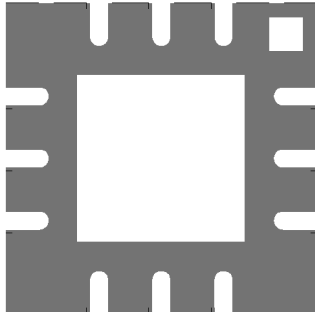


# Ku-Band 3-Stage Driver Packaged Amplifier

# TGA2507-SM



Top View



Bottom View

## Key Features

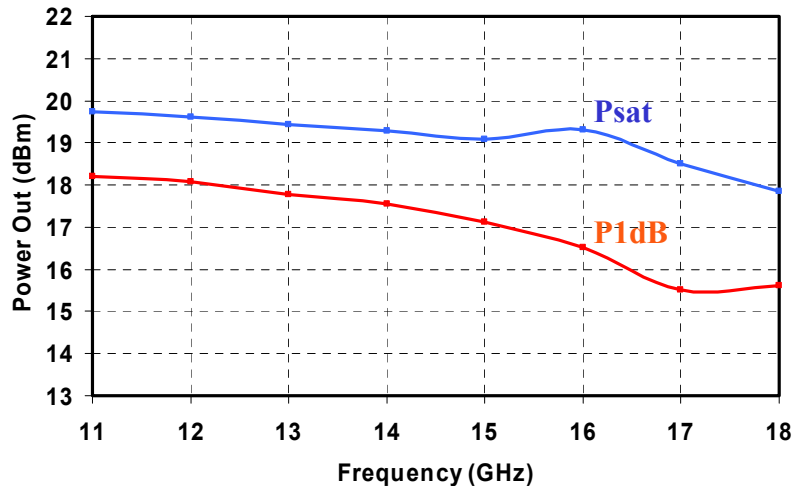
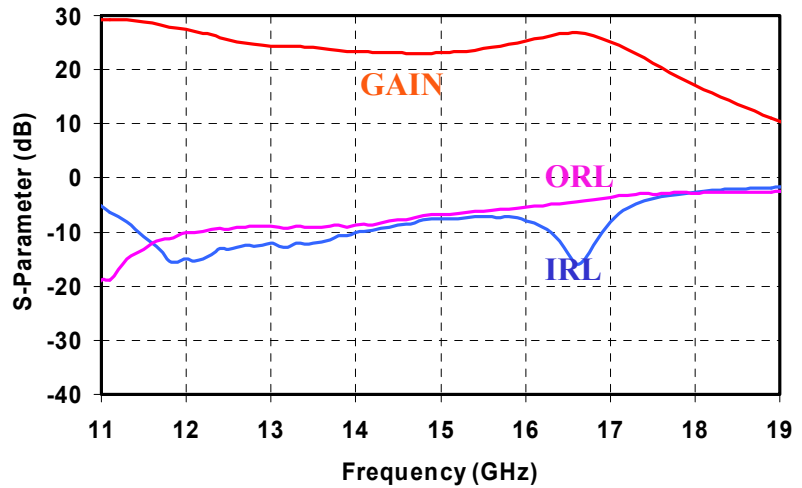
- 11-17 GHz Bandwidth
- 25 dB Nominal Gain
- 17 dBm Nominal P1dB
- Bias: 5 - 7 V, 75 mA Self Bias
- PHEMT Technology
- Package Dimensions:  
4.0 x 4.0 x 0.9 mm  
(0.157 x 0.157 x 0.035 in)

## 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



Datasheet subject to change without notice.

**TABLE I**  
**ABSOLUTE MAXIMUM RATINGS 1/**

<b>SYMBOL</b>	<b>PARAMETER</b>	<b>VALUE</b>	<b>NOTES</b>
V <sup>+</sup>	Positive Supply Voltage	8 V	
I <sup>+</sup>	Positive Supply Current	114 mA	
P <sub>IN</sub>	Input Continuous Wave Power	20 dBm	
P <sub>D</sub>	Power Dissipation	0.91 W	
T <sub>channel</sub>	Channel Temperature	200 °C	<u>2/</u>
	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 those 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<sub>D</sub>.

