

9-13.5GHz 2Watt GaAs Power Amplifier

Features

- ◆ Frequency Range: 9 – 13.5GHz
- ◆ Gain: 19dB(Typ.)
- ◆ Output P1dB: 31dBm
- ◆ Psat: 33dBm
- ◆ DC decoupled input and output
- ◆ Dual bias operation
- ◆ Metal-ceramic Package

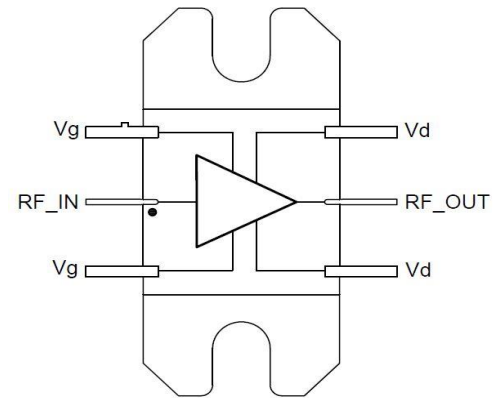
Typical Applications

- ◆ Radar
- ◆ Military & Space
- ◆ Instrumentation

Description

The ASL4044MC2 is a broad band Power Amplifier which covers frequency range from 9-13.5GHz. It features 19dB Gain with input and output return losses better than 10dB(typ) over the operating frequency band. This amplifier features saturated output power of 33dBm over the bandwidth. The circuit grounds are provided through on chip vias to the backside metallization.

Functional Diagram



Absolute Maximum Ratings¹

Parameter	Absolute Maximum	Units
Drain supply voltage	+9	volts
Drain current (I_{dq}) at $V_d=5v$	2.5	A
RF input power	25	dBm
Operating temperature	-50 to +85	°C
Storage Temperature	-65 to +150	°C

