

Ku-Band 3-Stage Driver Packaged Amplifier TGA2507-SM



Top View

Key Features

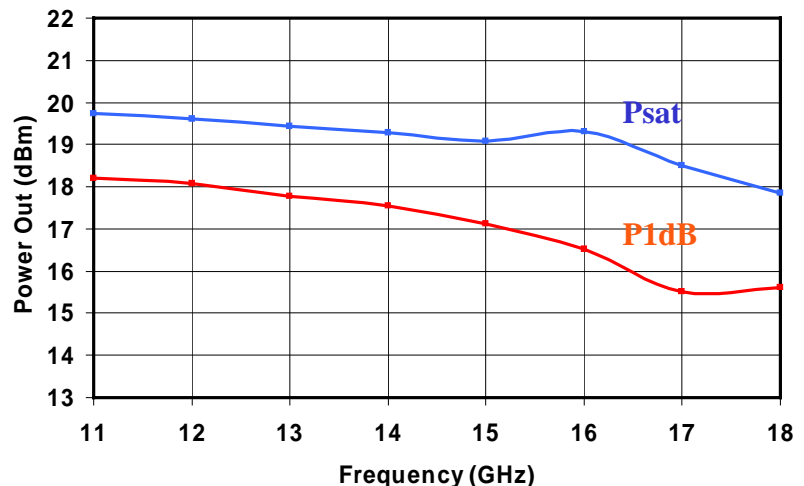
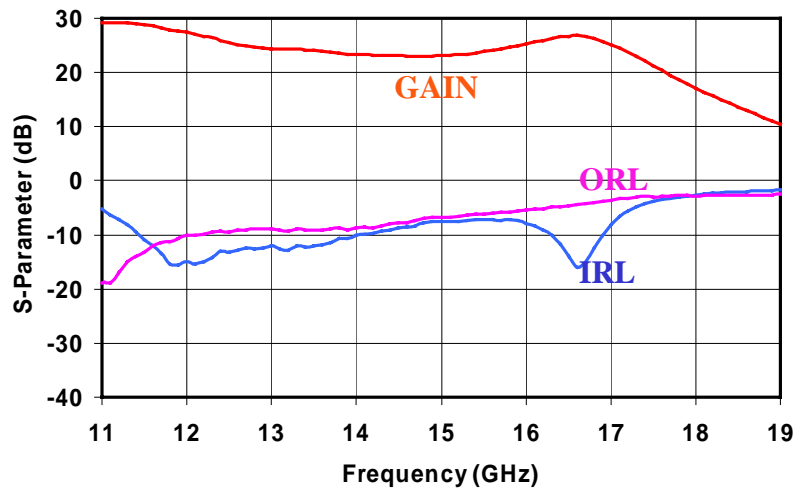
- 11-17 GHz Bandwidth
- 23 dB Nominal Gain
- 17 dBm Nominal P1dB
- Bias: 5 - 7 V, 75 mA Self Bias
- PHEMT Technology
- Package Dimensions:
4.0 x 4.0 x 0.9 mm
(0.157 x 0.157 x 0.035 in)

Primary Applications

- Point to Point Radio
- Military Ku-Band
- Ku-Band Space
- VSAT
- Lead-Free & RoHS compliant
- Demo boards are available.

Measured Data

Bias Conditions: $V_d = 6\text{ V}$, $I_d = 75\text{ mA}$ Self Bias



Note: This device is early in the characterization process prior to finalizing all electrical specifications. Specifications are subject to change without notice.