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

**TGA2507-SM**

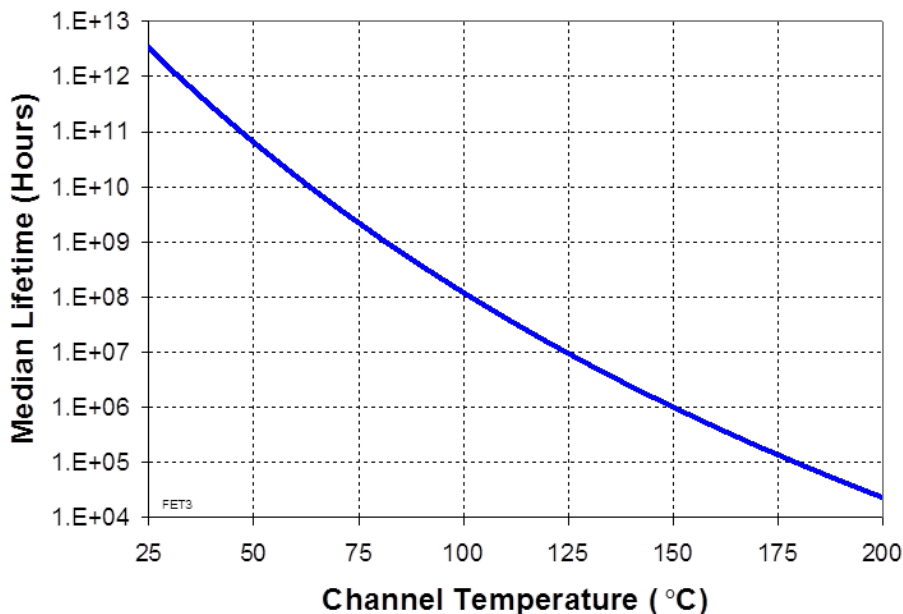
PARAMETER	TYPICAL	UNITS
Frequency Range	11 - 17	GHz
Drain Operating	6	V
Quiescent Current	75 (Self Bias)	mA
Small Signal Gain	25	dB
Input Return Loss	8	dB
Output Return Loss	8	dB
Output Power @ 1 dB Compression Gain	17	dBm

**TABLE III**  
**THERMAL INFORMATION**

PARAMETER	TEST CONDITIONS	Tchannel (°C)	$\theta_{JC}$ (°C/W)	Tm (HRS)
$\theta_{JC}$ Thermal Resistance (channel to Case)	Vd = 6 V Id = 80 mA Pd = 0.48 W	109	81	4.7 E+7