1. Operation beyond these limits may cause permanent damage to the component

Electrical Specifications @ $T_A = 25\text{ }^\circ\text{C}$, $Z_o = 50\Omega$,

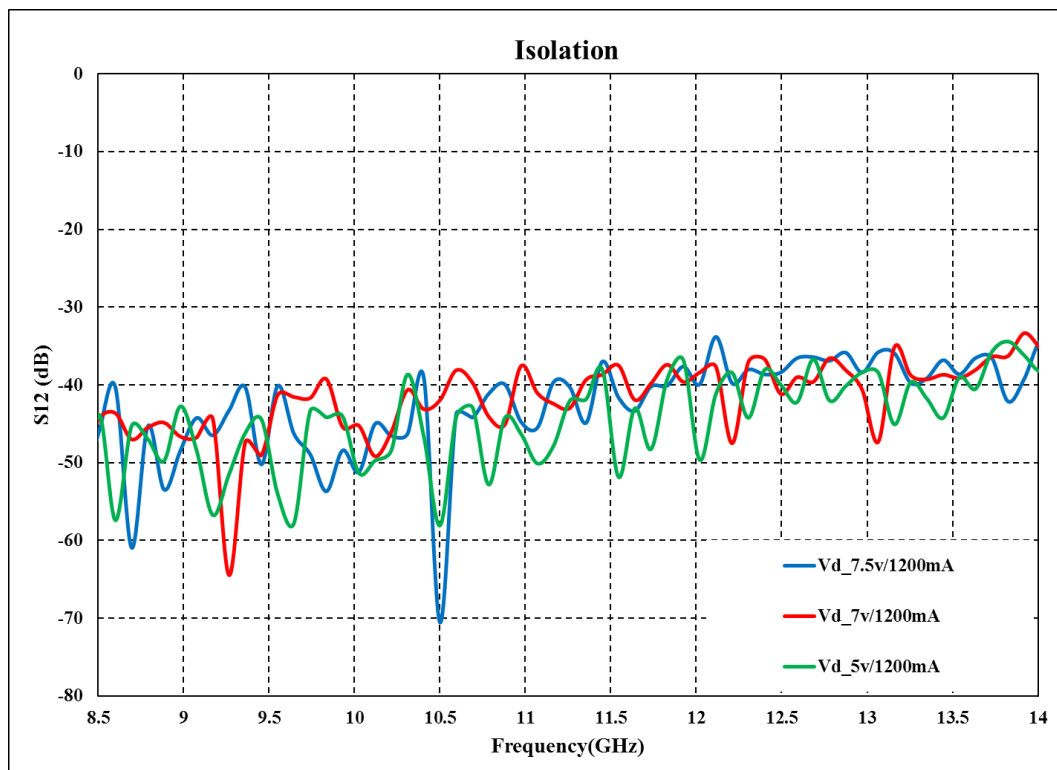
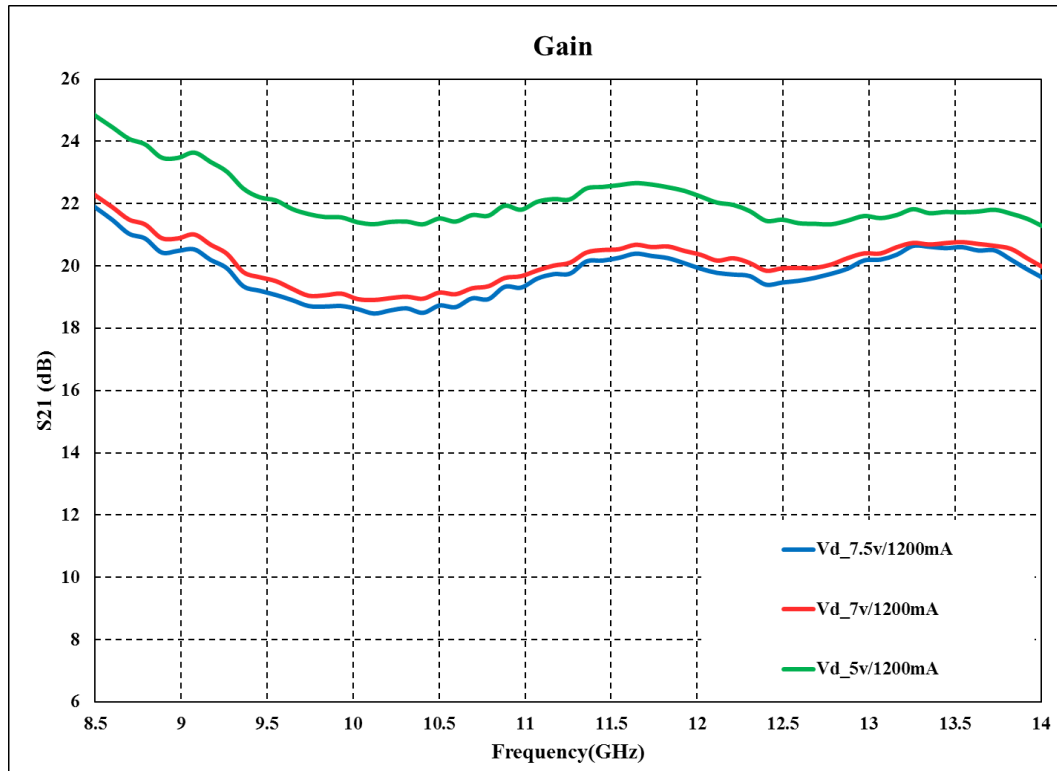
Parameter	Typical Values	Units
Frequency Range	9 – 13.5	GHz
Gain	19	dB
P _{gain}	16	dB
P _{1dB}	31	dBm
P _{sat}	33	dBm
Input Return Loss	10	dB
Output Return Loss	10	dB
Voltage	7	V
Current(I _{dq})	1200	mA

Note:

1. The above parameters specified are measured in 50-Ohm test fixture.
2. Adjust V_g between -4V to 0V to achieve I_{dq} = 1200mA (Typical)

