1. Description

- The M0003 is a 2-way 0° splitter/combiner fabricated on GaAs IPD process. It operates over 2-6GHz, provides insertion loss of 0.9dB and excellent power handling capability of 10W.

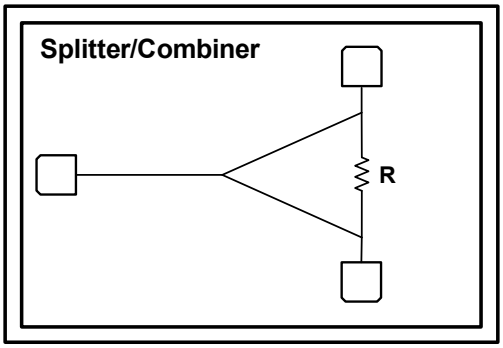


Figure 1. M0003 Functional Block Diagram

2. Applications

- Phased Array

3. Features[1]

- Frequency Range: 2-6GHz
- Insertion Loss: 0.9dB
- Isolation: 20dB
- Input/Output Return Loss: -14dB
- Input/Output Impedance: 50Ohm
- Die Size: 1.23 x 0.67 x 0.10mm

[1] On-wafer Test

4. Brief Typical Performance

Table 1. Brief Typical Performance

Parameter	2-6GHz	Units
Insertion Loss	0.9	dB
Isolation	20	dB
Passband Ripple	±0.25	dB
Input Return Loss	-14	dB
Output Return Loss	-14	dB

Table of Contents

No.	Contents	Page
1	Description	1
2	Applications	1
3	Features	1
4	Brief Typical Performance	1
5	Recommended Operating Conditions	3
6	RF Characteristics	3
7	Typical Performance Curve	3
8	Outline Dimensions	4
9	Assembly Information	5
10	Handling Precautions	5
11	Contact Information	6
12	Disclaimer	6

5. Recommended Operating Conditions

Table 2. Recommended Operating Conditions

Parameter	Min.	Typ.	Max.	Units
Operating Temperature Range	-55	25	125	°C

6. RF Characteristics (T_C = 25˚C)

Table 3. RF Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Units
Frequency Range	Freq.	2	-	6	GHz
Insertion Loss	IL	-	0.9	-	dB
Passband Ripple	△L	-	±0.25	-	dB
Isolation	ISO	-	20	-	dB
Input Return Loss	RL_RFC	-	-14	-	dB
Output Return Loss	RL_RF1/RL_RF2	-	-14	-	dB

