

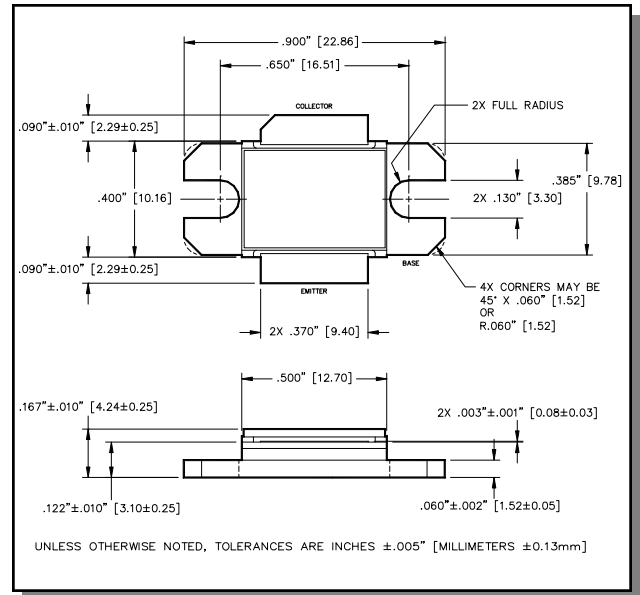
## Radar Pulsed Power Transistor 110W, 2.7-2.9 GHz, 100µs Pulse, 10% Duty

M/A-COM Products  
Released, 29 Jun 07

### 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 | $V_{CES}$ | 63          | V     |
| Emitter-Base Voltage      | $V_{EBO}$ | 3.0         | V     |
| Collector Current (Peak)  | $I_C$     | 8.0         | A     |
| Power Dissipation @ +25°C | $P_{TOT}$ | 330         | 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 | $I_C = 50\text{mA}$                           |                                | $BV_{CES}$   | 63  | -     | V     |
| Collector-Emitter Leakage Current   | $V_{CE} = 36\text{V}$                         |                                | $I_{CES}$    | -   | 7.5   | mA    |
| Thermal Resistance                  | $V_{CC} = 36\text{V}$ , $P_{in} = 23\text{W}$ | $F = 2.7, 2.8, 2.9\text{ GHz}$ | $R_{TH(JC)}$ | -   | 0.3   | °C/W  |
| Output Power                        | $V_{CC} = 36\text{V}$ , $P_{in} = 23\text{W}$ | $F = 2.7, 2.8, 2.9\text{ GHz}$ | $P_{OUT}$    | 110 | -     | W     |
| Power Gain                          | $V_{CC} = 36\text{V}$ , $P_{in} = 23\text{W}$ | $F = 2.7, 2.8, 2.9\text{ GHz}$ | $G_P$        | 6.8 | -     | dB    |
| Collector Efficiency                | $V_{CC} = 36\text{V}$ , $P_{in} = 23\text{W}$ | $F = 2.7, 2.8, 2.9\text{ GHz}$ | $\eta_C$     | 35  | -     | %     |
| Input Return Loss                   | $V_{CC} = 36\text{V}$ , $P_{in} = 23\text{W}$ | $F = 2.7, 2.8, 2.9\text{ GHz}$ | RL           | -   | -6    | dB    |
| Load Mismatch Tolerance             | $V_{CC} = 36\text{V}$ , $P_{in} = 23\text{W}$ | $F = 2.7, 2.8, 2.9\text{ GHz}$ | VSWR-T       | -   | 2:1   | -     |
| Load Mismatch Stability             | $V_{CC} = 36\text{V}$ , $P_{in} = 23\text{W}$ | $F = 2.7, 2.8, 2.9\text{ GHz}$ | VSWR-S       | -   | 1.5:1 | -     |

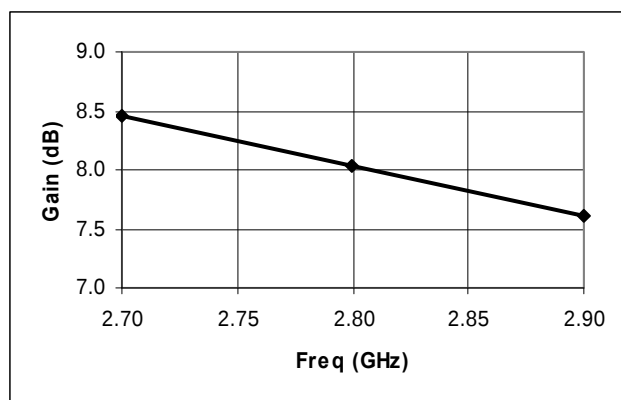
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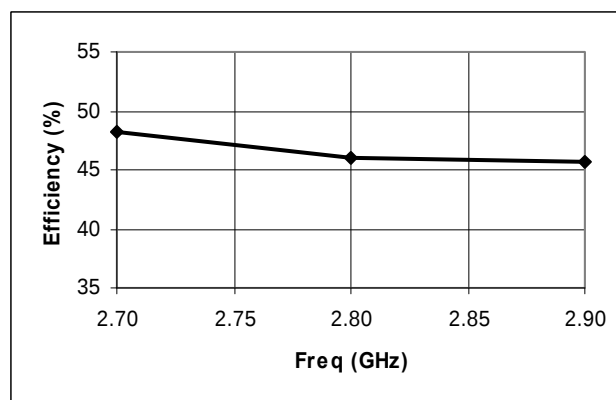
## Typical RF Performance