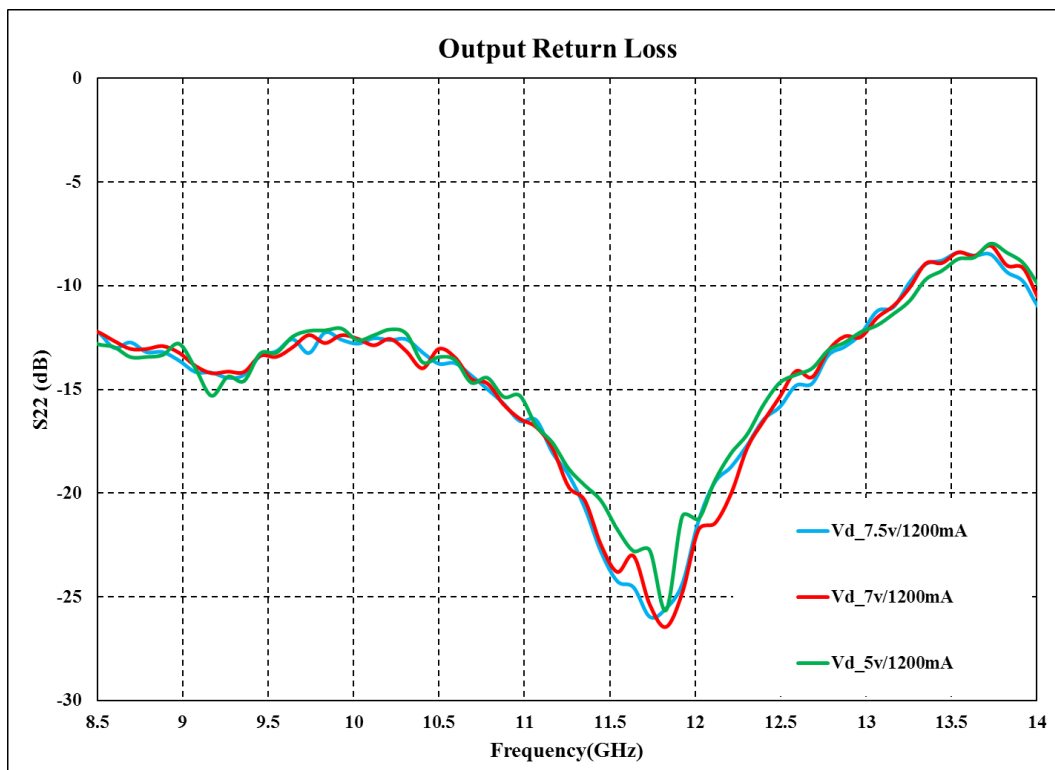
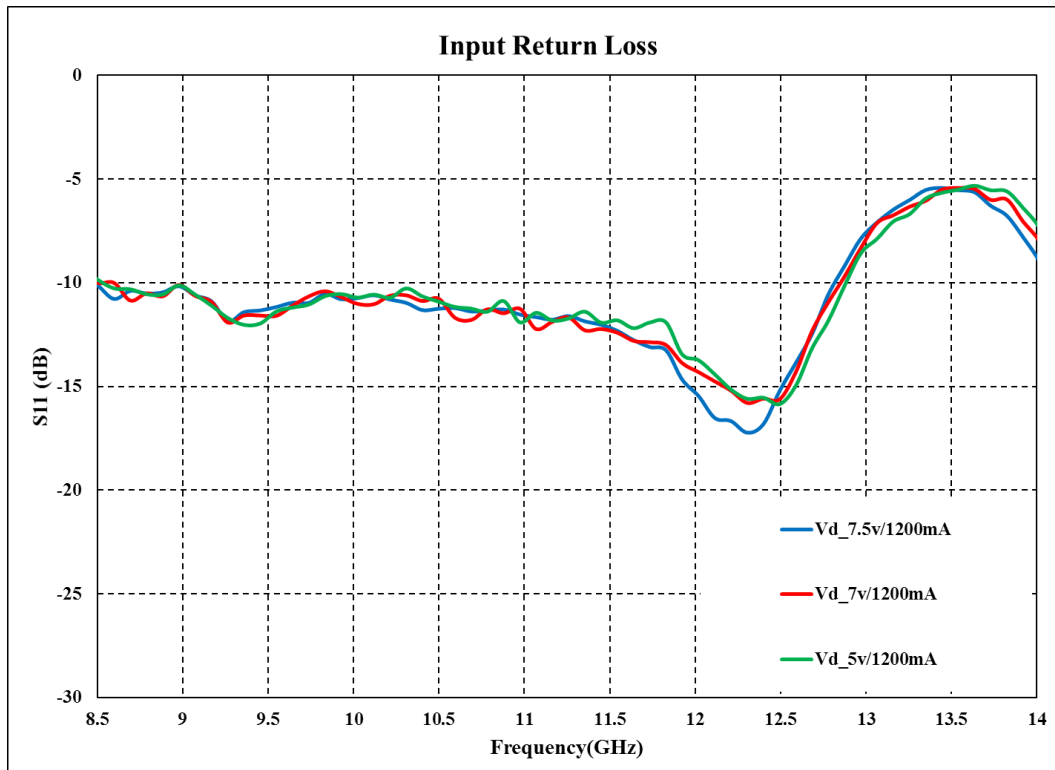
Test Fixture Data for Varying Vd @1200mA (Idq)

