

Preliminary **1.6 GHz 20 W Flange Ceramic Packaged GaAs Power FETs**
**FEATURES**

- 20 W Typical Power at 1.6 GHz
- 13 dB Typical Linear Power Gain at 1.6 GHz
- High Linearity:  
IP3 = 52 dBm Typical
- High Power Added Efficiency:  
Nominal PAE of 40 %
- Suitable for High Reliability Application
- $W_g = 50$  mm
- 100 % DC and RF Tested
- Flange Ceramic Package

**PHOTO ENLARGEMENT**

**DESCRIPTION**

The TC2997A is a packaged Pseudomorphic High Electron Mobility Transistor (PHEMT) power transistor. The flange ceramic package provides the best thermal conductivity for the GaAs FET. All devices are 100% DC and RF tested to assure consistent quality. Typical applications include high dynamic range power amplifier for commercial applications.

**ELECTRICAL SPECIFICATIONS (  $V_{DS} = 10.5V$ ,  $I_{DS} = 5A$  @ 1.6GHz )**

Symbol	CONDITIONS	MIN	TYP	MAX	UNIT
$P_{1dB}$	Output Power at 1dB Gain Compression Point	42	43		dBm
$G_L$	Linear Power Gain	12	13		dB
IP3	Intercept Point of the 3 <sup>rd</sup> -order Intermodulation * $P_{SCL} = 32$ dBm		52		dBm
PAE	Power Added Efficiency at 1dB Compression Power		40		%
$I_{DSS}$	Saturated Drain-Source Current at $V_{DS} = 2$ V, $V_{GS} = 0$ V		12.5		A
$g_m$	Transconductance at $V_{DS} = 2$ V, $V_{GS} = 0$ V		9000		mS
$V_p$	Pinch-off Voltage at $V_{DS} = 2$ V, $I_D = 60$ mA		-1.7		Volts
$BV_{DGO}$	Drain-Gate Breakdown Voltage at $I_{DGO} = 15$ mA	20	22		Volts
$R_{th}$	Thermal Resistance		0.9		°C/W

\*  $P_{SCL}$ : Output Power of Single Carrier Level.

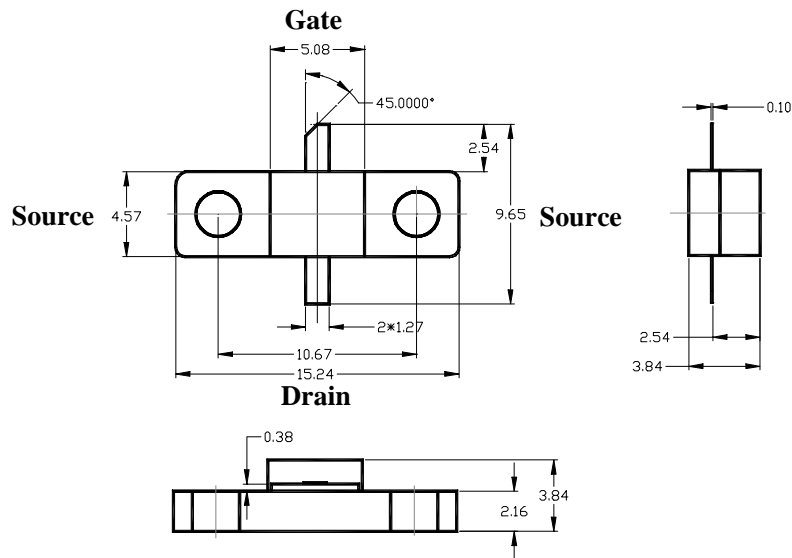
**ABSOLUTE MAXIMUM RATINGS at 25 °C**

Symbol	Parameter	Rating
V <sub>DS</sub>	Drain-Source Voltage	12 V
V <sub>GS</sub>	Gate-Source Voltage	-5 V
I <sub>DS</sub>	Drain Current	I <sub>DSS</sub>
P <sub>in</sub>	RF Input Power, CW	34 dBm
P <sub>T</sub>	Continuous Dissipation	100 W
T <sub>CH</sub>	Channel Temperature	175 °C
T <sub>STG</sub>	Storage Temperature	- 65 °C to +175 °C

**HANDLING PRECAUTIONS:**

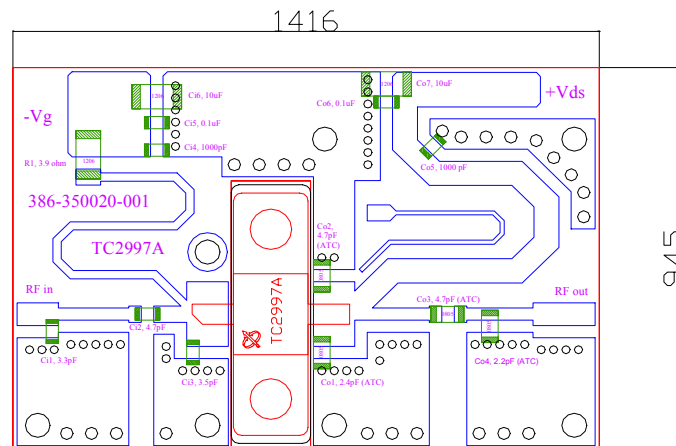
The user must operate in a clean, dry environment. Electrostatic Discharge (ESD) precautions should be observed at all stages of storage, handling, assembly, and testing. The static discharge must be less than 300V.

**FLANGE PACKAGE OUTLINE (in mm)**



**EVALUATION BOARD**

PCB Material: FR4  
 ER = 4.6  
 Thickness = 31 mil  
 Unit: mil



Qt'y	Description	Reference Designator	Manufacturer	Inventory ID
1	Chip Resistor (1206)3.9Ω±5%	R1	-	Chip Resistor(1206)3.9Ω±5%
1	Chip CAP(0603)3.3PF±5%	Ci1	Murata	GRM39COG3R3C50V
1	Chip CAP(0603)4.7PF±0.25PF	Ci2	Murata	GRM39COG4R7C50V
1	Chip CAP(0603)3.5PF±0.25PF	Ci3	Murata	GRM39COG3R5C50V
2	Chip CAP(0603)1000PF±10%	Ci4, Co5	Murata	GRM39X7R102K50V
2	Chip CAP(0603)0.1μF±20%	Ci5, Co6	Murata	GRM39Y5V104Z25V
2	Chip CAP(1206)10μF±20%	Ci6, Co7	Murata	GRM42-6Y5V106Z25V(GRM31CF5E106ZA01L)
1	Chip CAP(0805)2.4PF±0.1PF	Co1	ATC	ATC 600F 2R4BT (2.4pF±0.1pF 250WVDC)
2	Chip CAP(0805)4.7PF±0.25PF	Co2, Co3	ATC	ATC 600F 4R7CT (4.7pF±0.25pF 250WVDC)
1	Chip CAP(0805)2.2PF±0.1PF	Co4	ATC	ATC 600F 2R2BT (2.2pF±0.1pF 250WVDC)