED PER QQ-P-35 OR BRASS, ELECTROLESS NICKEL PLATED PER MIL-C-26074

DESIGNED TO MEET MIL-S-3928 AND MIL-E-5400

* ALSO AVAILABLE WITH 12.0, 15.0 AND 24.0 Vdc

** ALSO AVAILABLE WITH FAILSAFE AND MOMENTARY

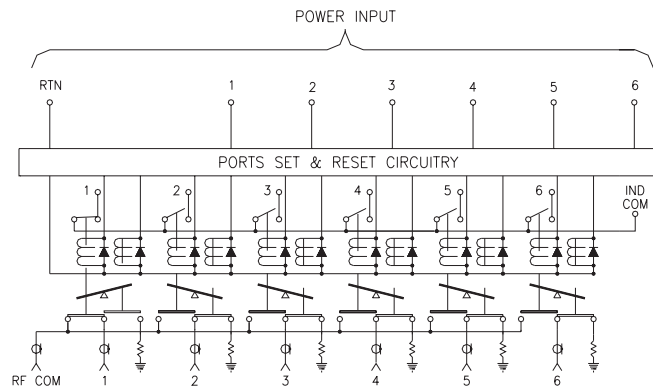
QUICK SELECTIONS TABLE

PART No.	CONN	FREQ GHz MAX	VOLTAGE DC	VOLTAGE COM (+,-)	CURRENT MA	DIODES	IND.	ACTUATOR	DIMENSION - A -
V3-7-L	SMA	18.0	28.0	-	300	NO	NO	LATCHING	2.20
V3-7-LI	SMA	18.0	28.0	-	300	NO	YES	LATCHING	2.20
V3-7-LIS	SMA	18.0	28.0	-	300	YES	YES	LATCHING	2.20
V4-7-F	SMA	18.0	28.0	-	250	NO	NO	FAILSAFE	2.20
V4-7-FI	SMA	18.0	28.0	-	250	NO	YES	FAILSAFE	2.20
V4-7-FIS	SMA	18.0	28.0	-	250	YES	YES	FAILSAFE	2.20
V5-7-L/28P	SMA	18.0	28.0	+	500	NO	NO	LATCHING	2.20
V5-7-LIS/28P	SMA	18.0	28.0	+	500	YES	YES	LATCHING	2.20
V6-7-L	SMA	18.0	28.0	-	600	NO	NO	LATCHING	2.20
V6-7-LI	SMA	18.0	28.0	-	600	NO	YES	LATCHING	2.20
V6-7-LIS	SMA	18.0	28.0	-	600	YES	YES	LATCHING	2.20
V6-7-L/28P	SMA	18.0	28.0	+	600	NO	NO	LATCHING	2.20
V6-7-LI/28P	SMA	18.0	28.0	+	600	NO	YES	LATCHING	2.20
V6-7-LIS/28P	SMA	18.0	28.0	+	600	YES	YES	LATCHING	2.20

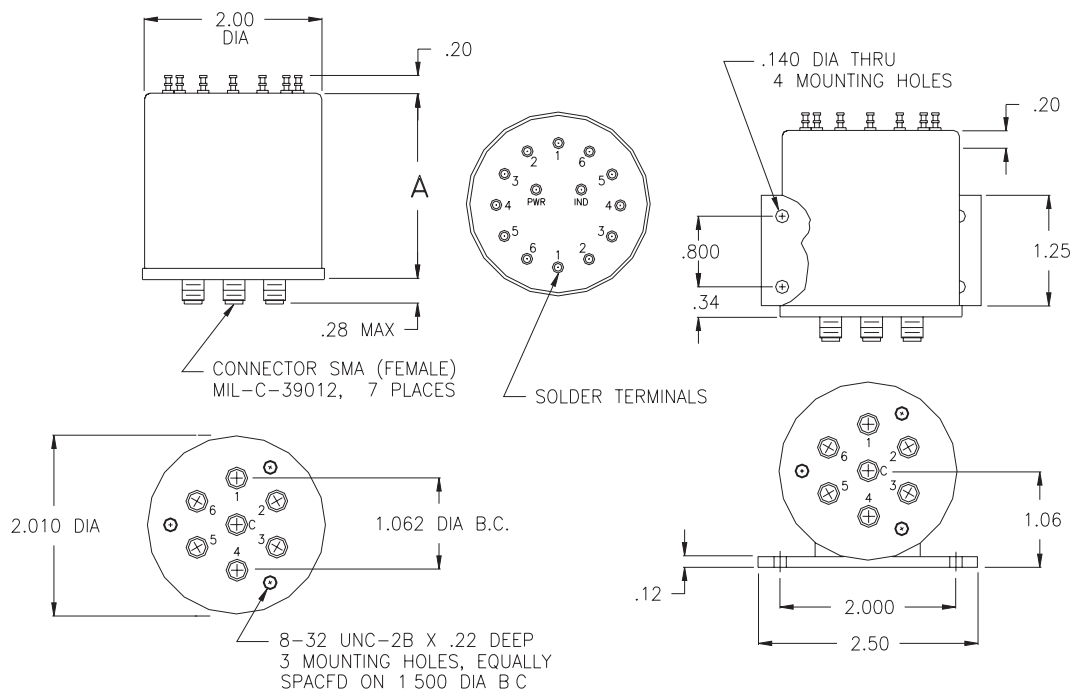
MODEL W3 - W6

SP3T - SP6T

SCHEMATIC
INC, SUPPRESSION DIODES & INDICATORS
OPEN PORTS TERMINATED



OUTLINE DRAWING



W3 - W6 SPECIFICATIONS

FREQUENCY : GHz	DC - 2.0	2.0 - 4.0	4.0 - 8.0	8.0 - 12.4	12.4 - 18.0
VSWR	1.20 : 1	1.25 : 1	1.30 : 1	1.40 : 1	1.50 : 1
INSERTION LOSS	0.20	0.25	0.30	0.40	0.50
ISOLATION	90	80	80	70	60
IMPEDANCE	50 Ohms				

MECHANICAL

CONTACT : BREAK BEFORE MAKE
 ACTUATOR : LATCHING **
 SWITCHING SPEED : 20 mSEC MAX

ELECTRICAL

ACTUATOR VOLTAGE : 28.0 Vdc (22.0-32.0 Vdc) *
 ACTUATOR CURRENT : SEE TABLE BELOW
 POWER HANDLING : 200 WCW @ 1.0 Ghz (THRU)

ENVIRONMENTAL

OPERATING TEMP : -54 DEG C TO 90 DEG C : SINE VIBRATION : 30 G'S rms
 LIFE : 1,000,000 CYCLES : RANDOM VIBRATION : 20 G'S rms

