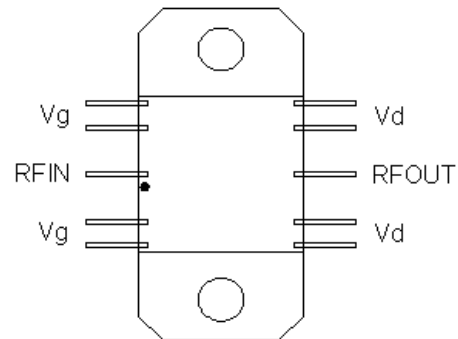


5 – 6 GHz 2 Watt Power Amplifier

Features

- ◆ Frequency Range : 5 – 6GHz
- ◆ 32 dBm output P1dB
- ◆ 24.5 dB Power gain
- ◆ 26% PAE
- ◆ High IP3
- ◆ Input Return Loss > 8 dB
- ◆ Output Return Loss > 12 dB
- ◆ Dual bias operation
- ◆ No external matching required
- ◆ DC decoupled input and output
- ◆ 0.5 μm InGaAs pHEMT Technology
- ◆ SMD Metal Ceramic Package

Functional Diagram



Typical Applications

- ◆ RADAR
- ◆ Military & space
- ◆ LMDS, VSAT

Description

The ASL4004MC2 is a C-band Power amplifier with 32dBm output P1dB. The PA uses 2 stages of amplification and operates in 5 – 6 GHz frequency range. The PA features 24.5 dB of gain with input and output return losses of 8 dB and 12 dB respectively. The PA has a high IP3 of 43dBm and 26% PAE. This feature enables it to be used in the applications requiring efficiency along with linearity. The chip operates with dual bias supply voltage. The die is fabricated using a reliable 0.5 μm InGaAs pHEMT technology. The Circuit grounds are provided through vias to the backside metallization.

The Package used is a compact SMD Metal Ceramic Package with a flat base made of copper molybdenum composite for mounting GaAs Power Amplifier die.

Absolute Maximum Ratings ⁽¹⁾

Parameter	Absolute Maximum	Units
Drain bias voltage (Vd)	+10	volts
Drain current (Id)	1.4	A
RF input power (RFin at Vd=8V)	26	dBm
Operating temperature	-50 to +85	°C
Storage Temperature	-65 to +150	°C

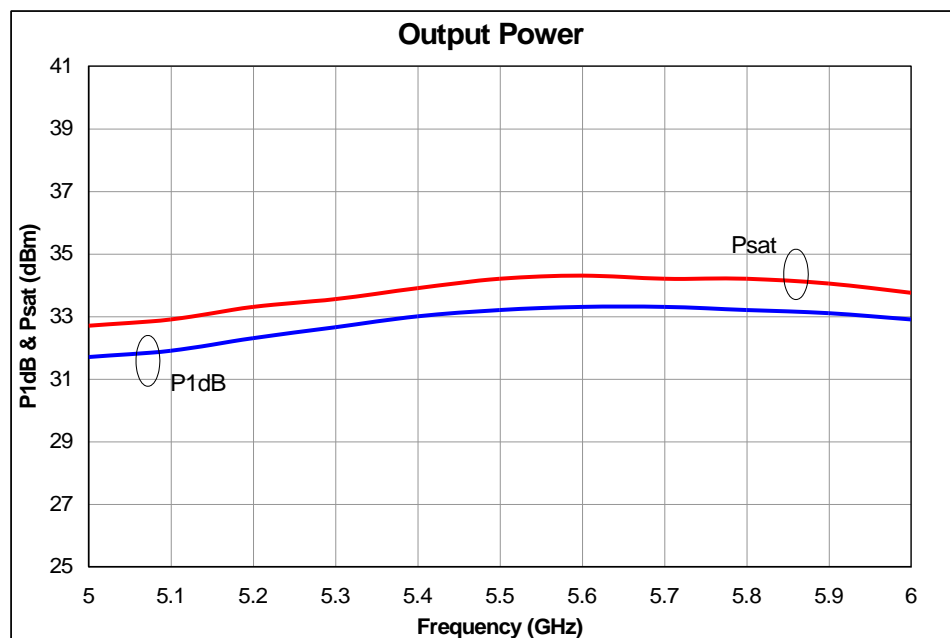
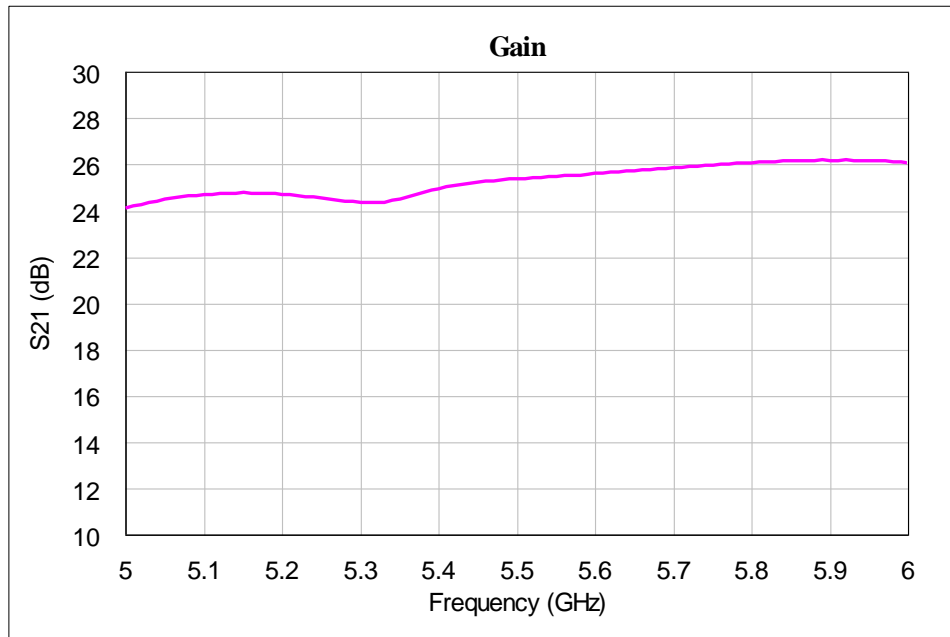
1. Operation beyond these limits may cause permanent damage to the component

