

- Preliminary Datasheet -

TC2998F PRE.3\_01/21/2008

# 2.7-2.9GHz 20W Packaged GaAs Power FETs

#### **FEATURES**

- 20 W Typical Power
- 10 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 TC2998F 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 commercial applications.

#### **ELECTRICAL SPECIFICATIONS**

Symbol	CONDITIONS	MIN	TYP	MAX	UNIT
FREQ	Operating Frequency	2.7		2.9	GHz
$P_{1dB}$	Output Power at 1dB Gain Compression Point, Vd = 10V, Id = 4.5A, f=2.7 – 2.9GHz	42	43		dBm
$G_{L}$	Linear Power Gain Vd = 10V, Id = 4.5A, f=2.7 – 2.9GHz	9	10		dB
IP3	Intercept Point of the $3^{rd}$ -order Intermodulation, Vd = 10V, Id = 4.5A, f=2.7 – 2.9GHz, $*P_{SCL}$ = 31 dBm		52		dBm
PAE	Power Added Efficiency at 1dB Compression Power		37		%
$I_{DSS}$	Saturated Drain-Source Current at V <sub>DS</sub> = 2 V, V <sub>GS</sub> = 0 V		18.75		A
$g_{\rm m}$	Transconductance at $V_{DS} = 2 \text{ V}$ , $V_{GS} = 0 \text{ V}$		13500		mS
$V_{P}$	Pinch-off Voltage at $V_{DS} = 2 \text{ V}$ , $I_D = 60 \text{ mA}$		-1.7		Volts
$BV_{DGO}$	Drain-Gate Breakdown Voltage at I <sub>DGO</sub> =15 mA	20	22		Volts
$R_{th}$	Thermal Resistance		0.6		°C/W

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

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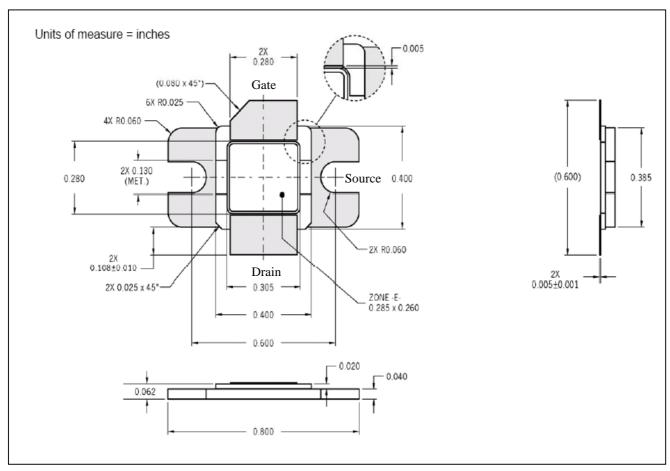
## ABSOLUTE MAXIMUM RATINGS at 25 °C

Symbol	Parameter	Rating
$V_{ m DS}$	Drain-Source Voltage	12 V
$V_{GS}$	Gate-Source Voltage	-5 V
$I_{DS}$	Drain Current	$I_{ m DSS}$
P <sub>in</sub>	RF Input Power, CW	37dBm
$P_{T}$	Continuous Dissipation	150 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

## **MECHANICAL OUTLINE**



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