

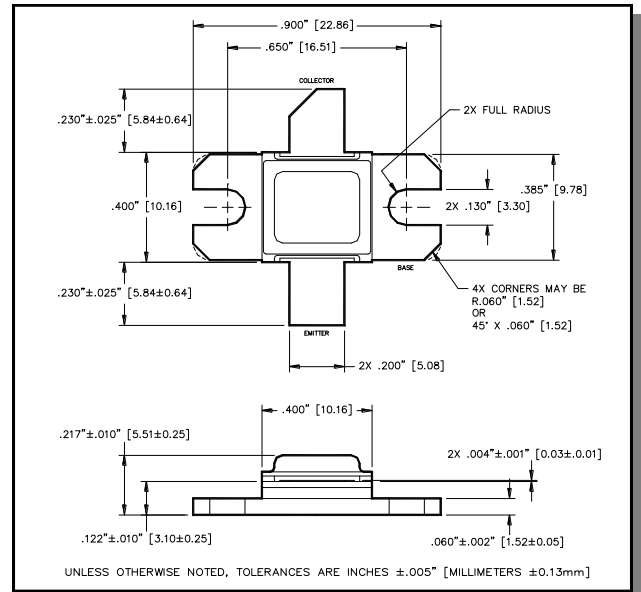
Radar Pulsed Power Transistor 100W, 1.2-1.4 GHz, 2ms Pulse, 20% Duty

Rev. V1

Features

- NPN silicon microwave power transistors
- Common base configuration
- Broadband Class C operation
- High efficiency inter-digitized geometry
- Diffused emitter ballasting resistors
- Gold metallization system
- Internal input and output impedance matching
- Hermetic metal/ceramic package
- RoHS compliant

Outline Drawing



Absolute Maximum Ratings at 25°C

| Parameter | Symbol | Rating | Units |
|---------------------------|-----------|-------------|-------|
| Collector-Emitter Voltage | V_{CES} | 75 | V |
| Emitter-Base Voltage | V_{EBO} | 3.0 | V |
| Collector Current (Peak) | I_C | 14.1 | A |
| Power Dissipation @ +25°C | P_{TOT} | 250 | W |
| Storage Temperature | T_{STG} | -65 to +200 | °C |
| Junction Temperature | T_J | 200 | °C |

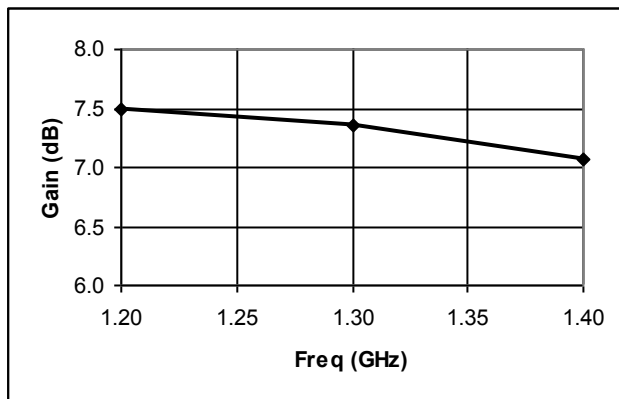
Electrical Specifications: $T_C = 25 \pm 5^\circ\text{C}$ (Room Ambient)

| Parameter | Test Conditions | Frequency | Symbol | Min | Max | Units |
|-------------------------------------|---|--------------------------------|--------------|-----|-------|-------|
| Collector-Emitter Breakdown Voltage | $I_C = 50\text{mA}$ | | BV_{CES} | 70 | - | V |
| Collector-Emitter Leakage Current | $V_{CE} = 28\text{V}$ | | I_{CES} | - | 10 | mA |
| Thermal Resistance | $V_{CC} = 28\text{V}$, $P_{in} = 25\text{W}$ | $F = 1.2, 1.3, 1.4\text{ GHz}$ | $R_{TH(JC)}$ | - | 0.7 | °C/W |
| Output Power | $V_{CC} = 28\text{V}$, $P_{in} = 25\text{W}$ | $F = 1.2, 1.3, 1.4\text{ GHz}$ | P_{OUT} | 100 | - | W |
| Power Gain | $V_{CC} = 28\text{V}$, $P_{in} = 25\text{W}$ | $F = 1.2, 1.3, 1.4\text{ GHz}$ | G_P | 6.0 | - | dB |
| Collector Efficiency | $V_{CC} = 28\text{V}$, $P_{in} = 25\text{W}$ | $F = 1.2, 1.3, 1.4\text{ GHz}$ | η_C | 52 | - | % |
| Input Return Loss | $V_{CC} = 28\text{V}$, $P_{in} = 25\text{W}$ | $F = 1.2, 1.3, 1.4\text{ GHz}$ | RL | - | -8 | dB |
| Load Mismatch Tolerance | $V_{CC} = 28\text{V}$, $P_{in} = 25\text{W}$ | $F = 1.2, 1.3, 1.4\text{ GHz}$ | VSWR-T | - | 3:1 | - |
| Load Mismatch Stability | $V_{CC} = 28\text{V}$, $P_{in} = 25\text{W}$ | $F = 1.2, 1.3, 1.4\text{ GHz}$ | VSWR-S | - | 1.5:1 | - |

