

# HC80

WR-8 hybrid circulator



**MicroHarmonics**

Superior mm-Wave Components

## Specifications

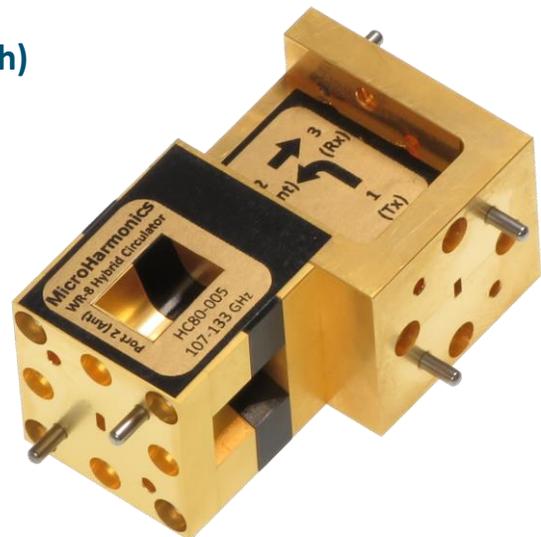
Flange	WR-8
Frequency (GHz)	107-133
Insertion Loss (dB, avg)	0.8
Insertion Loss (dB, max)	1.6
Isolation [ $S_{12}$ ] (dB, typ min)	24
Isolation [ $S_{23}$ ] (dB, typ min)	24
Isolation [ $S_{31}$ ] (dB, typ min)	19
Return Loss (dB, typ min)	17
VSWR (typ max)	1.35:1
Maximum Power (W)	3.5

## WR-8 Hybrid Circulator

The patent-pending hybrid circulator is designed for wideband millimeter wave applications. The hybrid circulator is an innovative technology, combining an orthomode transducer with a Faraday rotator to achieve five times the bandwidth of the traditional Y-junction. Every circulator is tested on a vector network analyzer to ensure conformity and the test data is provided to the customer.

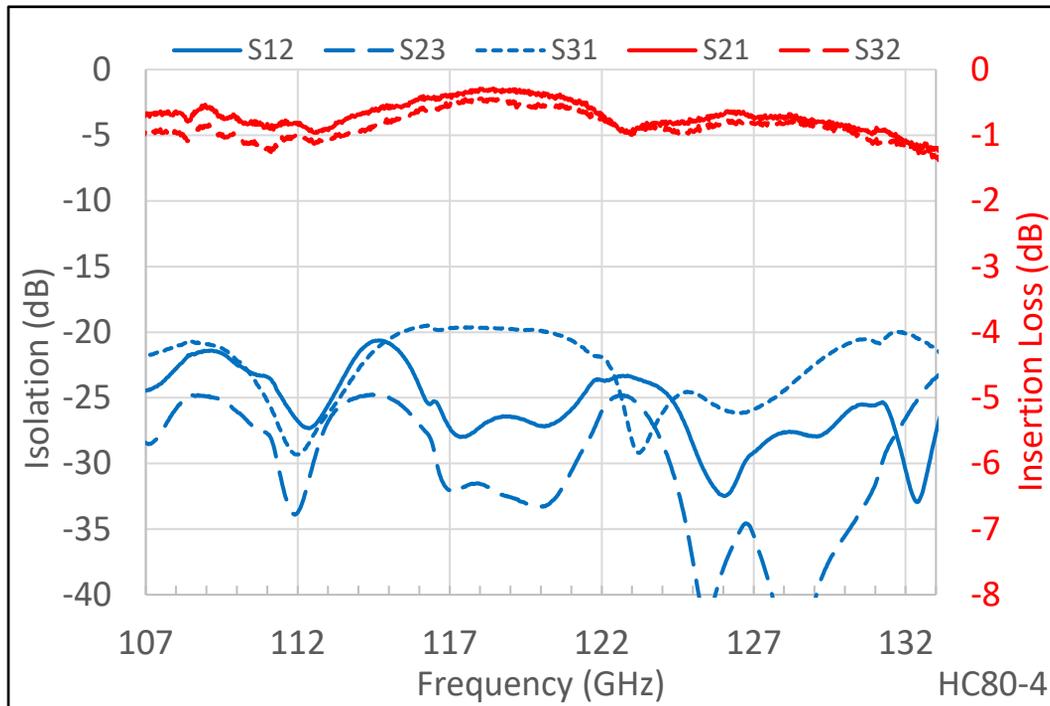
## 107-133 GHz Bandwidth

- ◆ Wideband (24% fractional bandwidth)
- ◆ Internal waveguide screw access
- ◆ Anti-cocking waveguide flanges
- ◆ Resists stray magnetic fields
- ◆ Comprehensive test data
- ◆ Low insertion loss
- ◆ Diamond Heatsink
- ◆ Patent pending

