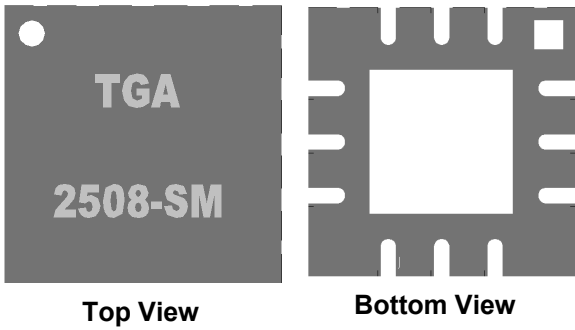


# Ku-Band VSAT Packaged Amplifier

# TGA2508-SM

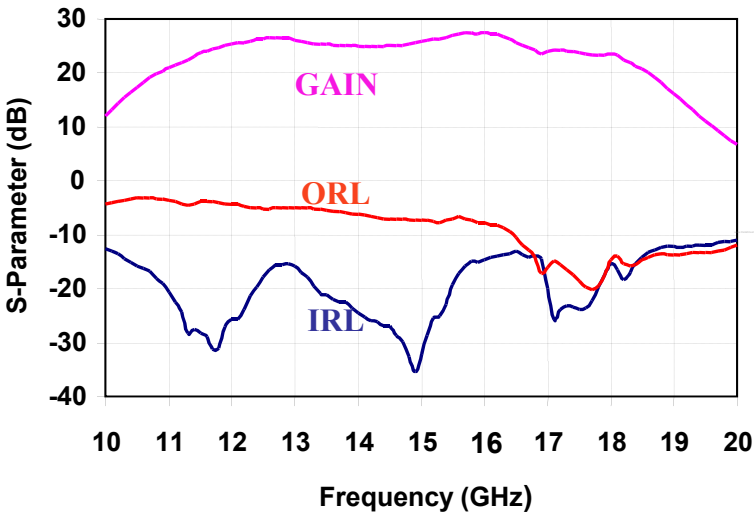


## Key Features

- Typical Frequency Range: 12 - 19 GHz
- 25 dB Nominal Gain
- 29 dBm Nominal P1dB
- Bias Conditions: 7 V, 433 mA
- pHEMT Technology
- Surface mount package
- Package Dimensions: 4.0 x 4.0 x 0.9 mm

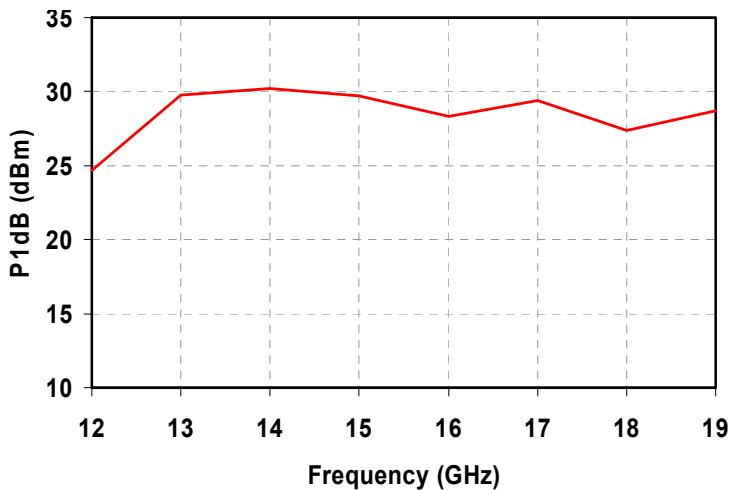
## Preliminary Measured Data

Bias Conditions:  $V_d = 7\text{ V}$ ,  $I_d = 433\text{ mA}$



## Primary Applications

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



Evaluation Boards are available upon request.

Lead-free and RoHS compliant

Datasheet subject to change without notice.

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

<b>SYMBOL</b>	<b>PARAMETER</b>	<b>VALUE</b>	<b>NOTES</b>
$V^+$	Positive Supply Voltage	8 V	
$V^-$	Negative Supply Voltage Range	-2 to 0 V	
$I^+$	Positive Supply Current (Quiescent)	591 mA	
$ I_G $	Gate Supply Current	16 mA	
$P_{IN}$	Input Continuous Wave Power	17 dBm	
$P_D$	Power Dissipation	4.7 W	
Tchannel	Operating 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  $P_D$ .

