

# **5 W Low-Cost Packaged PHEMT GaAs Power FETs**

#### **FEATURES**

- 5 W Typical Output Power at 6 GHz
- 7 dB Typical Linear Power Gain at 6 GHz
- High Linearity: IP3 = 47 dBm Typical at 6 GHz
- High Power Added Efficiency: Nominal PAE of 40 % at 6 GHz
- Suitable for High Reliability Application
- Breakdown Voltage:  $BV_{DGO} \ge 18 V$
- $Lg = 0.6 \mu m$ , Wg = 12 mm
- Tight Vp ranges control
- High RF input power handling capability
- 100 % DC Tested
- Low Cost Ceramic Package

#### DESCRIPTION

The TC2876 is packaged with the TC1806 Pseudomorphic High Electron Mobility Transistor (PHEMT) GaAs Power chip. The Cu-based ceramic package provides excellent thermal conductivity for the GaAs FET. All devices are 100% DC tested to assure consistent quality. Typical applications include high dynamic range power amplifiers for commercial and military high performance power applications.

Symbol	CONDITIONS	MIN	ТҮР	MAX	UNIT
P <sub>1dB</sub>	Output Power at 1dB Gain Compression Point, $f = 6 \text{ GHz } V_{DS} = 8 \text{ V}$ , $I_{DS} = 1200 \text{ mA}$	36	36.5		dBm
G <sub>L</sub>	Linear Power Gain, $f = 6 \text{ GHz } V_{DS} = 8 \text{ V}, I_{DS} = 1200 \text{ mA}$		7		dB
IP3	Intercept Point of the 3 <sup>rd</sup> -order Intermodulation, $f = 6$ GHz V <sub>DS</sub> = 8 V, I <sub>DS</sub> = 1200 mA, *P <sub>SCL</sub> = 23 dBm		47		dBm
PAE	Power Added Efficiency at 1dB Compression Power, $f = 6 \text{ GHz}$		40		%
I <sub>DSS</sub>	Saturated Drain-Source Current at $V_{DS} = 2$ V, $V_{GS} = 0$ V		3		А
g <sub>m</sub>	Transconductance at $V_{DS} = 2 V$ , $V_{GS} = 0 V$		2000		mS
V <sub>P</sub>	Pinch-off Voltage at $V_{DS} = 2$ V, $I_D = 24$ mA		-1.7**		Volts
BV <sub>DGO</sub>	Drain-Gate Breakdown Voltage at I <sub>DGO</sub> =6 mA	18	22		Volts
R <sub>th</sub>	Thermal Resistance		3.5		°C/W

## **ELECTRICAL SPECIFICATIONS (T<sub>A</sub>=25 °C)**

#### Note: \* P<sub>SCL</sub>: Output Power of Single Carrier Level.

\*\* For the tight control of the pinch-off voltage range, we divide TC2876 into 3 model numbers to fit customer design requirement (1)TC2876P1519 : Vp = -1.5V to -1.9V (2)TC2876P1620 : Vp = -1.6V to -2.0V (3)TC2876P1721 : Vp = -1.7V to -2.1V If required, customer can specify the requirement in purchasing document. For special Vp requirement, please contact factory for details.

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PHOTO ENLARGEMENT



# ABSOLUTE MAXIMUM RATINGS (T<sub>A</sub>=25 °C)

Symbol	Parameter	Rating
V <sub>DS</sub>	Drain-Source Voltage	12 V
V <sub>GS</sub>	Gate-Source Voltage	-5 V
I <sub>DS</sub>	Drain Current	I <sub>DSS</sub>
P <sub>in</sub>	RF Input Power, CW	33 dBm
P <sub>T</sub>	Continuous Dissipation	12 W
T <sub>CH</sub>	Channel Temperature	175 °C
T <sub>STG</sub>	Storage Temperature	- 65 °C to +175 °C

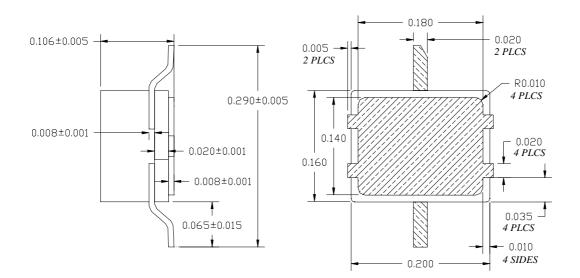
### **RECOMMANDED OPERATING CONDITION**

Symbol	Parameter	Rating
V <sub>DS</sub>	Drain to Source Voltage	8 V
ID	Drain Current	1200 mA

### 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.

### **OUTLINE DIMENSIONS** (Unit: inch)



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