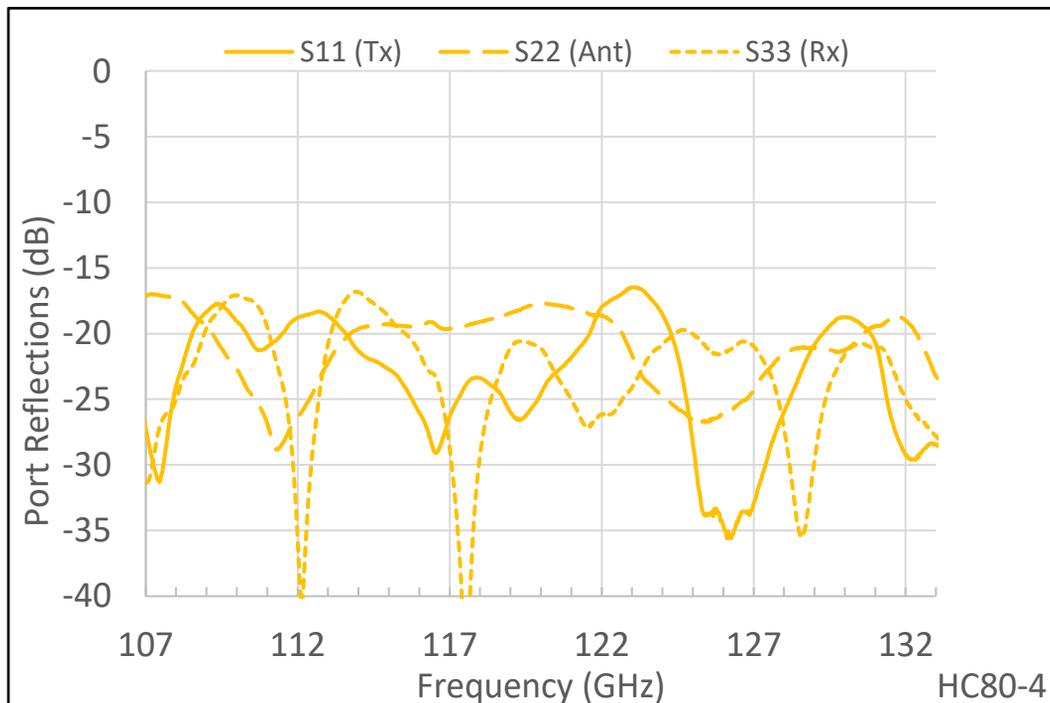




## Insertion Loss and Isolation



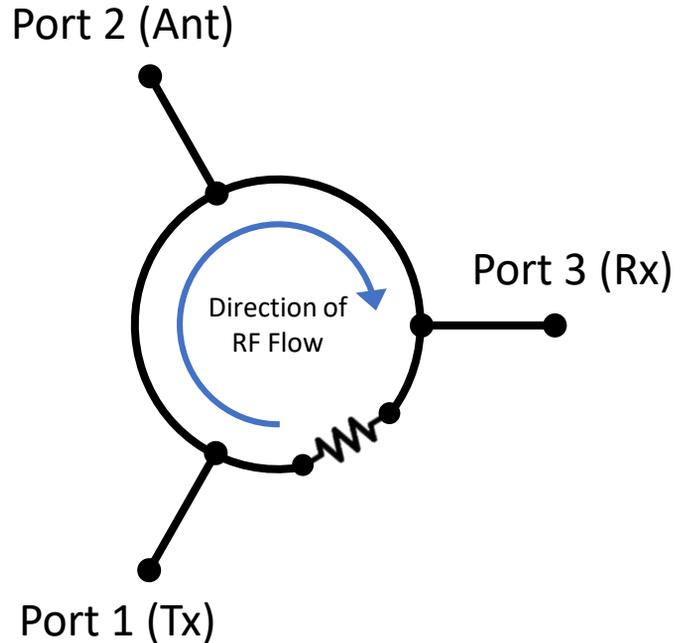
## Port Reflections



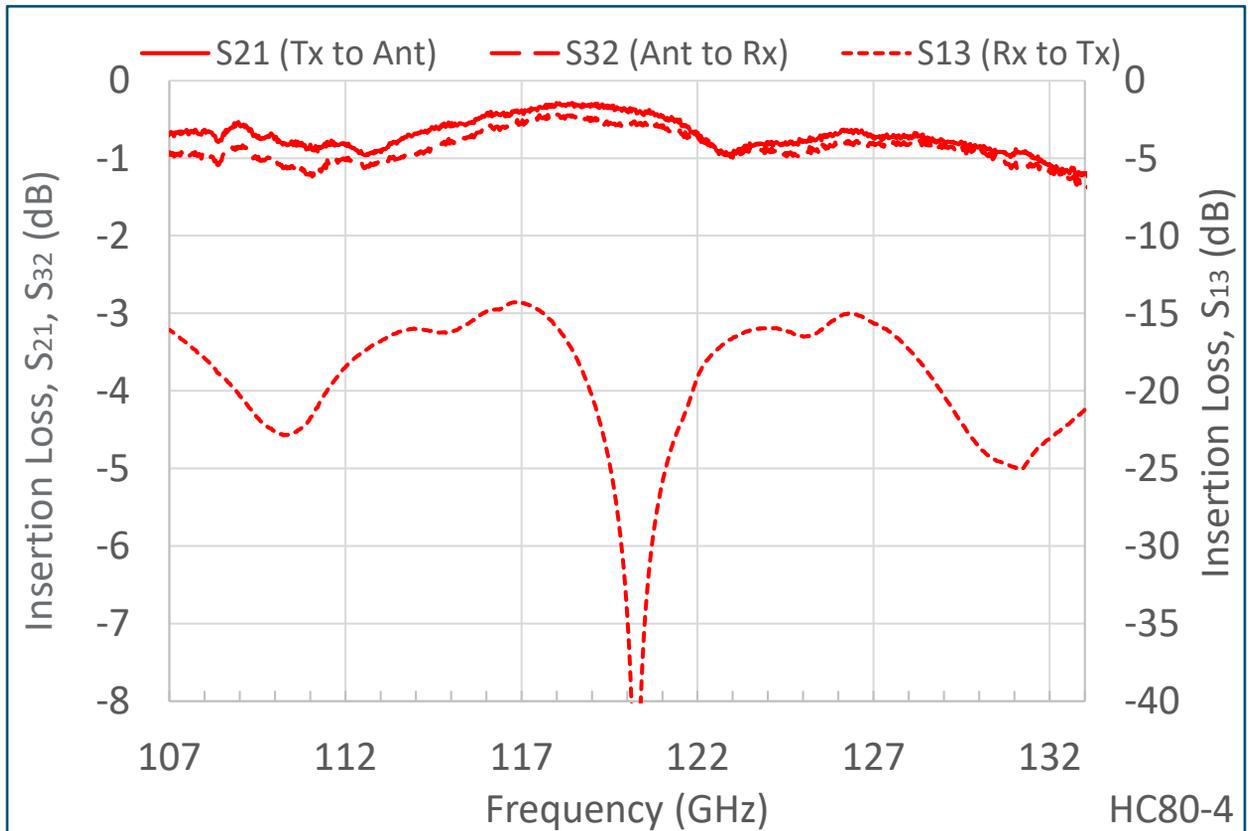


## Asymmetry

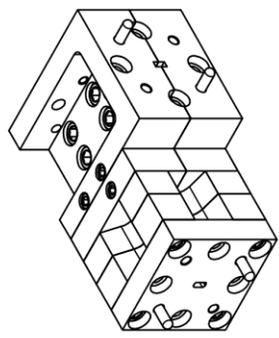
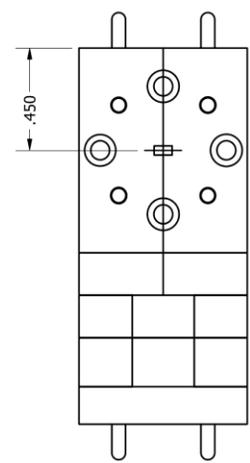
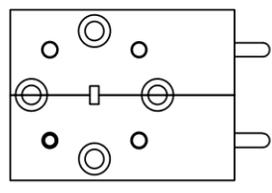
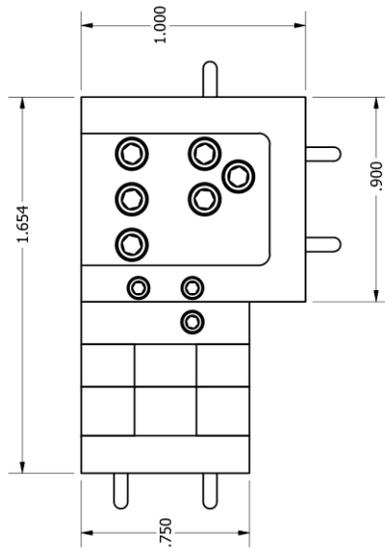
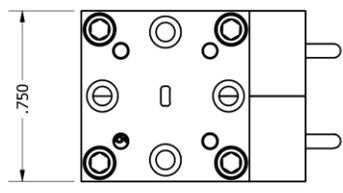
Unlike the Y-junction circulator, the hybrid circulator is asymmetric. The path from port 3 to port 1 is internally attenuated as shown in the schematic to the right and verified by the  $S_{13}$  trace in the measured data below. On request, the hybrid circulator can be assembled in a way that restores the symmetry if needed.



## Asymmetric Insertion Loss



Micro Harmonics	Proprietary - Micro Harmonics Corporation		REVISION HISTORY		1	
	Date	1/30/2023	ZONE	REV		DATE
					1/30/2023	SCS
				DESCRIPTION		
				RELEASE FOR CUSTOMER		



PART NUMBER - DESCRIPTION		MATERIAL & FINISH:		1
HC80 Dimension Drawing		HC122		
FLANGES: UG-383/U	DWG. UNITS: INCHES	SCS	SIZE: B	2
	DRAWN BY: JTK		DATE: 1/30/2023	
	APPROVAL: JTK			3
				4
				5
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