TABLE I
MAXIMUM RATINGS 1/

SYMBOL	PARAMETER	VALUE	NOTES
V ⁺	Positive Supply Voltage	8 V	<u>2/</u>
I ⁺	Positive Supply Current	114 mA	<u>2/</u>
P _{IN}	Input Continuous Wave Power	20 dBm	
P _D	Power Dissipation	0.91 W	<u>2/ 3/</u>
T _{CH}	Operating Channel Temperature	150 °C	<u>4/</u>
T _M	Mounting Temperature (30 Seconds)	250 °C	
T _{STG}	Storage Temperature	-65 to 150 °C	
T _{CASE}	Package Operating Temperature	-40 to 110 °C	

- 1/ These ratings represent the maximum operable values for this device
- 2/ Combinations of supply voltage, supply current, input power, and output power shall not exceed P_D.
- 3/ When operated at this power dissipation with a base plate temperature of 70° C, the median life is 1.7 E+6 hrs.
- 4/ Combinations of supply voltage, supply current, input power, and output power shall not exceed P_D.

TABLE II
ELECTRICAL CHARACTERISTICS
(Ta = 25 °C, Nominal)

PARAMETER	TYPICAL	UNITS
Frequency Range	11 - 17	GHz
Drain Operating	6	V
Quiescent Current	75 (Self Bias)	mA
Small Signal Gain	23	dB
Input Return Loss	8	dB
Output Return Loss	8	dB
Output Power @ 1 dB Compression Gain	17	dBm

