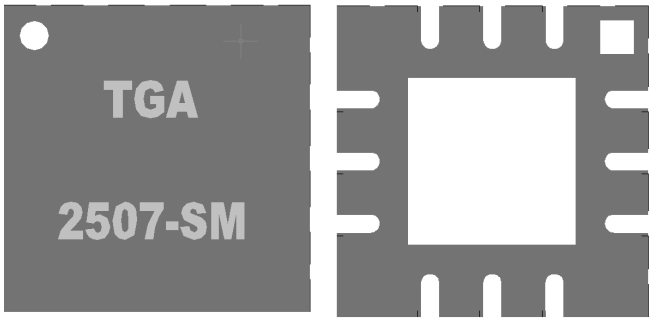
Ku-Band 3-Stage Driver Packaged Amplifier TGA2507-SM



Top View Bottom View

Key Features

- 11-17 GHz Bandwidth
- 25 dB Nominal Gain
- 17 dBm Norminal 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)

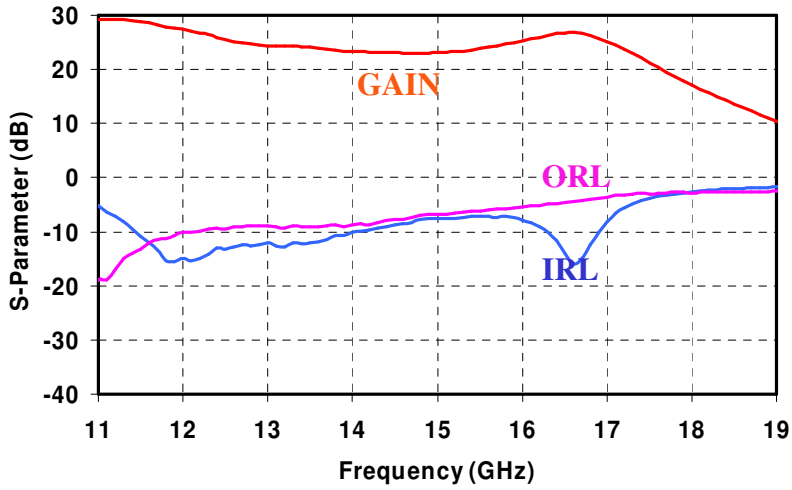
Primary Applications

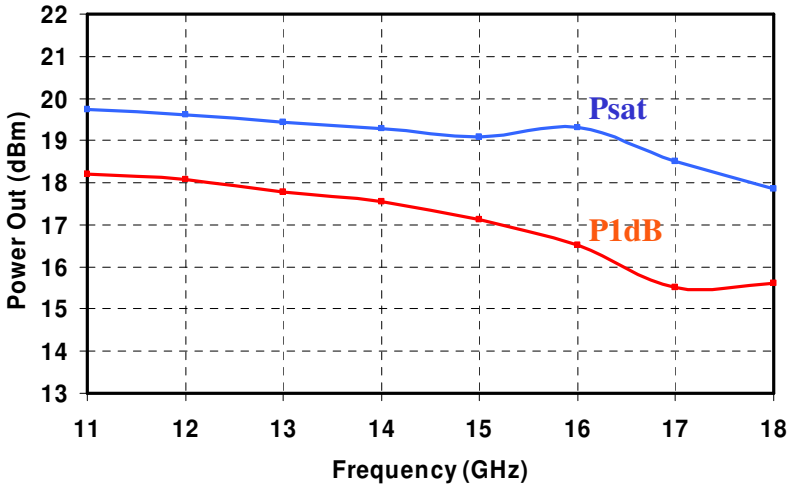
- Point to Point Radio
- Military Ku-Band
- Ku-Band Space
- VSAT

- Lead-Free & RoHS compliant
- Demo boards are available.

Measured Data

Bias Conditions: Vd = 6 V, Id = 75 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.

TriQuint Semiconductor Texas: Phone (972)994-8465 Fax (972)994-8504 Email: Info-mmw@tqs.com Web: www.triquint.com

TABLE I
ABSOLUTE MAXIMUM RATINGS 1/

SYMBOL	PARAMETER	VALUE	NOTES
V^+	Positive Supply Voltage	8 V	
I^+	Positive Supply Current	114 mA	
P_{IN}	Input Continuous Wave Power	20 dBm	
P_D	Power Dissipation	0.91 W	
Tchannel	Channel Temperature	200 °C	2/
	Mounting Temperature (30 Seconds)	260 °C	
	Storage Temperature	-65 to 150 °C	

1/ These ratings represent the maximum operable values for this device. Stresses beyond thos listed under “Absolute Maximum Ratings” may cause permanent damage to the device and / or affect device lifetime. These are stress ratings only, and functional operation of the device at these conditions is not implied.