FINISH

RF CAVITY : ALUMINUM, ELECTROLESS NICKEL PLATED PER MIL-C-26074, CLASS 4
 ENCLOSURE : ALUMINUM, BLACK
 CONTACT : BERYLLIUM COPPER, GOLD PLATED PER MIL-G-45204
 CONNECTOR SHELL : CRES, PASSIVATED PER QQ-P-35 OR BRASS, ELECTROLESS NICKEL PLATED PER MIL-C-26074

DESIGNED TO MEET MIL-S-3928 AND MIL-E-5400

* ALSO AVAILABLE WITH 12.0, 15.0 AND 24.0 Vdc

** ALSO AVAILABLE WITH FAILSAFE AND MOMENTARY

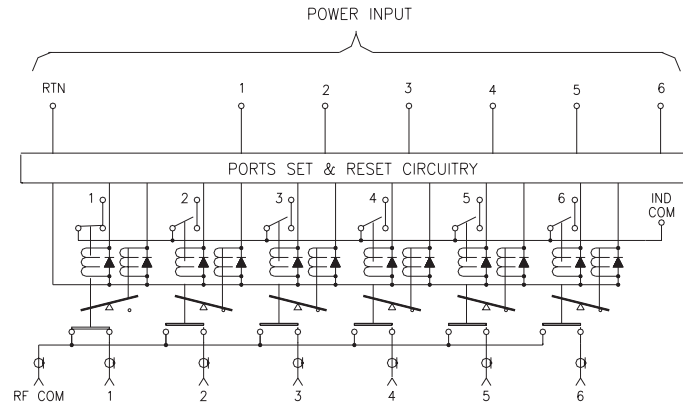
QUICK SELECTIONS TABLE

PART No.	CONN	FREQ GHz MAX	VOLTAGE DC	VOLTAGE COM (+,-)	CURRENT MA	DIODES	IND.	ACTUATOR	DIMENSION - A -
W3-7-L	SMA	18.0	28.0	-	300	NO	NO	LATCHING	2.20
W3-7-LI	SMA	18.0	28.0	-	300	NO	YES	LATCHING	2.20
W3-7-LIS	SMA	18.0	28.0	-	300	YES	YES	LATCHING	2.20
W4-7-F	SMA	18.0	28.0	-	250	NO	NO	FAILSAFE	2.20
W4-7-FI	SMA	18.0	28.0	-	250	NO	YES	FAILSAFE	2.20
W4-7-FIS	SMA	18.0	28.0	-	250	YES	YES	FAILSAFE	2.20
W5-7-L/28P	SMA	18.0	28.0	+	500	NO	NO	LATCHING	2.20
W5-7-LIS/28P	SMA	18.0	28.0	+	500	YES	YES	LATCHING	2.20
W6-7-L	SMA	18.0	28.0	-	600	NO	NO	LATCHING	2.20
W6-7-LI	SMA	18.0	28.0	-	600	NO	YES	LATCHING	2.20
W6-7-LIS	SMA	18.0	28.0	-	600	YES	YES	LATCHING	2.20
W6-7-L/28P	SMA	18.0	28.0	+	600	NO	NO	LATCHING	2.20
W6-7-LI/28P	SMA	18.0	28.0	+	600	NO	YES	LATCHING	2.20
W6-7-LIS/28P	SMA	18.0	28.0	+	600	YES	YES	LATCHING	2.20

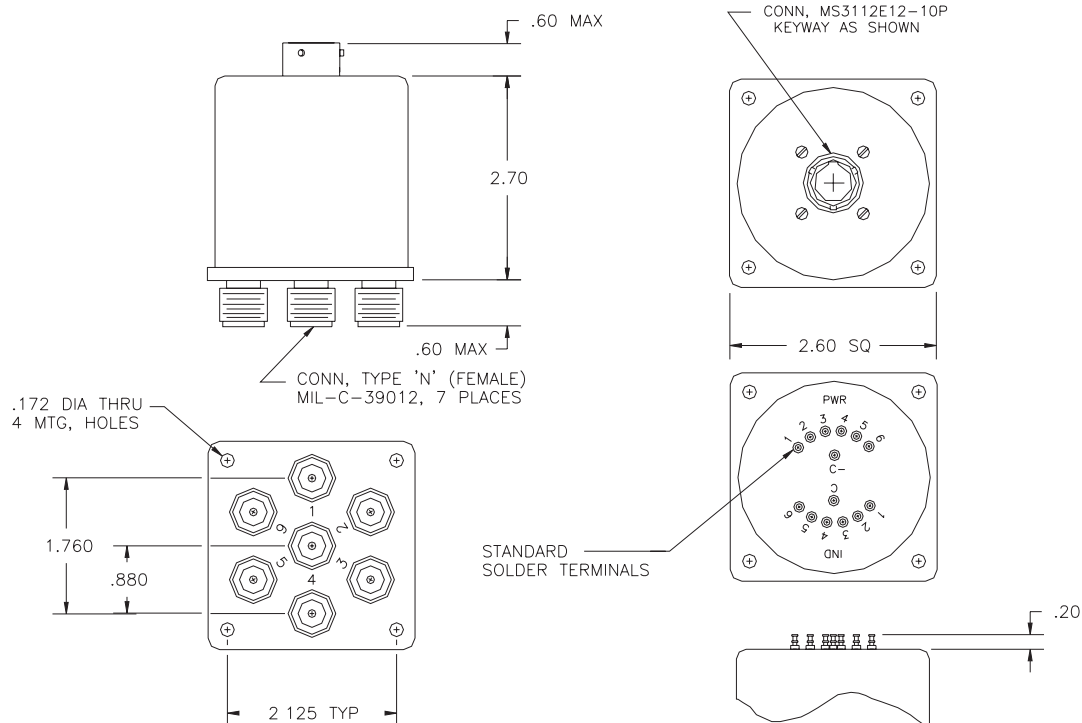
MODELS D3 - D6

SP3T - SP6T

SCHEMATIC
LATCHING, SUPPRESSION DIODES & INDICATORS



OUTLINE DRAWING



D3 - D6 SPECIFICATIONS

FREQUENCY : GHz	DC - 2.0	2.0 - 4.0	4.0 - 8.0	8.0 - 12.4
VSWR	1.20 : 1	1.30 : 1	1.40 : 1	1.50 : 1
INSERTION LOSS	0.20	0.30	0.40	0.50
ISOLATION	80	70	70	60
IMPEDANCE	50 Ohms			