**TABLE II**  
**ELECTRICAL CHARACTERISTICS**  
 (Ta = 25°C ± 5°C)

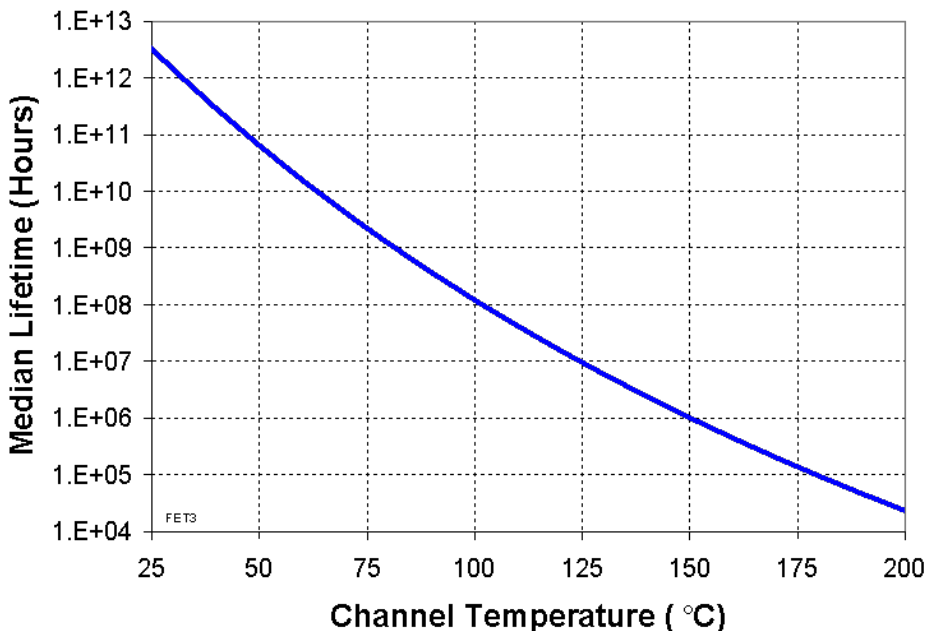
PARAMETER	TYPICAL	UNITS
Frequency Range	12 - 19	GHz
Drain Operating	7	V
Quiescent Current	433	mA
Small Signal Gain	25	dB
Input Return Loss (Linear Small Signal)	15	dB
Output Return Loss (Linear Small Signal)	7	dB
Output Power @ 1 dB Compression Gain	29	dBm

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

PARAMETER	TEST CONDITIONS	Tchannel (°C)	$\theta_{JC}$ (°C/W)	Tm (HRS)
$\theta_{JC}$ Thermal Resistance (Channel to Case)	Vd = 7 V Id = 433 mA Pd = 3.03 W	143	24.1	1.8 E+6