| Freq. (GHz) | Pin (W) | Pout (W) | Gain (dB) | Ic (A) | Eff (%) | RL (dB) | VSWR-S (1.5:1) | VSWR-T (2:1) |
|-------------|---------|----------|-----------|--------|---------|---------|----------------|--------------|
| 2.7         | 23      | 162      | 8.46      | 9.31   | 48.2    | -23.9   | S              | P            |
| 2.8         | 23      | 146      | 8.03      | 8.82   | 46.0    | -16.6   | S              | P            |
| 2.9         | 23      | 133      | 7.60      | 8.07   | 45.6    | -13.8   | S              | P            |

## Gain vs. Frequency

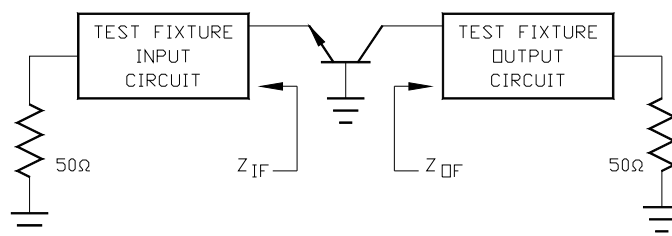


## Collector Efficiency vs. Frequency



## RF Test Fixture Impedance

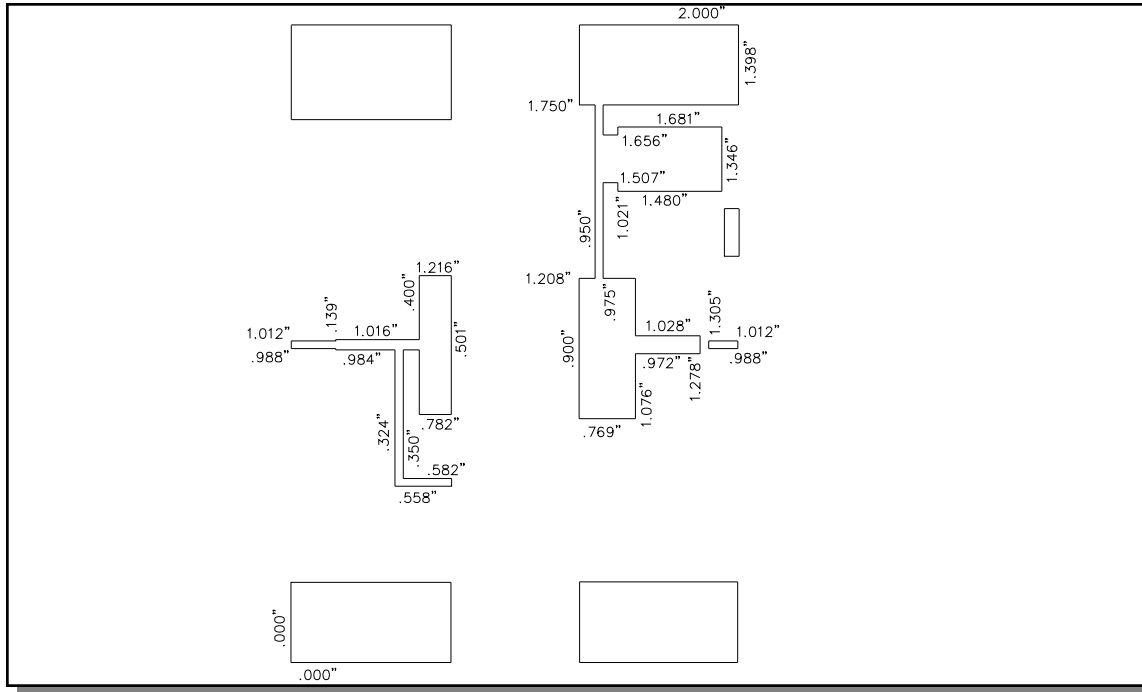
| F (GHz) | Z <sub>IF</sub> (Ω) | Z <sub>OF</sub> (Ω) |
|---------|---------------------|---------------------|
| 2.7     | 4.3 - j7.0          | 2.6 - j3.9          |
| 2.8     | 4.4 - j6.4          | 2.8 - j3.5          |
| 2.9     | 4.6 - j5.8          | 2.9 - j3.1          |



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## Test Fixture Circuit Dimensions



## Test Fixture Assembly