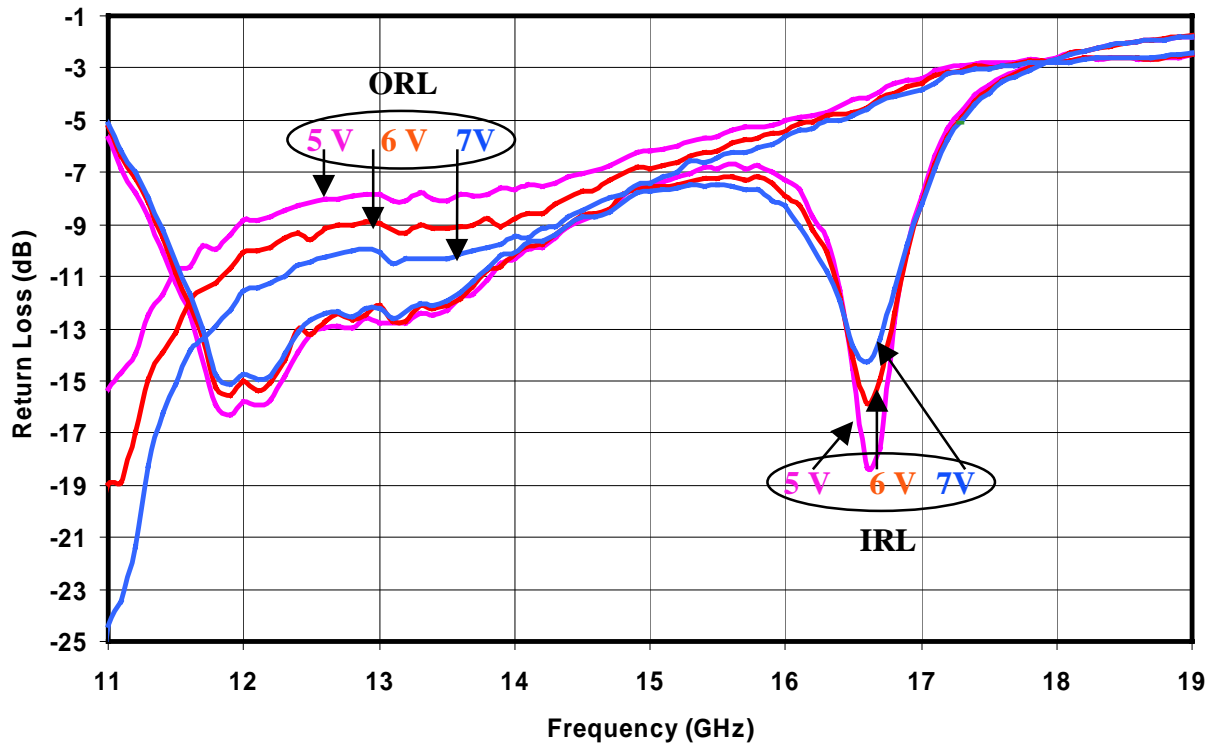
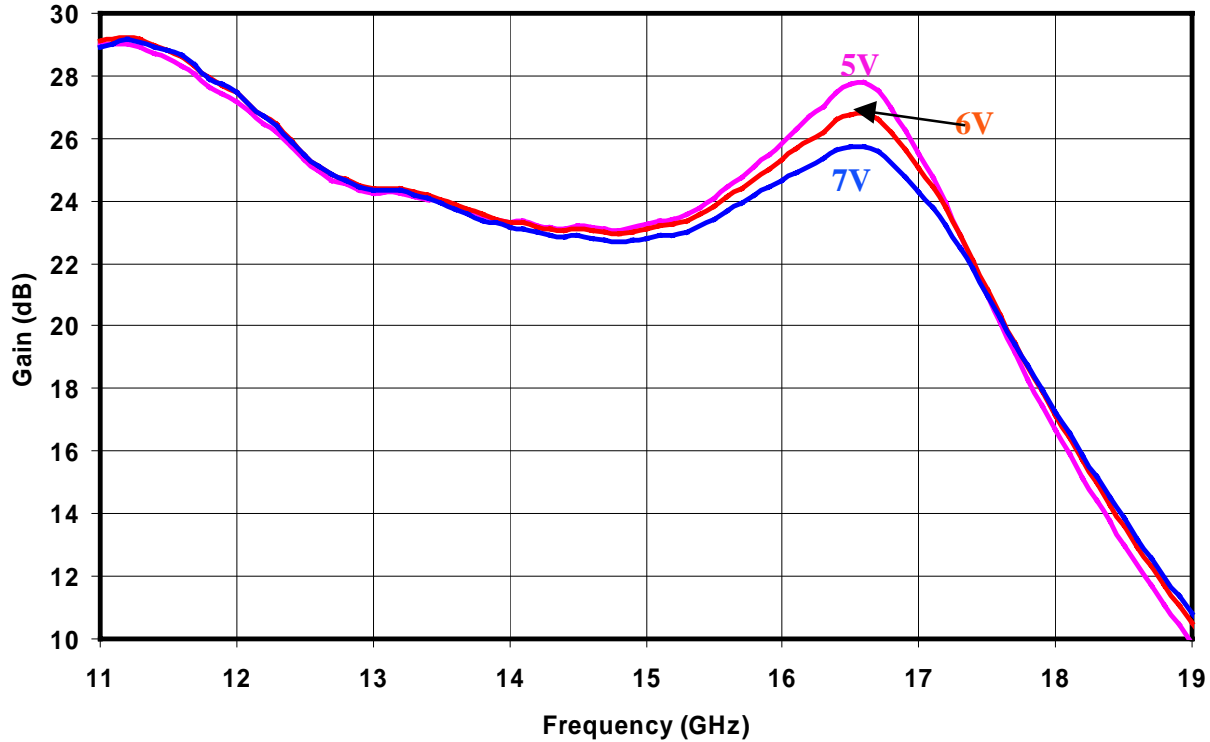
TABLE III
THERMAL INFORMATION

PARAMETER	TEST CONDITIONS	T _{CH} (°C)	R _{θJC} (°C/W)	T _M (HRS)
R _{θJC} Thermal Resistance (channel to Case)	Vd = 6 V Id = 80 mA P _{diss} = 0.48 W	109	81	4.7 E+7

Note: Worst case condition with no RF applied, 100% of DC power is dissipated, Case Temperature @ 70 °C

