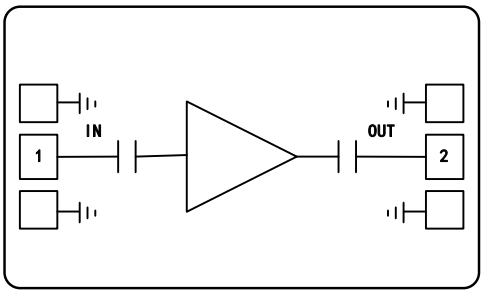
1. Description

- The M1719B is a 2-20GHz Ultra-wideband Distributed amplifier manufactured using a 0.15μm gate-length gallium arsenide high electron mobility transistor (pHEMT) process. The M1719B is grounded through backside metal via holes. All chips undergo 100% RF measurement.



M1719B-PDS-F01

Figure 1. M1719B Functional Block Diagram

2. Applications

- TX/RX Modules
- Wireless Communications

3. Features

- Frequency Range: 2-20GHz
- Typical Gain: 18.5dB, 1dB positive slope
- Noise Figure: <4dB
- Input/Output Return Loss: -12dB
- Output P_{-1dB}: 18dBm
- Single Positive Supply: +5V (I_{DQ}=85mA)
- Die Size: 3.2 x 1.4 x 0.1mm

4. Brief Typical Performance

Table 1. Brief Typical Performance

Parameter	2-20GHz	Units
Small-Signal Gain	18.5	dB
Noise Figure	4	dB
Input Return Loss	-12	dB
Output Return Loss	-12	dB
Output P_{-1dB}	18	dBm

Table of Contents

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

5. Absolute Maximum Ratings

Table 2. Absolute Maximum Ratings

Parameter	Symbol	Rating	Units
Drain-Source Voltage	V_{DS}	5	V
Maximum Input Power	P_{IN}	9	dBm
Storage Temperature Range	T_{STG}	- 65 ~ +150	°C

6. Recommended Operating Conditions

Table 3. Recommended Operating Conditions

Parameter	Min.	Typ.	Max.	Units
Operating Temperature Range	-55	25	125	°C
Drain-Source Voltage Range, V_{DS}	-	5	-	V
Drain Bias Current, I_{DQ}	-	85	-	mA

7. RF Characteristics (T_C = 25°C)

Table 4. RF Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Units
Small-Signal Gain	Gain	-	18.5	-	dB
Noise Figure	NF	-	4	-	dB
Input Return Loss	RL_{IN}	-	-12	-	dB
Output Return Loss	RL_{OUT}	-	-12	-	dB
Output Power for 1dB Compression	OP_{-1dB}	-	18	-	dBm