MECHANICAL

CONTACT : BREAK BEFORE MAKE
 ACTUATOR : PULSE LATCHING **
 SWITCHING SPEED : 20 mSEC MAX

ELECTRICAL

ACTUATOR VOLTAGE : 28.0 Vdc (22.0-32.0 Vdc) *
 ACTUATOR CURRENT : SEE TABLE BELOW
 POWER HANDLING : 350 WCW @ 1.0 Ghz

ENVIRONMENTAL

OPERATING TEMP : -54 DEG C TO 90 DEG C : SINE VIBRATION : 30 G'S rms
 LIFE : 1,000,000 CYCLES : RANDOM VIBRATION : 20 G'S rms

FINISH

RF CAVITY : ALUMINUM, ELECTROLESS NICKEL PLATED PER MIL-C-26074, CLASS 4
 ENCLOSURE : ALUMINUM, BLACK
 CONTACT : BERYLLIUM COPPER, GOLD PLATED PER MIL-G-45204
 CONNECTOR SHELL : CRES, PASSIVATED PER QQ-P-35 OR BRASS, ELECTROLESS NICKEL PLATED PER MIL-C-26074

DESIGNED TO MEET MIL-S-3928 AND MIL-E-5400

* ALSO AVAILABLE WITH 12.0, 15.0 AND 24.0 Vdc

** ALSO AVAILABLE WITH FAILSAFE AND MOMENTARY

QUICK SELECTIONS TABLE

PART No.	CONN	FREQ GHz MAX	VOLTAGE DC	VOLTAGE COM (+,-)	CURRENT MA	DIODES	IND.	ACTUATOR	DIMENSION - A -
D3-2-L	N	2.0	28.0	-	350	NO	NO	LATCHING	2.70
D3-2-LI	N	2.0	28.0	-	350	NO	YES	LATCHING	2.70
D3-2-LIS	N	2.0	28.0	-	350	YES	YES	LATCHING	2.70
D4-2-F	N	2.0	28.0	-	275	NO	NO	FAILSAFE	2.70
D4-2-FI	N	2.0	28.0	-	275	NO	YES	FAILSAFE	2.70
D4-2-FIS	N	2.0	28.0	-	275	YES	YES	FAILSAFE	2.70
D5-2-L/28P	N	2.0	28.0	+	575	NO	NO	LATCHING	2.70
D5-2-LIS/28P	N	2.0	28.0	+	575	YES	YES	LATCHING	2.70
D6-3-L	N	4.0	12.0	-	685	NO	NO	LATCHING	2.70
D6-3-LI	N	4.0	12.0	-	685	NO	YES	LATCHING	2.70
D6-3-LIS	N	4.0	12.0	-	685	YES	YES	LATCHING	2.70
D6-3-L/28P	N	4.0	12.0	+	685	NO	NO	LATCHING	2.70
D6-3-LI/28P	N	4.0	12.0	+	685	NO	YES	LATCHING	2.70
D6-3-LIS/28P	N	4.0	12.0	+	685	YES	YES	LATCHING	2.70

FREE RUN DIELECTRIC RESONATOR OSCILLATORS

FEATURES

- Low Microphonic
- High Power Output
- Low Harmonic, Low Phase Noise
- High Stability



GENERAL SPECIFICATIONS:

Model No.	DR-XXXX-XM*	DR-XXXX-XM*	DR-XXXX-XM*	DR-XXXX-XM*	DR-XXXX-XM*
Single Frequency	3.0-4.0 GHz	4.0-5.8 GHz	5.9-7.9 GHz	8.0-10.5 GHz	10.5-14.0 GHz
Mechanical Tuning Range	3% Min.	3% Min.	3% Min.	3% Min.	3% Min.
Mechanical Tuning Resolution	50 KHz Typ.	50 KHz Typ.	100 KHz Typ.	150 KHz Typ.	150 KHz Typ.
Electrical Tuning Range	0.2 - 0.3%	0.2 - 0.3%	0.2 - 0.3%	0.2 - 0.3%	0.2 - 0.3%
Electrical Tuning Voltage	0 To +30 VDC	0 To +30 VDC	0 To +30 VDC	0 To +30 VDC	0 To +30 VDC
Power Output @ 25° C	+16 dBm	+16 dBm	+15.5 dBm	+15 dBm	+10 dBm
Power Output Variation (Max) @ 0° To +60° C	± 0.6 dB	± 0.6 dB	± 0.6 dB	± 0.6 dB	± 2 dB
Power Output Variation (Max) @ -40° To +85° C	+1.0/-1.3 dB	+1.0/-1.3 dB	+1.0/-1.3 dB	+1.0/-1.3 dB	+2.0/-2.3 dB
Frequency Stability	5 ppm/°C	5 ppm/°C	5 ppm/°C	5 ppm/°C	5 ppm/°C
Phase Noise	See Figure 1	See Figure 1	See Figure 1	See Figure 1	See Figure 1
Spurious (dBc)	-80	-80	-80	-80	-80
Harmonics (dBc)	-20	-20	-20	-20	-20
Frequency Pushing	10 KHz/V	5 KHz/V	10 KHz/V	5 KHz/V	5 KHz/V
Frequency Pulling 1.5:1 VSWR	± 1.0	± 1.5	± 1.0	± 1.5	± 1.5
Power Requirements (Volts)	+15 ± 1 VDC	+7 TO +18 VDC	+7 TO +18 VDC	+7 TO +18 VDC	+12 to +24±1 VDC
Power Requirements (mA)	50	50	50	50	200
Operating Temperature	-54° to +85° C	-40° to +85° C	-54° to +85° C	-40° to +85° C	-40 to +55° C
Storage Temperature	-55° to +125° C	-55° to +125° C	-55° to +125° C	-55° to +125° C	-55° to +125° C
Connectors	SMA Female	SMA Female	SMA Female	SMA Female	SMA Female
Outline	1	1	1	2	1A