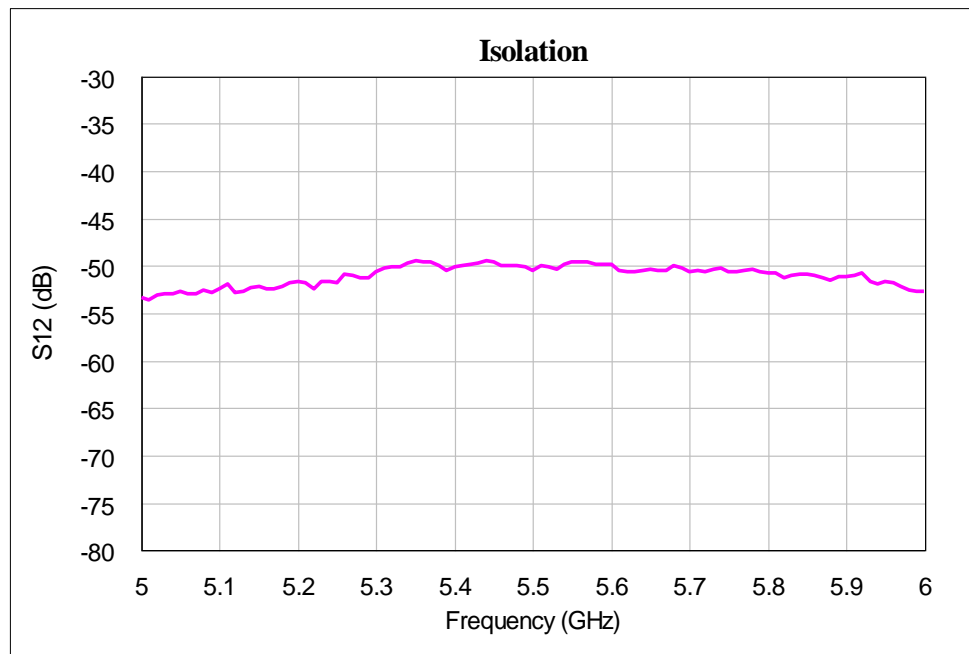
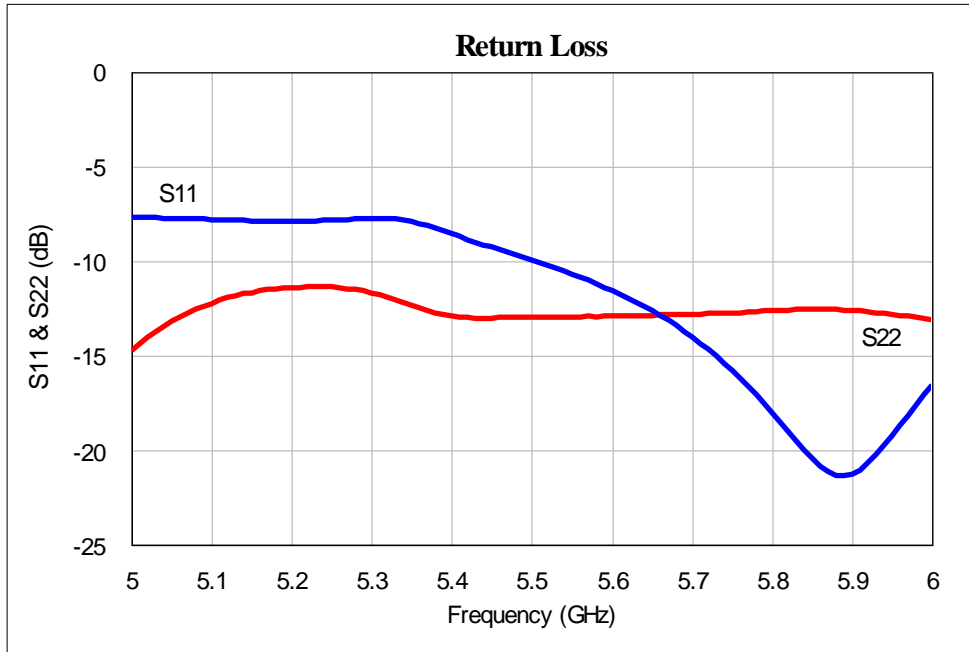
Electrical Specifications ⁽¹⁾ @ T_A = 25 °C, V_d = 8V, V_g = -1V, Z_o = 50 Ω

