



BCP080T-70

HIGH EFFICIENCY HETEROJUNCTION POWER FET (0.25μm x 800μm gate)



The BeRex BCP080T-70 is a GaAs power pHEMT in an industry standard, 70 mil. ceramic, low parasitic, surface-mountable package. It's 0.25μm by 800 μm recessed gate architecture provides high gain, high power and excellent PAE over a broad frequency range of 1000 MHz to 26 GHz.

PRODUCT FEATURES

- 70 mil. surface-mount ceramic package
- 27.5dBm P1dB @12 GHz (*typical*)
- 9.5dB Gain @12 GHz (*typical*)
- 65% PAE @12 GHz (*typical*)
- RoHS-compliant/lead-free



APPLICATIONS

- Commercial
- Military / Hi-Rel.
- Test & Measurement

ELECTRICAL CHARACTERISTIC (TUNED FOR POWER) T_a = 25° C

SYMBOLS	PARAMETER/TEST CONDITIONS	TEST FREQUENCY	MIN.	TYPICAL	Max	UNIT
P _{1dB}	Output Power @ P _{1dB} (V _{ds} = 6V, I _{ds} = 50% I _{dss})	12 GHz 18 GHz	26.0 26.0	27.5 27.5		dBm
G _{1dB}	Gain @ P _{1dB} (V _{ds} = 6V, I _{ds} = 50% I _{dss})	12 GHz 18 GHz	9.0 4.0	9.5 5.5		dB
PAE	PAE @ P _{1dB} (V _{ds} = 6V, I _{ds} = 50% I _{dss})	12 GHz 18 GHz		65 50		%
I _{dss}	Saturated Drain Current (V _{gs} = 0V, V _{ds} = 2.0V)		160	240	320	mA
G _m	Transconductance (V _{ds} = 3V, V _{gs} = 50% I _{dss})			320		mS
V _p	Pinch-off Voltage (I _{ds} = 0.2 mA, V _{ds} = 2V)		-2.5	-1.1	-0.5	V
BV _{gd}	Drain Breakdown Voltage (I _g = 0.2 mA, source open)			-15		V
BV _{gs}	Source Breakdown Voltage (I _g = 0.2 mA, drain open)			-13		V
R _{th}	Thermal Resistance			135		° C/W

