

2.45 GHz 12 W Flange Ceramic Packaged GaAs Power FETs

FEATURES

- 12 W Typical Power at 2.45 GHz
- 11 dB Typical Linear Power Gain at 2.45 GHz
- High Linearity: IP3 = 50 dBm Typical
- High Power Added Efficiency: Nominal PAE of 40 %
- Suitable for High Reliability Application
- $W_g = 30$ mm
- 100 % DC and RF Tested
- Flange Ceramic Package

PHOTO ENLARGEMENT



DESCRIPTION

The TC2996D 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 amplifier for commercial applications.

ELECTRICAL SPECIFICATIONS ($V_{DS} = 10.5V$, $I_{DS} = 2.5A$ @ 2.45 GHz)

Symbol	CONDITIONS	MIN	TYP	MAX	UNIT
P_{1dB}	Output Power at 1dB Gain Compression Point	39.5	41		dBm
G_L	Linear Power Gain	10	11		dB
IP3	Intercept Point of the 3 rd -order Intermodulation, * $P_{SCL} = 28$ dBm		50		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		7.5		A
g_m	Transconductance at $V_{DS} = 2$ V, $V_{GS} = 0$ V		5400		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		1.5		°C/W

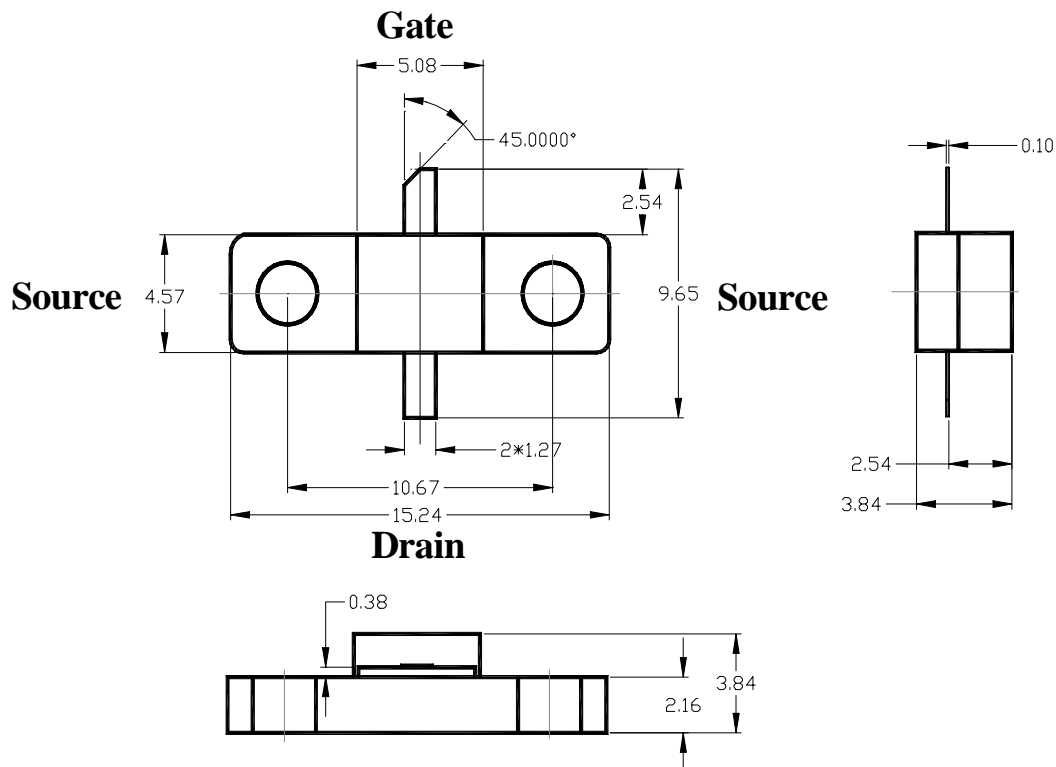
* P_{SCL} : Output Power of Single Carrier Level.

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	35dBm
P_T	Continuous Dissipation	30 W
T_{CH}	Channel Temperature	175 °C
T_{STG}	Storage Temperature	- 65 °C to +175 °C

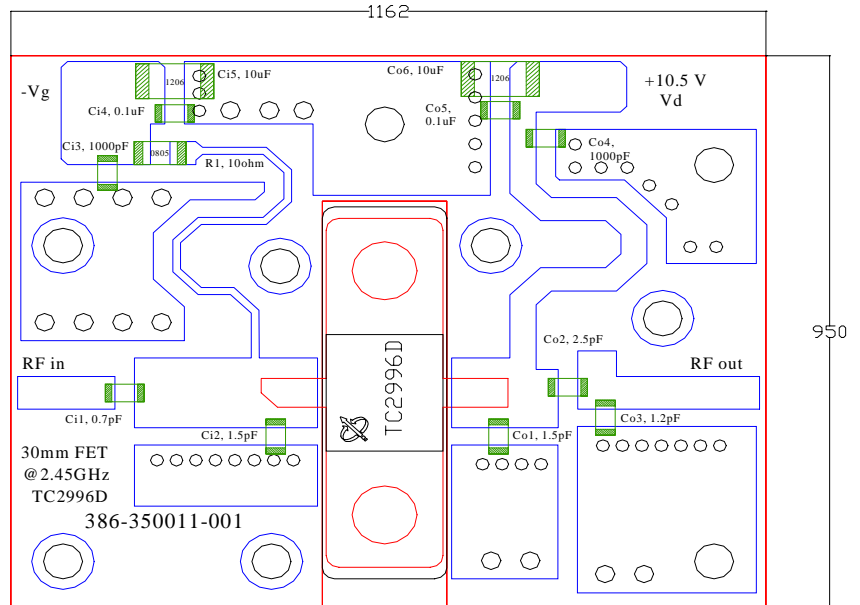
HANDLING PRECAUTIONS:

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

Part Type	Reference Designator	Description	Manufacturer	Part Number
Chip Resistor	R1	(0805) 10Ω±5%		Chip Resistor(0805)10Ω±5%
Chip Capacitor	Ci1	(0603) 0.7PF ±0.25PF	Murata	GRM39COG0R7C50V
Chip Capacitor	Ci2, Co1	(0603) 1.5PF ±0.25PF	Murata	GRM39COG1R5C50V
Chip Capacitor	Ci3, Co4	(0603) 1000PF ±10%	Murata	GRM39X7R102K50V
Chip Capacitor	Ci4, Co5	(0603) 0.1 μ F ±20%	Murata	GRM39Y5V104Z25V
Chip Capacitor	Ci5, Co6	(1206) 10 μ F ±20%	Murata	GRM42-6Y5V106Z25V (GRM31CF5E106ZA01L)
Chip Capacitor	Co2	(0603) 2.5PF ± 0.25PF	Murata	GRM39COG2R5C50V
Chip Capacitor	Co3	(0603) 1.2PF ± 0.25PF	Murata	GRM39COG1R2C50V