8. Typical Performance Curve

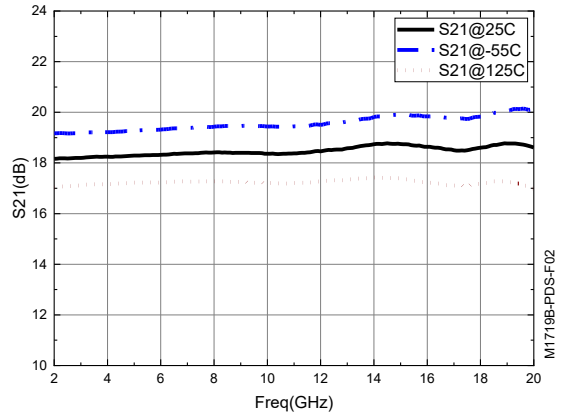


Figure 2. Small Signal Gain vs. Frequency

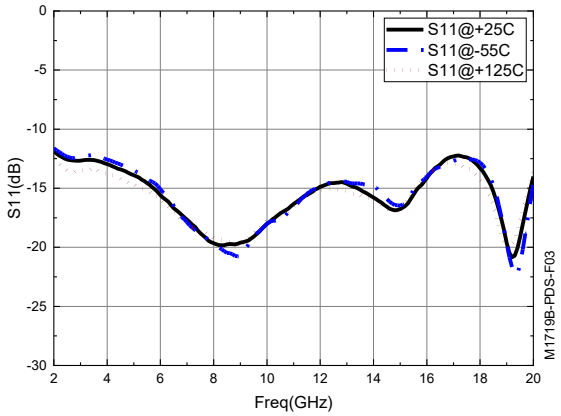


Figure 3. Input Return Loss vs. Frequency

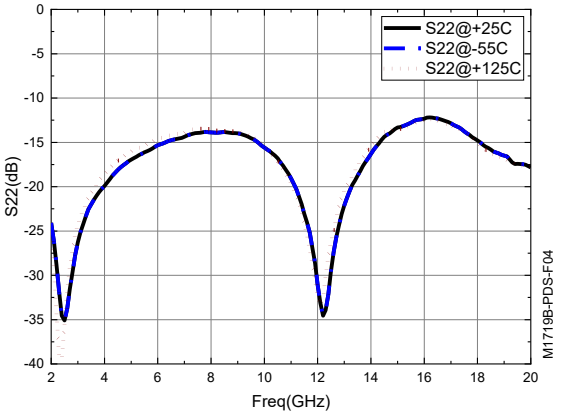


Figure 4. Output Return Loss vs. Frequency

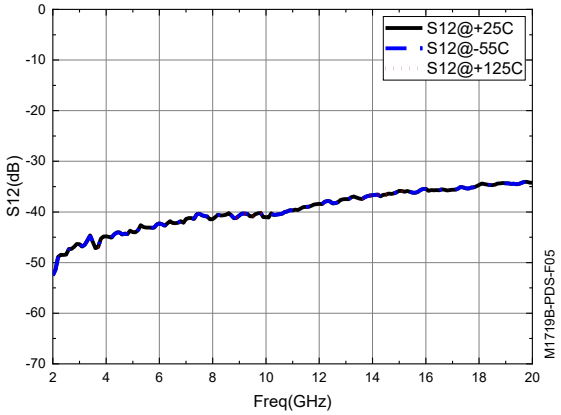


Figure 5. Reverse Isolation vs. Frequency

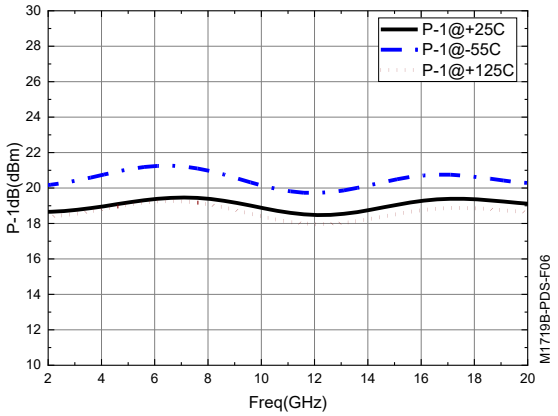


Figure 6. OP-1 Characteristics

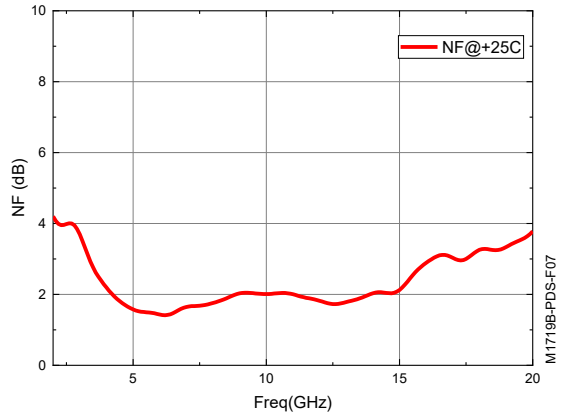
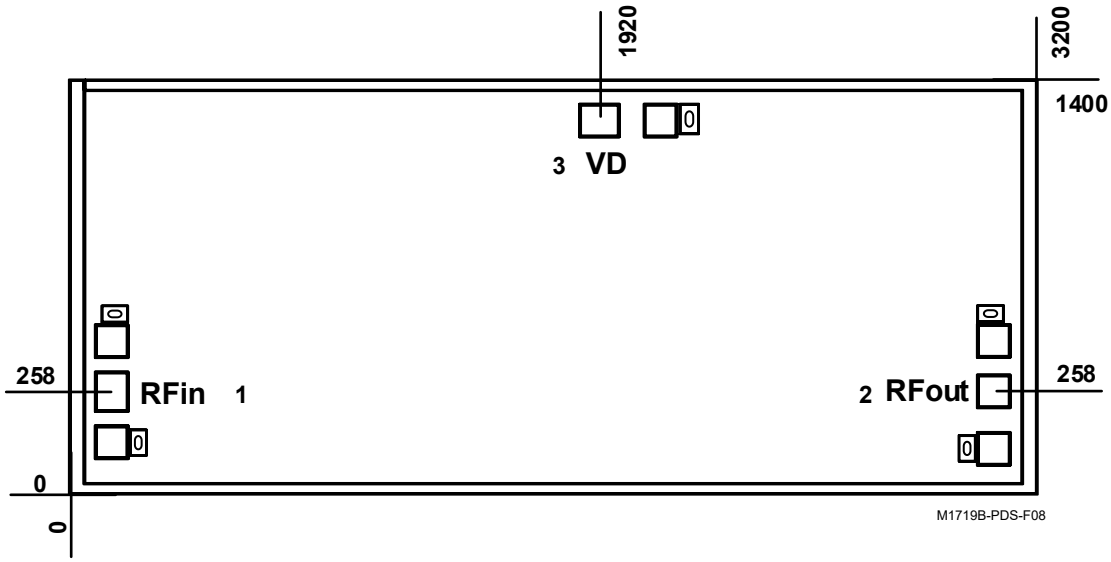