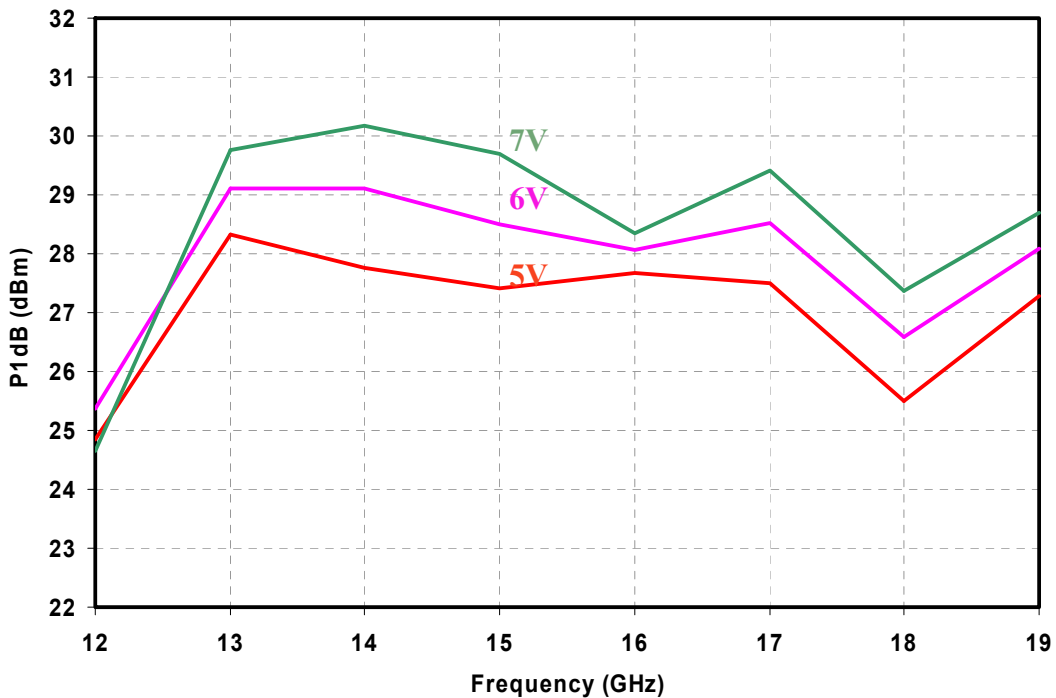
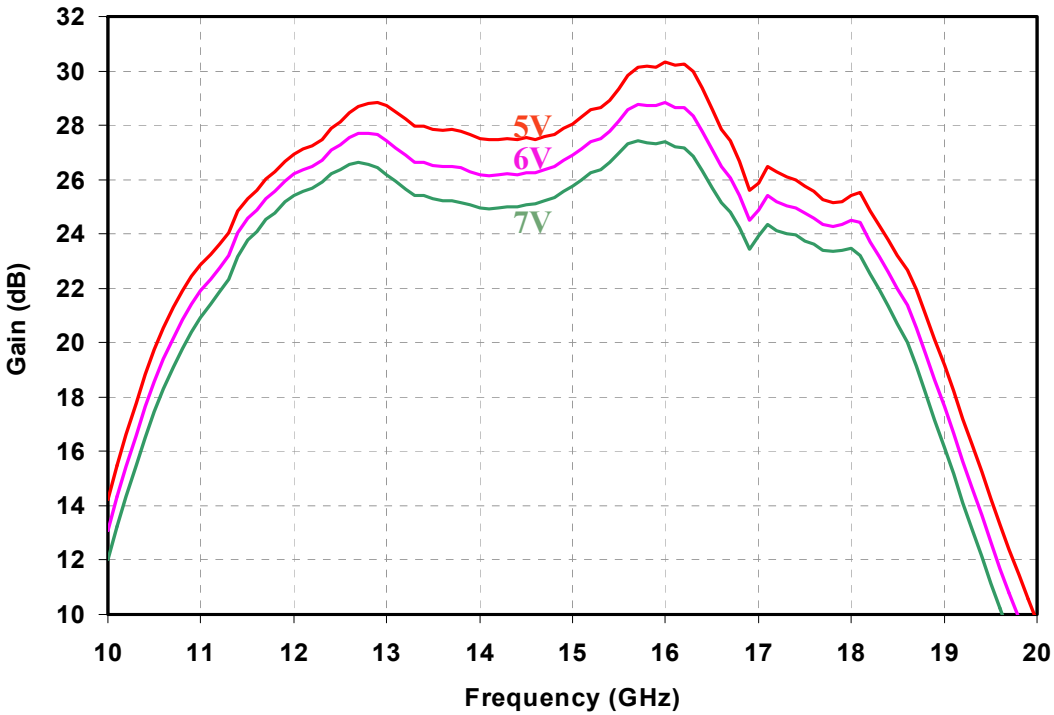
Note: Worst case condition with no RF applied, 100% of DC power is dissipated, Case Temperature @ 70°C

