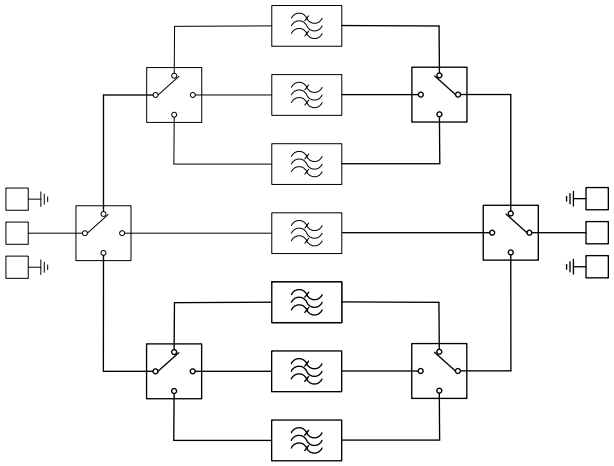
1. Description

- The M6202 is a 5-13GHz 7-channel switch filter bank integrated Filter, Switch and 3-to-8 Decoder fabricated on GaAs p-HEMT MMIC process. The chip is grounded through backside metal via holes. All chip products undergo 100% RF measurement.



M6202-PDS-F01

Figure 1. M6202 Functional Block Diagram

2. Applications

- TX/RX modules
- Wireless communications
-

3. Features

- Operating Frequencies: 5-13GHz
- Channels: 7 Through/5-7GHz/7-9GHz/9-10GHz/ 10-11GHz/11-12GHz/12-13GHz
- Insertion Loss at Through Channel: 2dB
- Insertion Loss at Filter Channel: 6.4dB
- Filter Rejection: 33dBc
- Input/Output Return Loss: -12dB
- Control Voltage: 0/+5V
- Die Size: 4.0 x 7.0 x 0.1mm

4. Brief Typical Performance

Table 1. Brief Typical Performance

Parameter		Data	Units
Channel	Thru	5-13	GHz
	Band1	5-7	
	Band2	7-9	
	Band3	9-10	
	Band4	10-11	
	Band5	11-12	
	Band6	12-13	
Insertion Loss at Through Channel		2	dB
Insertion Loss at Filter Channel		6.0-6.8	dB
Filter Rejection		33	dBc
Input Return Loss		-12	dB
Output Return Loss		-12	dB

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5. Recommended Operating Conditions

Table 3. Recommended Operating Conditions

Parameter	Min.	Typ.	Max.	Units
Operating Temperature Range	-55	25	85	°C
Supply Voltage, VEE	-	-5	-	V
Control Voltage, V1/V2/V3	-	0/5	-	V

6. RF Characteristics (TC = 25˚C)

Table 4-1. RF Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Units
Insertion Loss of Through Channel	IL_{Thru}	-	2	-	dB
Insertion Loss of Filter Channel	IL	-	6.0-6.8	-	dB
Filter Rejection	Rej	-	33	-	dBc
Input Return Loss	S11	-	-12	-	dB
Output Return Loss	S22	-	-12	-	dB

Table 4-2. RF Characteristics

Parameter	Symbol	Through	5-7GHz	7-9GHz	9-10GHz	Units
Insertion Loss (Typ.)	IL	2	6.7	6.8	6.0	dB
Input Return Loss (Typ.)	S11	-17	-15	-15	-15	dB
Output Return Loss (Typ.)	S22	-17	15	-15	-15	dB
Filter Rejection	Rej	-	33 @3GHz 33 @9GHz	33 @5GHz 33 @11GHz	33 @7GHz 33 @12GHz	dBc

Parameter	Symbol	10-11GHz	11-12GHz	12-13GHz	Units
Insertion Loss (Typ.)	IL	6.2	6.5	6.2	dB
Input Return Loss (Typ.)	S11	-17	-12	-14	dB
Output Return Loss (Typ.)	S22	-17	-12	-14	dB
Filter Rejection	Rej	33 @8GHz 33 @13GHz	33 @9GHz 33 @14GHz	33 @10GHz 33 @15GHz	dBc