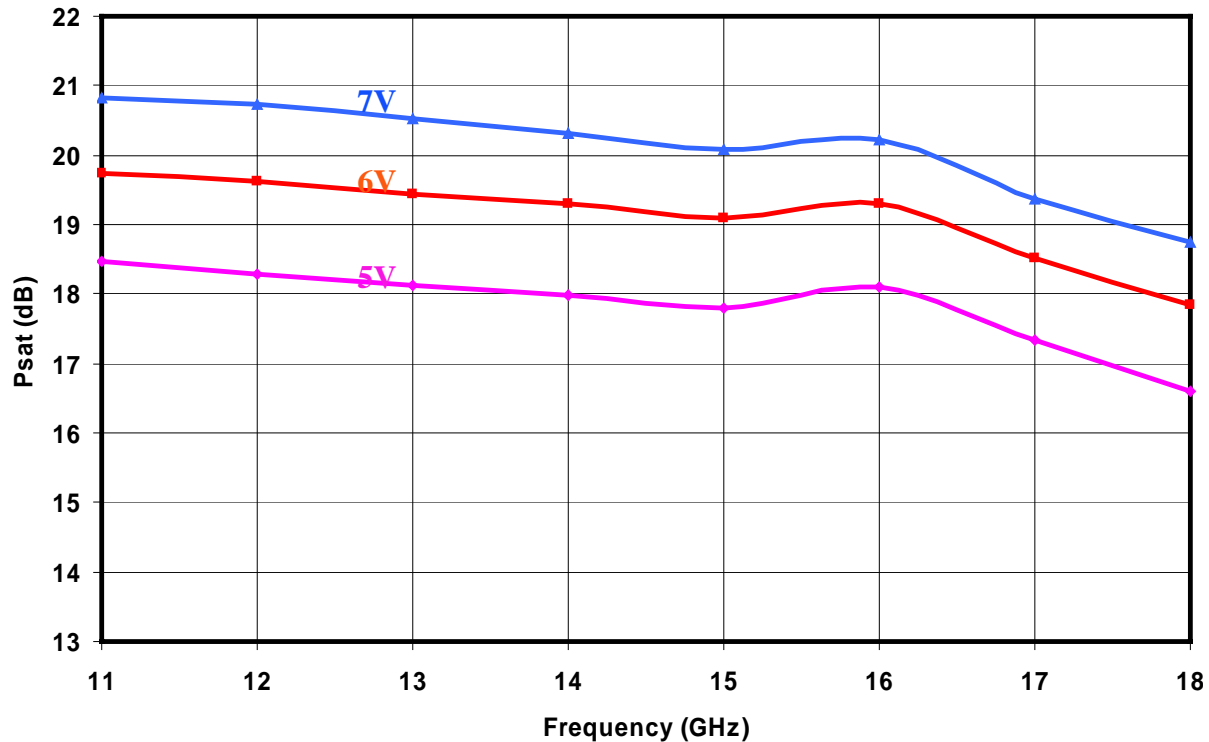
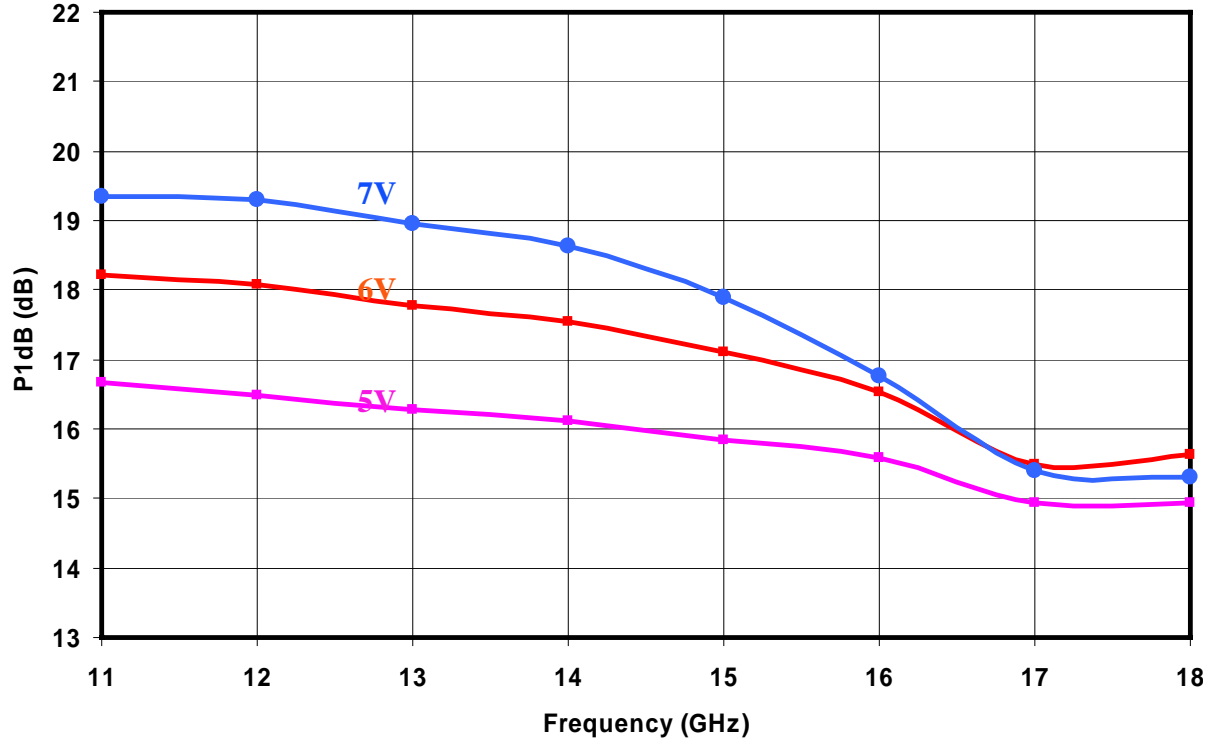
Measured Data