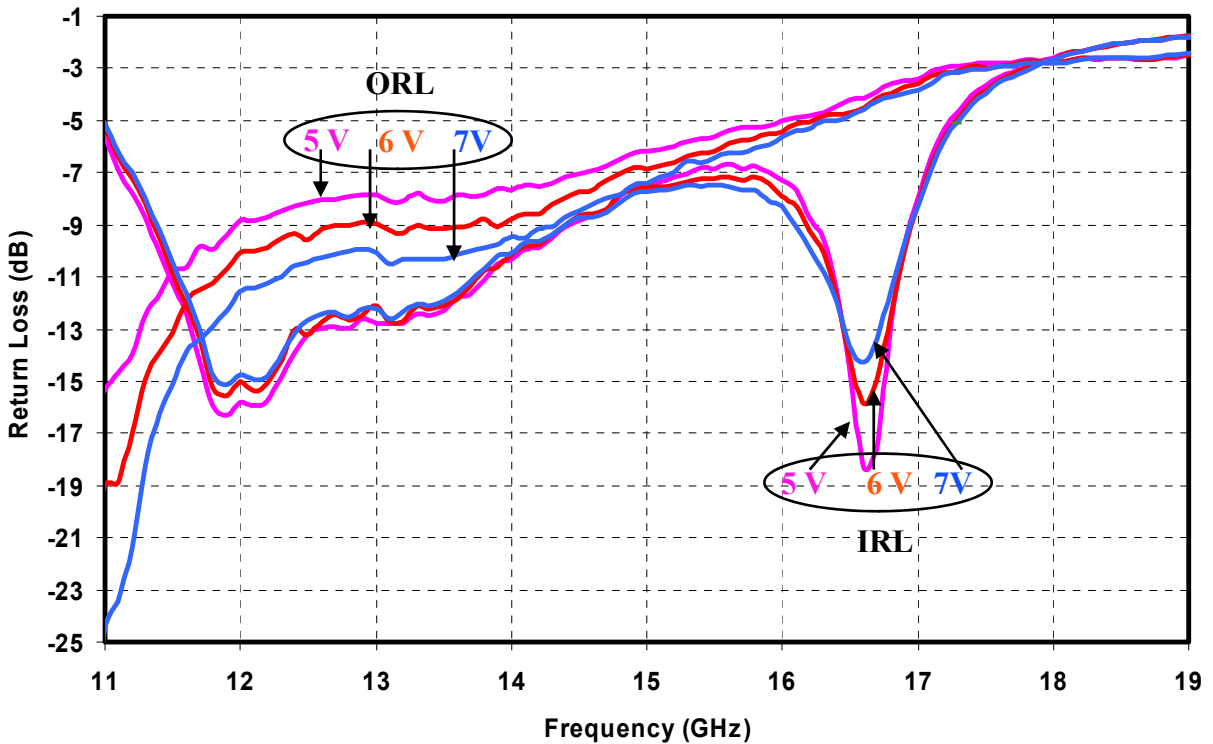
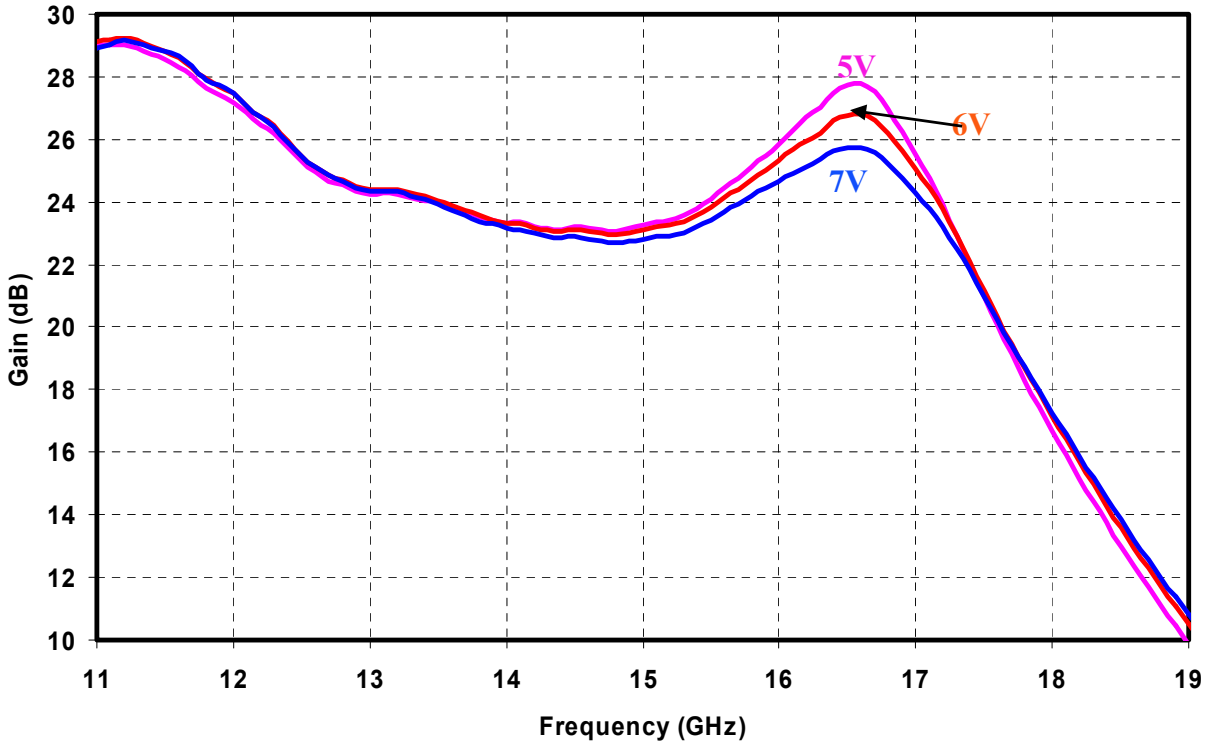
Note: Worst case condition with no RF applied, 100% of DC power is dissipated, Case Temperature @ 70 °C