2/ Combinations of supply voltage, supply current, input power, and output power shall not exceed P_D.

TABLE II
ELECTRICAL CHARACTERISTICS
(Ta = 25 ^{0}C, Nominal)

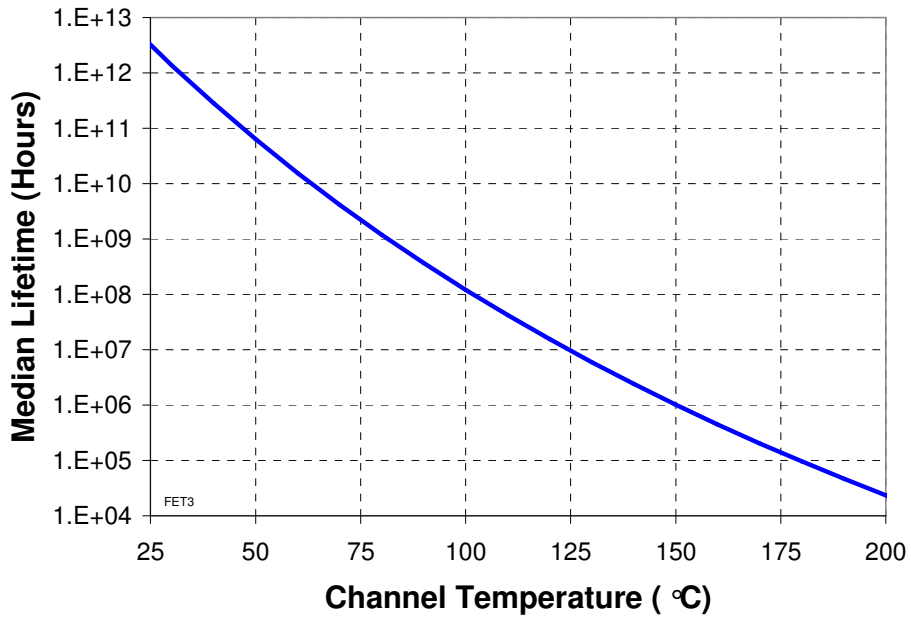
PARAMETER	TYPICAL	UNITS
Frequency Range	11 - 17	GHz
Drain Operating	6	V
Quiescent Current	75 (Self Bias)	mA
Small Signal Gain	25	dB
Input Return Loss	8	dB
Output Return Loss	8	dB
Output Power @ 1 dB Compression Gain	17	dBm

TABLE III
THERMAL INFORMATION

PARAMETER	TEST CONDITIONS	Tchannel (°C)	θ_{JC} (°C/W)	Tm (HRS)
θ_{JC} Thermal Resistance (channel to Case)	Vd = 6 V Id = 80 mA Pd = 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 ^{O}C