Ordering Information

"XXXX" Represents Center Frequency

*All models offer mechanical tuning

*Add - "E" for Electrical Tuning Option

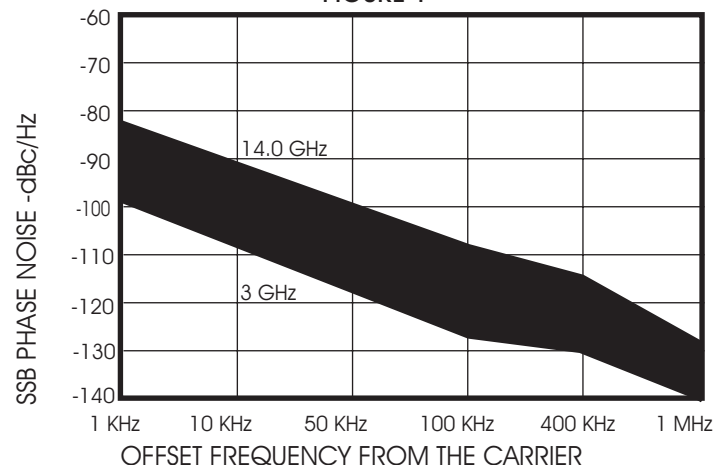
DR-XXXX-XM

Example: DR-9200-M Mechanically Tuned
DRO @ 9.2 GHz

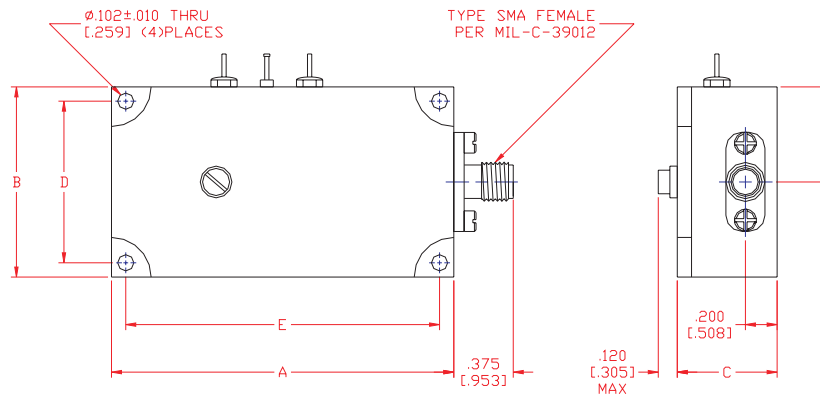
Example: DR-5800-EM Electrically and
Mechanically Tuned DRO @ 5.8 GHz

Mechanical Outline available on page 138

FIGURE 1

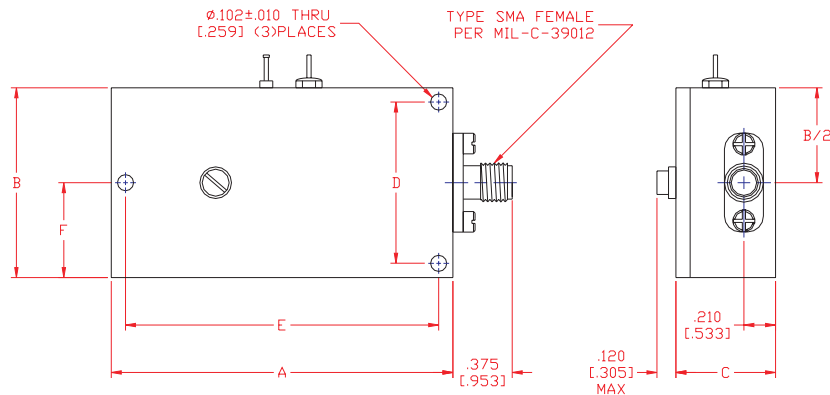


FREE RUN DIELECTRIC RESONATOR OSCILLATORS MECHANICAL OUTLINES



SMA CONNECTORS

OUTLINE		A	B	C	D	E
1	[in]	1.730	1.200	0.630	1.020	1.550
	[cm]	4.394	3.048	1.600	2.591	3.937
2	[in]	1.530	1.050	0.530	0.870	1.350
	[cm]	3.886	2.667	1.346	2.210	3.429



OUTLINE A

OUTLINE		A	B	C	D	E	F
1A	[in]	2.250	1.250	0.780	1.040	2.040	0.600
	[cm]	5.715	3.175	1.981	2.641	5.181	1.524

EXTERNAL AND INTERNAL PHASE-LOCKED DIELECTRIC RESONATOR OSCILLATORS

FEATURES

- Low Microphonic
- High Power Output
- Low Harmonic, Low Phase Noise
- High Stability

GENERAL SPECIFICATIONS:

Model Number	PLDR-XXXX-XXX*		PLDR-XXXX-XXX*
Single Frequency	4.0-10.5 GHz		10.6-14.0 GHz
Mechanical Tuning Range	3%		100 MHz
Power Output	+15 dBm		+10 to +17 dBm
Power Output Variation 0° To +60° C	± 0.6 dB Max.		± 0.7 dB Max.
Power Output Variation -40° To +85° C	± 1.2 dB Max.		± 1.3 dB Max.
Load VSWR (Max.)	1.5:1		2.0:1
Power Requirements (Volts)	+12 ± 1 Or +15 ± 1 VDC		+12 ± 1 to +24 ± 1 VDC
Power Requirements (mA)	280		200
Reference Input Frequency	50 - 150 MHz		1 - 1000 MHz
Reference Power Input	0 ± 4 dBm		0 ± 3 dBm
Frequency Stability	Same As Reference		Same As Reference
Phase Noise	See Figure 1		See Figure 1
Spurious (dBc)	-80		-60 to -90 dBc
Harmonics (dBc)	-20		-20
Alarm	Open Collector		Open Collector
Operating Temperature	-54° to +85° C		-40° to +50° C
Storage Temperature	-55° to +125° C		-55° to +125° C
Connectors	SMA Female		SMA Female
Outline (GHz Models)	4.0-7.9	8.0-10.5	A (Internal Reference)
	1	2	B (External Reference)

OPTION AVAILABILITY

- Internal Isolator available for applications with poor load VSWR.
- Higher power output.
- Different Voltages.
- Connectors: Type N, TNC or other.
- Power Monitor available.

Ordering Information

"XXXX" Represents the Center Frequency

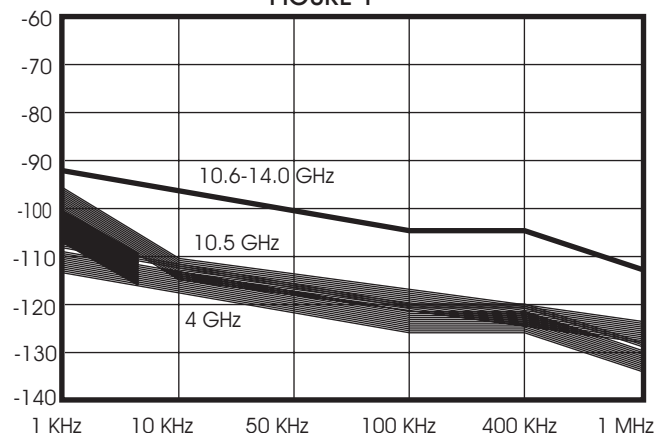
"XXX" Represents the Reference Input Frequency