### Median Lifetime (Tm) vs. Channel Temperature



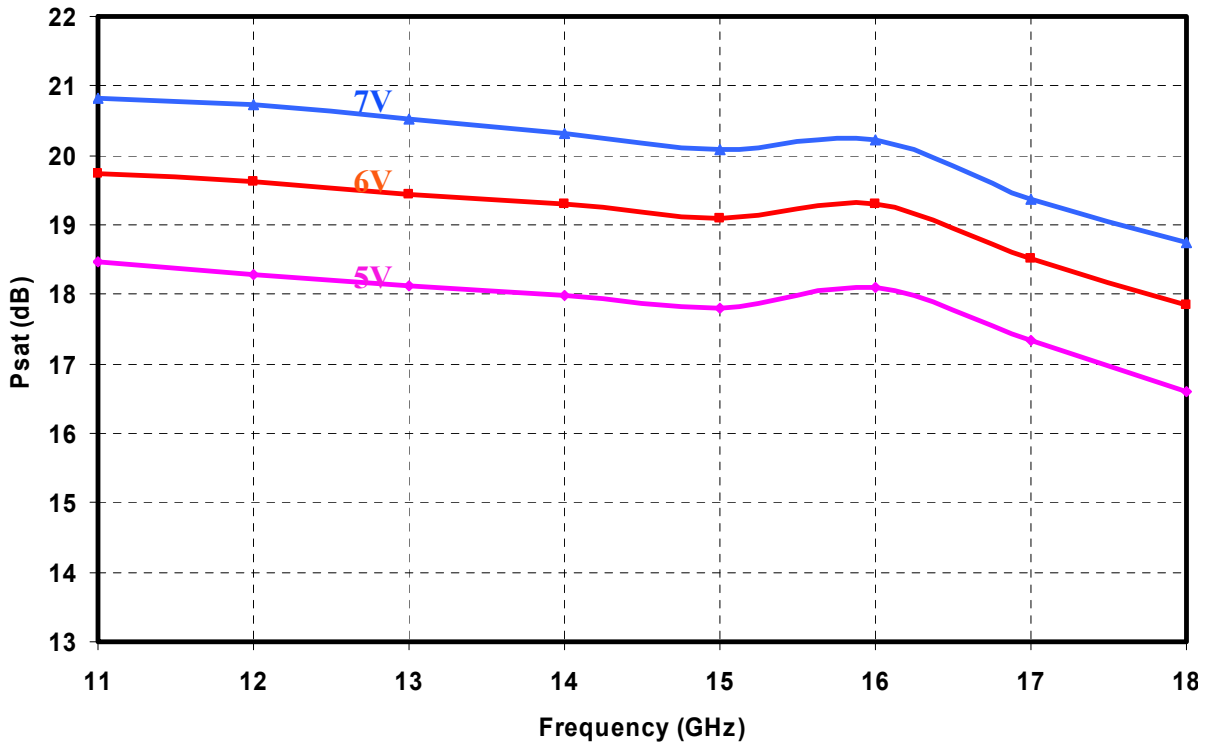
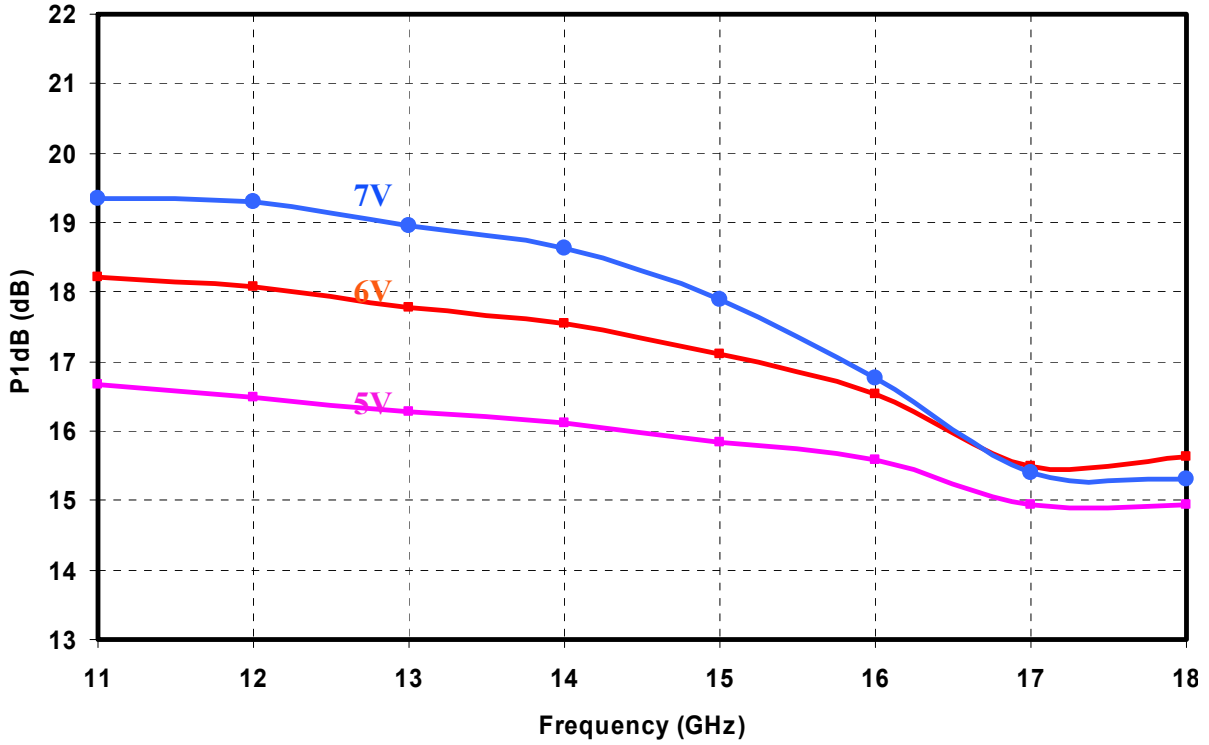
### Measured Data