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



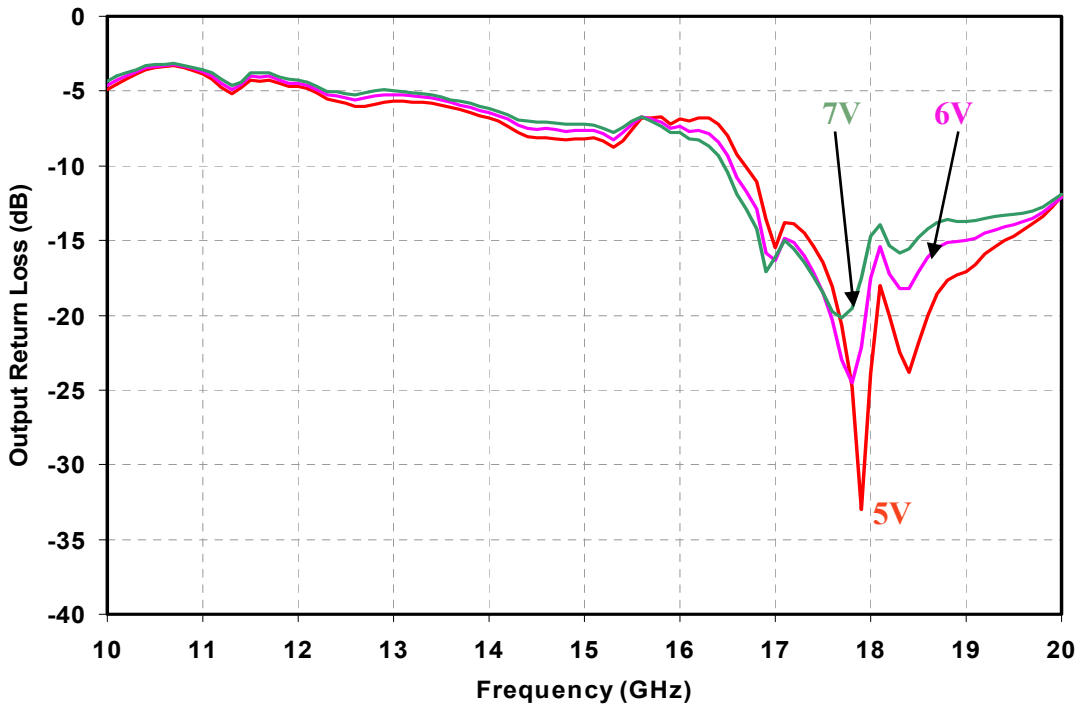
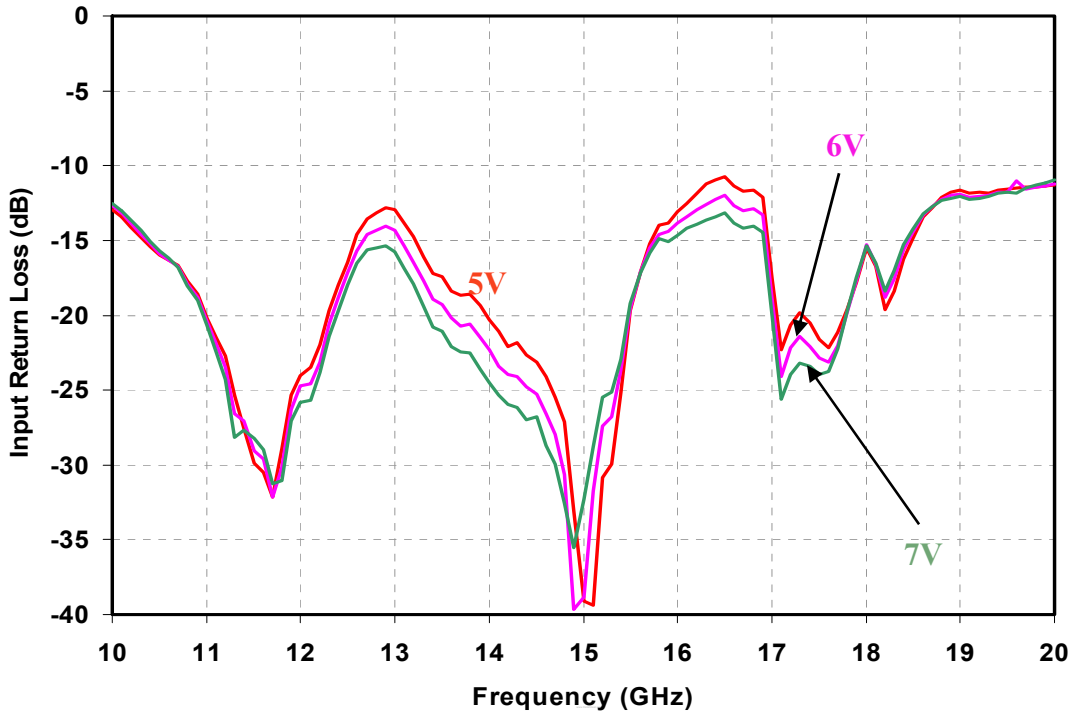
**Preliminary Measured Data**