PLDR-XXXX-XXX

Example: PLDR-5900-75 5.9 GHz output with
a 75 MHz Reference

Example: PLDR-11200-110 11.2 GHz output with
a 110 MHz Reference

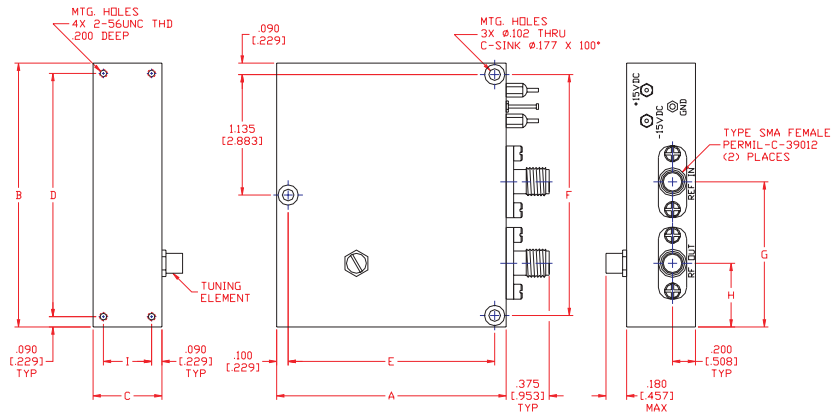
FIGURE 1



Mechanical Outline available on page 140

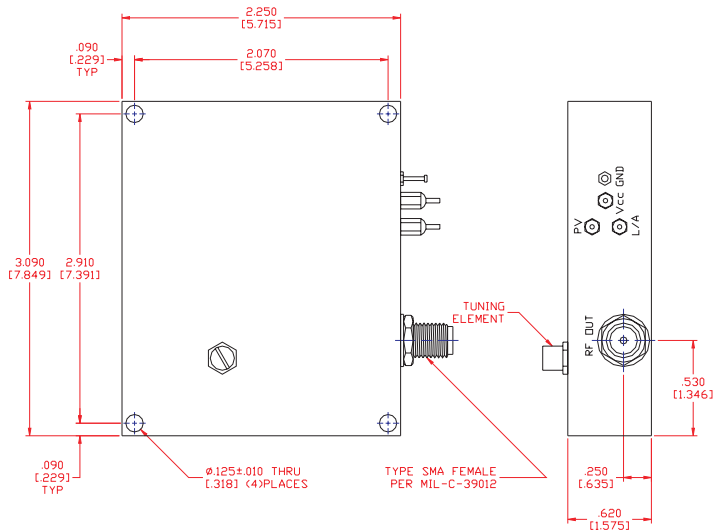
OFFSET FREQUENCY FROM THE CARRIER

EXTERNAL AND INTERNAL PHASE-LOCKED DIELECTRIC RESONATOR OSCILLATORS MECHANICAL OUTLINES

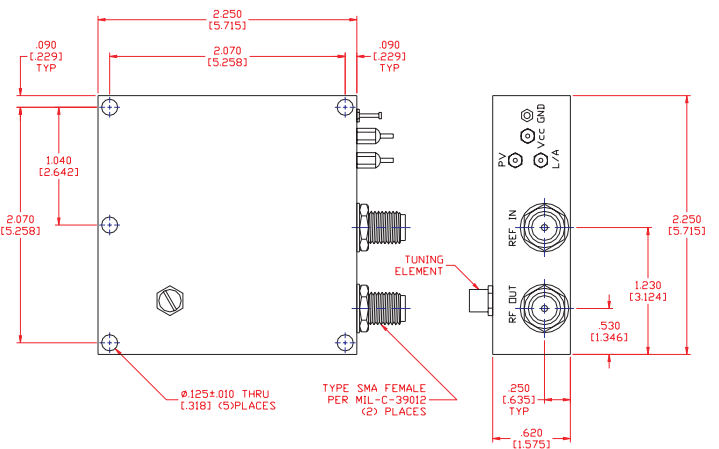


SMA CONNECTORS

OUTLINE	A	B	C	D	E	F	G	H	I
1 [in]	2.090	2.340	0.602	2.160	1.910	2.160	1.265	0.555	0.450
[cm]	5.308	5.943	1.529	5.486	4.851	5.486	3.213	1.408	1.143
2 [in]	1.910	2.190	0.502	2.010	1.730	2.010	1.115	0.455	0.370
[cm]	4.851	5.562	1.275	5.105	4.394	5.105	2.832	1.155	0.940



OUTLINE A
(Internal Reference)



OUTLINE B
(External Reference)

SOLID STATE POWER AMPLIFIER

0.5 - 20.5 GHz

Features:

- High Power Output
- High Efficiency
- Broad Bandwidth
- Light Weight, Compact



ELECTRICAL SPECIFICATIONS

Model Number	Frequency Range (GHz)	OUTPUT POWER* dBm / Watts		SMALL SIGNAL GAIN (dB)	GAIN VARIATION ± dB	VSWR		DC POWER		OUTLINE
		SATURATED TYPICAL	1 dB COMP.			IN	OUT	VOLTS**	AMPS (TYP)	
PA-1	.50-.80	40/10	39/8.5	20	1	1.5	2.0	+28	5	1
PA-2	0.850-0.960	40/10	39/8.5	20	1	1.5	2.0	+28	4	1
PA-3	1.5-1.7	30/1.0	29/0.8	30	1	1.5	2.0	+12	4	2
PA-4	1.85-1.90	40/10	39/8.5	20	1	1.5	1.5	+12	4	2
PA-5	2.20-2.30	40/10	39/8.5	20	1	1.5	2.0	+12/-12	4	3
PA-6	3.60-4.20	37/5.0	36/4.0	36	0.5	1.5	1.5	+12	4	3
PA-7	5.925-6.425	38/6.3	37/5.0	47	0.5	1.5	1.5	+12	4	3
PA-8	7.125-7.725	32/1.6	31/1.25	30	1	1.5	2.0	+12	1.5	4
PA-9	10.70-11.70	32/1.6	31/1.25	20	1	1.5	2.0	+12	1.5	4
PA-10	12.70-13.25	30/1.0	29/0.8	20	1	1.5	2.0	+12	2	4
PA-11	14.00-14.50	30/1.0	30/1.0	20	1	1.5	1.5	+12	1.5	5
PA-12	17.70-18.20	27/0.5	23/0.2	20	1	1.5	1.5	+12	1.2	5
PA-13	18.10-18.60	27/0.5	23/0.2	20	1	1.5	1.5	+12	1.2	5
PA-14	19.20-19.70	27/0.5	23/0.2	15	1	1.5	1.5	+12	1.0	5