7. Typical Performance Curve

■ Small-signal Characteristics Curve

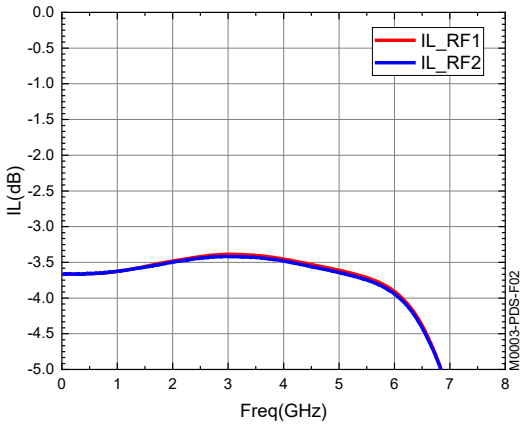


Figure 2. Insertion Loss Characteristics

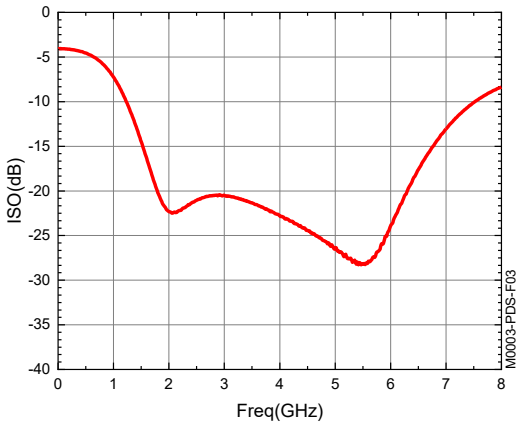


Figure 3. Isolation Characteristics

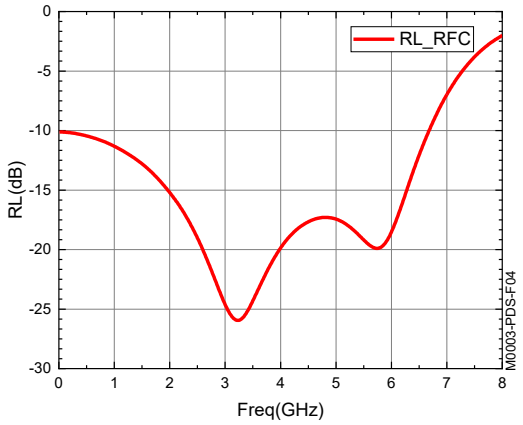


Figure 4. Input Return Loss Characteristics

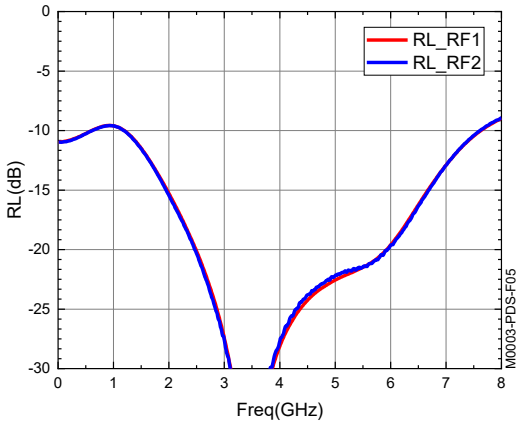
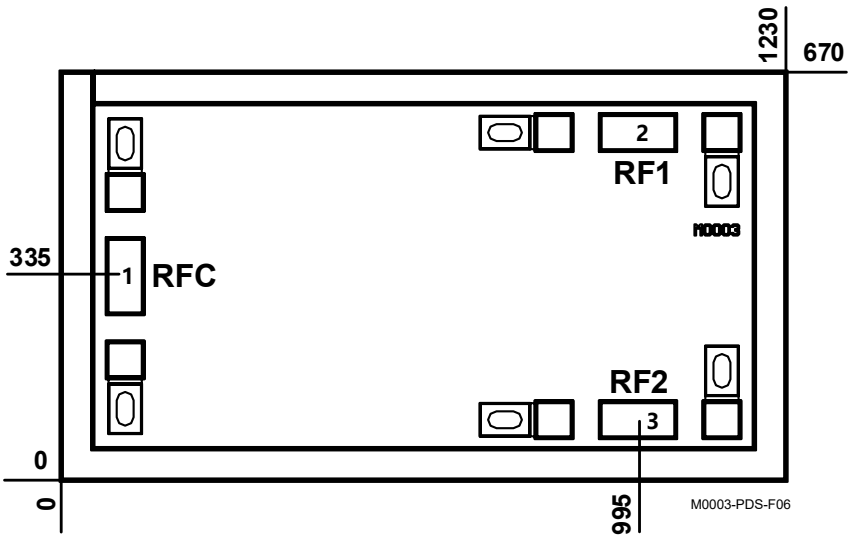


Figure 5. Output Return Loss Characteristics

8. Outline Dimensions



• Dimensions shown in micrometre

Figure 6. M0003 Outline Dimensions

Table 4. Pad Description

Pad	Symbol	Description
1	RFC	RF Input
2	RF1	RF Output 1
3	RF2	RF Output 2

9. Assembly Information

■ Assembly Diagram

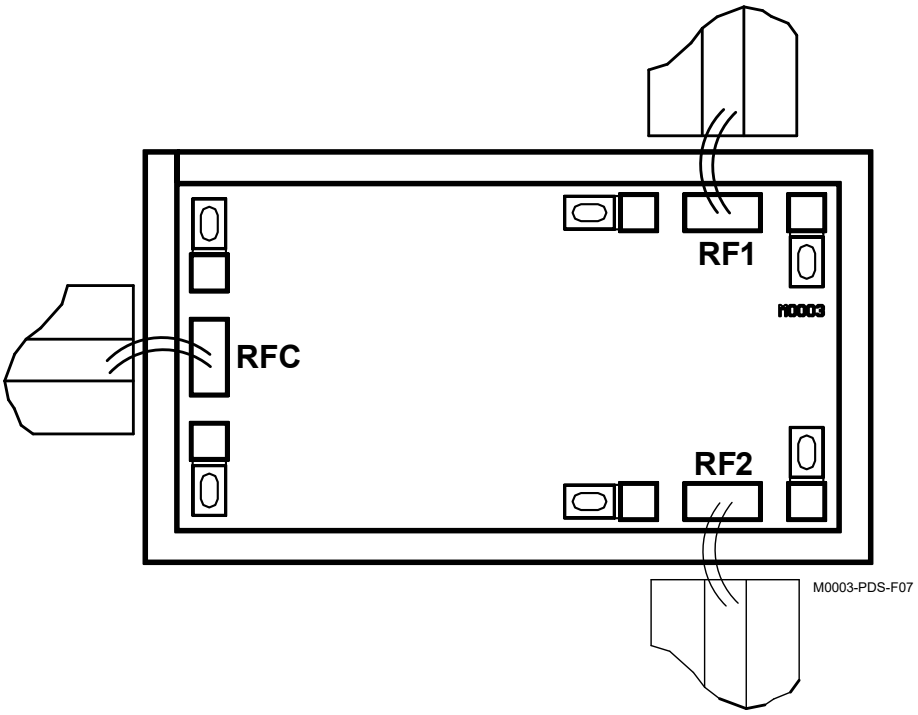


Figure 7. M0003 Assembly Diagram

- **Eutectic Die Attach:** It is best to use an 80% Au/20% Sn preform. Do not expose the chip to a temperature greater than 300°C for more than 30sec.
- **Wire Bonding:** RF bonds made with 1mil gold wire are recommended for the RF ports. Keep all bonds as short as possible, less than 0.35mm.

10. Handling Precautions

■ Storage

All bare dies ship in either Waffle or Gel Pak, which is an ESD protective container, and then sealed in an ESD protective bag. After opening the sealed ESD protective bag, all dies must be stored in a dry nitrogen environment.

■ Cleanliness

Handle the dies in a clean environment. Never use liquid cleaning systems to clean the dies.

■ ESD Caution

ESD (electrostatic discharge) sensitive device. Charged devices and circuit boards can discharge without detection. Although this product features patented or proprietary protection circuitry, damage may occur on devices subjected to high energy ESD. Therefore proper ESD precautions should be taken to avoid performance degradation or loss of functionality.



11. Contact Information

For the latest specifications, additional product information, technical support and sales support, please contact:

- **Email:** RF.support@raytrontek.com
- **Web:** www.raytrontek.com

12. Disclaimer

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