Bias Conditions:  $V_d = 5 - 7 \text{ V}$ ,  $I_d = 433 \text{ mA}$

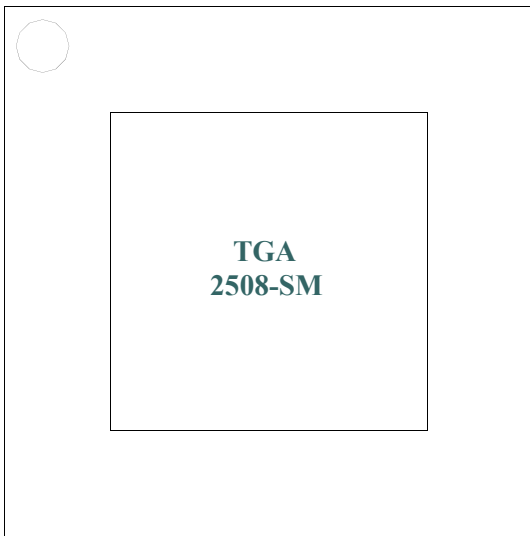


### Preliminary Measured Data

Bias Conditions:  $V_d = 5 - 7 \text{ V}$ ,  $I_d = 433 \text{ mA}$

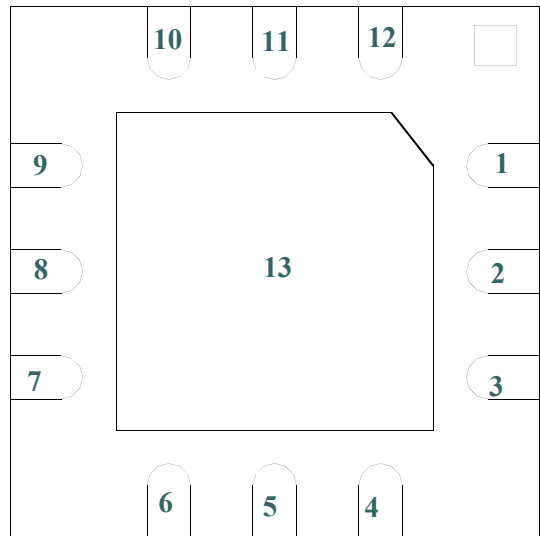


**Package Pinout Diagram**



**Top Side**

Dot indicates Pin 1



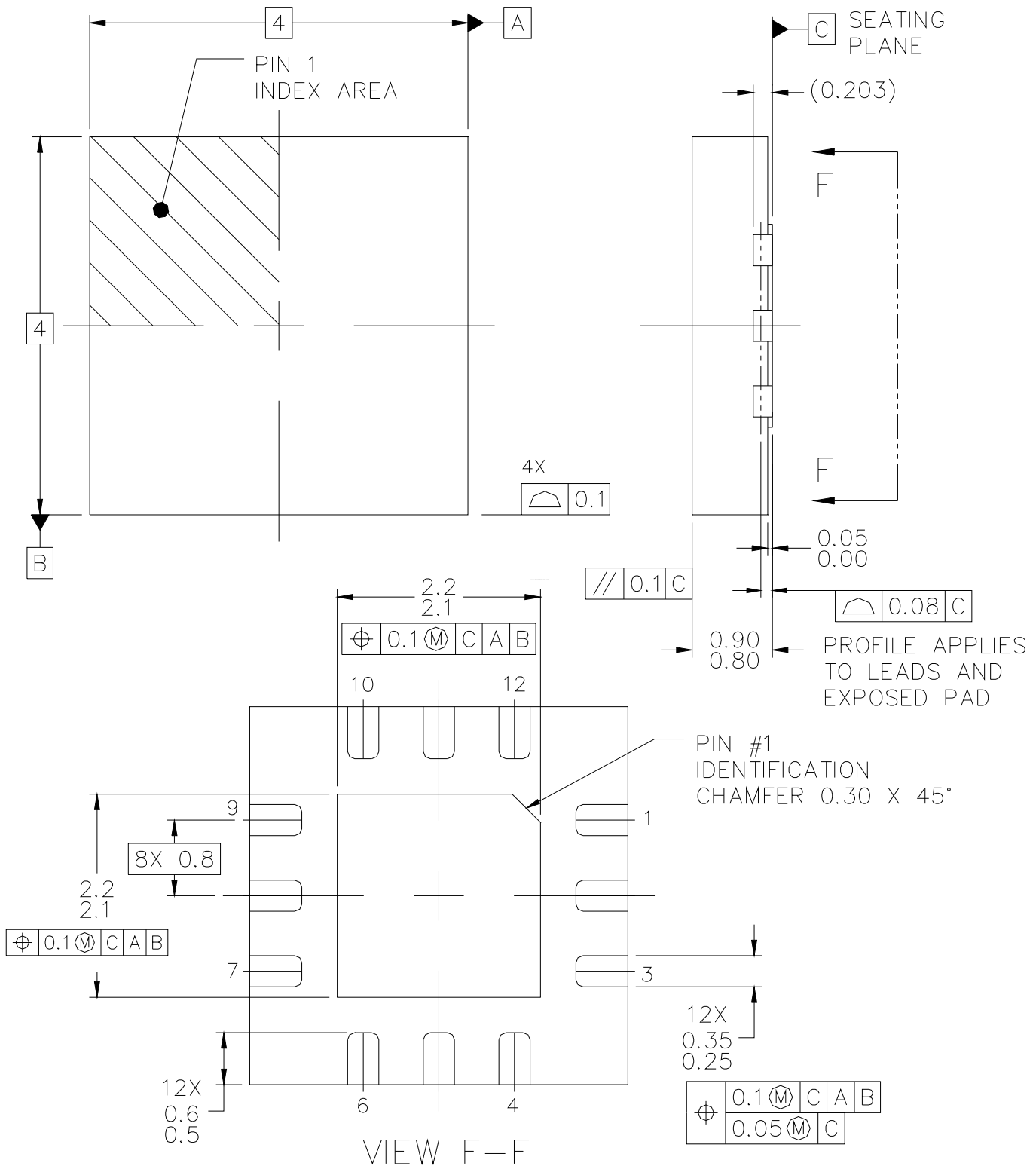
**Bottom Side**

Pin	Description
1	GND
2	RF Input
3	GND
4	Vg
5,6	NC
7	GND
8	RF Output
9	GND
10	Vd
11,12	NC
13	GND

