TRANSCOM

TC2676

REV.2_04/12/2004

2W Low-Cost Packaged PHEMT GaAs Power FETs

FEATURES

- 2 W Typical Output Power at 2.45 GHz
- 13 dB Typical Linear Power Gain at 2.45 GHz
- High Linearity:
  IP3 = 43 dBm Typical at 2.45 GHz
- High Power Added Efficiency:
  Nominal PAE of 43 % at 2.45 GHz
- Suitable for High Reliability Application
- Breakdown Voltage:
  $BV_{DGO} \geq 18$ V
- Lg = 0.6 μm, Wg = 5 mm
- 100 % DC Tested
- Low Cost Ceramic Package

PHOTO ENLARGEMENT

DESCRIPTION

The TC2676 is packaged with the TC1606 Pseudomorphic High Electron Mobility Transistor (PHEMT) 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 amplifier for commercial applications including Cellular/PCS systems, and military high performance power amplifier.

ELECTRICAL SPECIFICATIONS (T_A=25 °C)

Symbol	CONDITIONS	MIN	TYP	MAX	UNIT
P_{1dB}	Output Power at 1dB Gain Compression Point , f = 2.45GHz V_{DS} = 8 V, I_{DS} = 600 mA	32.5	33		dBm
G_L	Linear Power Gain, f = 2.45GHz V_{DS} = 8 V, I_{DS} = 600 mA		13		dB
IP3	Intercept Point of the 3rd-order Intermodulation, f = 2.45GHz V_{DS} = 8 V, I_{DS} = 600 mA, *P_{SCL} = 20 dBm		43		dBm
PAE	Power Added Efficiency at 1dB Compression Power, f = 2.45GHz		43		%
I_{DSS}	Saturated Drain-Source Current at V_{DS} = 2 V, V_{GS} = 0 V		1.2		A
g_m	Transconductance at V_{DS} = 2 V, V_{GS} = 0 V		850		mS
V_P	Pinch-off Voltage at V_{DS} = 2 V, I_D = 10 mA		-1.7**		Volts
BV_{DGO}	Drain-Gate Breakdown Voltage at I_{DGO} =2.5 mA	18	22		Volts
R_{th}	Thermal Resistance		8		°C/W

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

** For the tight control of the pinch-off voltage range, we divide TC2676 into 3 model numbers to fit customer design requirement (1)TC2676P1519 : Vp = -1.5V to -1.9V (2)TC2676P1620 : Vp = -1.6V to -2.0V (3)TC2676P1721 : 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	26 dBm
P_T	Continuous Dissipation	7.7 W
T_{CH}	Channel Temperature	175 °C
T_{STG}	Storage Temperature	- 65 °C to +175 °C

RECOMMANDED OPERATING CONDITION

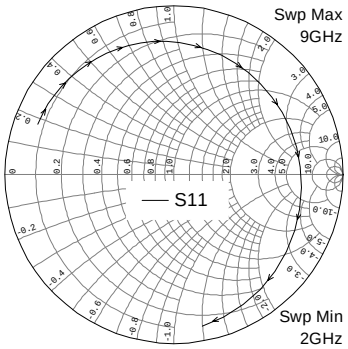
Symbol	Parameter	Rating
V_{DS}	Drain to Source Voltage	8 V
I_D	Drain Current	600 mA

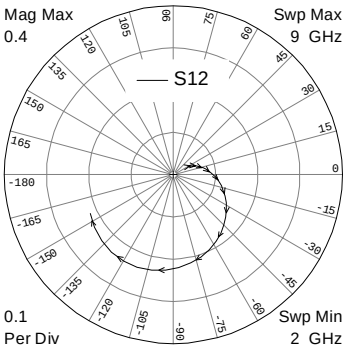
HANDLING PRECAUTIONS:

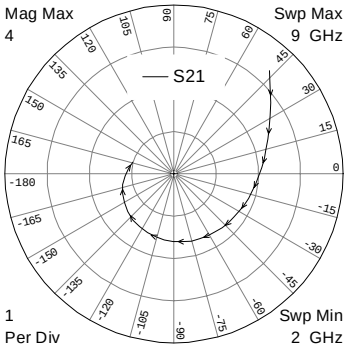
The user must operate in a clean, dry environment. Electrostatic Discharge (ESD) precautions should be observed at all stages of storage, handling, assembly, and testing. The static discharge must be less than 300V.

