



BCP060T-70

HIGH EFFICIENCY HETEROJUNCTION POWER FET (0.25μm x 600μm gate)



The BeRex BCP060T-70 is a GaAs power pHEMT in an industry standard, 70 mil. ceramic, low parasitic, surface-mountable package. It's 0.25μm by 600 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-mountable ceramic package
- 26.5 dBm P_{1dB} @12 GHz (*typical*)
- 10.5dB Gain @ 12 GHz (*typical*)
- 70% 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	25.5 25.0	26.5 26.0		dBm
G _{1dB}	Gain @ P _{1dB} (V _{ds} = 6V, I _{ds} = 50% I _{dss})	12 GHz 18 GHz	9.0 4.0	10.5 5.5		dB
PAE	PAE @ P _{1dB} (V _{ds} = 6V, I _{ds} = 50% I _{dss})	12 GHz 18 GHz		70 50		%
I _{dss}	Saturated Drain Current (V _{gs} = 0V, V _{ds} = 2.0V)		120	180	240	mA
G _m	Transconductance (V _{ds} = 3V, V _{gs} = 50% I _{dss})			240		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			175		° C/W

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

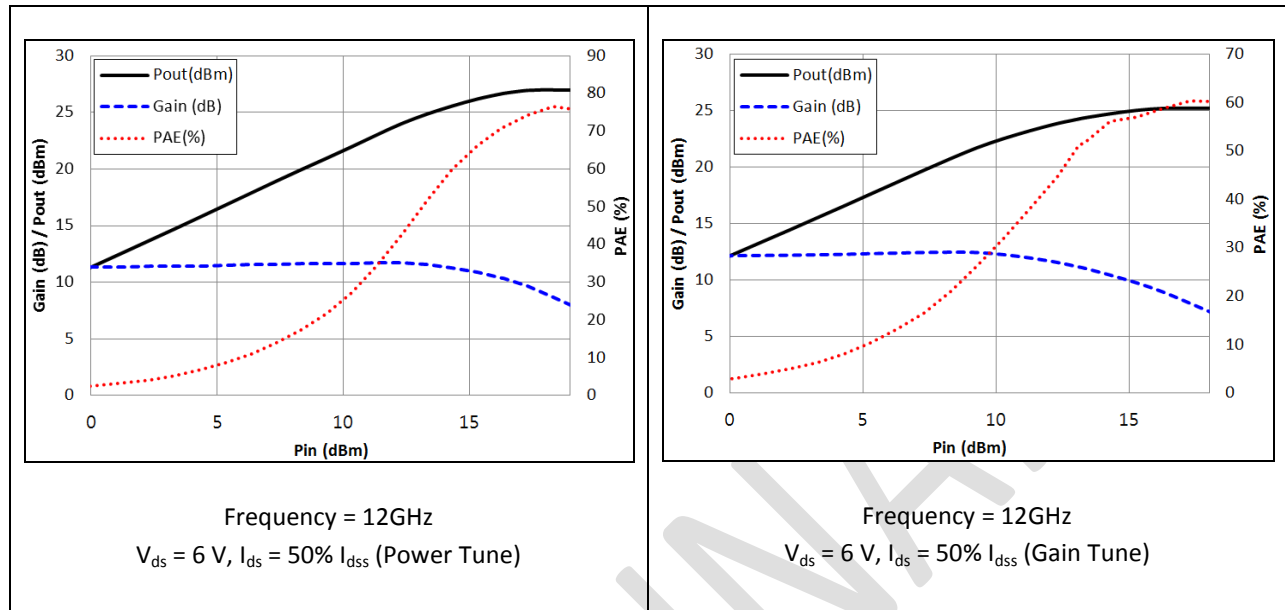
SYMBOLS	PARAMETER/TEST CONDITIONS	TEST FREQUENCY	MIN.	TYPICAL	MAX.	UNIT
P_{1dB}	Output Power @ P_{1dB} ($V_{ds} = 8V$, $I_{ds} = 50\% I_{dss}$)	12 GHz 18 GHz	23.5 24.0	24.5 25.0		dBm
G_{1dB}	Gain @ P_{1dB} ($V_{ds} = 8V$, $I_{ds} = 50\% I_{dss}$)	12 GHz 18 GHz	9.5 4.0	11 6.5		dB
PAE	PAE @ P_{1dB} ($V_{ds} = 8V$, $I_{ds} = 50\% I_{dss}$)	12 GHz 18 GHz		50 45		%
I_{dss}	Saturated Drain Current ($V_{gs} = 0V$, $V_{ds} = 1.0V$)		120	180	240	mA
G_m	Transconductance ($V_{ds} = 3V$, $V_{gs} = 50\% I_{dss}$)			240		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			175		$^\circ\text{C/W}$