**Mechanical Drawing**

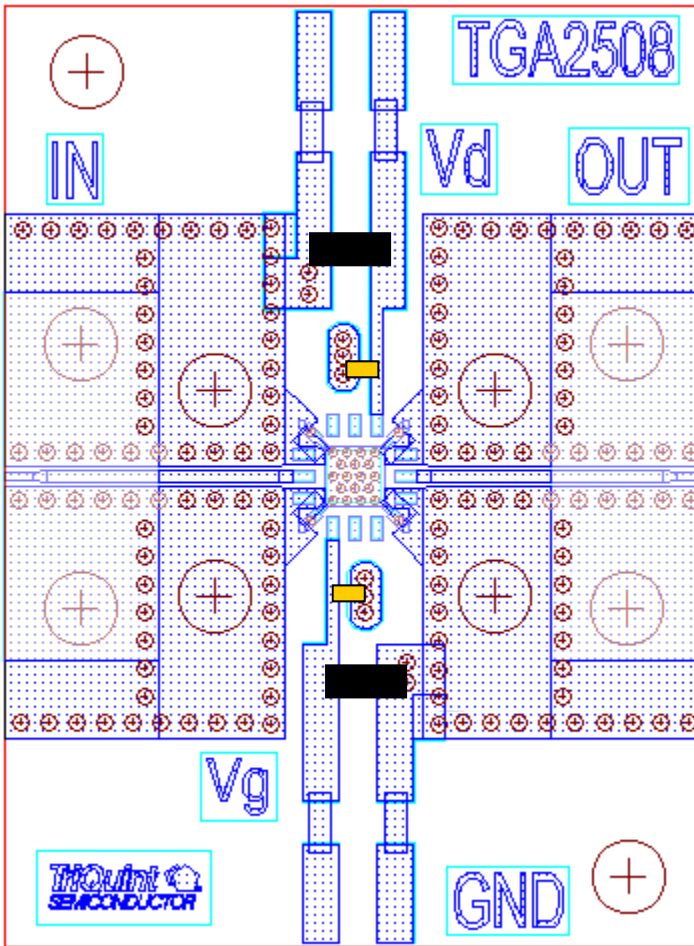
Units: Millimeters

**TGA2508-SM**



**GaAs MMIC devices are susceptible to damage from Electrostatic Discharge. Proper precautions should be observed during handling, assembly and test.**

## Recommended Board Layout Assembly



■ 1 uF 1206 cap

■ 100 pF 0402 cap

**Board material is RO4003, 0.008 in thick**



## 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

### Ordering Information

Part	Package Style
TGA2508-SM	QFN 12L 4x4 Surface Mount