

Preliminary 2.1 GHz 20 W Flange Ceramic Packaged GaAs Power FETs

FEATURES

- 20 W Typical Power at 2.1 GHz
- 12 dB Typical Linear Power Gain at 2.1 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 TC2997C 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 (@ 2.1 GHz)

Symbol	CONDITIONS	MIN	TYP	MAX	UNIT
P_{1dB}	Output Power at 1dB Gain Compression Point	42	43		dBm
G_L	Linear Power Gain	11	12		dB
IP3	Intercept Point of the 3 rd -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

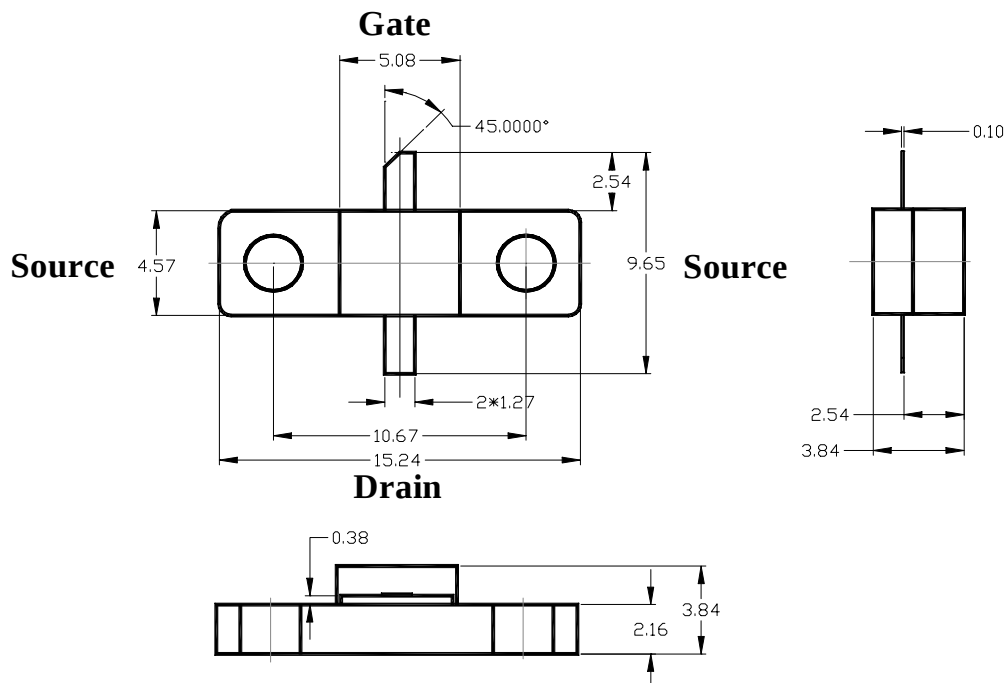
* P_{SCL} : Output Power of Single Carrier Level.

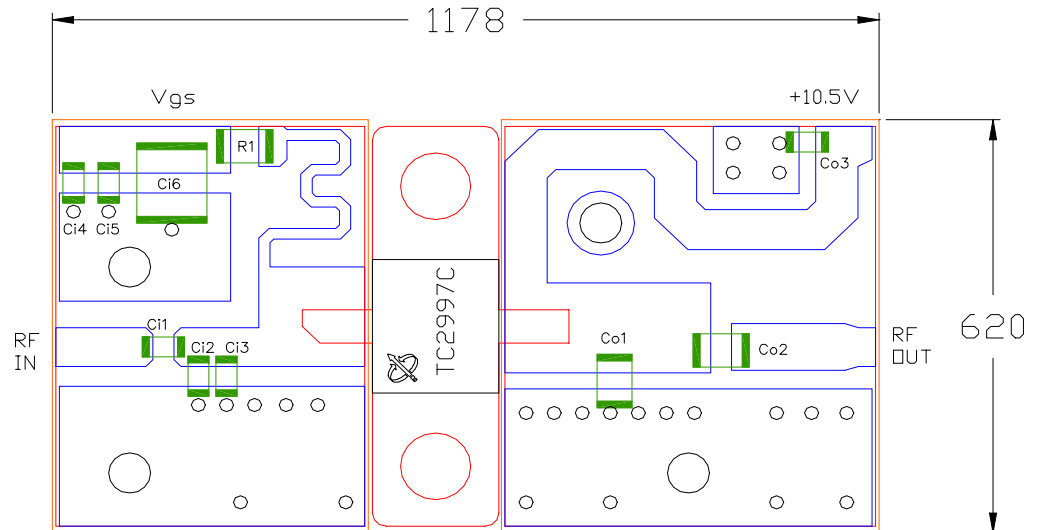
ABSOLUTE MAXIMUM RATINGS at 25 °C

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


Part Type	Reference Designator	Description	Manufacturer
Resistor	R1	12 ohm 0805	-
Capacitor	Ci1	1.2 pF 0603	Murata
Capacitor	Ci2	0.75 pF 0603	Murata
Capacitor	Ci3	2.0 pF 0603	Murata
Capacitor	Ci4	1000 pF 0603	Murata
Capacitor	Ci5	0.1 uF 0603	Murata
Capacitor	Ci6	10 uF 1206	Murata
Capacitor	Co1	2.2 pF 0805	ATC
Capacitor	Co2	1.5 pF 0805	ATC
Capacitor	Co3	1000 pF 0603	Murata