Bias Conditions:  $V_d = 5-7\text{ V}$ ,  $I_d = 75\text{ mA}$  Self Bias



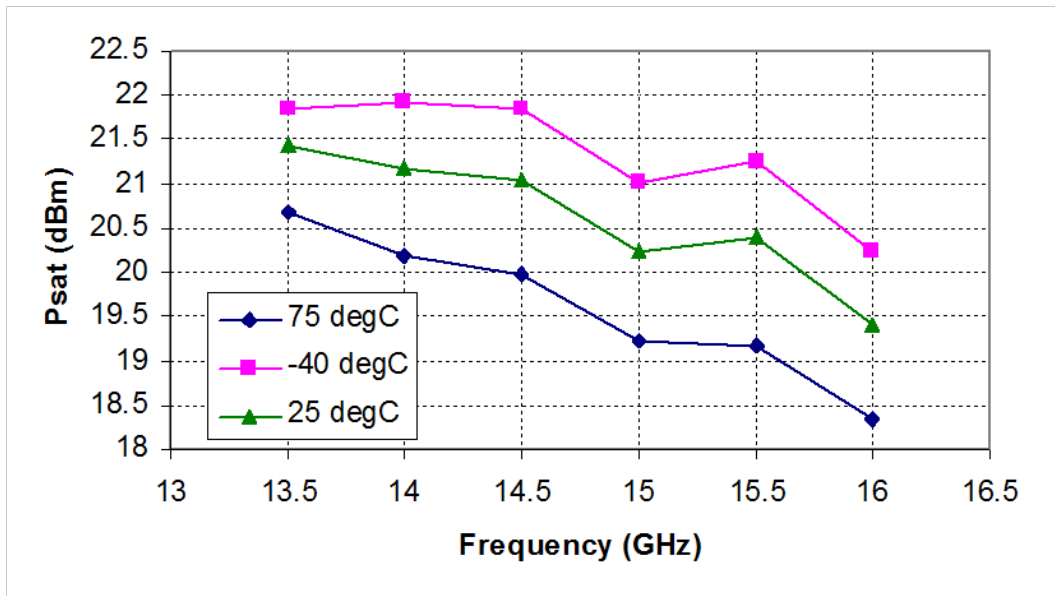
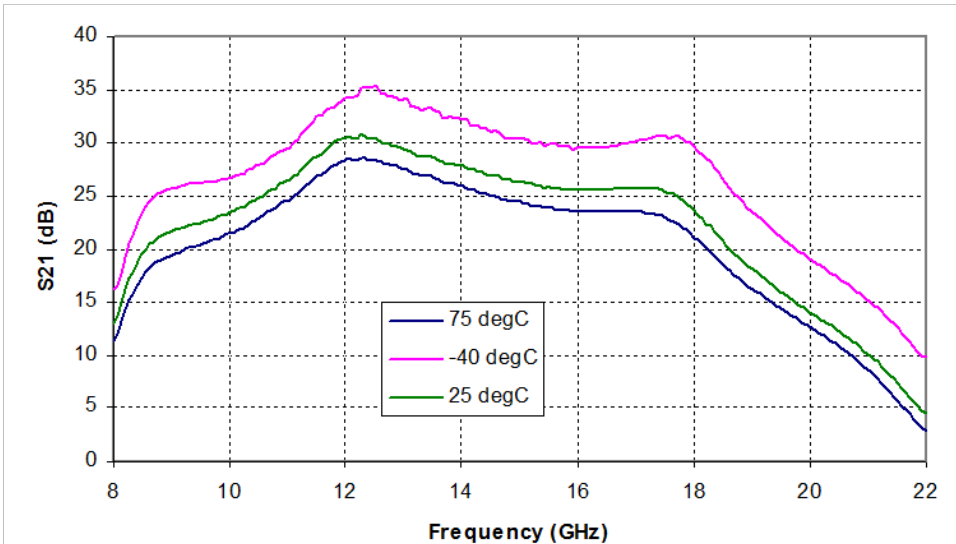
**Measured Data**

