

## 2.5-2.7GHz 20W Packaged GaAs Power FETs

### FEATURES

- 20 W Typical Power
- 10.5 dB Typical Linear Power Gain
- High Linearity:  
IP3 = 52 dBm Typical
- High Power Added Efficiency:  
Nominal PAE of 37 %
- 100 % DC and RF Tested

### DESCRIPTION

The TC2998E is a packaged Pseudomorphic High Electron Mobility Transistor (PHEMT) power transistor. The 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 military or commercial applications.

### ELECTRICAL SPECIFICATIONS

Symbol	CONDITIONS	MIN	TYP	MAX	UNIT
FREQ	Operating Frequency	2.5		2.7	GHz
P <sub>1dB</sub>	Output Power at 1dB Gain Compression Point, V <sub>d</sub> = 10V, I <sub>d</sub> = 4.5A, f=2.5 – 2.7GHz	42	43		dBm
G <sub>L</sub>	Linear Power Gain V <sub>d</sub> = 10V, I <sub>d</sub> = 4.5A, f=2.5 – 2.7GHz	9.5	10.5		dB
IP3	Intercept Point of the 3 <sup>rd</sup> -order Intermodulation, V <sub>d</sub> = 10V, I <sub>d</sub> = 4.5A, f=2.5 – 2.7GHz, *P <sub>SCL</sub> = 31 dBm		52		dBm
PAE	Power Added Efficiency at 1dB Compression Power		37		%
I <sub>DSS</sub>	Saturated Drain-Source Current at V <sub>DS</sub> = 2 V, V <sub>GS</sub> = 0 V		18.75		A
g <sub>m</sub>	Transconductance at V <sub>DS</sub> = 2 V, V <sub>GS</sub> = 0 V		13500		mS
V <sub>P</sub>	Pinch-off Voltage at V <sub>DS</sub> = 2 V, I <sub>D</sub> = 60 mA		-1.7		Volts
BV <sub>DGO</sub>	Drain-Gate Breakdown Voltage at I <sub>DGO</sub> = 15 mA	20	22		Volts
R <sub>th</sub>	Thermal Resistance		0.6		°C/W

\* P<sub>SCL</sub>: Output Power of Single Carrier Level, delta frequency=5MHz.

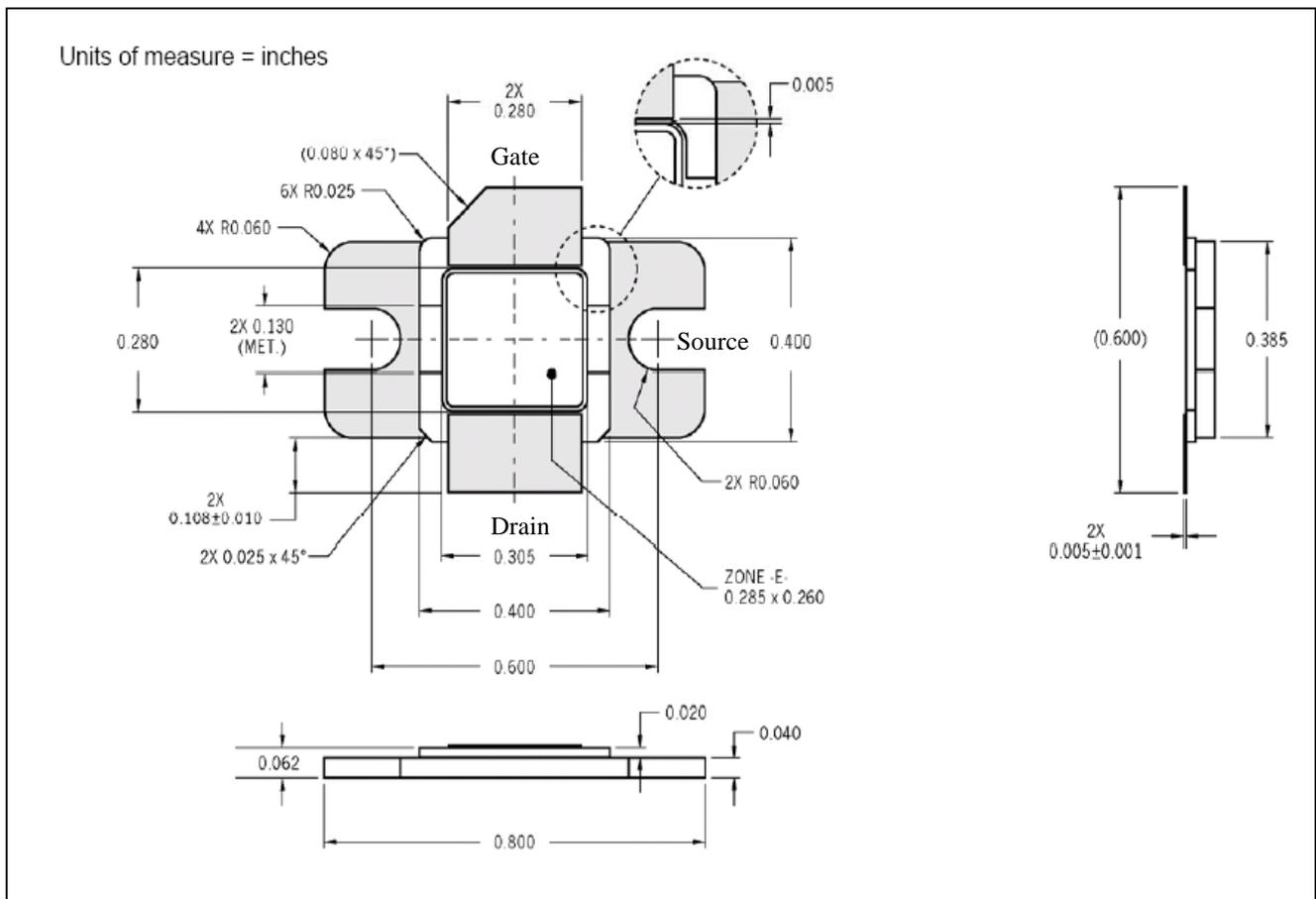
**ABSOLUTE MAXIMUM RATINGS at 25 °C**

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	37dBm
P <sub>T</sub>	Continuous Dissipation	150 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

**MECHANICAL OUTLINE**



Note – Mechanical outline might be adjusted upon actual design..