Median Lifetime (Tm) vs. Channel Temperature



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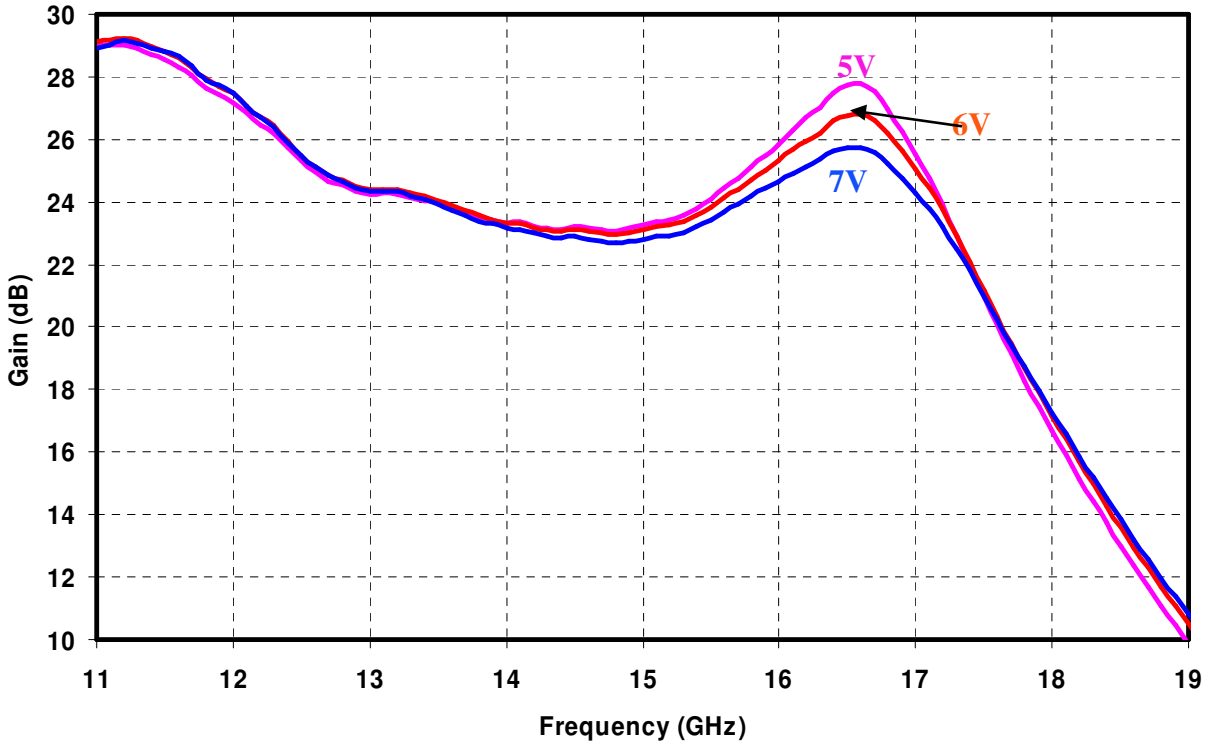
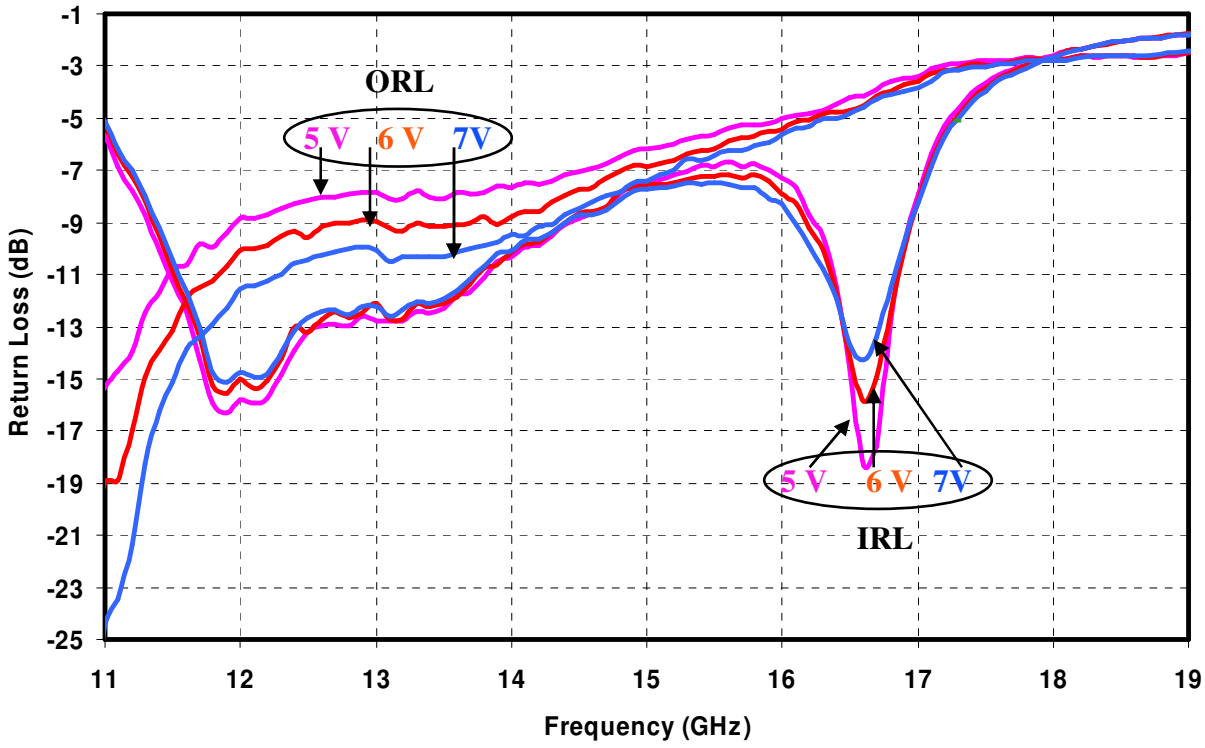
Measured Data

