## 1. Description

- The M0016D is a Gain Equalizer fabricated on GaAs IPD MMIC process. It operates over 7-13GHz, provides attenuation slope of 5dB with insertion loss of 0.6dB.

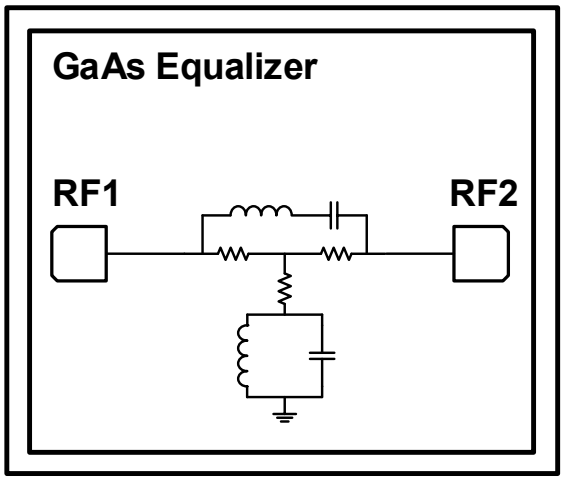



**Figure 1. M0016D Functional Block Diagram**

## 2. Applications

- TX/RX Modules
- Telecommunications
- Radar
- Defense

## 3. Features

- Frequency Range: 7-13GHz
- Attenuation Slope: 5dB
- Return Loss: -23dB (Typ.)
- Die Size: 0.75 x 0.70 x 0.10mm

## 4. Brief Typical Performance

**Table 1. Brief Typical Performance**

| Parameter | 7-13GHz | Units |
|---|---|---|
| Attenuation Slope | 5 | dB |
| Insertion Loss@13GHz | 0.6 | dB |
| Input/Output Return Loss | -23 | 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 | 4 |
| 10 | Handling Precautions | 5 |
| 11 | Contact Information | 5 |
| 12 | Disclaimer | 5 |

## 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[1]**

| Parameter | Symbol | Min. | Typ. | Max. | Units |
|---|---|---|---|---|---|
| Attenuation Slope | Eq | - | 5 | - | dB |
| Insertion Loss @13GHz | IL | - | 0.6 | - | dB |
| Input/Output Return Loss | $RL_{IN}$/ $RL_{OUT}$ | - | -23 | - | dB |
| Power Handling Capability | $P_{IN\ MAX}$ | - | 30 | - | dBm |

