

## Coaxial 50W 10dB Directional Coupler 1GHz-18GHz



### Product Description

RFDC1G18G10 is a coaxial directional coupler with a frequency range of 1 to 18GHz.

The power of this directional coupler is 50W. The insertion loss is 0.5dB with a typical directivity of 20dB.

The working temperature of this product is between - 40°C and + 85°C.

### Features

- High power handling up to 50W
- Ultra Wide band operation
- High directivity within operational band
- Low Insertion Loss

### Typical Applications

- Wireless Infrastructure
- Military and Aerospace Applications
- Test Instrumentation
- Radar Systems
- 5G Wireless Communications
- Microwave Radio Systems
- TR Modules
- Research and Development
- Cellular Base Stations

### Electrical Specifications, TA = +25°C

| Parameter                         |         | Min | Typ  | Max                                      | Min | Typ  | Max  | Units |
|-----------------------------------|---------|-----|------|------------------------------------------|-----|------|------|-------|
| Frequency Range                   |         | 1   |      | 6                                        | 6   |      | 18   | GHz   |
| Nominal Coupling                  |         | 9   | 10   | 11                                       | 9   | 10   | 11   | dB    |
| Frequency Sensitivity             |         |     | ±0.5 | ±0.7                                     |     | ±0.7 | ±1.0 | dB    |
| Directivity                       |         | 16  | 20   |                                          | 12  | 14   |      | dB    |
| Insertion Loss<br>(Excl Coupling) |         |     |      | 0.5                                      |     |      | 0.6  | dB    |
| Insertion Loss (True)             |         |     | 0.7  | 0.9                                      |     | 0.9  | 1.1  | dB    |
| VSWR Primary                      |         |     | 1.2  | 1.35                                     |     | 1.3  | 1.5  | : 1   |
| VSWR Secondary                    |         |     | 1.2  | 1.35                                     |     | 1.4  | 1.5  | : 1   |
| Power Rating                      | Average |     |      | 50                                       |     |      |      | W     |
|                                   | Peak    |     |      | 500<br>(1% Duty Cycle, 1 us Pulse Width) |     |      |      | W     |
| Weight                            |         |     |      | 0.1 Max.                                 |     |      |      | lbs   |
| Impedance                         |         |     |      | 50                                       |     |      |      | Ω     |
| Input / Output Connectors         |         |     |      | SMA-Female(Input) – SMA-Female(Output)   |     |      |      |       |
| Package                           |         |     |      | Epoxy Sealed (Standard)                  |     |      |      |       |
|                                   |         |     |      | Hermetically Sealed (Optional)           |     |      |      |       |

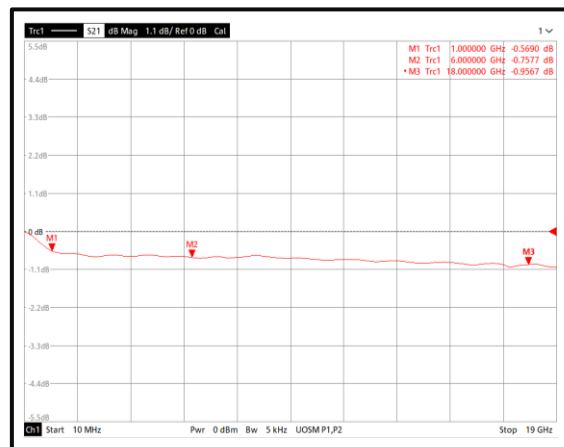
## Environmental Specifications and Test Standards