ELECTRICAL CHARACTERISTIC (TUNED FOR GAIN) $T_a = 25^\circ\text{C}$

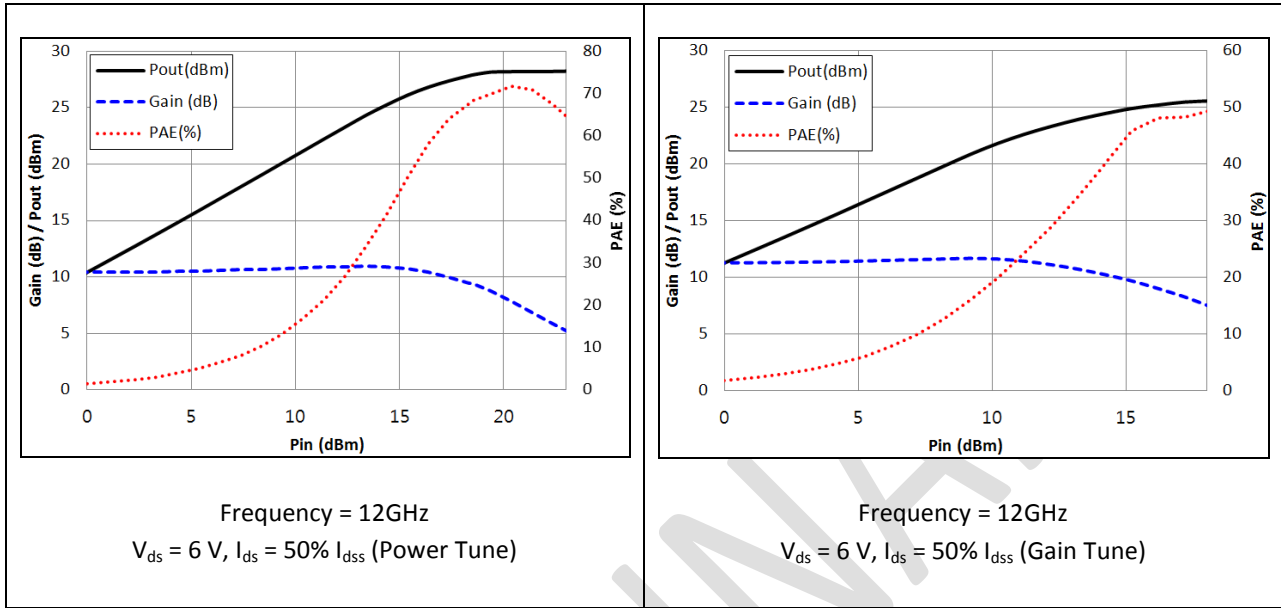
SYMBOLS	PARAMETER/TEST CONDITIONS	TEST FREQUENCY	MIN.	TYPICAL	MAX.	UNIT
P_{1dB}	Output Power @ P_{1dB} ($V_{ds} = 8V$, $I_{ds} = 50\% I_{dss}$)	12 GHz 18 GHz	23.5 24.0	24.5 25.0		dBm
G_{1dB}	Gain @ P_{1dB} ($V_{ds} = 8V$, $I_{ds} = 50\% I_{dss}$)	12 GHz 18 GHz	9.0 4.0	10.5 5.5		dB
PAE	PAE @ P_{1dB} ($V_{ds} = 8V$, $I_{ds} = 50\% I_{dss}$)	12 GHz 18 GHz		50 45		%
I_{dss}	Saturated Drain Current ($V_{gs} = 0V$, $V_{ds} = 1.0V$)		160	240	320	mA
G_m	Transconductance ($V_{ds} = 3V$, $V_{gs} = 50\% I_{dss}$)			320		mS
V_p	Pinch-off Voltage ($I_{ds} = 0.2\text{ mA}$, $V_{ds} = 2V$)		-2.5	-1.1	-0.5	V