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

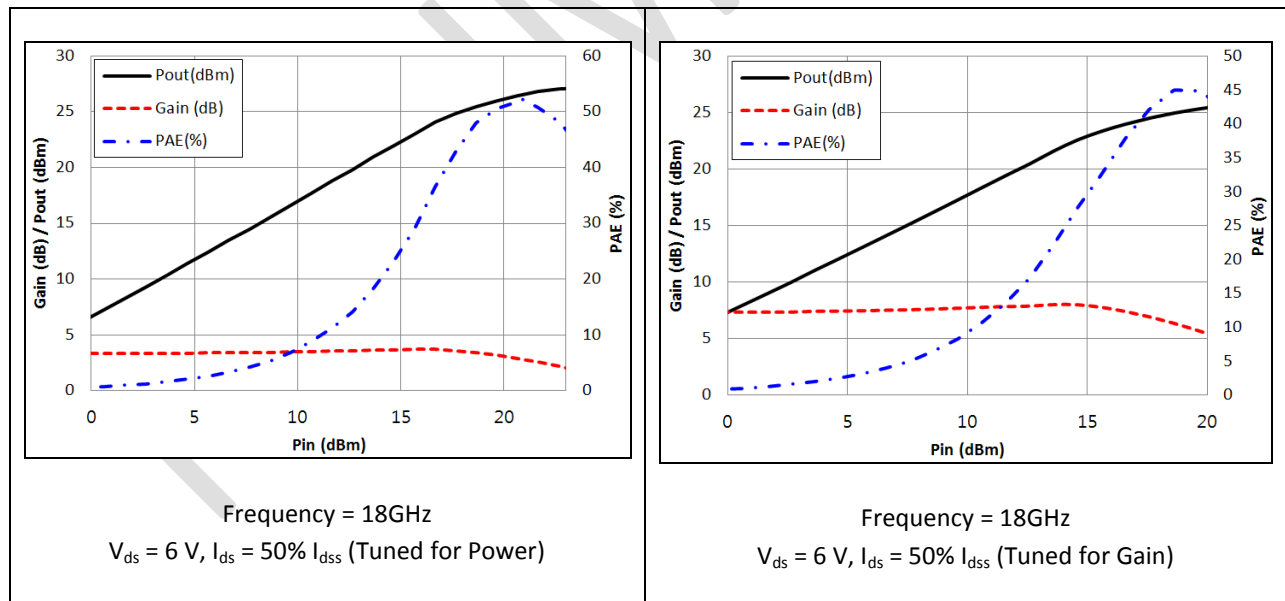
SYMBOLS	PARAMETERS	ABSOLUTE	CONTINUOUS
V_{ds}	Drain-Source Voltage	12 V	8 V
V_{gs}	Gate-Source Voltage	-6 V	-3 V
I_{ds}	Drain Current	I_{dss}	I_{dss}
I_{gsf}	Forward Gate Current	30 mA	10 mA
P_{in}	Input Power	25 dBm	@ 3dB compression
T_{ch}	Channel Temperature	175 $^\circ\text{C}$	150 $^\circ\text{C}$
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	770 mW	640 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)



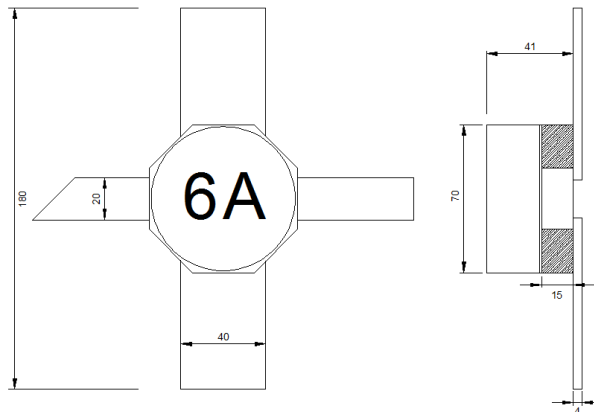
P_{IN}_P_{OUT}/Gain, PAE (18 GHz)



