

## SILICON MICROWAVE POWER TRANSISTOR

### PRODUCT DATA SHEET

#### FEATURES:

- High Output Power  
4 Watts @ 4.2 GHz
- High Gain Bandwidth Product  
 $f_t = 6.0 \text{ GHz @ } I_C = 800 \text{ mA}$
- High Gain  
 $|S_{21}|^2 = 9.0 \text{ dB @ } 4.2 \text{ GHz}$



#### DESCRIPTION AND APPLICATIONS:

Bipolarics' BPT42E04 is a high performance silicon bipolar transistor intended for linear power applications at UHF frequencies to 4.2 GHz. Typical applications include amplifiers in aeronautical, maritime and personal communication applications. The BPT42E04 is bonded common emitter for linear applications. Linear output power of 4 Watts 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.

- BeO packaging for low thermal resistance

#### PERFORMANCE DATA:

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

#### Absolute Maximum Ratings:

SYMBOL	PARAMETERS	RATING	UNITS
$V_{CBO}$	Collector-Base Voltage	40	V
$V_{CEO}$	Collector-Emitter Voltage	20	V
$V_{EBO}$	Emitter-Base Voltage	3.0	V
$I_C$	Collector Current (instantaneous)	1.2	A
$T_J$	Junction Temperature	200	$^\circ\text{C}$
$T_{STG}$	Storage Temperature	-65 to 150	$^\circ\text{C}$
$\theta_{jc}$	Thermal Resistance	11	C/W

SYMBOL	PARAMETERS & CONDITIONS $V_{CE} = 15\text{V}, I_C = 800 \text{ mA}, \text{Class A}, \text{ unless stated}$	UNIT	MIN.	TYP.	MAX.
$P_{1dB}$	Power output at 1 dB compression: $f = 4.2 \text{ GHz}$	W		4.0	
$G_{1dB}$	Gain at 1dB compression: $f = 4.2 \text{ GHz}$	dB		8.0	
$\eta$	Collector Efficiency Class A	%		30	
$C_{CB}$	Collector Base Capacitance: $f = 1 \text{ MHz}, I_E = 0$	pF		8.0	
$h_{FE}$	Forward Current Transfer Ratio: $V_{CE} = 8\text{V}, I_C = 400 \text{ mA}$		20	60	100
$P_T$	Total Power Dissipation ( $T_C = 25^\circ\text{C}$ )	W		12.0	

**BIPOLARICS, INC.**

**Part Number BPT42E04**

**SILICON MICROWAVE POWER TRANSISTOR**

**ORDERING INFORMATION:**

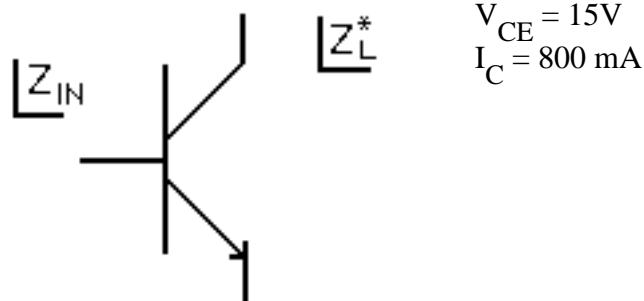
Part Number	Temp Range/App
BPT42E04	-55 to +125*

\* Junction temperature must be maintained below 175°C

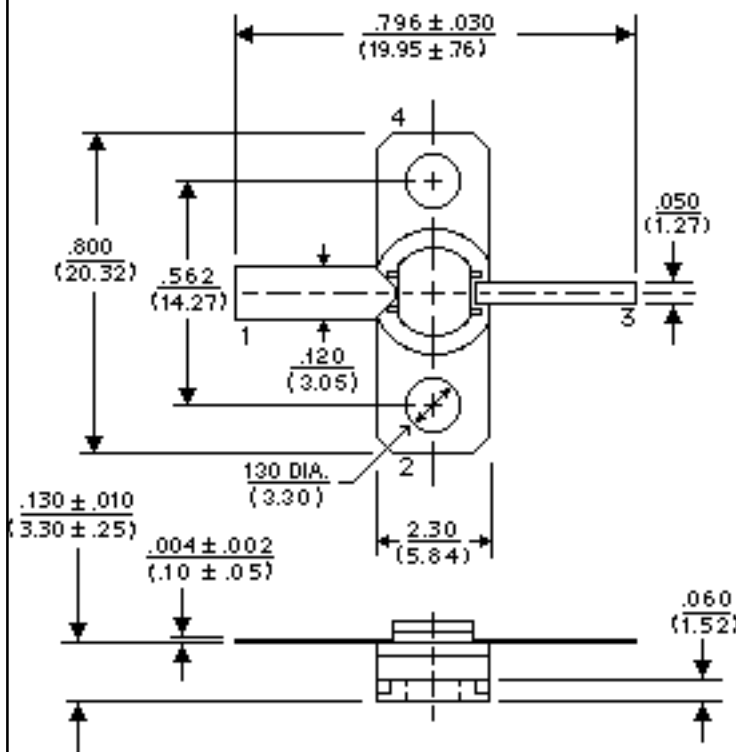
**LARGE SIGNAL IMPEDANCE  
(COMMON EMITTER)**

Frequency	$Z_{IN}$	$Z^*_L$
2.0 GHz	TBD	TBD
2.3 GHz	TBD	TBD

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 = ± .005  
 mm .xx = ± .13
3. All dimensions nominal; subject to change without notice

**BIPOLARICS, INC.**

602 Charcot Ave.

San Jose, CA 95131

Phone: (408) 456-0430 FAX: (408) 456-0431