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





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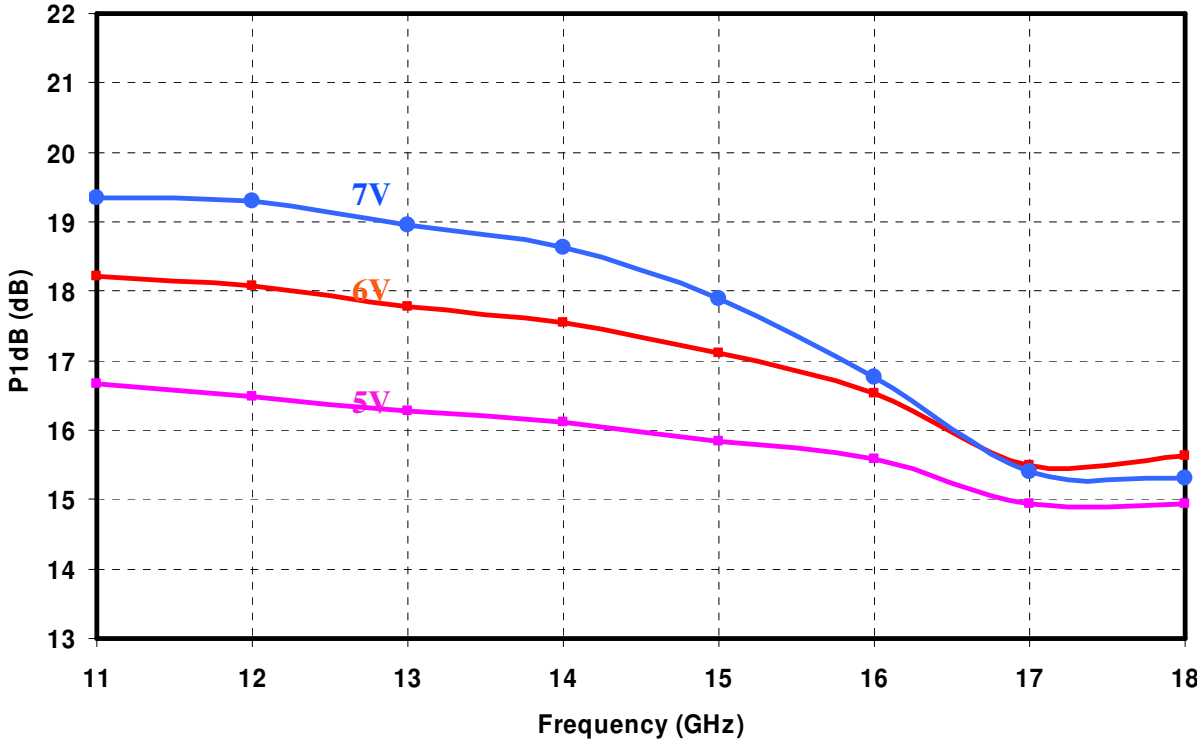
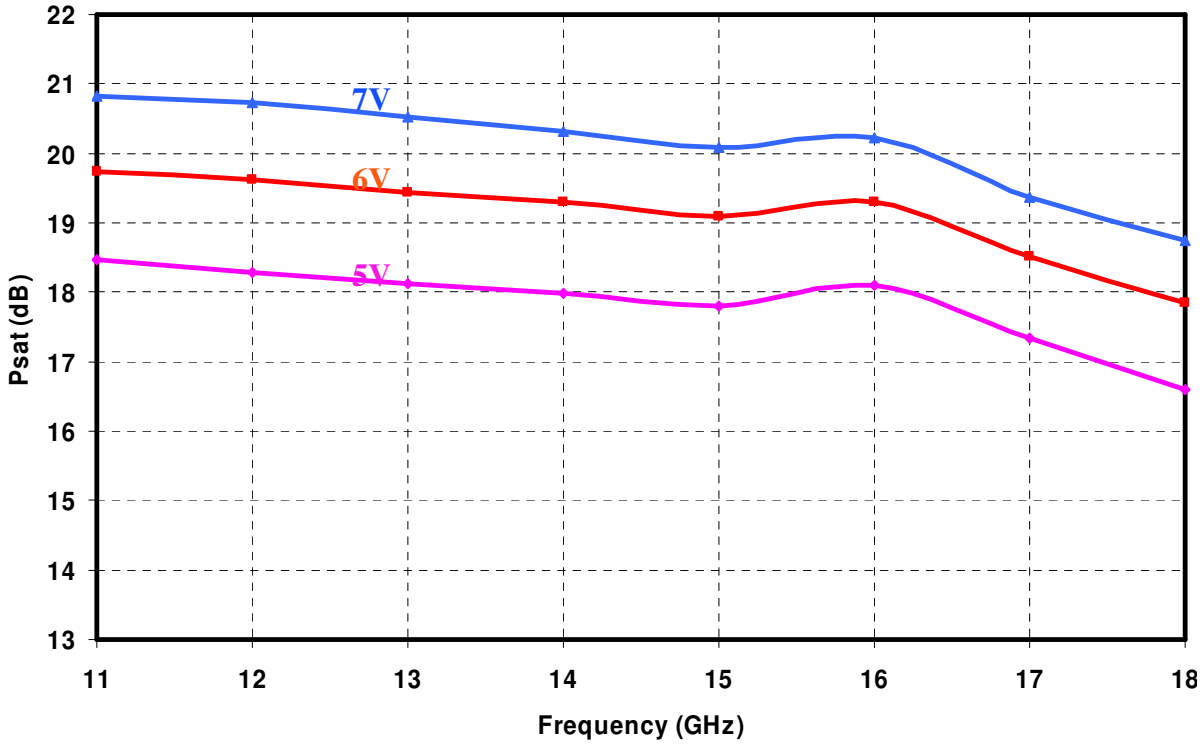
Measured Data

