

SILICON MICROWAVE POWER TRANSISTOR

PRODUCT DATA SHEET

FEATURES:

- High Output Power
2 Watts @ 3.0 GHz
- High Gain Bandwidth Product
 $f_t = 6.0 \text{ GHz @ } I_C = 320 \text{ mA}$
- High Gain
 $G_{PE} = 9.0 \text{ dB @ } 3.0 \text{ GHz}$
- BeO packaging for low thermal resistance

PERFORMANCE DATA:

- Electrical Characteristics ($T_A = 25^\circ\text{C}$)

DESCRIPTION AND APPLICATIONS:

Bipolarics' BPT30E02 is a high performance silicon bipolar transistor intended for linear power applications at UHF frequencies of 3.0 GHz. Typical applications include amplifiers in aeronautical, maritime and personal communication applications. The BPT30E02 is bonded common emitter for linear applications. Linear output power of 2Watts can be achieved. BeO flange packaging makes this device excellent for industrial and military products. Uniformity and reliability are assured by the use of ion implanted junctions, ion implanted ballast resistors and gold metallization.

Absolute Maximum Ratings:

SYMBOL	PARAMETERS	RATING	UNITS
V_{CES}	Collector-Base Voltage	45	V
V_{CEO}	Collector-Emitter Voltage	20	V
V_{EBO}	Emitter-Base Voltage	3.5	V
I_C	Collector Current (instantaneous)	640	mA
T_J	Junction Temperature	200	$^\circ\text{C}$
T_{STG}	Storage Temperature	-65 to 200	$^\circ\text{C}$

θ_{JC}	Thermal Resistance	22	C/W
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SYMBOL	PARAMETERS & CONDITIONS $V_{CE} = 15\text{V}, I_C = 320 \text{ mA}, \text{Class A}, \text{ unless stated}$	UNIT	MIN.	TYP.	MAX.
P_{1dB}	Power output at 1 dB compression: $f = 3.0 \text{ GHz}$	dBm	32.5	33.5	
G_{PE}	Common Emitter Power Gain: $f = 3.0 \text{ GHz}$ $P_{OUT} = +32.5 \text{ dBm}$	dB	8.0	9.0	
η	Collector Efficiency Class A	%		30	
Ψ	Load Mismatch $P_{OUT} = +32.5 \text{ dBm}$ LOAD VSWR = $\infty:1$		∞		
C_{OB}	Output Capacitance: $f = 1 \text{ MHz}, I_E = 0$ $V_{CB} = 20\text{V}$	pF		3.5	5.0
h_{FE}	Forward Current Transfer Ratio: $V_{CE} = 8\text{V}, I_C = 200 \text{ mA}$		20	45	120
P_T	Total Power Dissipation	W		6	

BIPOLARICS, INC.

Part Number BPT30E02

SILICON MICROWAVE POWER TRANSISTOR

ORDERING INFORMATION:

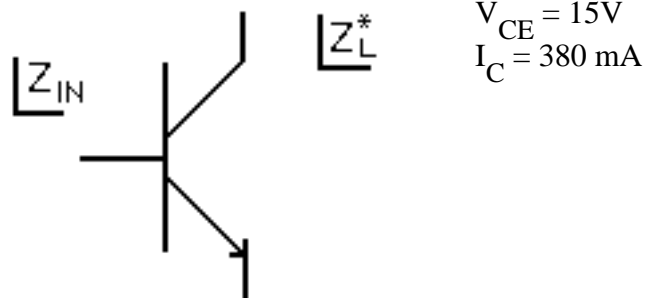
LARGE SIGNAL IMPEDANCE (COMMON EMITTER)

Part Number	Temp Range/App
BPT30E02	-55 to +125*

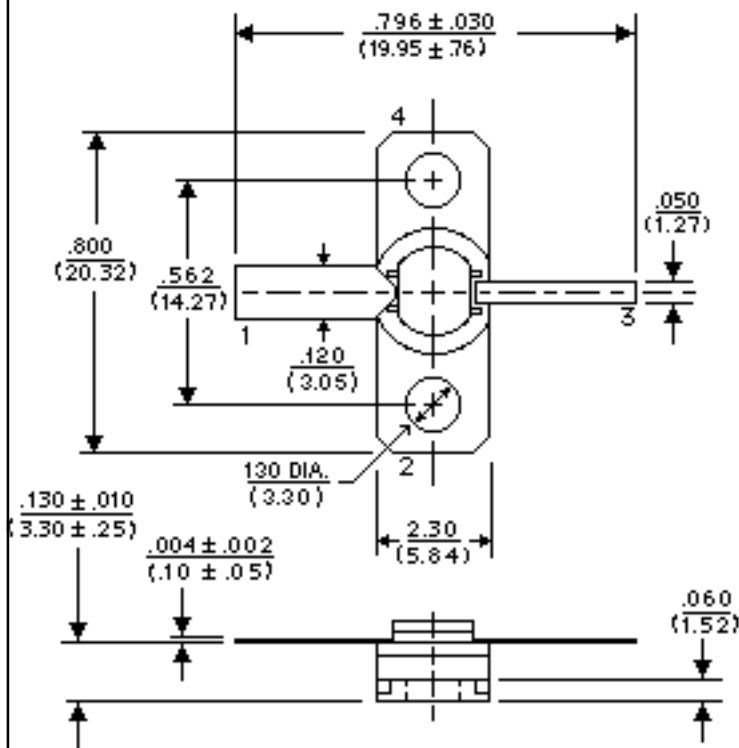
Frequency	Z_{IN}	Z^*_L
2.0 GHz	2.5+j25.5	4.9 - j7.0
2.3 GHz	2.5+j29.5	5.0 - j8.5

* Junction temperature must be maintained below 175°C

LEAD	1	2	3	4
23 Package	Base	Emitter	Collector	Emitter



23 Package: 0.230" BeO



NOTES: (unless otherwise specified)

1. Dimensions are $\frac{\text{in}}{\text{(mm)}}$
2. Tolerances:
in .xxx = $\pm .005$
mm .xx = $\pm .13$
3. All dimensions nominal; subject to change without notice

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