

Wireless Bipolar Power Transistor, 60W 1450 - 1550 MHz

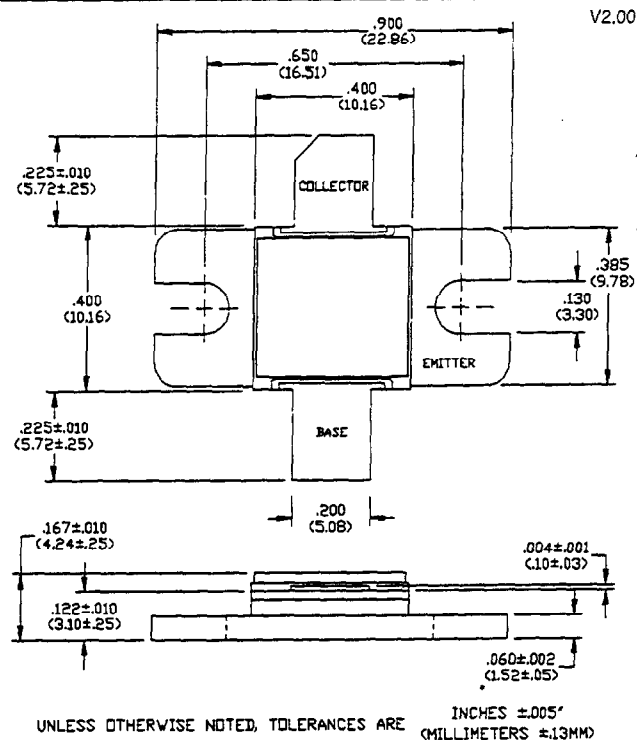
PH1516-60

Features

- Designed for Linear Amplifier Applications
- Class AB: -30 dBc Typ 3rd IMD at 60 Watts PEP
- Class A: +53 dBm Typ 3rd Order Intercept Point
- Common Emitter Configuration
- Internal Input Impedance Matching
- Diffused Emitter Ballasting

Absolute Maximum Ratings at 25°C

| Parameter | Symbol | Rating | Units |
|---------------------------|---------------|-------------|-------|
| Collector-Base Voltage | V_{CBO} | 65 | V |
| Collector-Emitter Voltage | V_{CES} | 65 | V |
| Emitter-Base Voltage | V_{EBO} | 3.0 | V |
| Collector Current | I_C | 10 | A |
| Power Dissipation | P_D | 116 | W |
| Junction Temperature | T_J | 200 | °C |
| Storage Temperature | T_{STG} | -55 to +150 | °C |
| Thermal Resistance | θ_{JC} | 1.5 | °C/W |