7. Typical Performance Curve

■ Small signal Characteristics Curve (T_C = 25˚C)

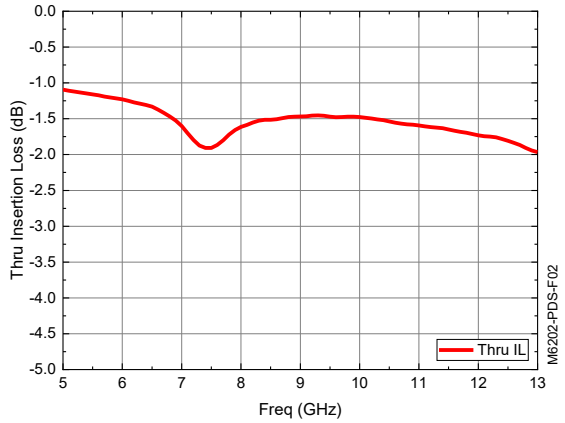


Figure 2. Insertion Loss of Through Channel

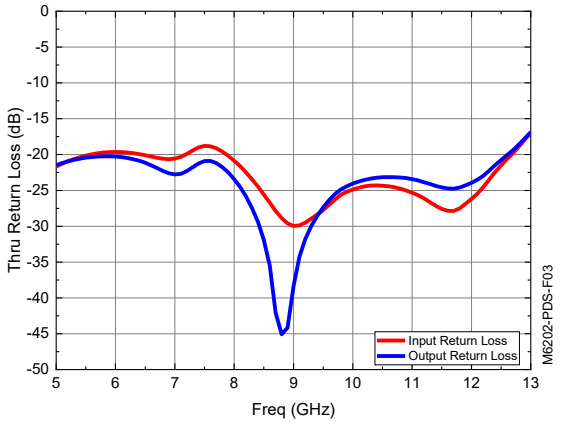


Figure 3. Input/Output Return Loss of Through Channel

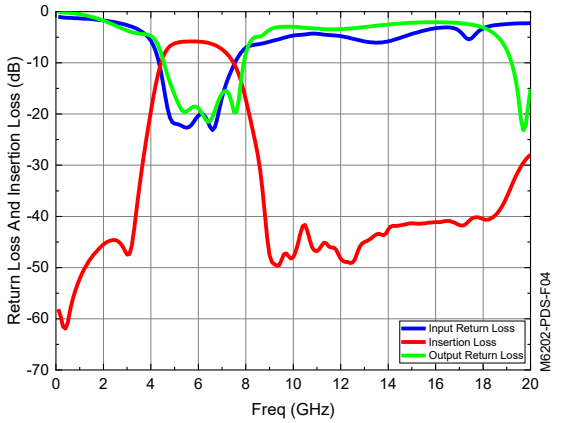


Figure 4. Return Loss and Insertion Loss of Band1

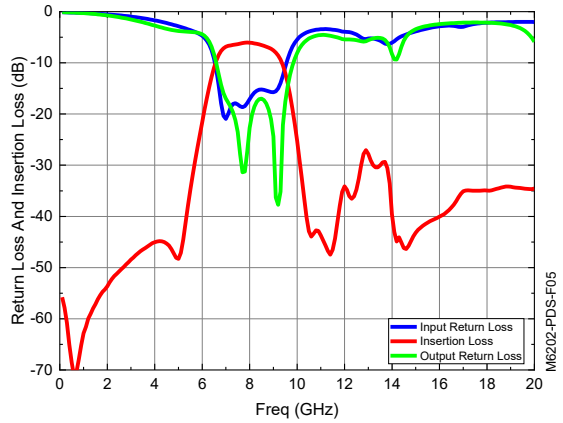


Figure 5. Return Loss and Insertion Loss of Band2

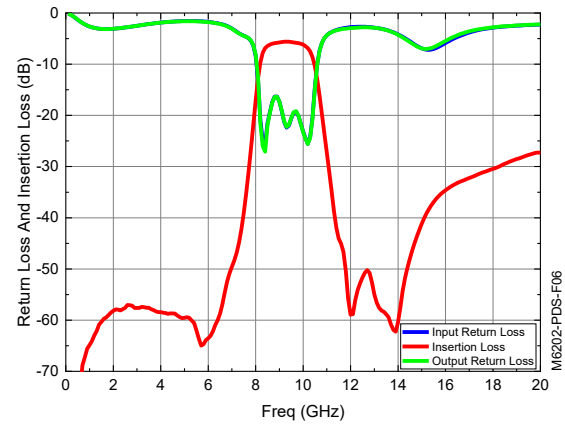


Figure 6. Return Loss and Insertion Loss of Band3

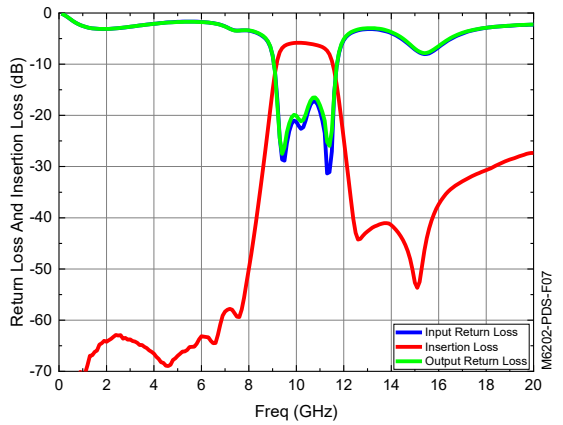


Figure 7. Return Loss and Insertion Loss of Band4

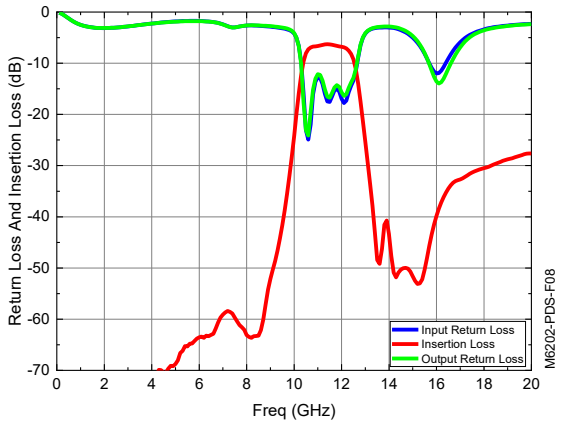


Figure 8. Return Loss and Insertion Loss of Band5

