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: $BV_{DGO} \geq 18$ V
- Lg = 0.6 μm, Wg = 12 mm
- Tight Vp ranges control
- High RF input power handling capability
- 100 % DC Tested
- Low Cost Ceramic Package

PHOTO ENLARGEMENT

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.

ELECTRICAL SPECIFICATIONS (T_A=25 °C)

Symbol	CONDITIONS	MIN	TYP	MAX	UNIT
P_{1dB}	Output Power at 1dB Gain Compression Point , f = 6 GHz V_{DS} = 8 V, I_{DS} = 1200 mA	36	36.5		dBm
G_L	Linear Power Gain, f = 6 GHz V_{DS} = 8 V, I_{DS} = 1200 mA		7		dB
IP3	Intercept Point of the 3rd-order Intermodulation, f = 6 GHz V_{DS} = 8 V, I_{DS} = 1200 mA, *P_{SCL} = 23 dBm		47		dBm
PAE	Power Added Efficiency at 1dB Compression Power, f = 6 GHz		40		%
I_{DSS}	Saturated Drain-Source Current at V_{DS} = 2 V, V_{GS} = 0 V		3		A
g_m	Transconductance at V_{DS} = 2 V, V_{GS} = 0 V		2000		mS
V_P	Pinch-off Voltage at V_{DS} = 2 V, I_D = 24 mA		-1.7**		Volts
BV_{DGO}	Drain-Gate Breakdown Voltage at I_{DGO} =6 mA	18	22		Volts
R_{th}	Thermal Resistance		3.5		°C/W

Note: * P_{SCL}: 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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ABSOLUTE MAXIMUM RATINGS (T_A=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	33 dBm
P_T	Continuous Dissipation	12 W
T_{CH}	Channel Temperature	175 °C
T_{STG}	Storage Temperature	- 65 °C to +175 °C

RECOMMANDED OPERATING CONDITION

Symbol	Parameter	Rating
V_{DS}	Drain to Source Voltage	8 V
I_D	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)