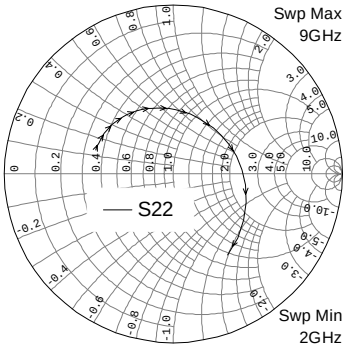
TYPICAL SCATTERING PARAMETERS (T_A=25 °C)

V_{DS} = 8 V, I_{DS} = 600 mA









FREQUENCY	S11		S21		S12		S22	
(GHz)	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
2	0.8583	159.78	3.3298	47.16	0.0396	28.75	0.4800	163.15
3	0.8419	137.46	2.3730	20.35	0.0580	20.43	0.4735	149.56
4	0.8171	114.30	1.9527	-6.75	0.0832	6.31	0.4560	134.61
5	0.7833	87.34	1.7538	-35.79	0.1169	-13.20	0.4254	116.87
6	0.7492	53.95	1.6530	-68.43	0.1597	-38.78	0.3866	93.67
7	0.7445	12.53	1.5564	-106.23	0.2058	-71.41	0.3603	58.23
8	0.8082	-34.29	1.3586	-149.76	0.2347	-111.25	0.4064	3.35
9	0.9125	-79.43	1.0009	164.08	0.2175	-154.91	0.5776	-56.08

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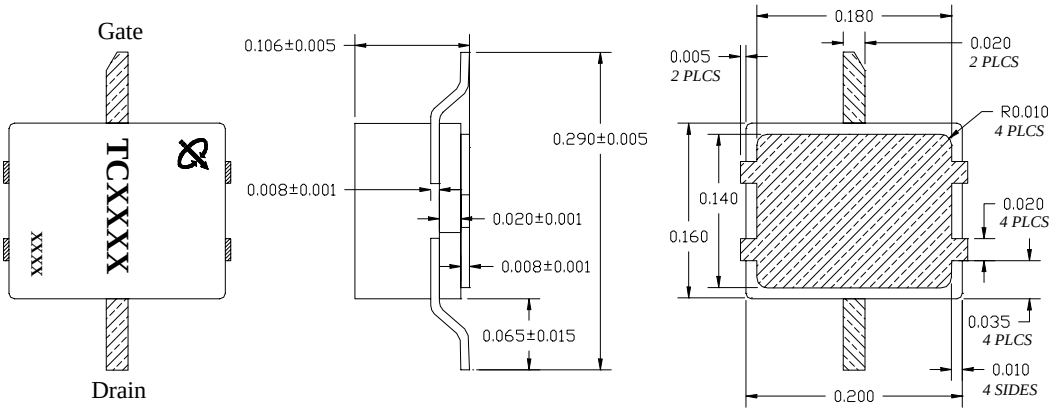
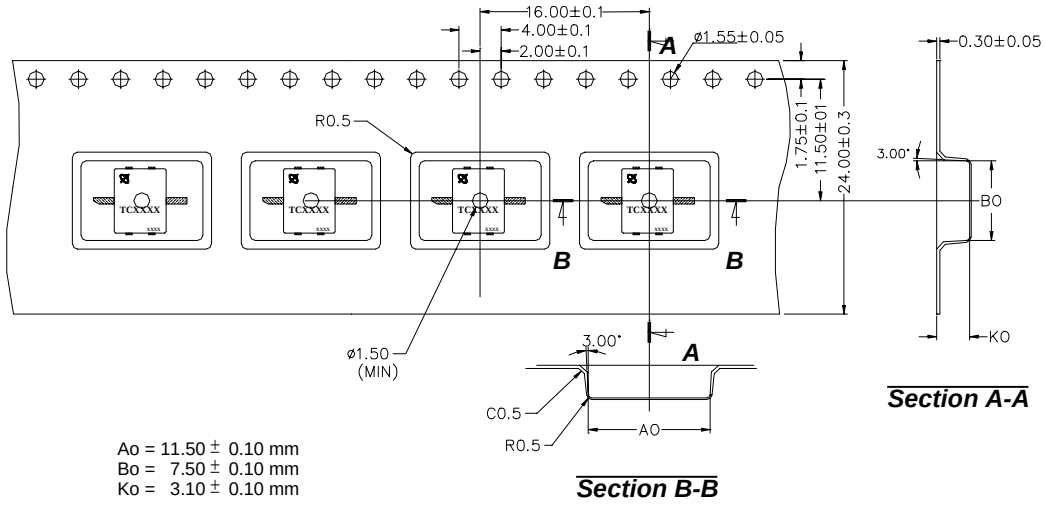
OUTLINE DIMENSIONS (in inch)



Top Side

Bottom Side(Source)

TAPE & REEL PACKAGE ORIENTATION (mm)



Ao = 11.50 ± 0.10 mm
Bo = 7.50 ± 0.10 mm
Ko = 3.10 ± 0.10 mm

Standard Reel Size	7”
Standard Reel Quantity	500