1. Description

- The M5307 is a 24dBm ($IP_{-0.1dB}$) wideband Single-Pole Double-Throw (SPDT) switch fabricated on GaAs p-HEMT MMIC process. It operates over DC-13GHz with a 0/-5V control voltage.
-

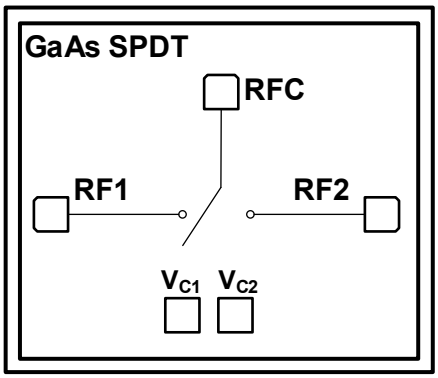


Figure 1. M5307 Functional Block Diagram

2. Applications

- TX/RX Modules

3. Features[1]

- Frequency Range: DC-13GHz
- Insertion Loss: 1.2dB
- Isolation: 24dB
- Input/Output Return Loss: -18dB
- Input Power ($IP_{-0.1dB}$): 24dBm
- Control Voltage: 0/-5V
- Die Size: 1.05 x 1.10 x 0.10mm

[1] On-wafer Test

4. Brief Typical Performance

Table 1. Brief Typical Performance

Parameter	DC-13GHz	Units
Insertion Loss	1.2	dB
Isolation	24	dB
Input/Output Return Loss	-18	dB
Input Power for 0.1dB Compression	24	dBm

- Test condition: Input signal Pulsed, Pulse width = 100ms, Duty cycle = 30%

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
Control Voltage, V_{C1}/V_{C2}	-	0/-5V	-	V

6. RF Characteristics (T_C = 25°C)

Table 3. RF Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Units
Insertion Loss	IL	-	1.2	-	dB
Isolation	ISO	-	24	-	dB
Input/Output Return Loss	RL_{IN}/ RL_{OUT}	-	-18	-	dB
Input Power for 0.1dB Compression	$IP_{-0.1dB}$	-	24	-	dBm