[1]. Test condition: Input signal pulsed CW（Continuous Wave）

## 7. Typical Performance Curve

### ■ Small-signal Characteristics Curve

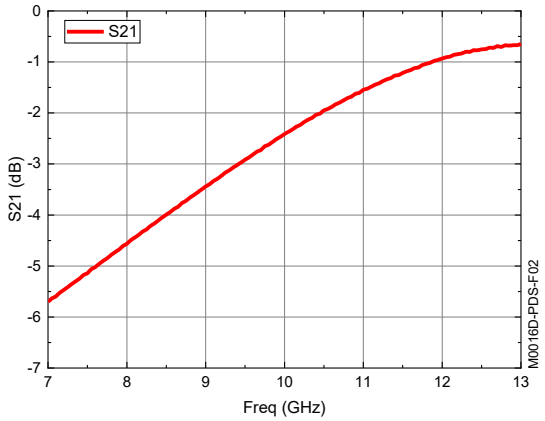



**Figure 2. Insertion Loss Characteristics**

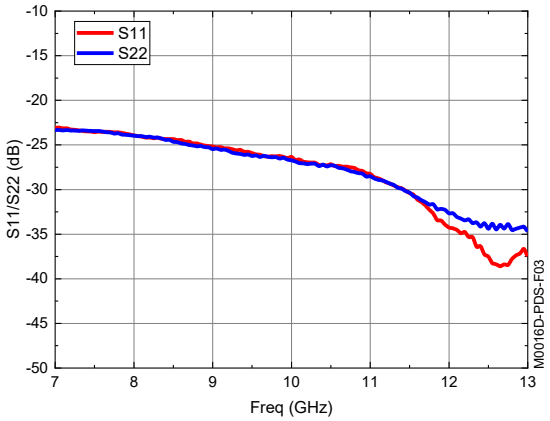
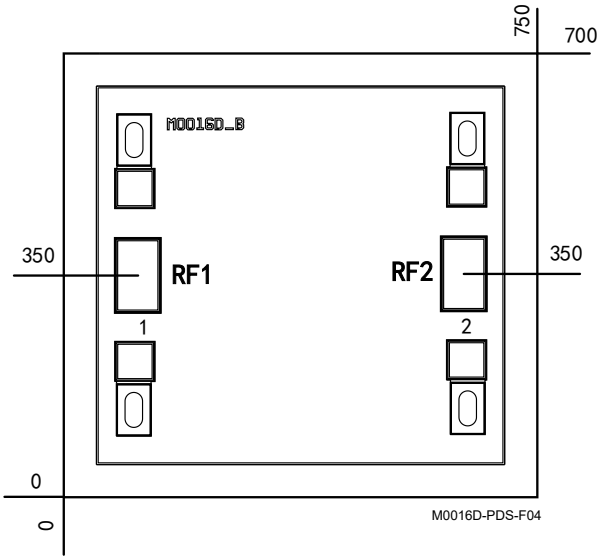



**Figure 3. Input/Output Return Loss Characteristics**

## 8. Outline Dimensions




- Dimensions shown in micrometre

**Figure 4. M0016D Outline Dimensions**

### Table 4. Pad Description

| Pad | Symbol | Description |
|---|---|---|
| 1 | RF1 | RF Input |
| 2 | RF2 | RF Output |

## 9. Assembly Information

### ■ Assembly Diagram

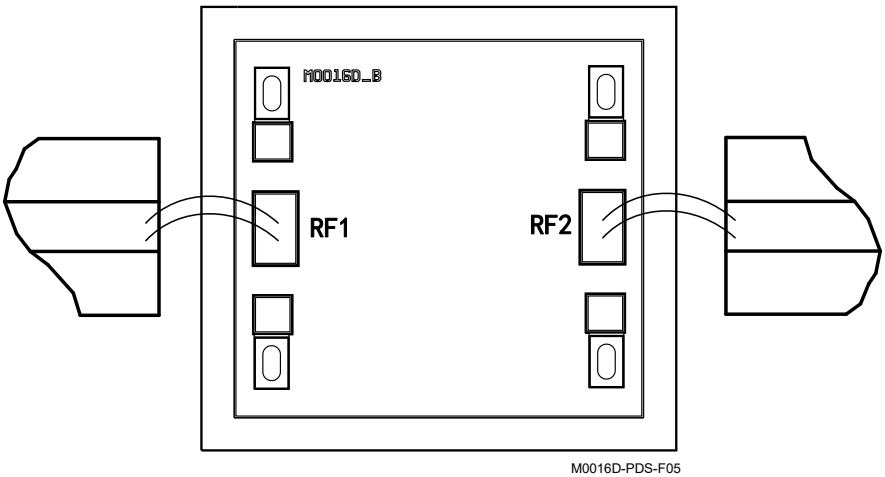



**Figure 5. M0016D Assembly Diagram**

- **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

The information provided here is believed to be reliable at the time of publication. Raytron reserves the right to make changes to its products, specifications and product descriptions at any time without notice. Raytron assumes no responsibility for the use of this information and all such information should entirely be at the user's own risk. Raytron makes no warranty about the suitability of its products for specific purpose or application and disclaims all liability, including without limitation consequential and incidental damages. Raytron does not authorize or warrant any Raytron products for use in the life support devices or systems.

Raytron Raytron Microwave

Copyright @ Raytron Technology Co.,Ltd.