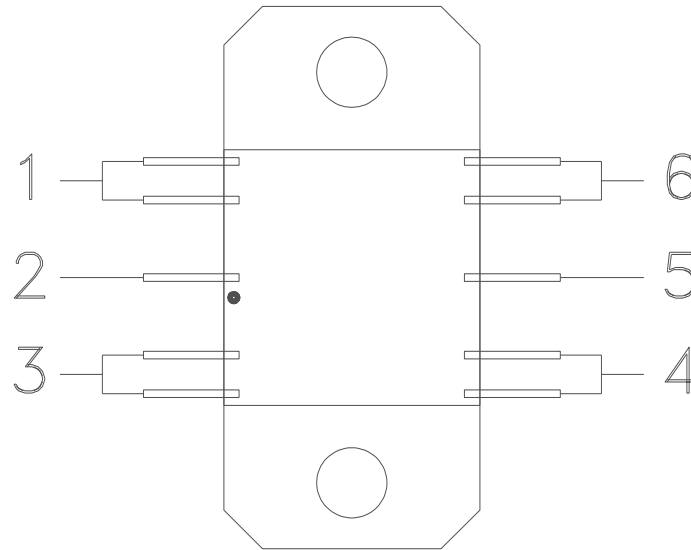
Parameter	Typ.	Units
Frequency Range	5 – 6	GHz
Gain	24.5	dB
Gain Flatness	+/-0.5	dB
Output Power (P1 dB)	32	dBm
Input Return Loss	8	dB
Output Return Loss	12	dB
Saturated output power (Psat)	33	dBm
Output Third Order Intercept (IP3)	43	dBm
Power Added Efficiency (PAE)	26%	--
Supply Current (I _{dq})	800	mA
Supply Current (I _{dsat})	1050	mA

Note:

1. Electrical specifications as measured in test fixture.

Test fixture data
 $V_d = 8V, V_g = -1V, \text{Total Current} = 800mA, T_A = 25^\circ C$


Test fixture data
 $V_d = 8V, V_g = -1V, \text{Total Current} = 800mA, T_A = 25^\circ C$