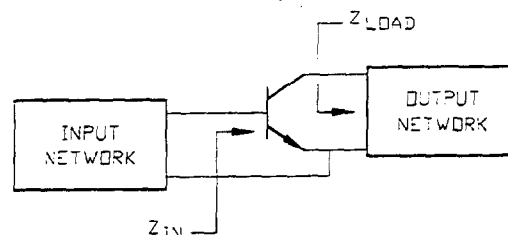


Electrical Characteristics at 25°C

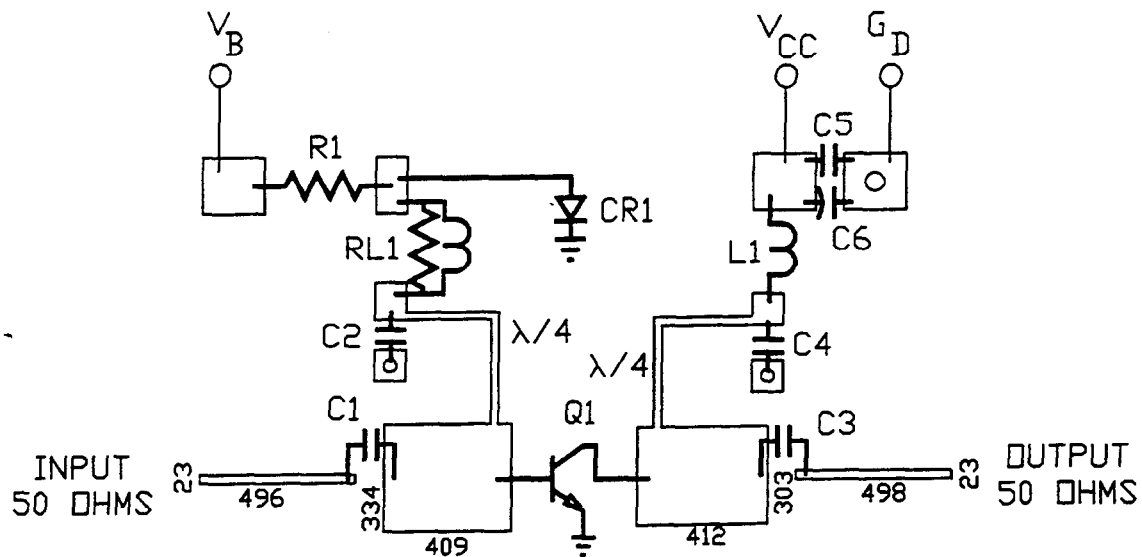
| Parameter | Symbol | Min | Max | Units | Test Conditions |
|-------------------------------------|------------------|-----|-------|-------|--|
| Collector-Emitter Breakdown Voltage | BV_{CES} | 60 | - | V | $I_C=40$ mA |
| Collector-Emitter Leakage Current | I_{CES} | - | 10 | mA | $V_{CE}=26$ V |
| Collector-Emitter Breakdown Voltage | BV_{CEO} | 24 | - | V | $I_C=40$ mA |
| Emitter-Base Breakdown Voltage | BV_{EBO} | 3.0 | - | V | $I_B=40$ mA |
| DC Forward Current Gain | h_{FE} | 15 | 120 | - | $V_{CE}=5$ V, $I_C=1$ A |
| Power Gain | G_P | 8 | - | dB | $V_{CC}=26$ V, $I_{CO}=50$ mA, $P_{OUT}=60$ W PEP F=1500 MHz, $\Delta F=100$ kHz |
| Collector Efficiency | η_C | 30 | - | % | $V_{CC}=26$ V, $I_{CO}=50$ mA, $P_{OUT}=60$ W PEP F=1500 MHz, $\Delta F=100$ kHz |
| Input Return Loss | RL | 10 | - | dB | $V_{CC}=26$ V, $I_{CO}=50$ mA, $P_{OUT}=60$ W PEP F=1500 MHz, $\Delta F=100$ kHz |
| Load Mismatch Tolerance | VSWR-T | - | 5.0:1 | - | $V_{CC}=26$ V, $I_{CO}=50$ mA, $P_{OUT}=60$ W PEP F=1500 MHz, $\Delta F=100$ kHz |
| 3rd Order IMD | IMD ₃ | - | -28 | dBc | $V_{CC}=26$ V, $I_{CO}=50$ mA, $P_{OUT}=60$ W PEP F=1500 MHz, $\Delta F=100$ kHz |

Typical Optimum Device Impedances

| F(MHz) | $Z_{IN}(\Omega)$ | $Z_{LOAD}(\Omega)$ |
|--------|------------------|--------------------|
| 1450 | $2.2 + j5.0$ | $3.0 - j3.8$ |
| 1500 | $2.7 + j4.5$ | $2.2 - j4.0$ |
| 1550 | $2.1 + j3.7$ | $1.5 - j4.1$ |



RF Test Fixture



ARTWORK DIMENSIONS IN MILS

PARTS LIST

| | | | | |
|-------------|----|----|----|--|
| C1 | C2 | C3 | C4 | 18pF ATC SIZE B CAPACITOR |
| C5 | | | | 5000pF CHIP CAPACITOR |
| C6 | | | | 50 VOLT 50 μ F ELECTROLYTIC CAPACITOR |
| CR1 | | | | 1N5417 DIODE |
| L1 | | | | 7 TURNS OF NO. 22 AWG ON .125" DIA |
| Q1 | | | | PH1516-60 |
| R1 | | | | 4.7 OHM 1/2 WATT RESISTOR |
| RL1 | | | | 10 TURNS OF NO. 26 AWG ON 3 OHM 1/4 WATT RESISTOR |
| BOARD TYPE: | | | | ROGERS 6010.5 .025" THICK, E _R = 10.5 |

Typical Broadband Performance Curves

