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 3rd-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.**

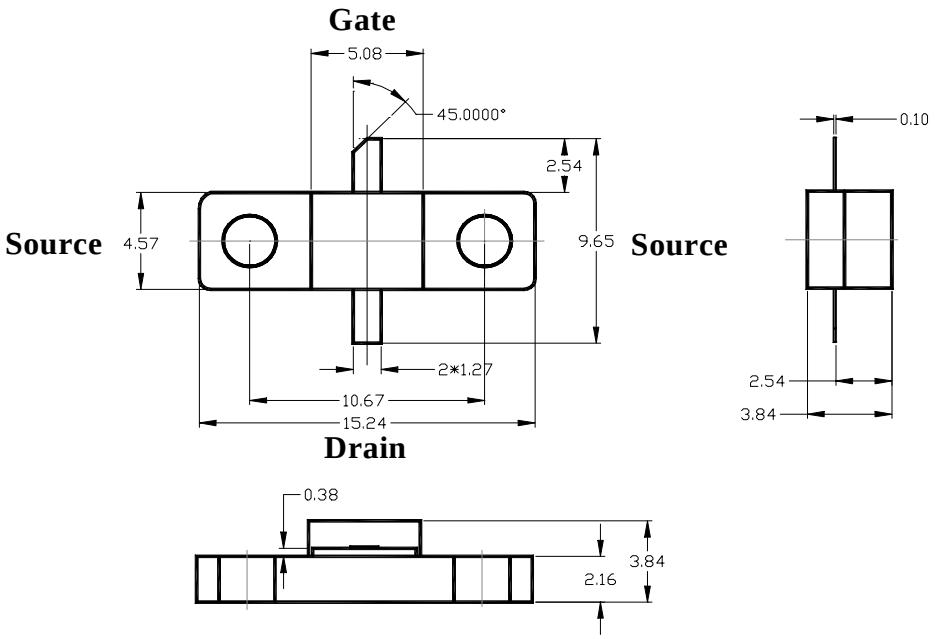
ABSOLUTE MAXIMUM RATINGS at 25 °C

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)



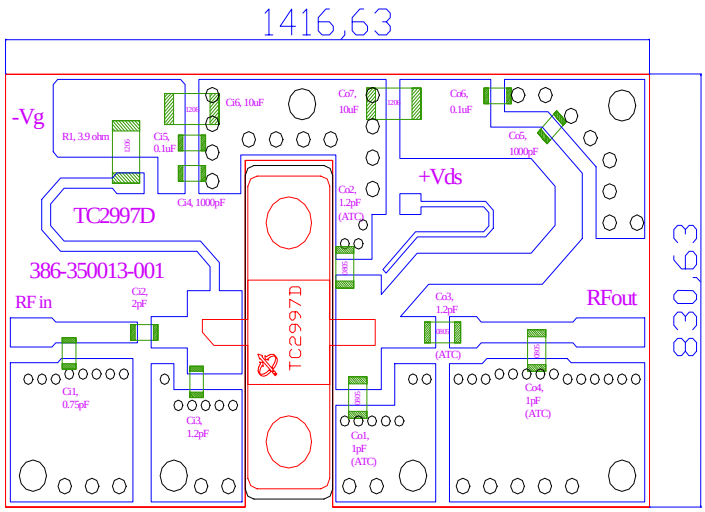
EVALUATION BOARD

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)