BV_{gd}	Drain Breakdown Voltage ($I_g = 0.2\text{mA}$, source open)			-15		V
BV_{gs}	Source Breakdown Voltage ($I_g = 0.2\text{mA}$, drain open)			-13		V
R_{th}	Thermal Resistance			135		$^\circ\text{C/W}$

MAXIMUM RATING ($T_a = 25^\circ\text{C}$)

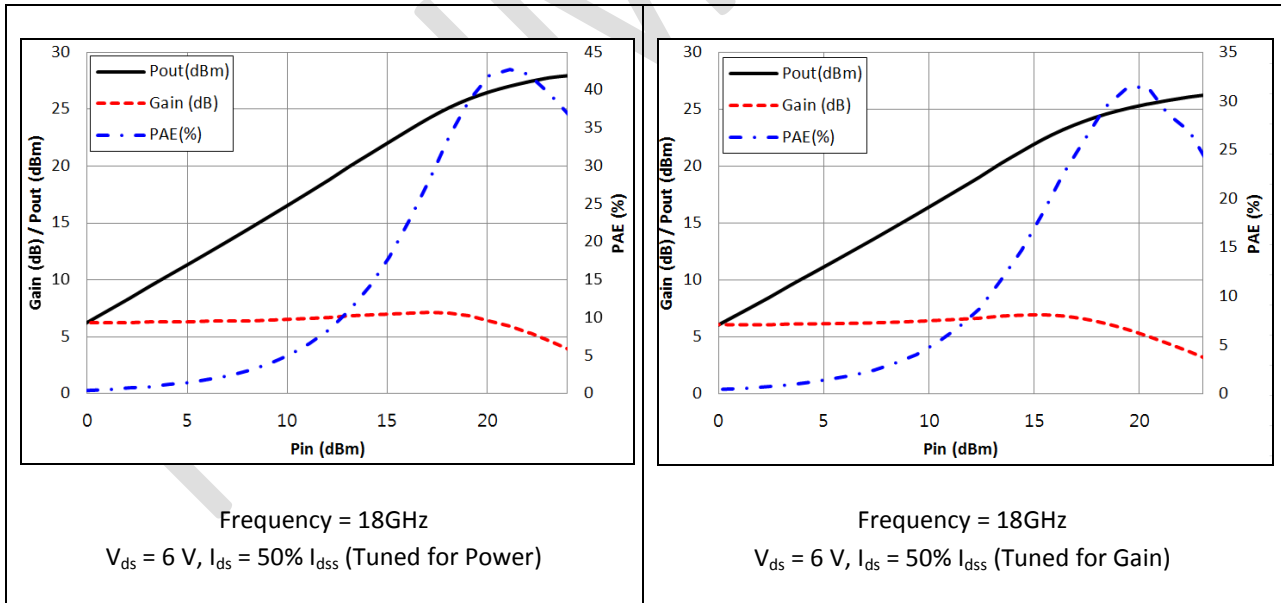
SYMBOLS	PARAMETERS	ABSOLUTE	CONTINUOUS
V_{ds}	Drain-Source Voltage	12 V	8 V
V_{gs}	Gate-Source Voltage	-6 V	-3 V
I_{ds}	Drain Current	I_{dss}	I_{dss}
I_{gsf}	Forward Gate Current	40 mA	7 mA
P_{in}	Input Power	27 dBm	@ 3dB compression
T_{ch}	Channel Temperature	175 $^\circ\text{C}$	150 $^\circ\text{C}$
T_{stg}	Storage Temperature	-60 $^\circ\text{C}$ - 150 $^\circ\text{C}$	-60 $^\circ\text{C}$ - 150 $^\circ\text{C}$
P_t	Total Power Dissipation	1.0 W	835 mW