Bias Conditions:  $V_d = 5-7\text{ V}$ ,  $I_d = 75\text{ mA}$  Self Bias



## Measured Data

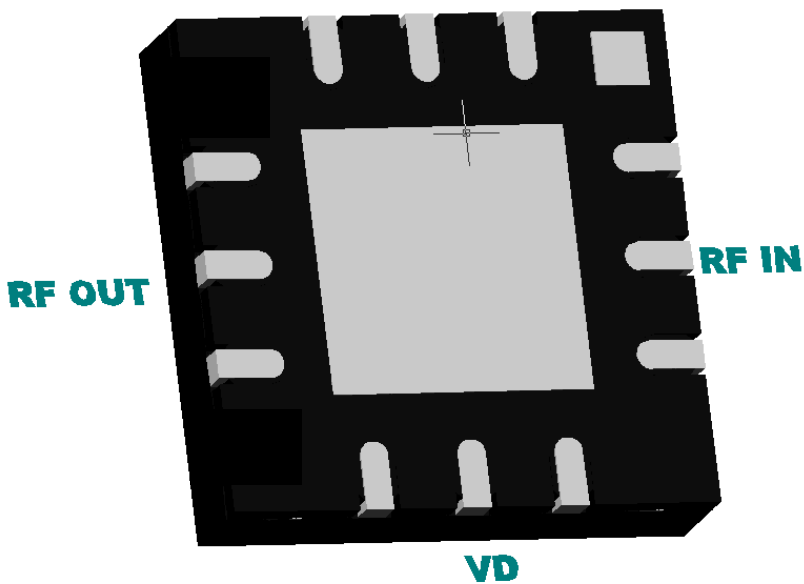
Bias Conditions:  $V_d = 6\text{ V}$ ,  $I_d = 75\text{ mA}$  Self Bias



