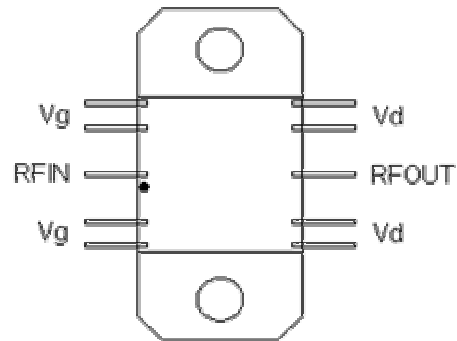


5 – 6.4 GHz 2 Watt Power Amplifier

Features

- ◆ Frequency Range : 5 – 6.4GHz
- ◆ 32.5 dBm output P1dB
- ◆ 9 dB Power gain
- ◆ 32% PAE
- ◆ High IP3
- ◆ Input Return Loss > 12 dB
- ◆ Output Return Loss > 12 dB
- ◆ Dual bias operation
- ◆ No external matching required
- ◆ DC decoupled input and output
- ◆ 0.5 μm InGaAs pHEMT Technology
- ◆ SMT Metal Ceramic Package

Functional Diagram



Typical Applications

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

Description

The AMT2134011P is a C-band Power amplifier with 32.5dBm output P1dB. The PA uses single stage of amplification and operates in 5 – 6.4 GHz frequency range. The PA features 9 dB of gain with input and output return losses of 12 dB respectively. The PA has a high IP3 of 43dBm and 32% 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.

Absolute Maximum Ratings ⁽¹⁾

Parameter	Absolute Maximum	Units
Drain bias voltage (Vd)	+10	volts
Drain current (Id)	1	A
RF input power (RFIn at Vd=9V)	26	dBm
Operating temperature	-50 to +85	°C
Storage Temperature	-65 to +150	°C

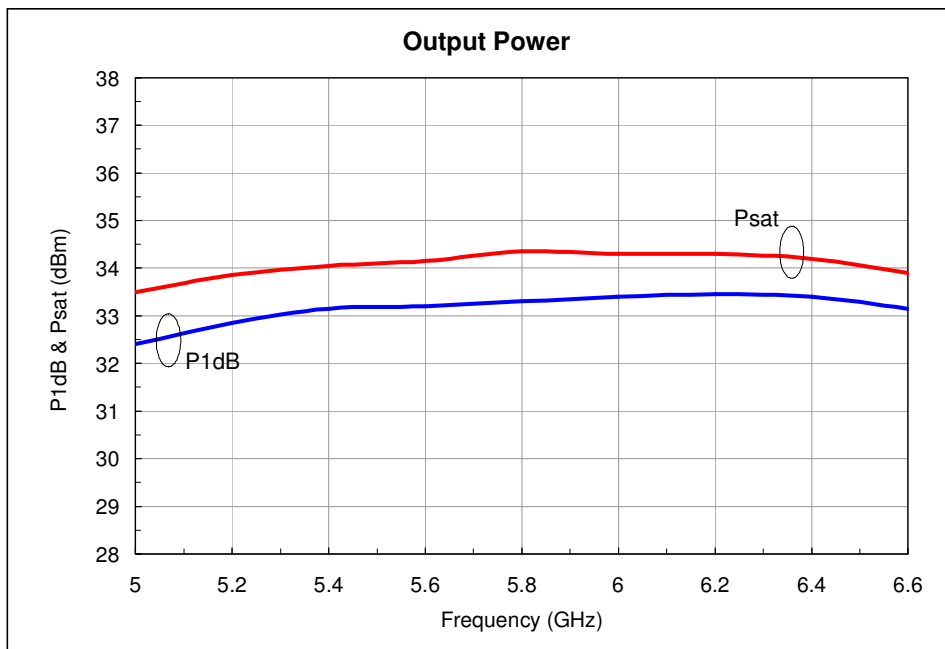
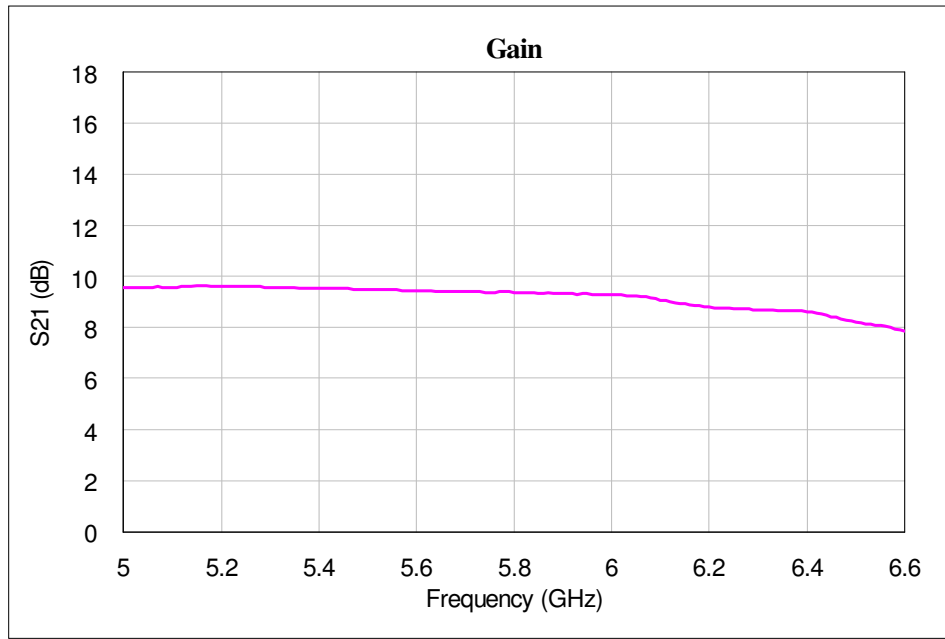
1. Operation beyond these limits may cause permanent damage to the component