| Parameter                         | Description                                                                                                                                                                                                     |
|-----------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Operational Temperature           | -40°C to +85°C<br>(Case Temperature)                                                                                                                                                                            |
| Storage Temperature               | -50°C to +105°C                                                                                                                                                                                                 |
| Thermal Shock                     | -40°C → +85°C<br>(5 Cycles / 10 hours)                                                                                                                                                                          |
| *Random Vibration                 | MIL-STD-202G<br>Table 214-I, Test Condition Letter C<br>1.5 Hours Per Axis                                                                                                                                      |
| Shock                             | 1. Weight >20g, 50g half sine wave for 11ms, Speed variation 3.44m/s<br>2. Weight <=20g, 100g Half sine wave for 6ms, Speed variation 3.75m/s<br>3. Total 18 times (6 directions, 3 repetitions per direction). |
| Altitude                          | Standard: 30,000 Ft (Epoxy Sealed Controlled Environment)<br>Optional: Hermetically Sealed (60,000 ft. 1.0 PSI min)                                                                                             |
| Hermetically Sealed<br>(Optional) | MIL-STD-883 (For Hermetically Sealed Units)                                                                                                                                                                     |

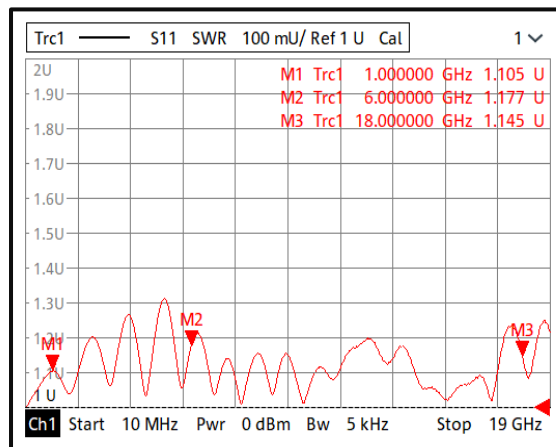
\*For vibration testing details please see additional information section.

