

## 2.45 GHz 20 W Flange Ceramic Packaged GaAs Power FETs

### FEATURES

- 20W Typical Power at 2.45 GHz
- 10dB Typical Linear Power Gain at 2.45 GHz
- High Linearity: IP3 = 52 dBm Typical
- High Power Added Efficiency: Nominal PAE of 40 %
- Suitable for High Reliability Application
- Wg = 50 mm
- 100 % DC and RF Tested
- Flange Ceramic Package

### PHOTO ENLARGEMENT



### DESCRIPTION

The TC2997D is a packaged Pseudomorphic High Electron Mobility Transistor (PHEMT) power transistor with input prematched circuits. 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 amplifiers for commercial applications.

### ELECTRICAL SPECIFICATIONS ( $V_{DS} = 10.5V$ , $I_{DS} = 5A$ @ 2.45GHz )

Symbol	CONDITIONS	MIN	TYP	MAX	UNIT
$P_{1dB}$	Output Power at 1dB Gain Compression Point	42	43		dBm
$G_L$	Linear Power Gain	9	10		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

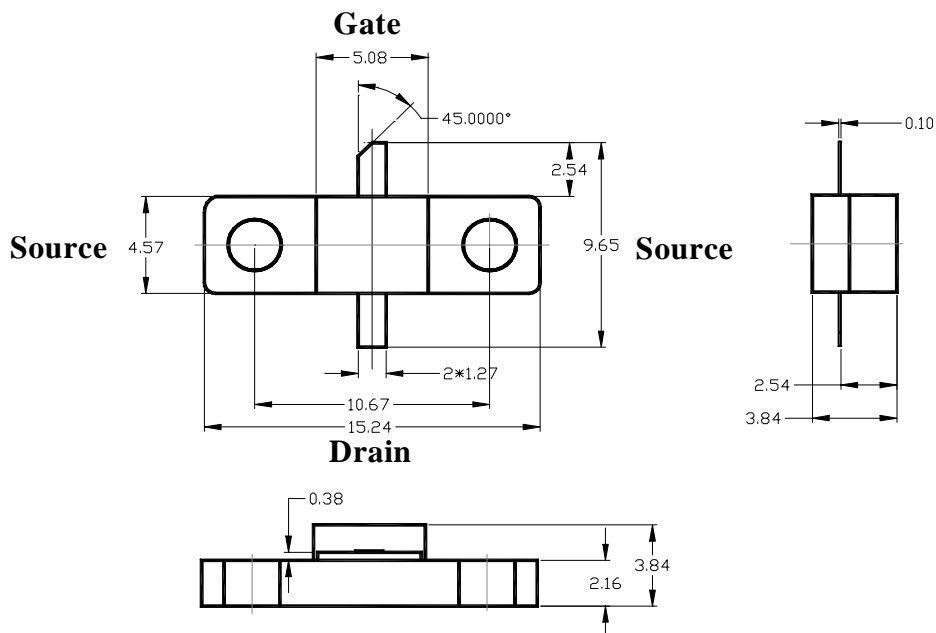
\*  $P_{SCL}$ : Output Power of Single Carrier Level.

**ABSOLUTE MAXIMUM RATINGS at 25 °C**

Symbol	Parameter	Rating
$V_{DS}$	Drain-Source Voltage	12 V
$V_{GS}$	Gate-Source Voltage	-5 V
$I_{DS}$	Drain Current	$I_{DSS}$
$P_{in}$	RF Input Power, CW	37 dBm
$P_T$	Continuous Dissipation	100 W
$T_{CH}$	Channel Temperature	175 °C
$T_{STG}$	Storage Temperature	- 65 °C to +175 °C

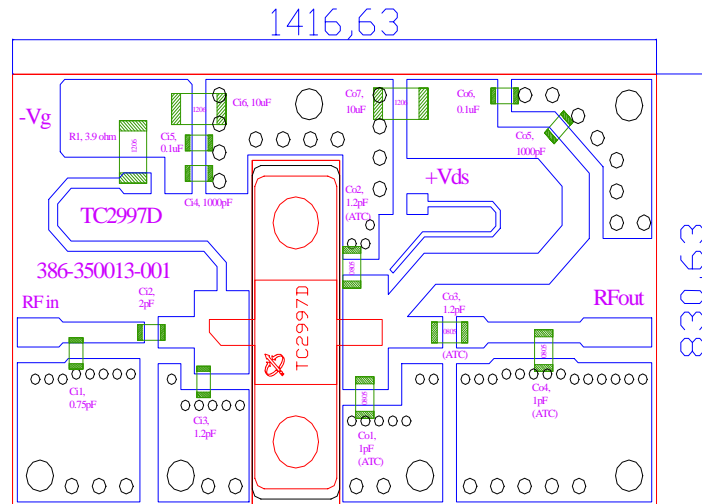
**HANDLING PRECAUTIONS:**

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**


**Evaluation Board Parts List**

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)0.75PF±5%	Ci1	Murata	GRM39COG0R75C50V
1	Chip CAP(0603)2PF±5%	Ci2	Murata	GRM39COG2RC50V
1	Chip CAP(0603)1.2PF±5%	Ci3	Murata	GRM39COG1R2C50V
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)
2	Chip CAP(0805)1PF±0.1PF	Co1, Co4	American Technical Ceramics	ATC 600F 1RBT (1pF±0.1pF 250WVDC)
2	Chip CAP(0805)1.2PF±0.1PF	Co2, Co3	American Technical Ceramics	ATC 600F 1R2BT (1.2pF±0.1pF 250WVDC)