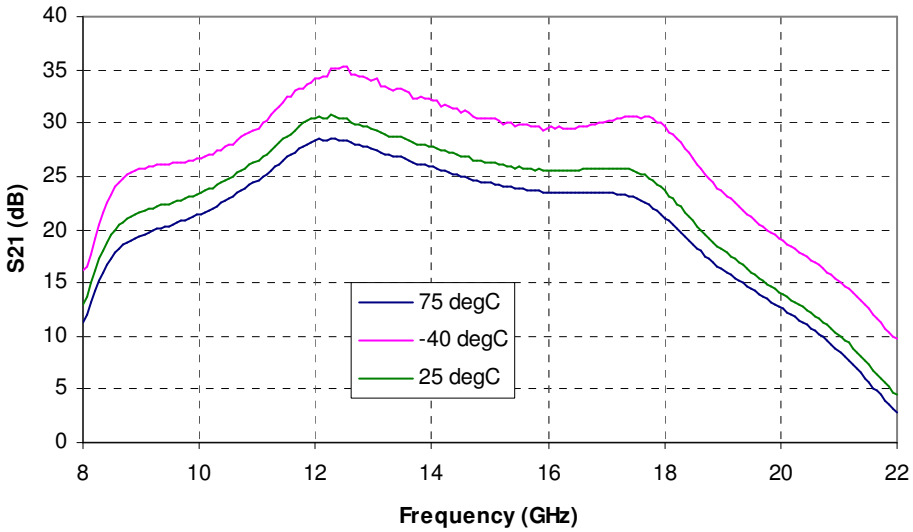
Bias Conditions: Vd = 5-7 V, Id =75 mA Self Bias