TA = 25 °C. Zo=50 Ω



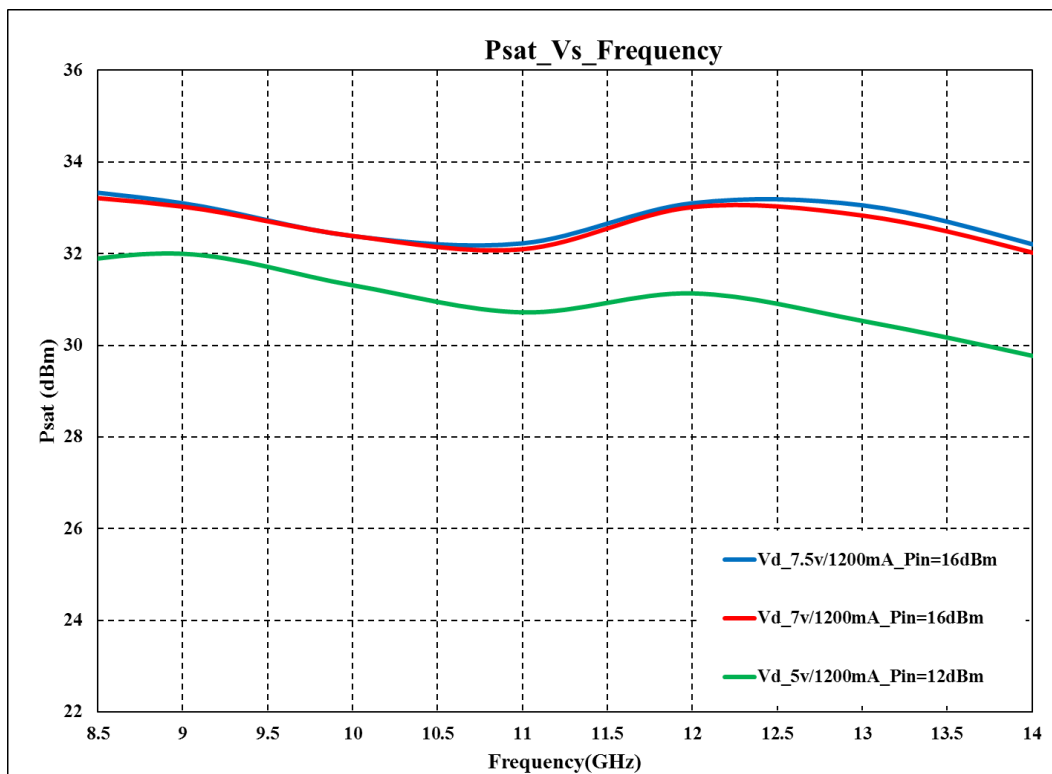
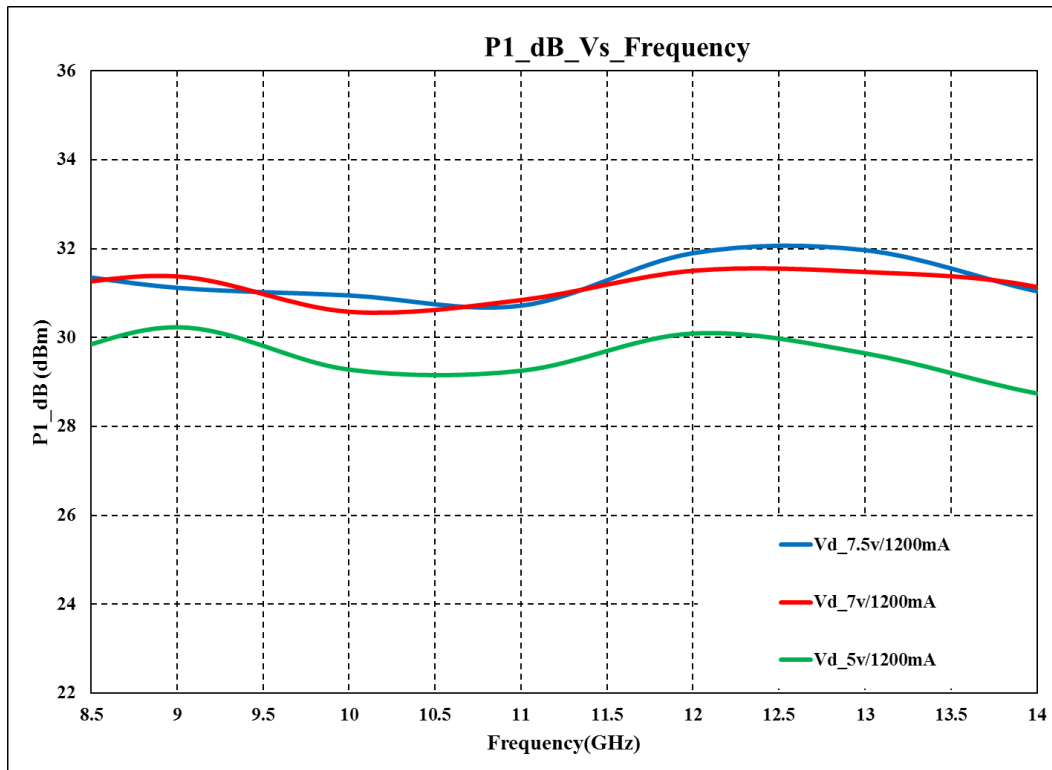
Test Fixture Data for Varying Vd @1200mA (Idq)