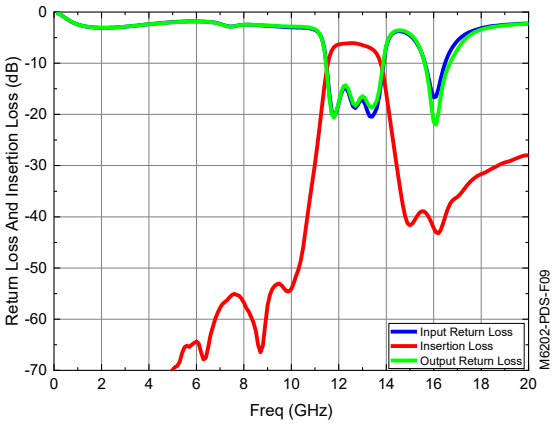


Figure 9. Return Loss and Insertion Loss of Band6

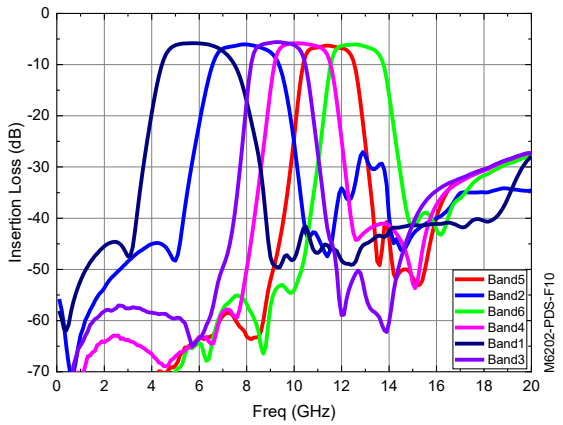
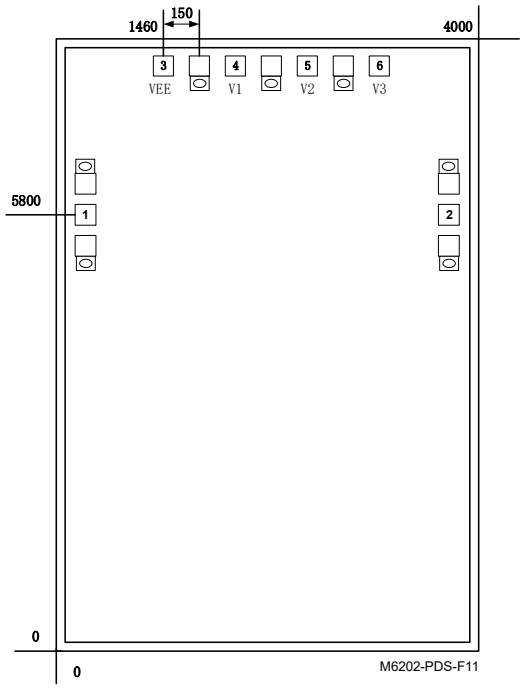


Figure 10. Full-State Insertion Loss Characteristics

8. Outline Dimensions



- Dimensions shown in micrometre

Figure 11. M6202 Outline Dimensions

Table 5. Pad Description

Pad	Symbol	Description
1	RF_{IN}	RF Input. 50 Ohm. DC blocking capacitor is not required.
2	RF_{OUT}	RF Output. 50 Ohm. DC blocking capacitor is not required.
3	VEE	Supply Voltage
4,5,6	V1, V2, V3	Control Voltage

Table 6. Truth Table

VEE	V1	V2	V3	Band
-5	0	0	0	Thru: 5-13GHz
-5	0	0	5	Band6: 12-13GHz
-5	0	5	0	Band5: 11-12GHz
-5	0	5	5	Band2: 7-9GHz
-5	5	0	0	Band4: 10-11GHz