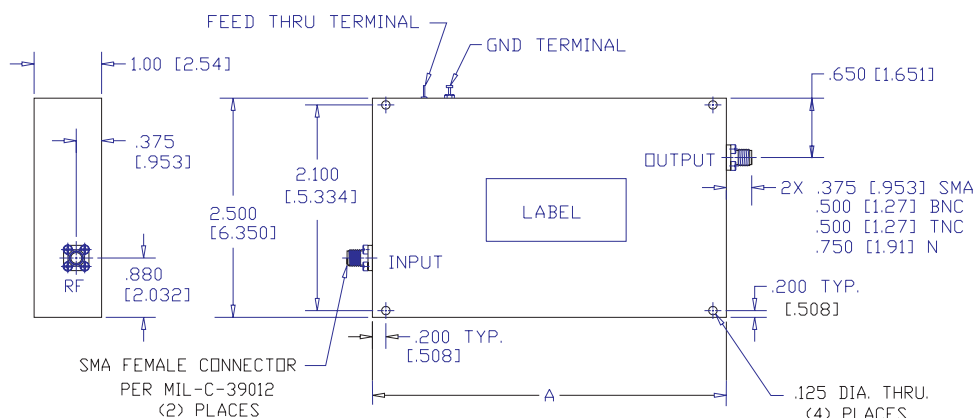
*Custom Design For Higher Power Output Available. Contact Manufacturer for Other Specifications.

** Various Voltage Inputs is Available

SMA* CONNECTORS

OUTLINE	A
1 [in]	6.0
[cm]	15.24
2 [in]	5.0
[cm]	12.70
3 [in]	4.75
[cm]	12.07
4 [in]	4.25
[cm]	10.80
5 [in]	3.0
[cm]	7.62

* Other Connectors Available, Contact Manufacturer for Details



RETURN LOSS VERSUS VSWR

**TABLE OF RETURN LOSS VERSUS
VOLTAGE STANDING WAVE RATIO**

RETURN LOSS (dB)	VSWR	RETURN LOSS (dB)	VSWR	RETURN LOSS (dB)	VSWR	RETURN LOSS (dB)	VSWR	RETURN LOSS (dB)	VSWR
46.064	1.01	13.842	1.51	9.485	2.01	7.327	2.51	5.999	3.01
40.086	1.02	13.708	1.52	9.428	2.02	7.294	2.52	5.970	3.02
36.607	1.03	13.577	1.53	9.372	2.03	7.262	2.53	5.956	3.03
34.151	1.04	13.449	1.54	9.317	2.04	7.230	2.54	5.935	3.04
32.256	1.05	13.324	1.55	9.262	2.05	7.198	2.55	5.914	3.05
30.714	1.06	13.201	1.56	9.208	2.06	7.167	2.56	5.893	3.06
29.417	1.07	13.081	1.57	9.155	2.07	7.135	2.57	5.872	3.07
28.299	1.08	12.964	1.58	9.103	2.08	7.105	2.58	5.852	3.08
27.318	1.09	12.849	1.59	9.051	2.09	7.074	2.59	5.832	3.09
26.444	1.10	12.736	1.60	8.999	2.10	7.044	2.60	5.811	3.10
25.650	1.11	12.625	1.61	8.949	2.11	7.014	2.61	5.791	3.11
24.943	1.12	12.518	1.62	8.899	2.12	6.984	2.62	5.771	3.12
24.289	1.13	12.412	1.63	8.849	2.13	6.954	2.63	5.751	3.13
23.686	1.14	12.308	1.64	8.800	2.14	6.925	2.64	5.732	3.14
23.127	1.15	12.207	1.65	8.752	2.15	6.896	2.65	5.712	3.15
22.607	1.16	12.107	1.66	8.705	2.16	6.867	2.66	5.693	3.16
22.120	1.17	12.009	1.67	8.657	2.17	6.839	2.67	5.674	3.17
21.664	1.18	11.913	1.68	8.611	2.18	6.811	2.68	5.654	3.18
21.234	1.19	11.818	1.69	8.565	2.19	6.783	2.69	5.635	3.19
20.828	1.20	11.725	1.70	8.519	2.20	6.755	2.70	5.617	3.20
20.443	1.21	11.634	1.71	8.474	2.21	6.728	2.71	5.598	3.21
20.079	1.22	11.545	1.72	8.430	2.22	6.700	2.72	5.579	3.22
19.732	1.23	11.457	1.73	8.386	2.23	6.673	2.73	5.561	3.23
19.401	1.24	11.370	1.74	8.342	2.24	6.646	2.74	5.542	3.24
19.005	1.25	11.285	1.75	8.299	2.25	6.620	2.75	5.524	3.25
18.783	1.26	11.202	1.76	8.257	2.26	6.594	2.76	5.506	3.26
18.493	1.27	11.120	1.77	8.215	2.27	6.567	2.77	5.488	3.27
18.216	1.28	11.039	1.78	8.173	2.28	6.541	2.78	5.470	3.28
17.949	1.29	10.960	1.79	8.138	2.29	6.516	2.79	5.452	3.29
17.690	1.30	10.881	1.80	8.091	2.30	6.490	2.80	5.435	3.30
17.445	1.31	10.804	1.81	8.051	2.31	6.465	2.81	5.417	3.31
17.207	1.32	10.729	1.82	8.011	2.32	6.440	2.82	5.400	3.32
16.977	1.33	10.654	1.83	7.972	2.33	6.415	2.83	5.383	3.33
16.755	1.34	10.581	1.84	7.933	2.34	6.390	2.84	5.365	3.34
16.540	1.35	10.509	1.85	7.894	2.35	6.366	2.85	5.348	3.35
16.332	1.36	10.437	1.86	7.856	2.36	6.341	2.86	5.331	3.36
16.131	1.37	10.367	1.87	7.818	2.37	6.317	2.87	5.315	3.37
15.936	1.38	10.298	1.88	7.781	2.38	6.293	2.88	5.298	3.38
15.747	1.39	10.230	1.89	7.744	2.39	6.270	2.89	5.281	3.39
15.563	1.40	10.163	1.90	7.707	2.40	6.246	2.90	5.265	3.40
15.385	1.41	10.097	1.91	7.671	2.41	6.223	2.91	5.248	3.41
15.211	1.42	10.032	1.92	7.635	2.42	6.200	2.92	5.232	3.42
15.043	1.43	9.968	1.93	7.599	2.43	6.177	2.93	5.216	3.43
14.879	1.44	9.904	1.94	7.564	2.44	6.154	2.94	5.200	3.44
14.719	1.45	9.842	1.95	7.529	2.45	6.131	2.95	5.184	3.45
14.564	1.46	9.780	1.96	7.494	2.46	6.109	2.96	5.168	3.46
14.412	1.47	9.720	1.97	7.460	2.47	6.086	2.97	5.152	3.47
14.264	1.48	9.660	1.98	7.426	2.48	6.064	2.98	5.137	3.48
14.120	1.49	9.601	1.99	7.393	2.49	6.042	2.99	5.121	3.49
13.979	1.50	9.542	2.00	7.360	2.50	6.021	3.00	5.105	3.50