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

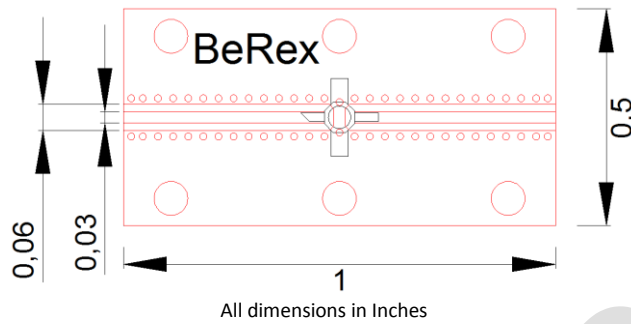
FREQ. [GHZ]	S11 [MAG]	S11 [ANG.]	S21 [MAG]	S21 [ANG.]	S12 [MAG]	S12 [ANG.]	S22 [MAG]	S22 [ANG.]
1	0.90	-60.76	11.78	133.20	0.029	54.41	0.48	-36.53
2	0.78	-105.90	9.06	99.27	0.045	33.13	0.41	-59.74
3	0.68	-142.83	7.14	71.51	0.055	17.59	0.35	-76.29
4	0.62	-176.75	5.78	46.88	0.062	4.08	0.30	-91.49
5	0.61	154.54	4.79	24.72	0.067	-7.08	0.27	-108.97
6	0.59	130.07	4.06	4.18	0.073	-17.33	0.27	-126.88
7	0.57	106.73	3.58	-15.67	0.081	-28.01	0.27	-139.27
8	0.58	81.95	3.20	-35.12	0.089	-38.65	0.26	-141.79
9	0.59	60.08	2.94	-54.62	0.099	-50.49	0.21	-147.95
10	0.63	36.00	2.73	-75.51	0.111	-64.55	0.11	-169.68
11	0.68	12.41	2.47	-96.75	0.119	-79.29	0.07	98.82
12	0.72	-8.35	2.21	-117.31	0.125	-94.00	0.13	58.07
13	0.75	-27.14	2.01	-137.10	0.130	-108.47	0.14	43.21
14	0.76	-47.14	1.85	-157.75	0.140	-123.66	0.10	14.57
15	0.80	-68.43	1.68	-179.26	0.144	-141.90	0.15	-49.75
16	0.86	-90.92	1.49	-159.58	0.143	-159.60	0.31	-68.95
17	0.90	-112.82	1.31	-141.19	0.141	-174.96	0.45	-70.56
18	0.93	-127.84	1.16	-124.88	0.138	-171.07	0.53	-74.01
19	0.93	-132.78	1.04	-109.39	0.128	-156.10	0.53	-88.99
20	0.96	-134.05	0.91	-90.24	0.121	-141.47	0.51	-126.25
21	0.96	-137.60	0.72	-69.33	0.104	-122.78	0.60	-169.56
22	0.94	-158.04	0.55	-50.76	0.086	-107.35	0.75	-179.70
23	0.92	-164.01	0.46	-35.25	0.080	-93.18	0.83	-162.41
24	0.94	-127.13	0.41	-21.26	0.076	-80.62	0.83	-143.57
25	0.99	-105.00	0.42	-4.82	0.084	-65.84	0.76	-146.28
26	1.03	-102.73	0.44	-19.39	0.092	-45.71	0.66	-170.63

Package Outline Dimension

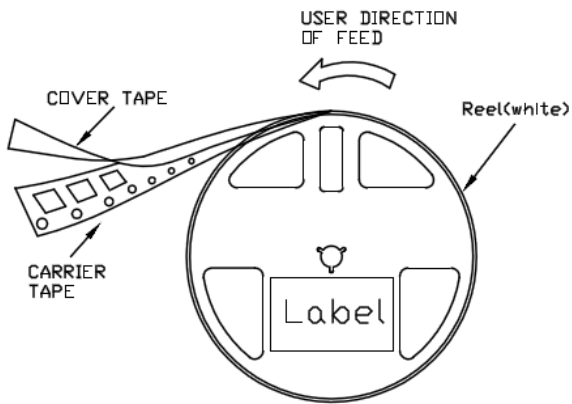


All dimensions in mils.

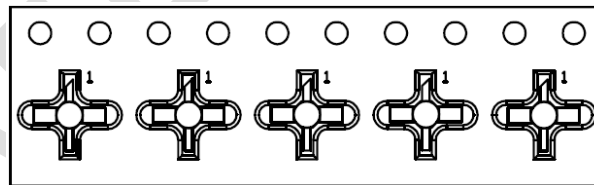
Suggested PCB layout



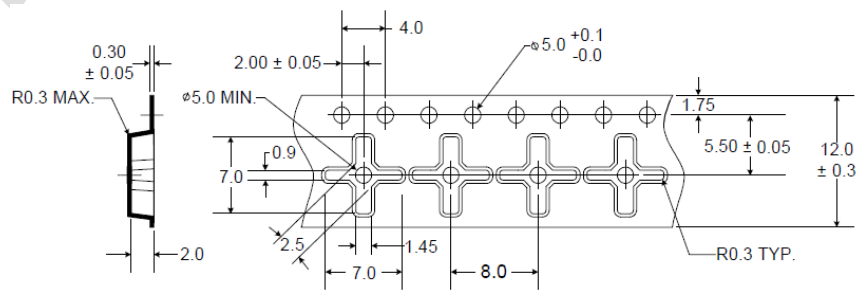
Tape and Reel Dimensions



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



User Direction of Feed



Dimensions in mm



Proper ESD procedures should be followed when handling this device.

DISCLAIMER

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