Typical Performance Plots

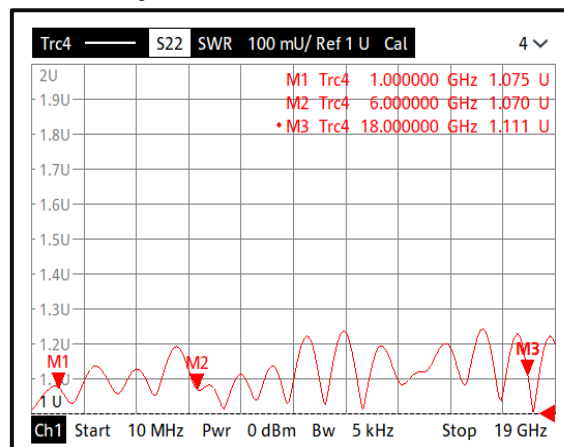
Insertion Loss



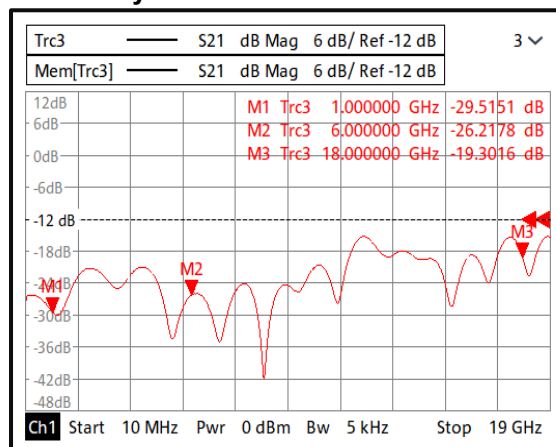
Primary VSWR



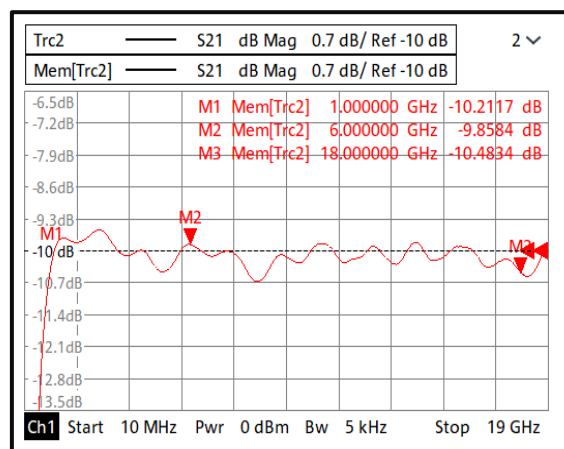
Secondary VSWR



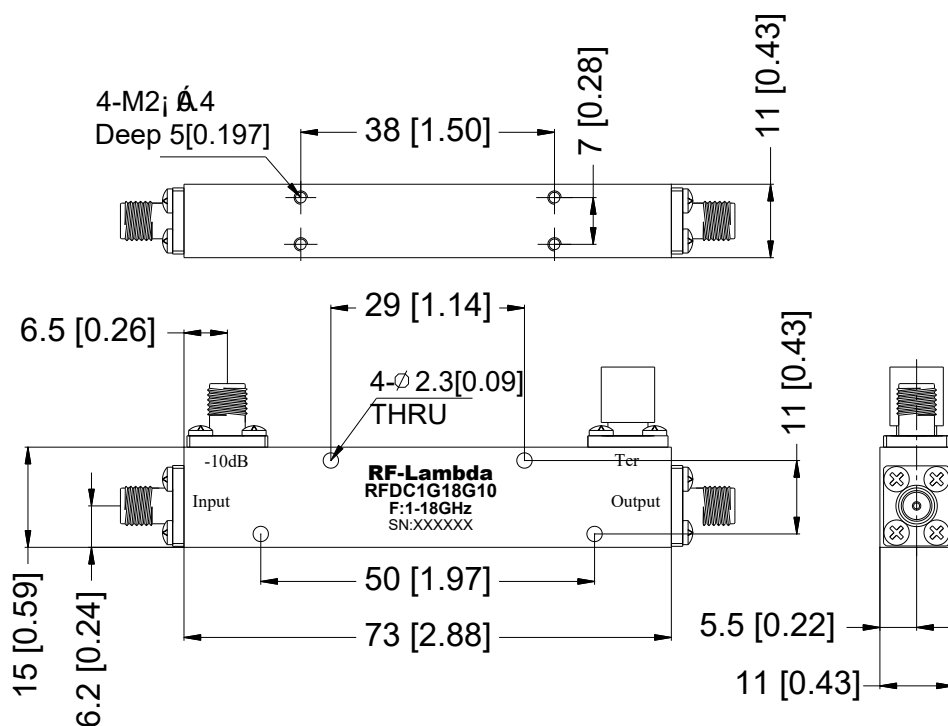
Directivity



Nominal Coupling

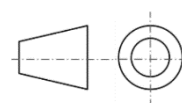


**Outline Drawing**



**Notes:**

1. Package Material: Aluminum
2. Finish: Blue Paint
3. All dimensions are in millimeters [inches].
4. Outline Tolerances  $\pm 0.5$  [0.02], Mounting Hole Tolerances  $\pm 0.2$  [0.008] unless otherwise specified.
5. Standard torque wrench must be used to secure RF connectors.



**Additional Information**

**Documentation**

Connector Torque Specifications

[https://www.rflambda.com/pdf/Torque\\_Specifications.pdf](https://www.rflambda.com/pdf/Torque_Specifications.pdf)

Random Vibration Test Standard

[https://www.rflambda.com/pdf/rflambda\\_random\\_vibration\\_MIL-STD-202G.pdf](https://www.rflambda.com/pdf/rflambda_random_vibration_MIL-STD-202G.pdf)

**Webpage**

## Ordering Information

| Part Number | Modification | Description                    |
|-------------|--------------|--------------------------------|
| RFDC1G18G10 | Standard     | 1GHz-18GHz Directional Coupler |

## Important Notice

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