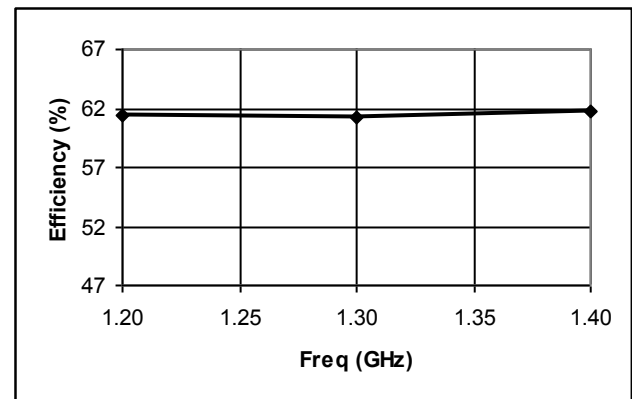
Typical RF Performance

| Freq. (GHz) | Pin (W) | Pout (W) | Gain (dB) | Ic (A) | Eff (%) | RL (dB) | VSWR-S (1.5:1) | VSWR-T (3:1) |
|-------------|---------|----------|-----------|--------|---------|---------|----------------|--------------|
| 1.2 | 25 | 140 | 7.48 | 16.3 | 61.4 | -14.9 | S | P |
| 1.3 | 25 | 136 | 7.35 | 15.8 | 61.3 | -13.5 | S | P |
| 1.4 | 25 | 127 | 7.07 | 14.7 | 61.8 | -13.9 | S | P |

Gain vs. Frequency

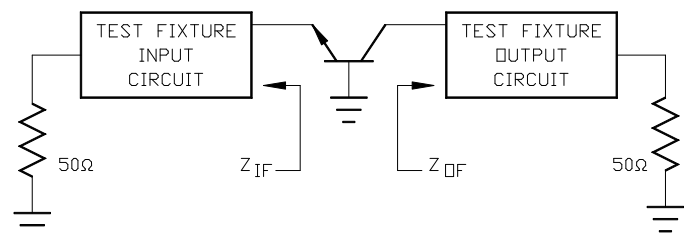


Collector Efficiency vs. Frequency

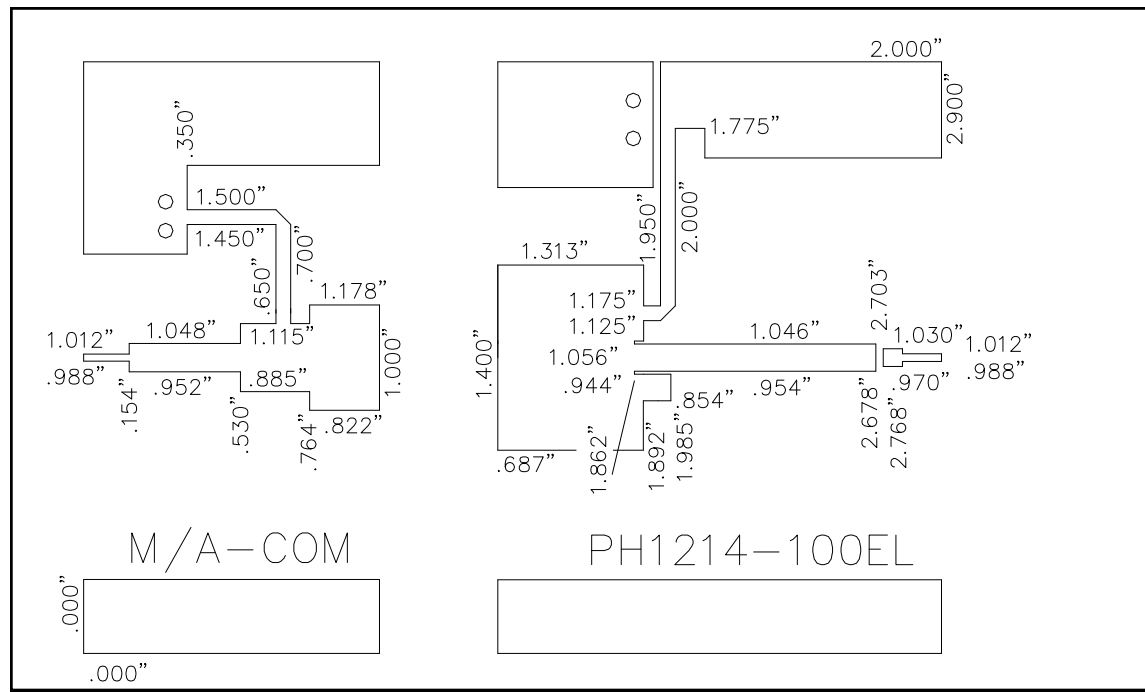


RF Test Fixture Impedance

| F (GHz) | Z _{IF} (Ω) | Z _{OF} (Ω) |
|---------|---------------------|---------------------|
| 1.2 | 2.6 - j3.8 | 3.0 - j2.7 |
| 1.3 | 3.0 - j3.4 | 2.4 - j2.6 |
| 1.4 | 3.4 - j3.1 | 1.9 - j2.5 |



Test Fixture Circuit Dimensions



Test Fixture Assembly