Figure 7. Noise Figure Characteristics

9. Outline Dimensions



• Dimensions shown in micrometre

Figure 8. M1719B Outline Dimensions

Table 5. Pad Description

Pad	Symbol	Description
1	RFin	RF Input. 50Ohm. DC blocking capacitor is not required.
2	RFout	RF Output. 50Ohm. DC blocking capacitor is not required.
3	VD	Supply Voltage. External bypass capacitors are required, refer to Figure 9.

10. Assembly Information

■ Assembly Diagram

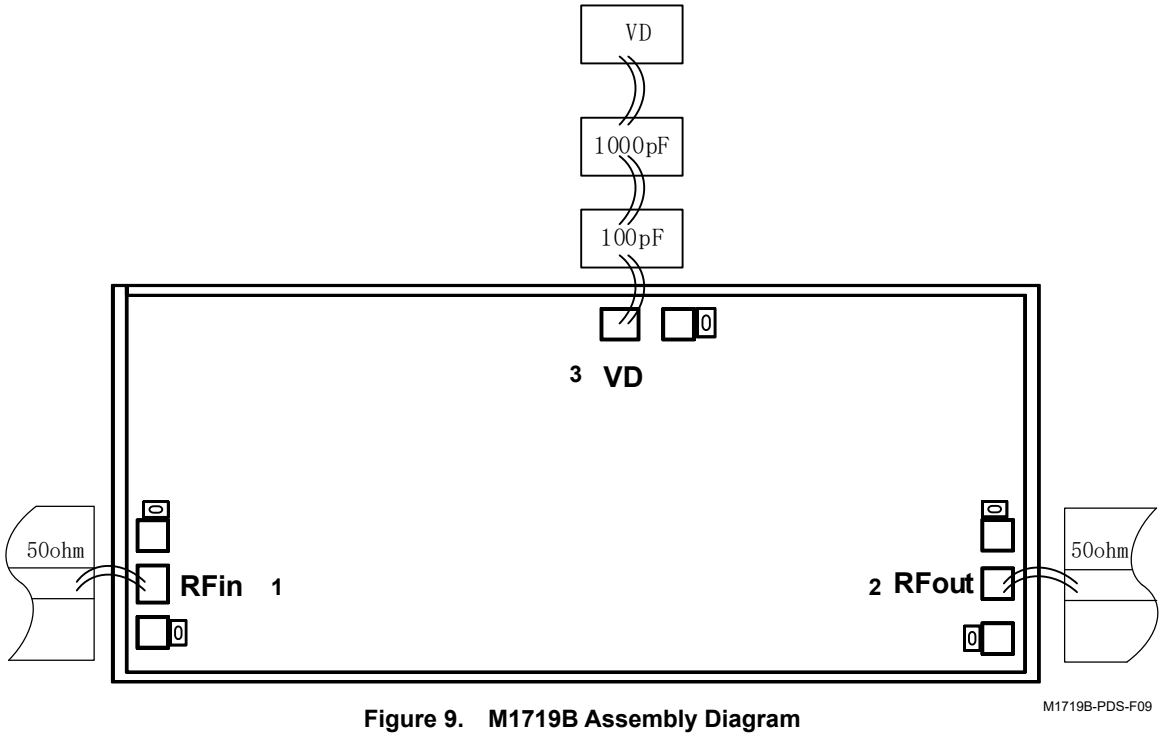


Figure 9. M1719B Assembly Diagram

- **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.

11. 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.



12. 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

13. 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.