[1]. Test condition: Input signal Pulsed, Pulse width = 100ms, Duty cycle = 30%

7. Typical Performance Curve

■ Small-signal Characteristics Curve

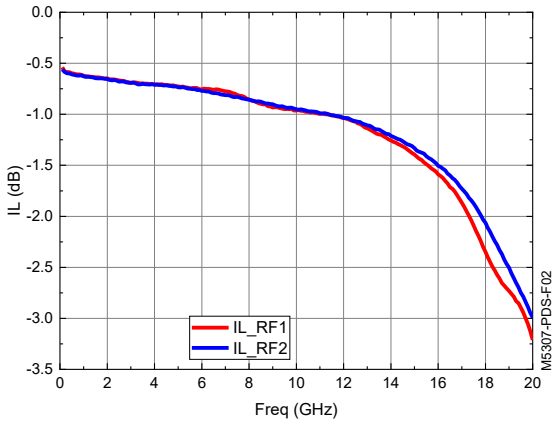


Figure 2. Insertion Loss Characteristics

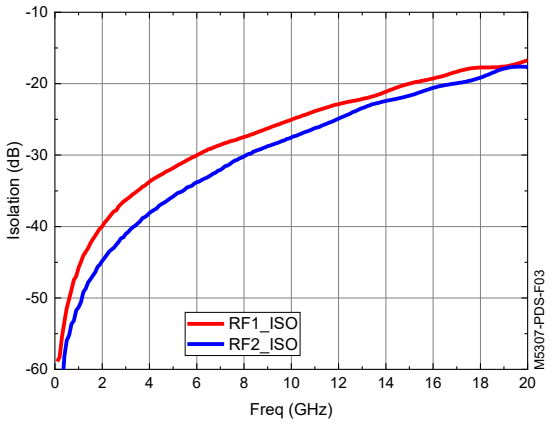


Figure 3. Isolation Characteristics

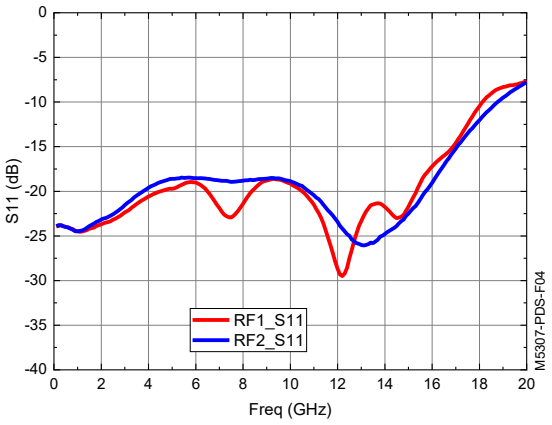


Figure 4. Input Return Loss Characteristics

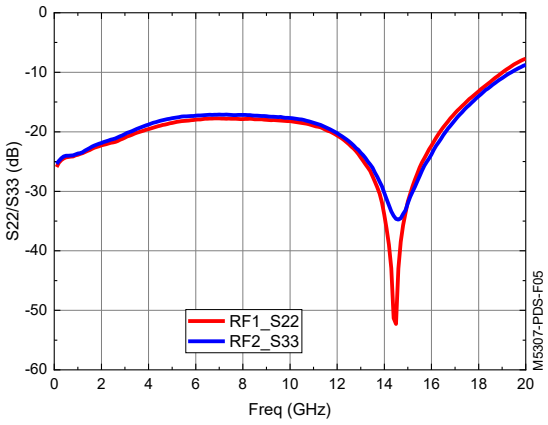
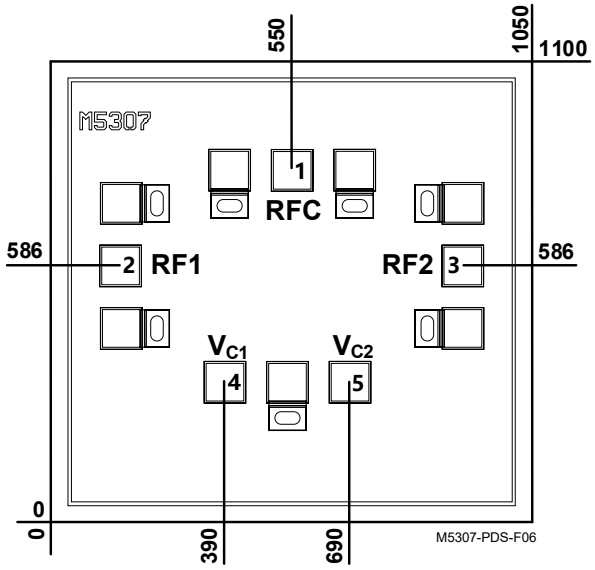


Figure 5. Output Return Loss Characteristics

8. Outline Dimensions



• Dimensions shown in micrometre

Figure 6. M5307 Outline Dimensions

Table 4. Pad Description

Pad	Symbol	Description
1	RFC	RF Input
2,3	RF1/RF2	RF Output 1 / RF Output 2
4,5	V_{C1}/V_{C2}	Control Voltage

Table 5. Truth Table

V_{C1}	V_{C2}	RFC to RF1	RFC to RF2
-5V	0V	ON	OFF
0V	-5V	OFF	ON

9. Assembly Information

■ Assembly Diagram

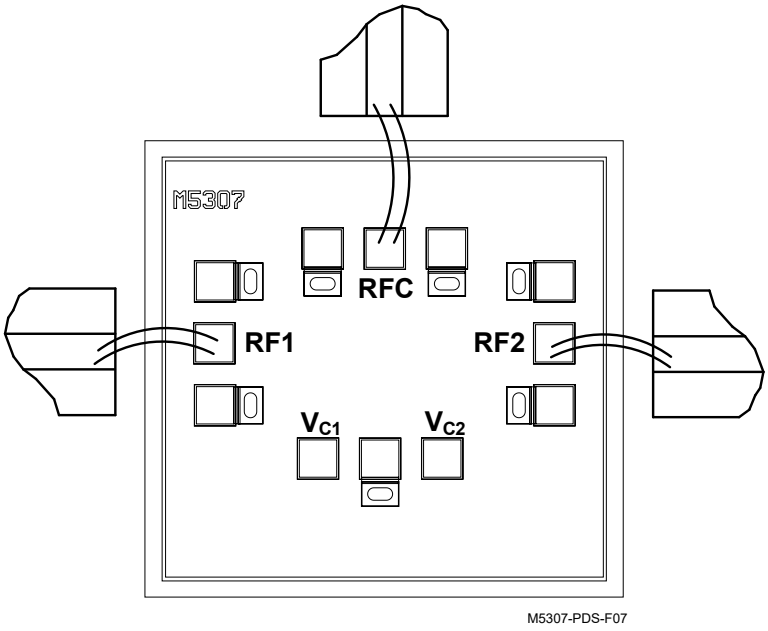


Figure 7. M5307 Assembly Diagram

- **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 Microwave

Copyright @ Raytron Technology Co.,Ltd.