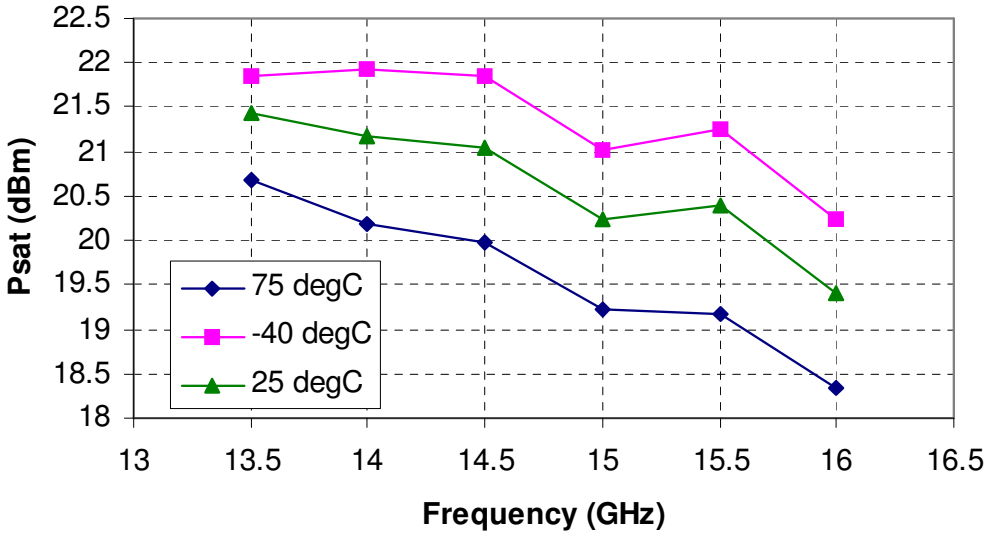




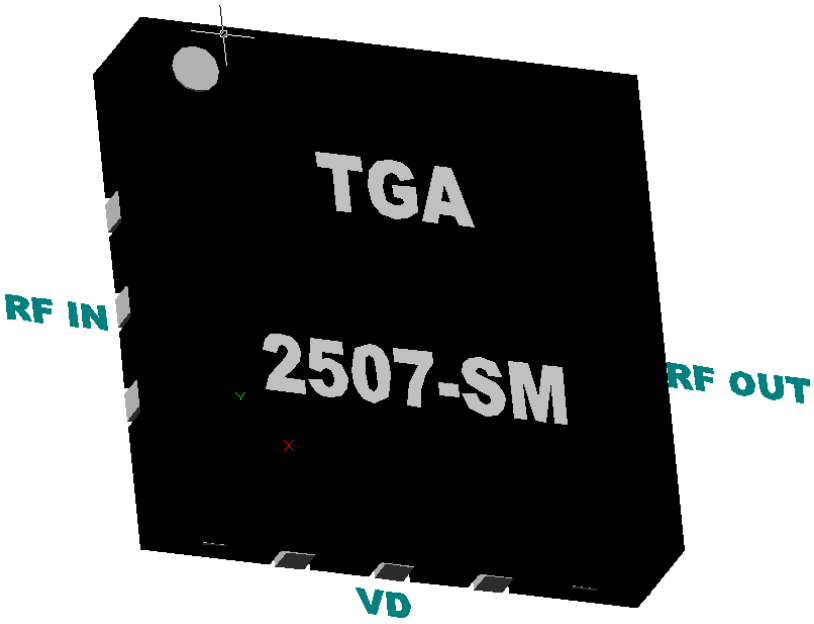
Measured Data

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

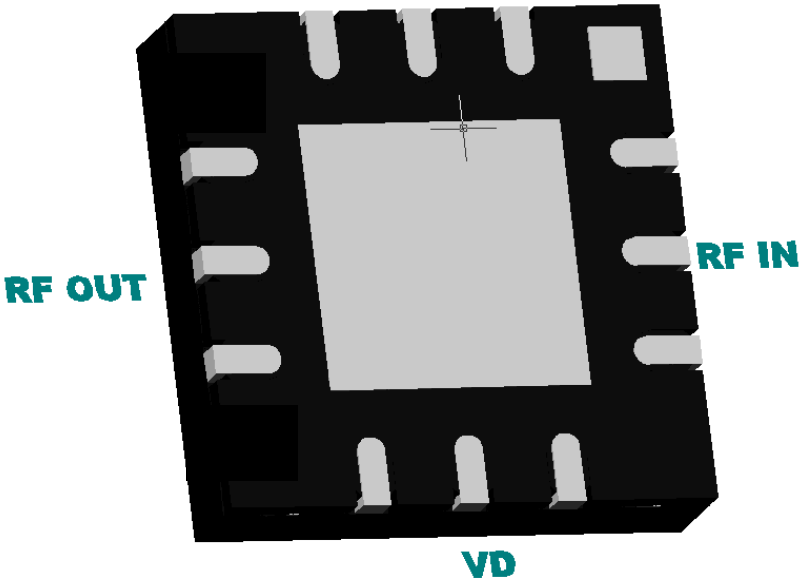