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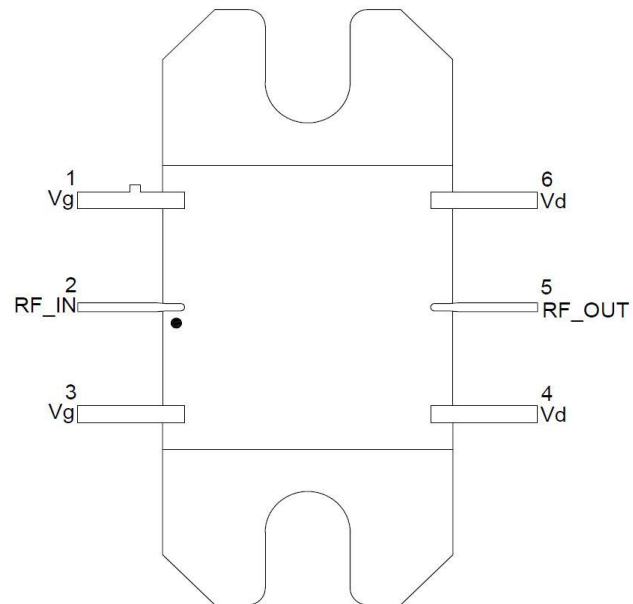


Test Fixture Data for Varying Vd @1200mA (Idq)