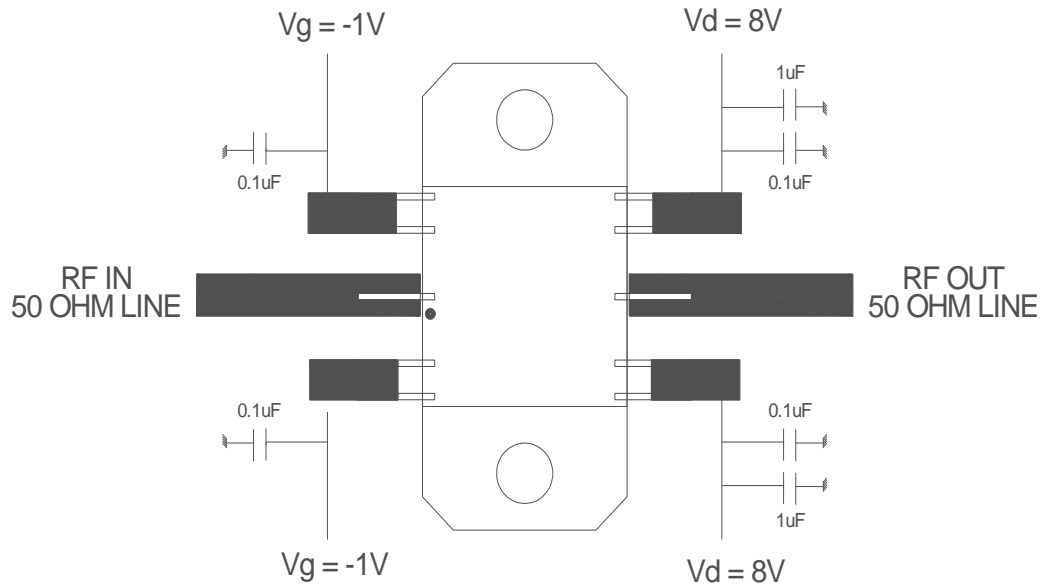
Pin details

Units: millimeters (inches)

Note:

1. All RF and DC bond pads are 100 μ m x 100 μ m
2. Pad no. 2 : RF IN
3. Pad no. 1,3: Vg
4. Pad no. 6,4: Vd
5. Pad no. 5: RF OUT

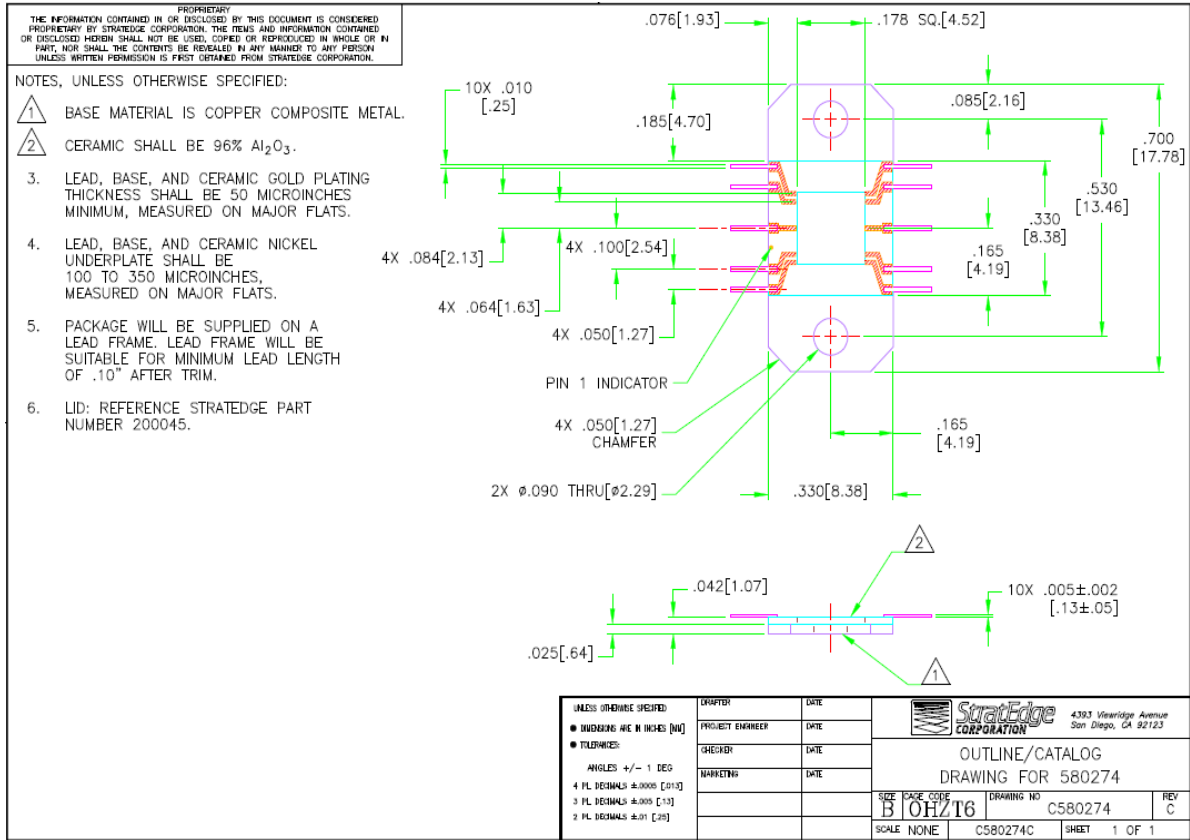
Recommended Assembly Diagram



Note :

1. Input and output 50 ohm lines are on 5 mil RT Duroid substrate
2. 0.1 μ F and 1 μ F capacitors may be additionally used as a second level of bypass for reliable operation
3. The RF input & output ports are DC decoupled on-chip.
4. Proper heat sink like Aluminium or copper to be used for better reliability of package

Package outline drawing



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