Bias Conditions: $V_d = 5-7$ V, $I_d = 75$ mA Self Bias



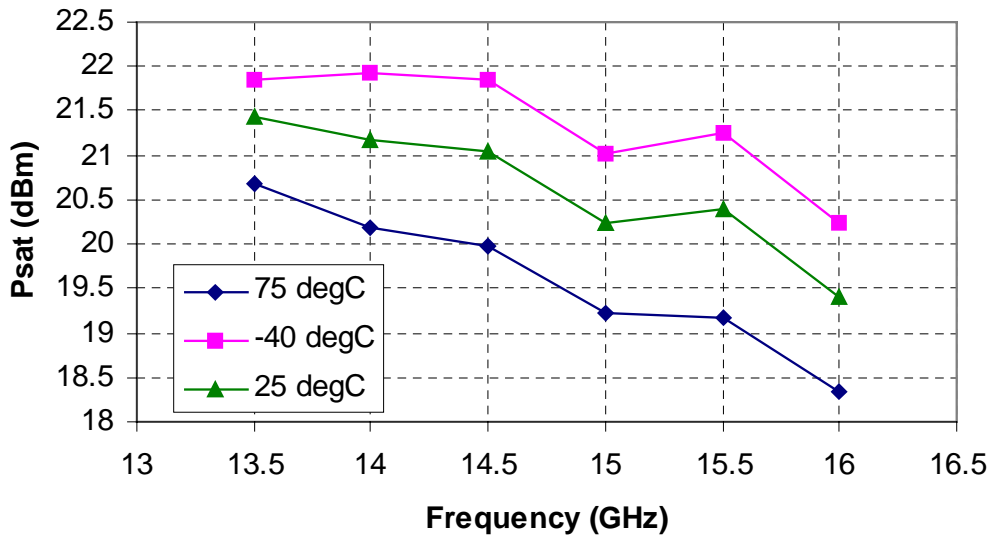
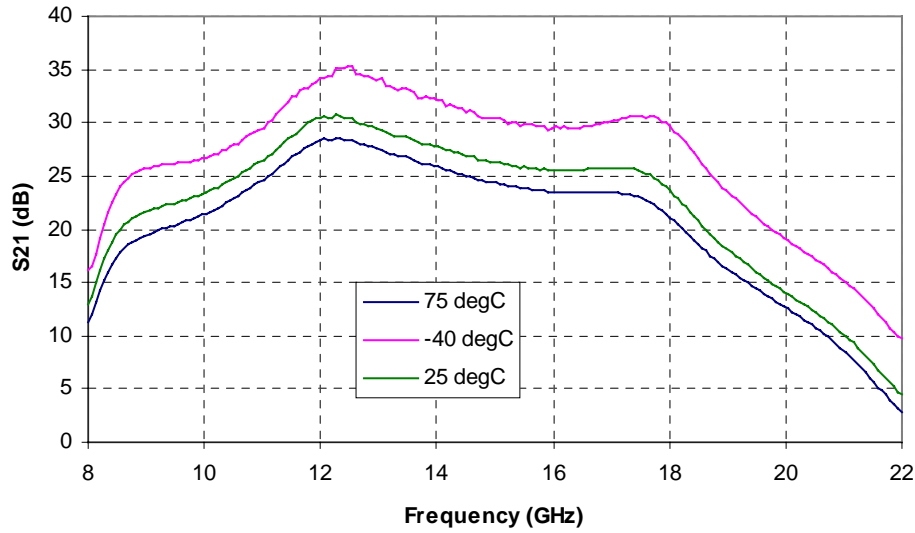
Measured Data