Exceeding any of the above Maximum Ratings will result in reduced MTTF and may cause permanent damage to the device.

P_{IN}_P_{OUT}/Gain, PAE (12 GHz)



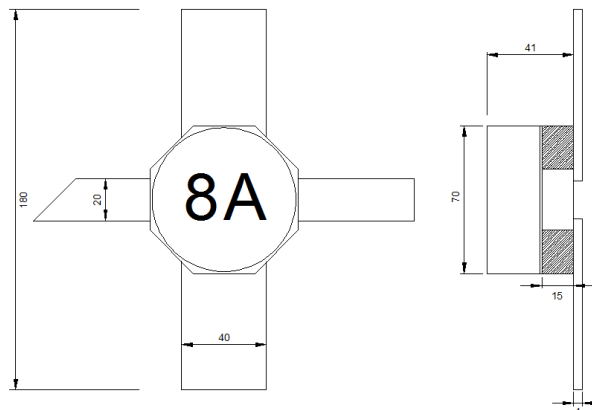
P_{IN}_P_{OUT}/Gain, PAE (18 GHz)



S-PARAMETER ($V_{ds} = 6V$, $I_{ds} = 50\% I_{dss}$)

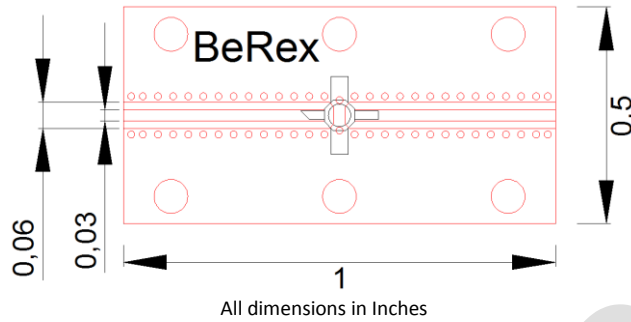
FREQ. [GHZ]	S11 [MAG]	S11 [ANG.]	S21 [MAG]	S21 [ANG.]	S12 [MAG]	S12 [ANG.]	S22 [MAG]	S22 [ANG.]
1	0.86	-75.90	12.72	124.40	0.031	49.04	0.37	-48.85
2	0.73	-125.12	9.06	89.52	0.045	29.42	0.29	-74.05
3	0.66	-161.95	6.79	62.24	0.055	16.03	0.23	-90.96
4	0.63	166.59	5.34	38.46	0.063	4.50	0.18	-108.26
5	0.63	141.16	4.37	17.17	0.070	-5.18	0.16	-130.79
6	0.62	119.15	3.69	-2.76	0.078	-15.42	0.17	-150.96
7	0.61	97.38	3.25	-22.60	0.088	-26.11	0.17	-163.48
8	0.62	74.35	2.90	-42.48	0.099	-38.30	0.14	-165.32
9	0.64	53.76	2.65	-62.68	0.111	-51.60	0.07	179.06
10	0.68	30.82	2.41	-84.30	0.122	-66.91	0.08	51.04
11	0.73	8.48	2.14	-105.66	0.129	-82.82	0.19	27.25
12	0.77	-11.33	1.90	-126.13	0.134	-98.23	0.27	15.44
13	0.80	-29.36	1.72	-146.13	0.140	-113.49	0.28	-1.04
14	0.81	-49.08	1.58	-167.77	0.148	-129.95	0.28	-29.71
15	0.85	-70.34	1.40	169.89	0.150	-149.97	0.37	-60.91
16	0.89	-92.81	1.20	149.00	0.143	-167.89	0.51	-75.62
17	0.91	-114.04	1.02	132.15	0.136	178.31	0.62	-78.27
18	0.94	-128.03	0.90	117.66	0.132	164.97	0.67	-83.00
19	0.93	-132.41	0.81	102.69	0.123	149.84	0.66	-99.29
20	0.96	-133.36	0.71	83.23	0.114	134.62	0.65	-136.54
21	0.96	-136.80	0.55	62.32	0.095	115.93	0.73	-176.39
22	0.93	-156.75	0.41	45.29	0.077	101.75	0.84	175.30
23	0.91	165.99	0.35	31.62	0.071	89.54	0.90	-166.91
24	0.93	129.64	0.32	18.97	0.070	78.11	0.89	-148.46
25	0.98	108.05	0.34	2.86	0.078	63.42	0.82	-152.69
26	1.02	106.49	0.35	-22.11	0.082	43.20	0.72	162.75

Package Outline Dimension

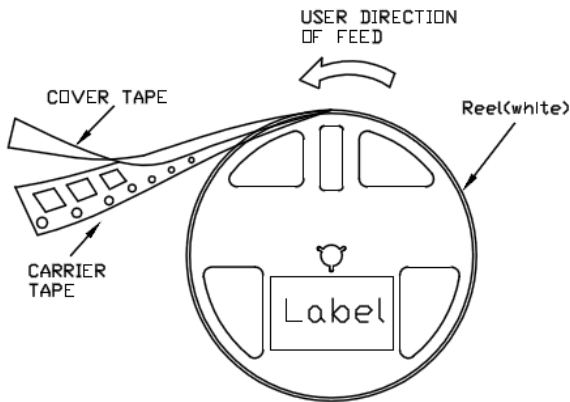


All dimensions in mils.

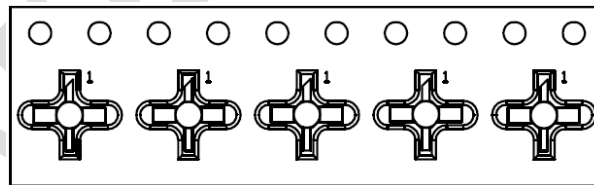
Suggested PCB layout



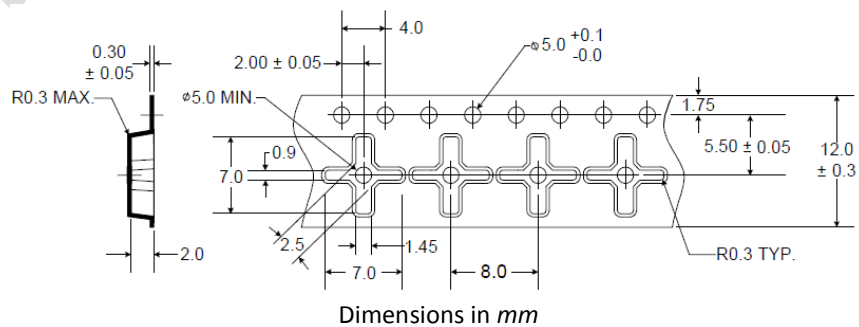
Tape and Reel Dimensions



PKG TYPE	Tape Width (mm)	Reel Size	Devices Per Reel
Ceramic 70mils	12	7"	1000



User Direction of Feed →





Proper ESD procedures should be followed when handling this device.

DISCLAIMER

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