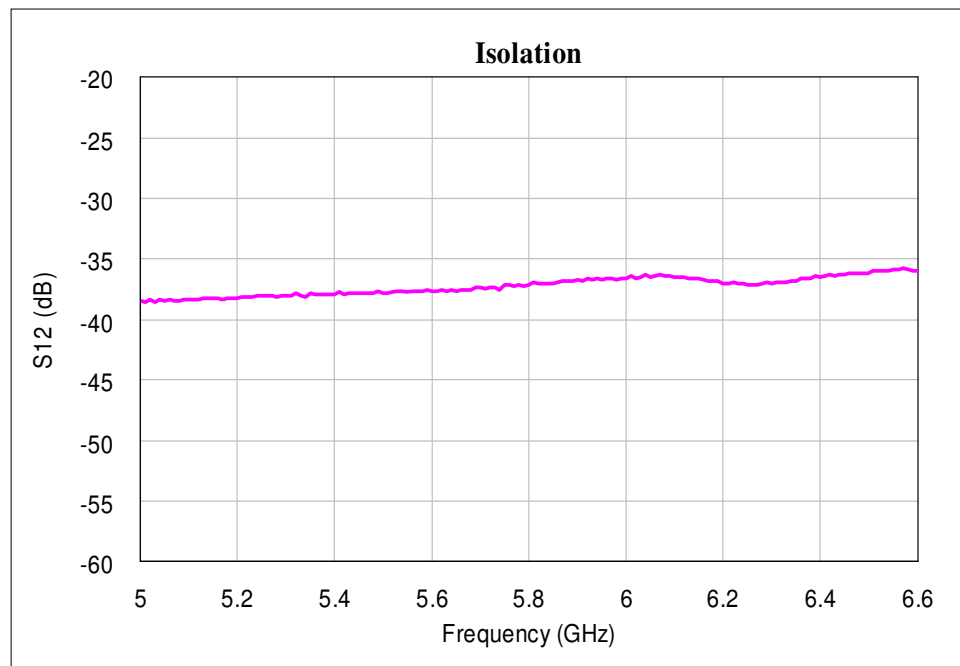
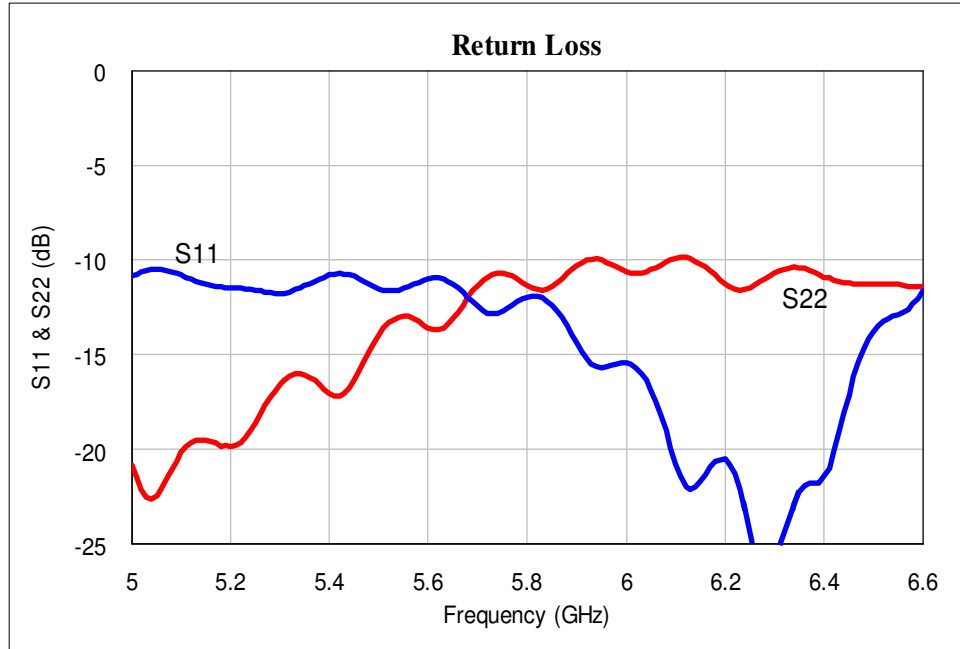
Electrical Specifications ⁽¹⁾ @ T_A = 25 °C, V_d = 8V, V_g = -1V, Z_o =50 Ω