-5	5	0	5	Band3: 9-10GHz
-5	5	5	0	Band1: 5-7GHz

9. Assembly Information

■ Assembly Diagram

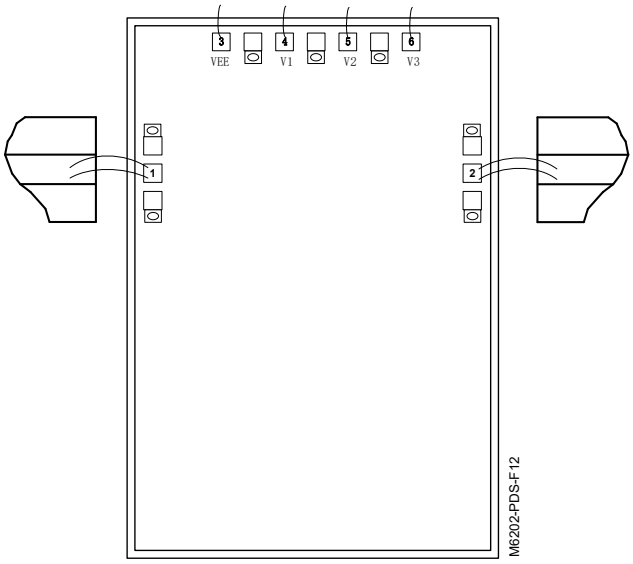


Figure 12. M6202 Assembly Diagram

- **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 1 mil gold wire are recommended for the RF ports.

10. Handling Precautions

■ Storage

All bare dies are placed in either Waffle or Gel based ESD protective containers, then sealed in an ESD protective bag for shipment. Once the sealed ESD protective bag has been opened, all dies should be stored in a dry nitrogen environment.

■ Cleanliness

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

■ 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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