TA = 25 °C. Zo=50 Ω

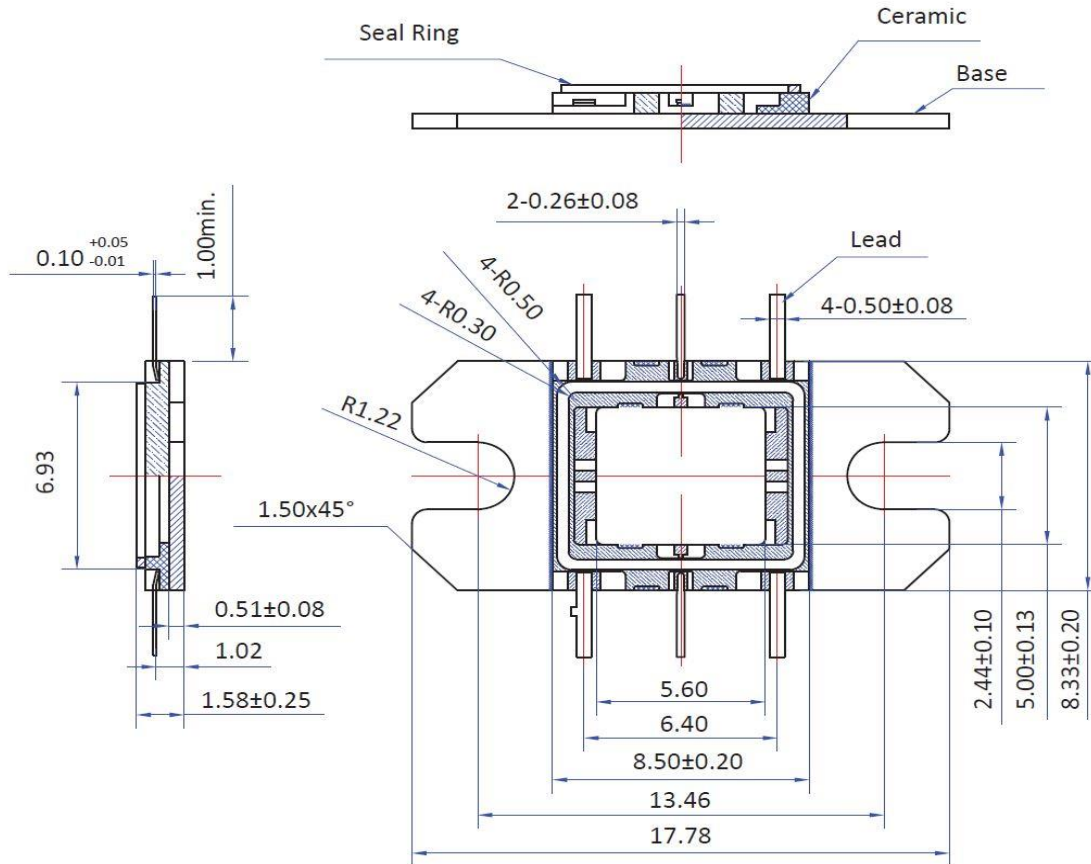


Pin Configuration Details

**Note:**

1. Pin no. 2 : RF IN
2. Pin no. 5 : RF OUT
3. Pin no. 1 & 3 : Vg
4. Pin no. 4 & 6 : Vd

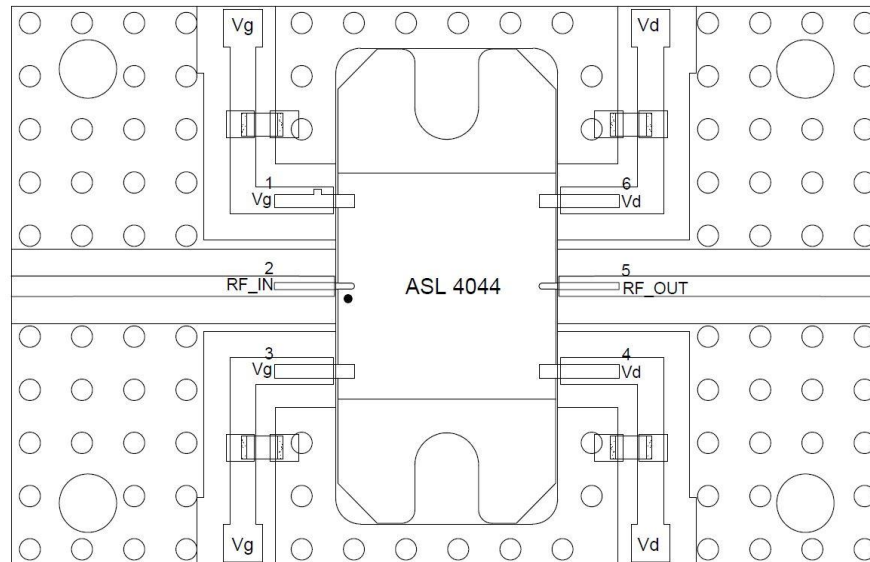
Package Outline Drawing



Notes:

1. Unit : mm;
2. Material : Ceramic : $90\% \text{Al}_2\text{O}_3$ (Black); Lead: Alloy 42; Base: WCU 15; Seal Ring: Kovar
3. Plating : $\text{Ni} \geq 2.0 \mu\text{m}$; $\text{Au} \geq 1.3 \mu\text{m}$;
4. Unless otherwise specified tolerance : $\pm 0.15 \text{mm}$;

Recommended Assembly Diagram



Note:

1. Input and output 50 ohm lines are preferably on 5mil or 10mil RT Duroid substrate.
2. Use high thermal conductive material for die mounting/die attachment for long-term reliability.
3. 10kF MLCs are required at Vg supply lines (as shown above).
4. 1μF/50V MLCs are required at Vd supply lines (as shown above).



GaAs MMIC devices are susceptible to Electrostatic discharge. Proper precautions should be observed during handling, assembly & testing

All information and Specifications are subject to change without prior notice. Before using the product, please download and refer to latest datasheet from website.