Package Layout

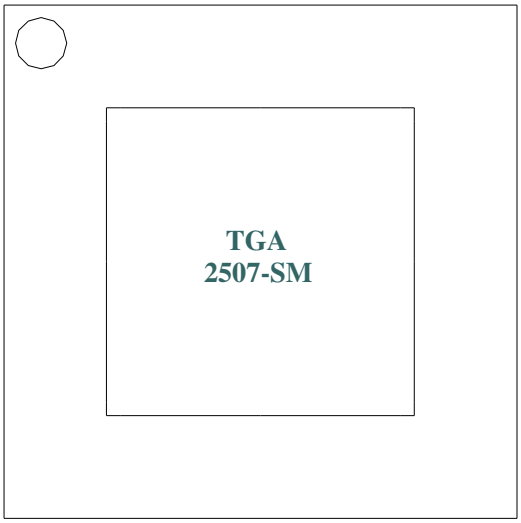


Top View



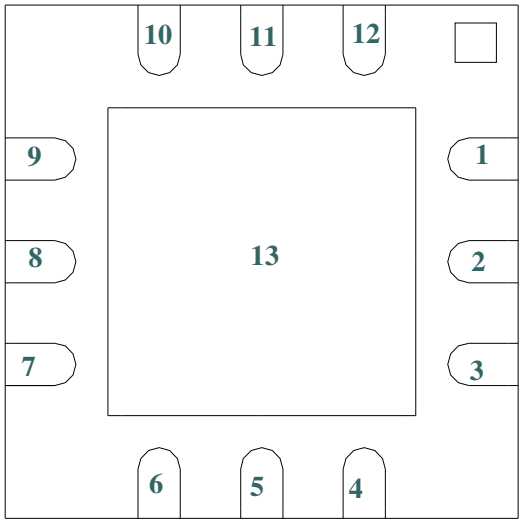
Bottom View

Package Pinout Diagram



Top Side

Dot indicates Pin 1