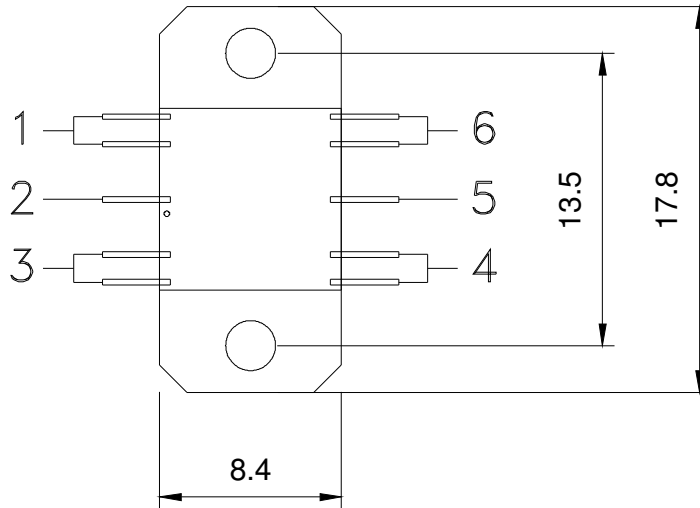
Parameter	Typ.	Units
Frequency Range	5 – 6.4	GHz
Gain	9	dB
Gain Flatness	+/-0.5	dB
Output Power (P1 dB)	32.5	dBm
Input Return Loss	12	dB
Output Return Loss	12	dB
Saturated output power (P _{sat})	33.5	dBm
Output Third Order Intercept (IP3)	43	dBm
Power Added Efficiency (PAE)	32%	--
Supply Current (I _{dq})	660	mA
Supply Current (I _{dsat} ²)	820	mA

Note:

1. Electrical specifications as measured in test fixture.
2. I_{dsat} is the maximum current under input RF drive condition.

Test fixture data
 $V_d = 8V, V_g = -1V, \text{Total Current} = 660mA, T_A = 25^\circ C$


Test fixture data $V_d = 8V$, $V_g = -1V$, Total Current = 660mA, $T_A = 25^\circ C$ 

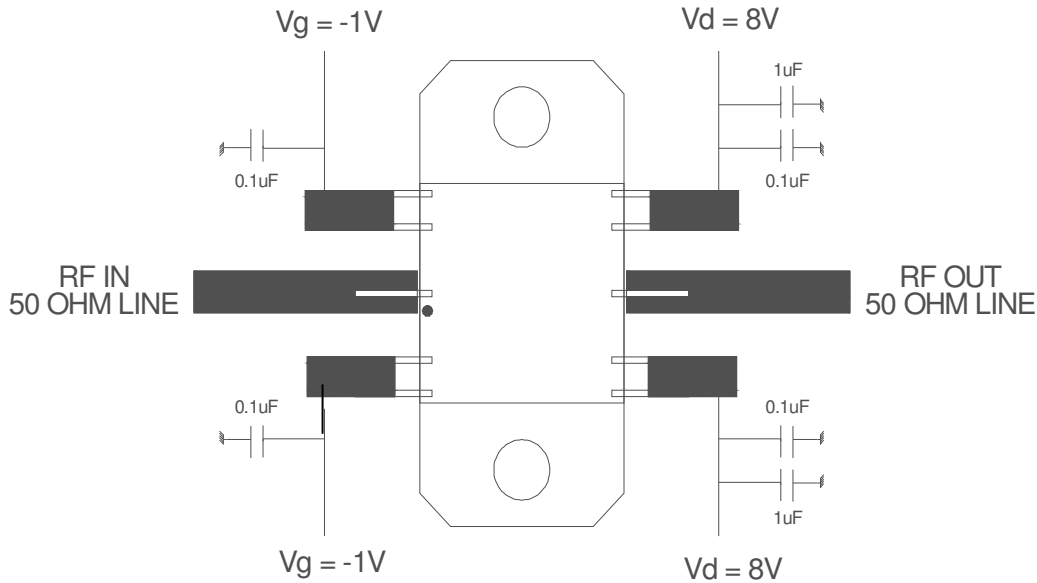
Pin details

Units: millimeters

Note:

1. Pad no. 2 : RF IN
2. Pad no. 1,3 : Vg
3. Pad no. 6,4 : Vd
4. Pad no. 5 : RF OUT

Recommended Assembly Diagram

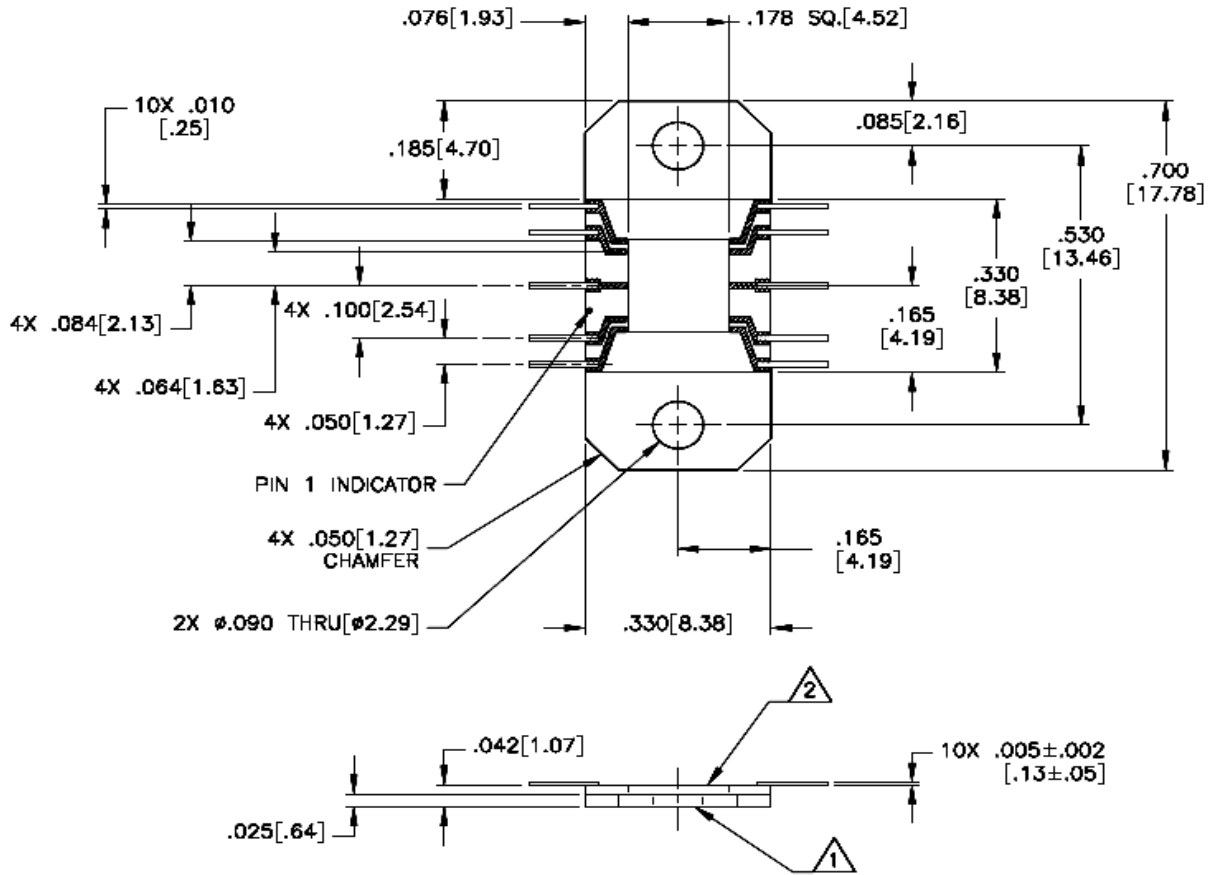


Note :

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

Die attach: For Epoxy attachment, use of a two-component conductive epoxy is recommended. An epoxy fillet should be visible around the total die periphery. If Eutectic attachment is preferred, use of fluxless AuSn (80/20) 1-2 mil thick preform solder is recommended. Use of AuGe preform should be strictly avoided.

Wire bonding: For DC pad connections use either ball or wedge bonds. For best RF performance, use of 150 - 200 μ m length of wedge bonds is advised. Single Ball bonds of 250-300 μ m though acceptable, may cause a deviation in RF performance.

Package Outline Diagram


Units: Inches [mm]



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