Package Layout

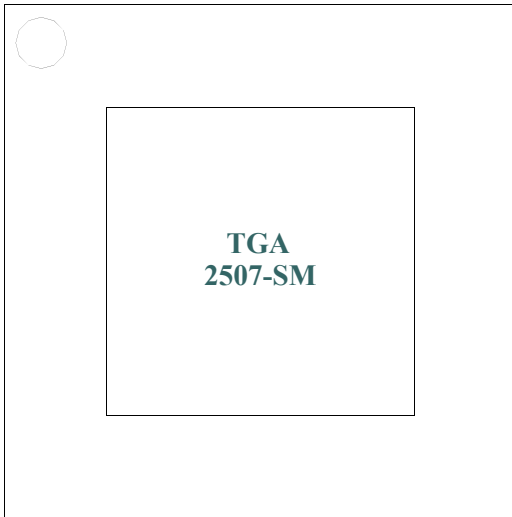


Top View



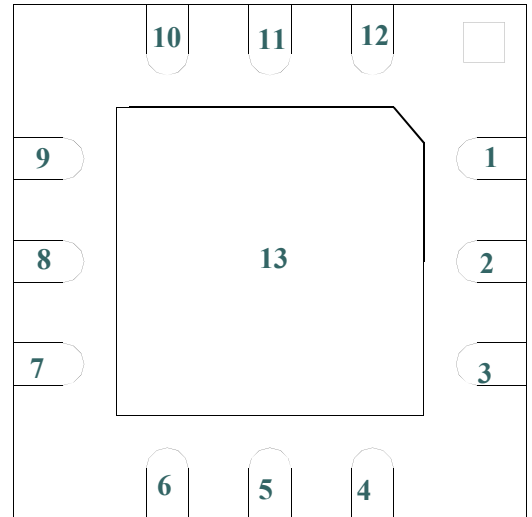
Bottom View

**Package Pinout Diagram**



**Top Side**

Dot indicates Pin 1



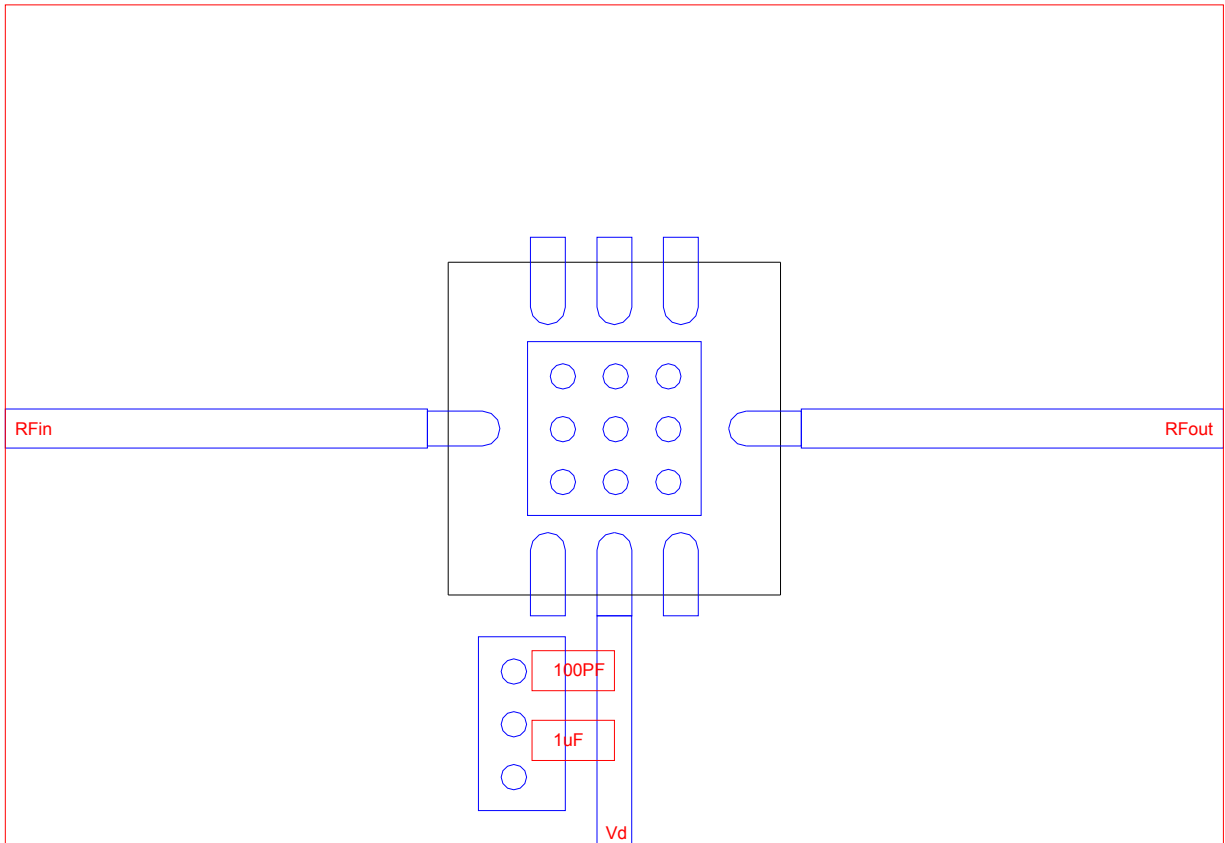
**Bottom Side**

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





## 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.

Solder attach process requires the use of no clean flux.

This part is not rated for high moisture environments.

**Typical Solder Reflow Profiles**

<b>Reflow Profile</b>	<b>SnPb</b>	<b>Pb Free</b>
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