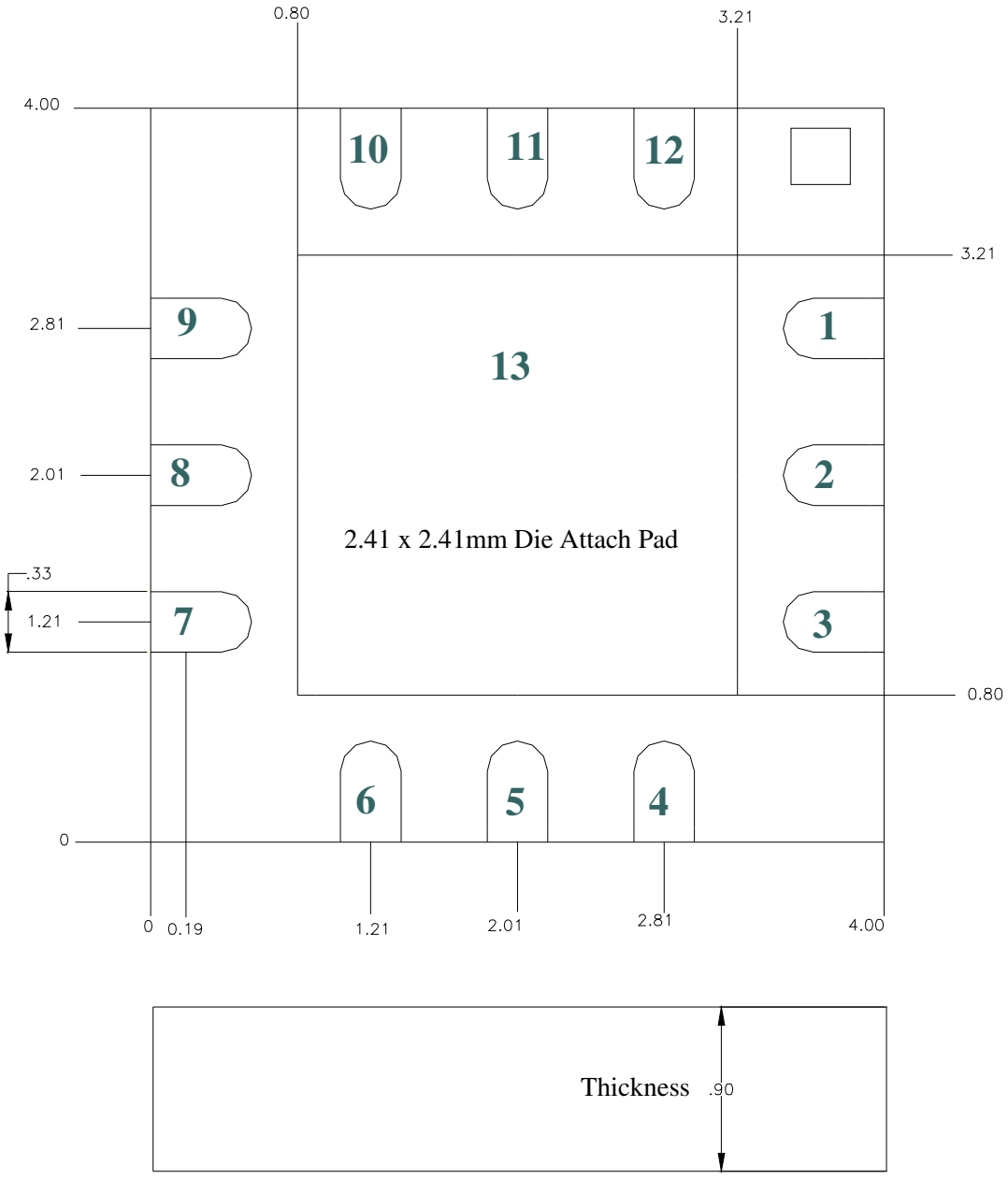


Bottom Side

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

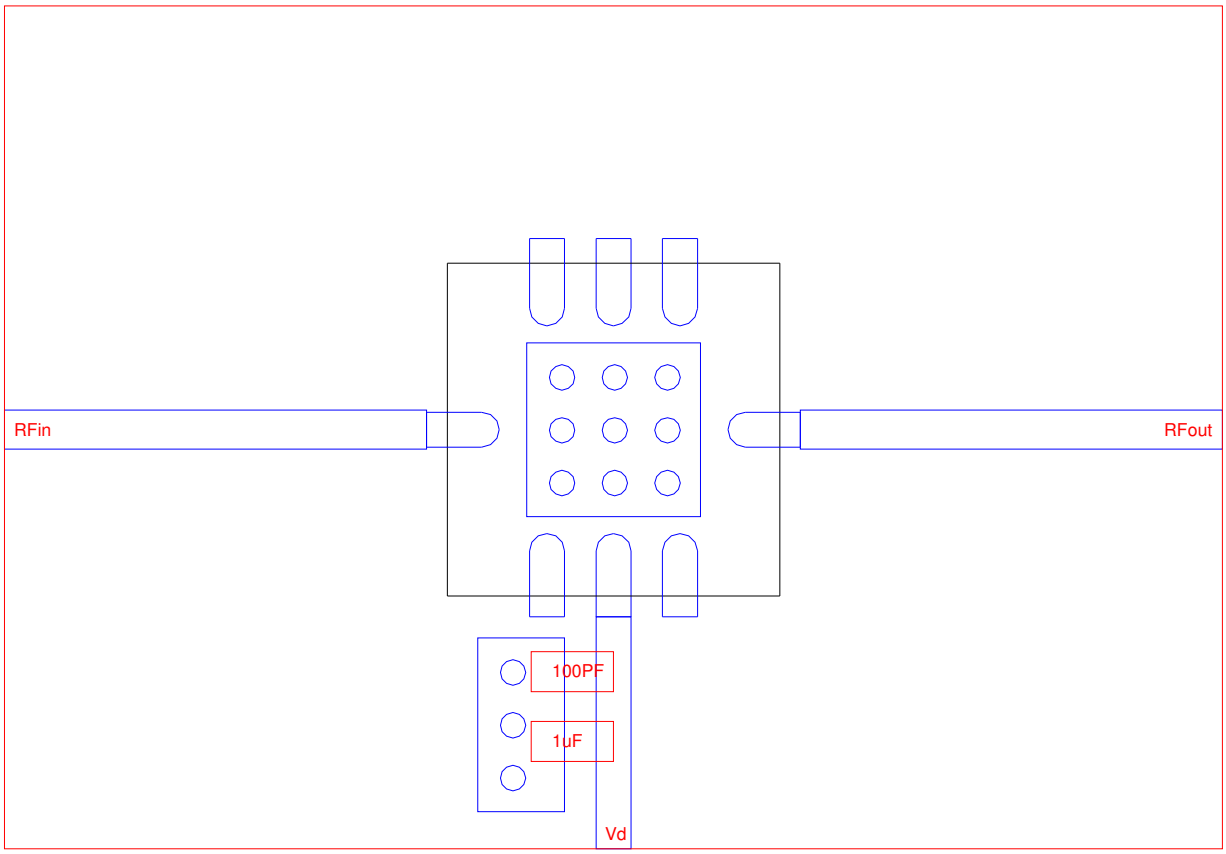
(Bottom Side)



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