

SILICON MICROWAVE POWER TRANSISTOR

PRODUCT DATA SHEET

FEATURES:

- High Output Power
5 Watts @ 4.2 GHz
- High Gain Bandwidth Product
 $f_t = 6.0 \text{ GHz @ } I_C = 1.0 \text{ A}$
- High Gain
 $|S_{21}|^2 = 9.0 \text{ dB @ } 4.2 \text{ GHz}$



DESCRIPTION AND APPLICATIONS:

Bipolarics' BPT42E05 is a high performance silicon bipolar transistor intended for linear power applications at UHF frequencies to 6 GHz. Typical applications include amplifiers in aeronautical, maritime and personal communication applications. The BPT42E05 is bonded common emitter for linear applications. Linear output power of 5 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) | 1.5 | A |
| $T_J^{(1)}$ | Junction Temperature | 200 | $^\circ\text{C}$ |
| T_{STG} | Storage Temperature | -65 to 150 | $^\circ\text{C}$ |

(1) Depends on package

| SYMBOL | PARAMETERS & CONDITIONS $V_{CE} = 15\text{V}, I_C = 1.0\text{A}, \text{Class A}, \text{unless stated}$ | UNIT | MIN. | TYP. | MAX. |
|------------------|---|------|------|------|------|
| $P_{1\text{dB}}$ | Power output at 1 dB compression: $f = 4.2 \text{ GHz}$ | W | | 5.0 | |
| $G_{1\text{dB}}$ | Gain at 1dB compression: $f = 4.2 \text{ GHz}$ | dB | | 8.0 | |
| η | Collector Efficiency Class A | % | | 30 | |
| C_{CB} | Collector Base Capacitance: $f = 1 \text{ MHz}, I_E = 0$ | pF | | 10.0 | |
| h_{FE} | Forward Current Transfer Ratio: $V_{CE} = 8\text{V}, I_C = 500 \text{ mA}$ | | 20 | 60 | 100 |
| P_T | Total Power Dissipation ($T_C = 25^\circ\text{C}$) | W | | 15.0 | |

BIPOLARICS, INC.

Part Number BPT42E05

SILICON MICROWAVE POWER TRANSISTOR

ORDERING INFORMATION:

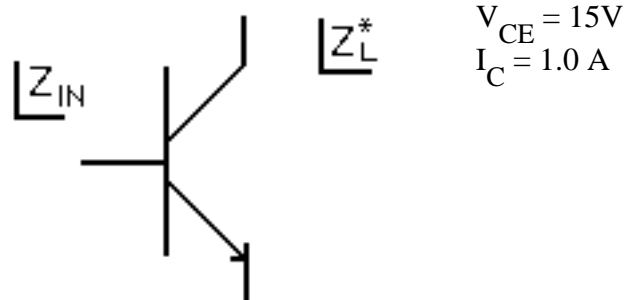
| Part Number | Temp Range/App |
|-------------|----------------|
| BPT42E05 | -55 to +125* |

* Junction temperature must be maintained below 175°C

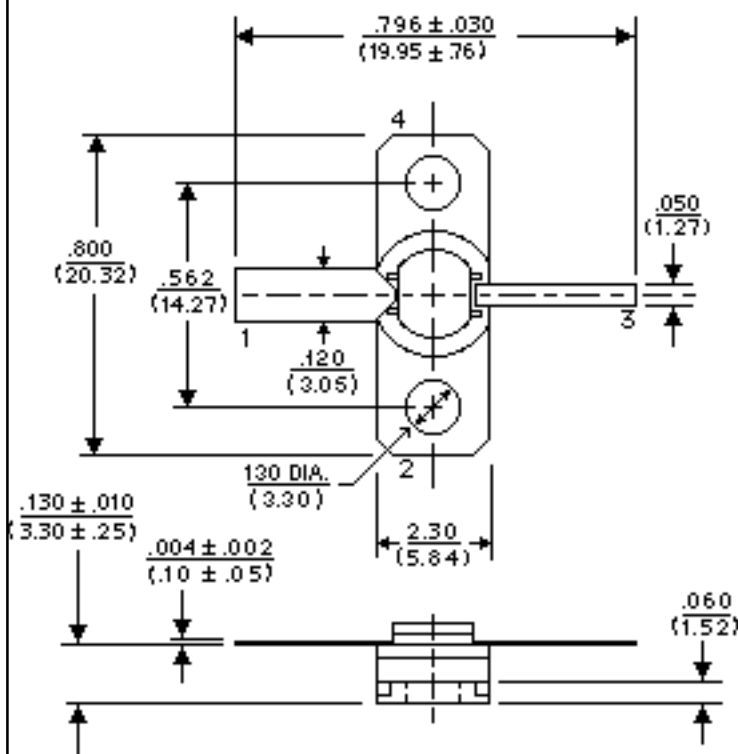
**LARGE SIGNAL IMPEDANCE
(COMMON EMITTER)**

| 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: 230 Mil 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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