Bias Conditions: Vd = 5-7 V, Id =75 mA Self Bias

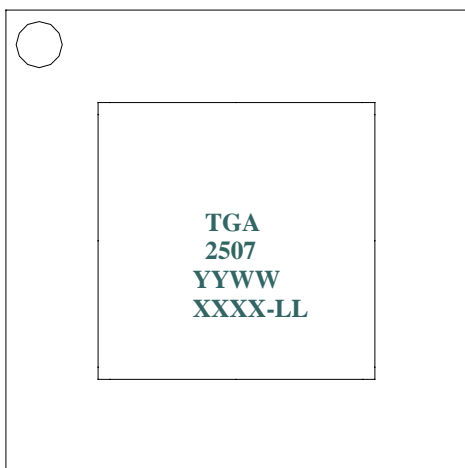


Measured Data

Bias Conditions: Vd = 6 V, Id =75 mA Self Bias

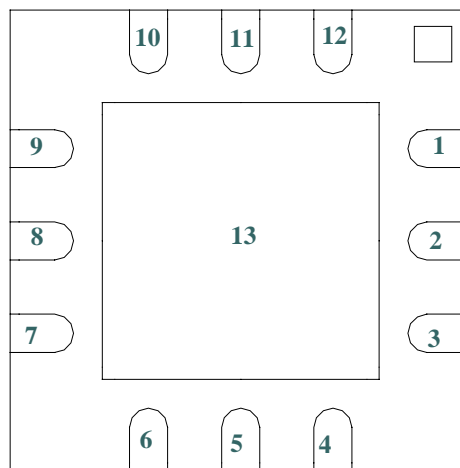


Package Pinout Diagram



Top Side

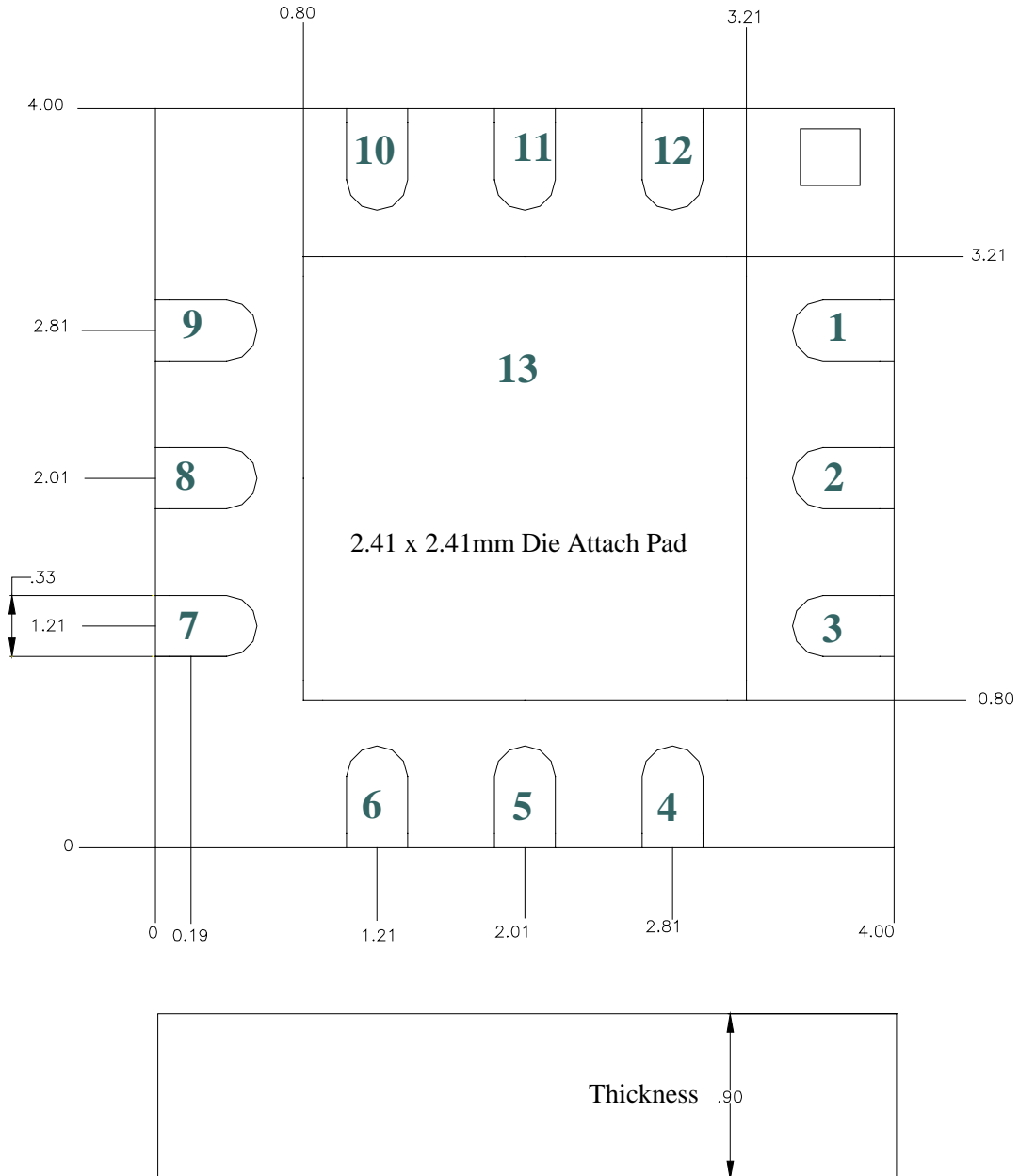
Dot indicates Pin 1



Bottom Side

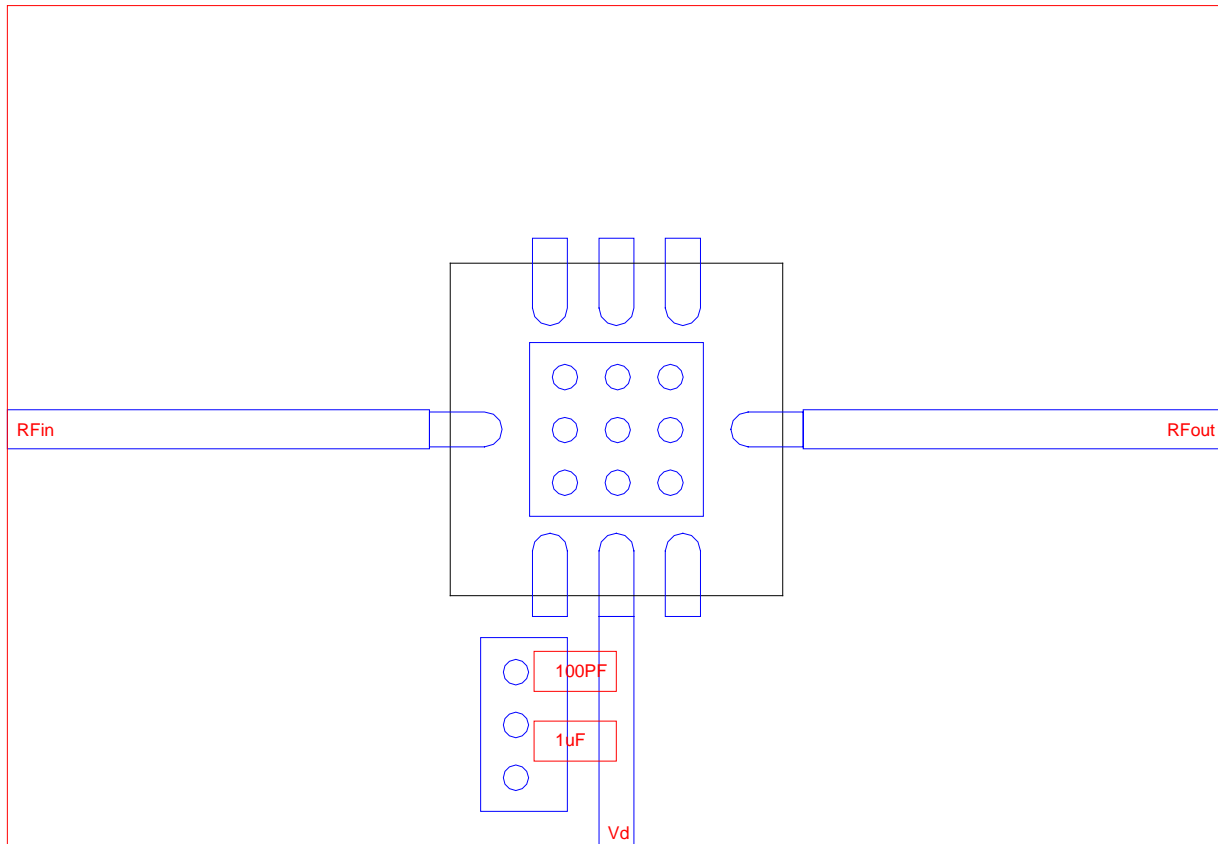
Pin	Description
1	NC
2	RF Input
3, 4	NC
5	Vd
6, 7	NC
8	RF Output
9 -12	NC
13	GND

Mechanical Drawing
(Bottom Side)



Units: Millimeters
Package tolerance: +/- 0.10

Recommended Board Layout Assembly



All measurement was made with part solder to 0.008 in thick of RO4003

Recommended Surface Mount Package Assembly

Proper ESD precautions must be followed while handling packages.

Clean the board with acetone. Rinse with alcohol. Allow the circuit to fully dry.

TriQuint recommends using a conductive solder paste for attachment. Follow solder paste and reflow oven vendors' recommendations when developing a solder reflow profile. Typical solder reflow profiles are listed in the table below.

Hand soldering is not recommended. Solder paste can be applied using a stencil printer or dot placement. The volume of solder paste depends on PCB and component layout and should be well controlled to ensure consistent mechanical and electrical performance.

Clean the assembly with alcohol.

Typical Solder Reflow Profiles

Reflow Profile	SnPb	Pb Free
Ramp-up Rate	3 °C/sec	3 °C/sec
Activation Time and Temperature	60 – 120 sec @ 140 – 160 °C	60 – 180 sec @ 150 – 200 °C
Time above Melting Point	60 – 150 sec	60 – 150 sec
Max Peak Temperature	240 °C	260 °C
Time within 5 °C of Peak Temperature	10 – 20 sec	10 – 20 sec
Ramp-down Rate	4 – 6 °C/sec	4 – 6 °C/sec