POWER CONVERSION/VSWR CHARTs

POWER CONVERSION CHART

dBm	mW	dBm	mw/Watts	dBm	Watts
-20	0.010	+7	5.010	+34	2.550
-19	0.012	+8	6.300	+35	3.160
-18	0.016	+9	7.940	+36	3.910
-17	0.020	+10	10.00	+37	5.010
-16	0.025	+11	12.60	+38	6.310
-15	0.032	+12	15.80	+39	7.940
-14	0.040	+13	19.90	+40	10.00
-13	0.050	+14	25.10	+41	12.60
-12	0.063	+15	31.60	+42	15.80
-11	0.079	+16	39.80	+43	20.00
-10	0.100	+17	50.10	+44	25.10
-9	0.130	+18	63.10	+45	31.60
-8	0.160	+19	79.40	+46	39.80
-7	0.200	+20	0.100 (W)	+47	50.10
-6	0.250	+21	0.120 (W)	+48	63.10
-5	0.316	+22	0.159 (W)	+49	79.40
-4	0.398	+23	0.200 (W)	+50	100.0
-3	0.501	+24	0.251 (W)	+51	126.0
-2	0.630	+25	0.316 (W)	+52	158.0
-1	0.794	+26	0.398 (W)	+53	200.0
0	1.000	+27	0.501 (W)	+54	251.0
+1	1.250	+28	0.631 (W)	+55	316.0
+2	1.580	+29	0.794 (W)	+56	398.0
+3	2.000	+30	1.000 (W)	+57	501.0
+4	2.510	+31	1.260 (W)	+58	631.0
+5	3.160	+32	1.590 (W)	+59	794.0
+6	3.980	+33	2.000 (W)	+60	1 K

VSWR Chart/Effect on VSWR on Transmitted Power

VSWR	Return Loss (dB)	Trans. Loss (db)	Volt. Refl. COEF.	Power Refl. (%)	Power Trans. (%)
1.00	∞	0.000	0.00	0.0	100.0
1.01	46.1	0.000	0.00	0.0	100.0
1.02	40.1	0.000	0.01	0.0	100.0
1.03	36.6	0.001	0.01	0.0	100.0
1.04	34.2	0.002	0.02	0.0	100.0
1.05	32.3	0.003	0.02	0.1	99.9
1.06	30.7	0.004	0.03	0.1	99.9
1.07	29.4	0.005	0.03	0.1	99.9
1.08	28.3	0.006	0.04	0.1	99.9
1.09	27.3	0.008	0.04	0.2	99.8
1.10	26.4	0.010	0.05	0.2	99.8
1.11	25.7	0.012	0.05	0.3	99.7
1.12	24.9	0.014	0.06	0.3	99.7
1.13	24.3	0.016	0.06	0.4	99.6
1.14	23.7	0.019	0.07	0.4	99.6
1.15	23.1	0.021	0.07	0.5	99.5
1.16	22.6	0.024	0.07	0.5	99.5
1.17	22.1	0.027	0.08	0.6	99.4
1.18	21.7	0.030	0.08	0.7	99.3
1.19	21.2	0.033	0.09	0.8	99.2
1.20	20.8	0.036	0.09	0.8	99.2
1.25	19.1	0.054	0.11	1.2	98.8
1.30	17.7	0.075	0.13	1.7	98.3
1.40	15.6	0.122	0.17	2.8	97.2
1.50	14.0	0.177	0.20	4.0	96.0
1.60	12.7	0.238	0.23	5.3	94.7
1.70	11.7	0.302	0.26	6.7	93.3
1.80	10.9	0.370	0.29	8.2	91.8
1.90	10.2	0.440	0.31	9.6	90.4
2.00	9.50	0.512	0.33	11.1	88.9
3.00	6.00	1.240	0.50	25.0	75.0
4.00	4.40	1.930	0.60	36.0	64.0
5.00	3.50	2.550	0.67	44.4	55.6
10.0	1.70	4.800	0.82	66.9	33.1
20.0	0.90	7.410	0.90	81.9	18.1

CATALOG REQUEST FORM

FOR YOUR CONVENIENCE, YOU MAY FAX THIS REQUEST TO (727) 381-6116

Name _____

Company _____

Title _____ Dept. _____

Address _____

City _____

State/ _____ Zip _____

Telephone (____) _____ Ext. _____

Fax (____) _____ Email _____

☐ Please have a Sales associate contact me.

I AM INTERESTED IN:

- ☐ POWER DIVIDERS/COMBINERS
- ☐ COUPLERS
- ☐ HYBRIDS
- ☐ WAVEGUIDE
- ☐ ATTENUATORS
- ☐ SWITCHES
- ☐ POWER AMPLIFIERS
- ☐ OSCILLATORS
- ☐ FILTERS
- ☐ ISOLATORS/CIRCULATORS
- ☐ TERMINATIONS
- ☐ CUSTOM DESIGN PRODUCTS
- ☐ OTHER

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- ☐ TERMINATIONS
- ☐ CUSTOM DESIGN PRODUCTS
- ☐ OTHER

QUOTATION REQUEST FORM

FOR YOUR CONVENIENCE, YOU MAY FAX THIS REQUEST TO (727) 381-6116

POWER DIVIDERS/COMBINERS

Model# _____ Qty _____
Model# _____ Qty _____
Model# _____ Qty _____
Model# _____ Qty _____

ATTENUATORS

Model# _____ Qty _____
Model# _____ Qty _____
Model# _____ Qty _____
Model# _____ Qty _____

COUPLERS

Model# _____ Qty _____
Model# _____ Qty _____
Model# _____ Qty _____
Model# _____ Qty _____

SWITCHES

Model# _____ Qty _____
Model# _____ Qty _____
Model# _____ Qty _____
Model# _____ Qty _____

HYBRIDS

Model# _____ Qty _____
Model# _____ Qty _____
Model# _____ Qty _____
Model# _____ Qty _____

ISOLATORS/CIRCULATORS

Model# _____ Qty _____
Model# _____ Qty _____
Model# _____ Qty _____
Model# _____ Qty _____

WAVEGUIDE

Model# _____ Qty _____
Model# _____ Qty _____
Model# _____ Qty _____
Model# _____ Qty _____

TERMINATIONS

Model# _____ Qty _____
Model# _____ Qty _____
Model# _____ Qty _____
Model# _____ Qty _____

**MOST REQUESTS WILL RECEIVE
A REPLY WITHIN 24 HOURS**

**SPECIFICATIONS AND MECHANICAL
OUTLINES MAY BE PRINTED FROM
OUR WEB-SITE AT WWW.MCLI.COM**

☐ I do not see the model or specifications I am interested in.

Please have a sales engineer contact me at:

Name _____

Company _____

Phone (_____) _____ Ext. _____

Fax (_____) _____ Email _____



MICROWAVE COMMUNICATIONS
LABORATORIES INC.

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TEL: (727)344-MCLI (6254) ● 1-800-333-MCLI (6254) ● FAX: (727)381-6116

Internet: <http://www.MCLI.COM>

● Email: Sales@MCLI.com

Custom Design Capabilities

MCLI offers excellent phase matching capabilities with PS8-35/PM, a space qualified model. This 8-Way Power Divider/Combiner operates in the 750-1450 MHz frequency range for high power applications and can be used for GPS convertor systems.



MCLI model PS8-35/PM offers a Type N input connector and Type SMA Female output connectors.

High quantity connector outputs are available by custom design with MCLI. This 32-Way Power Divider/Combiner can monitor multiple communication systems. MCLI can design specific models to function with unique applications.



MCLI model PS32-19/NF offers 32-Way Power Splitting or combining with Type N Connectors.

MCLI can offer new designs to assist your project. This switch filter bank is a switch, filter combination. It offers Low VSWR, High Gain, TTL control and conveniently small size for mobile communication systems.

MCLI model SHEB-001 is a switch filter bank offering hybrid options

MCLI can manufacture a single switch or build a custom switch matrix system.. This unique design offers multiple switching capabilities. The MCLI engineering team can supply entire systems and sub-systems for your application.

Model SM-8-SMA is a switch matrix utilizing multiple electromechanical switches for operation in larger systems.

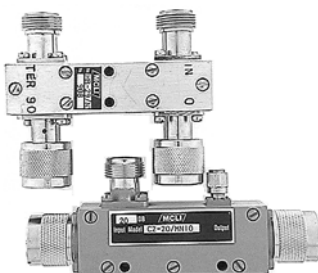
Custom Design Capabilities



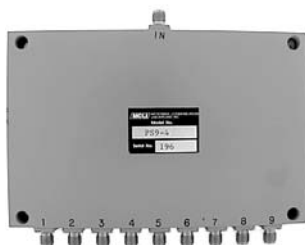
A substantial quantity of MCLI model PS2-11 is ready for shipment. This 2-Way Power Divider/Combiner operates from 2-18 GHz with Type SMA connectors.



MCLI model HB-21/NF is a 90° hybrid offering a broad frequency range and excellent phase tracking of +/- 1 degree.



A 90° hybrid and directional coupler offer Type N Male connector outputs.



A 9-Way Divider/Combiner was specifically designed for a customer's application. Model PS9-4 functions from 824-849 MHz with Type SMA Connectors.

With our standard catalog items, large quantities are available in very short time periods. The MCLI production team will meet your delivery requirements. MCLI model PS2-11 (shown left) is a stock item in smaller quantities.

Wide bandwidths are available in various products. MCLI specializes in creating specific components for your application. Model HB-21/NF is a 90° hybrid operating from 0.4-4.0 GHz with Type N Connectors.

Various connector configurations are available with MCLI. Shown left are a 90° hybrid and directional coupler with non-standard connectors. These models and others can be purchased in single or multiple quantities.

MCLI can design unusually numbered N-Way Dividers/Combiners to suit your application. We offer 3, 5, 6, 9, 10, 11, and 12 Way models for immediate purchase. All offer excellent VSWR and amplitude balance.

ORDERING INFORMATION

How to Order:

To place an order either contact your local representative or contact the Microwave Communications Laboratories (MCLI) sales department at:

MCLI
7255 30th Avenue North
St. Petersburg, FL 33710
Tel: (727) 344-6254
Fax: (727) 381-6116
Website: www.mcli.com
Email: sales@mcli.com

Please include the model number, frequency range, part name, and shipping instructions with all orders.

CAGE CODE: ØD2L5

Domestic Terms:

Domestic terms at Net 30 days, F.O.B. MCLI factory, unless otherwise specified. Customers without credit approval are shipped C.O.D unless payment has been received in advance.

MCLI also offers the ability to pay by Credit Card accepting VISA or MASTERCARD.

International Terms:

Customers outside North America are usually served by local representatives. Should you have difficulty reaching your local representative, please contact MCLI directly via mail, e-mail, phone, or fax. Full payment in advance of shipment or against irrevocable letter of credit is required before shipment. If payment is made via wire transfer, the customer is required to pay the wire transfer fee of both the sending and receiving banks.

Freight charges, customs duty, custom clearance costs and applicable taxes are to paid by the customer.

Shipping:

Domestic shipment are made via UPS 2nd Day Air unless otherwise specified.

Change Orders and Cancellations:

Once a purchase order is placed with MCLI, it may not be cancelled without express written consent from MCLI after three (3) business days.

All cancellations will be subjected to a termination fee.

The termination fee will be a percentage of the total cost of the original purchase order that MCLI deems necessary to sustain profit and growth.

Change orders regarding price, delivery, quantities, or any conditions not specified on the original purchase order will be considered in effect after mutual agreement has been affirmed in writing.

A change order may be subjected to additional charges as determined by MCLI.

MCLI will retain final approval on all change orders or cancellations.

Warranty:

Microwave Communications Laboratories Inc. (MCLI) warranties each new product to be free from defects in material and workmanship from one (1) year from the date of shipment. Any instrument or component found to be defective under normal use for a one year period will be either repaired or replaced free of charge. MCLI shall not be liable for installation or consequential damages.

For products that are not covered by the warranty, a written quotation for repair charges will be provided for customer approval.

Certificate of Compliance:

MCLI will include a Certificate of Compliance with each purchase order.

Product and Price Changes:

MCLI reserves the right to alter price and specifications of all products without notice.

MCLI can produce many non-standard items.

Throughout the years, we have produced various custom products for our customers. Please do not hesitate to contact us if the products you need are not in this catalog. Our engineering staff will be happy to provide you with the most cost effective, beneficial solution to any of your design engineering problems.