

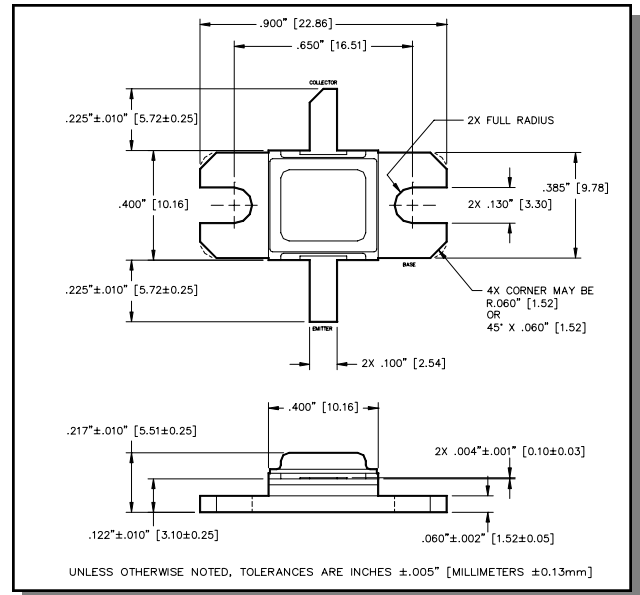
**Radar Pulsed Power Transistor**  
**80W, 1.2-1.4 GHz, 150µs Pulse, 10% Duty**

**M/A-COM Products**  
**Released, 30 May 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 | $V_{CES}$ | 70          | V     |
| Emitter-Base Voltage      | $V_{EBO}$ | 3.0         | V     |
| Collector Current (Peak)  | $I_C$     | 6.4         | A     |
| Power Dissipation @ +25°C | $P_{TOT}$ | 220         | 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 | $I_C = 35\text{mA}$                           |                                 | $BV_{CES}$   | 70  | -     | V     |
| Collector-Emitter Leakage Current   | $V_{CE} = 40\text{V}$                         |                                 | $I_{CES}$    | -   | 3.5   | mA    |
| Thermal Resistance                  | $V_{CC} = 40\text{V}$ , $P_{in} = 13\text{W}$ | $F = 1.2, 1.3, 1.4 \text{ GHz}$ | $R_{TH(JC)}$ | -   | 0.8   | °C/W  |
| Output Power                        | $V_{CC} = 40\text{V}$ , $P_{in} = 13\text{W}$ | $F = 1.2, 1.3, 1.4 \text{ GHz}$ | $P_{OUT}$    | 80  | -     | W     |
| Power Gain                          | $V_{CC} = 40\text{V}$ , $P_{in} = 13\text{W}$ | $F = 1.2, 1.3, 1.4 \text{ GHz}$ | $G_P$        | 7.9 | -     | dB    |
| Collector Efficiency                | $V_{CC} = 40\text{V}$ , $P_{in} = 13\text{W}$ | $F = 1.2, 1.3, 1.4 \text{ GHz}$ | $\eta_C$     | 50  | -     | %     |
| Input Return Loss                   | $V_{CC} = 40\text{V}$ , $P_{in} = 13\text{W}$ | $F = 1.2, 1.3, 1.4 \text{ GHz}$ | RL           | -   | -9    | dB    |
| Load Mismatch Tolerance             | $V_{CC} = 40\text{V}$ , $P_{in} = 13\text{W}$ | $F = 1.2, 1.3, 1.4 \text{ GHz}$ | VSWR-T       | -   | 3:1   | -     |
| Load Mismatch Stability             | $V_{CC} = 40\text{V}$ , $P_{in} = 13\text{W}$ | $F = 1.2, 1.3, 1.4 \text{ GHz}$ | VSWR-S       | -   | 1.5:1 | -     |

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**ADVANCED:** Data Sheets contain information regarding a product M/A-COM Technology Solutions is considering for development. Performance is based on target specifications, simulated results, and/or prototype measurements. Commitment to develop is not guaranteed.

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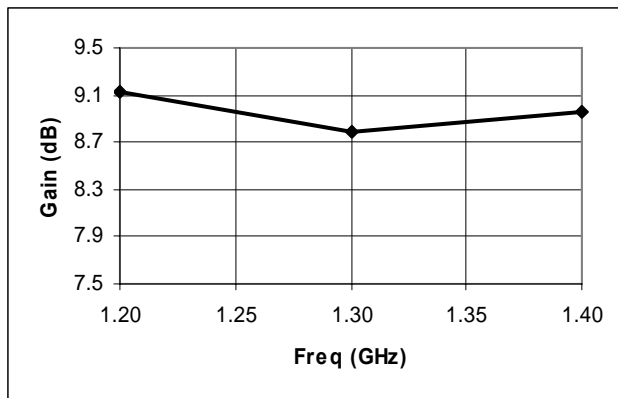
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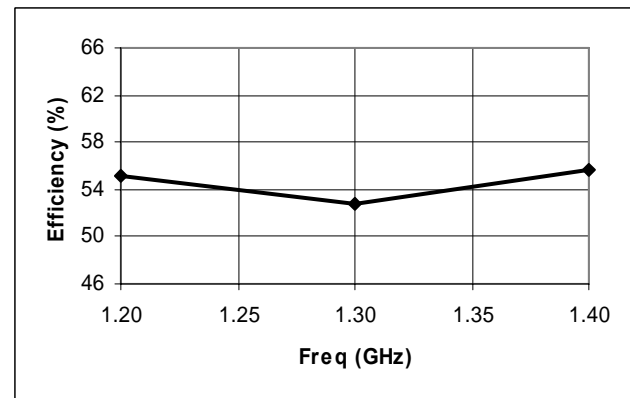
## Typical RF Performance

| Freq. (GHz) | Pin (W) | Pout (W) | Gain (dB) | Ic (A) | Eff (%) | RL (dB) | VSWR-S (1.5:1) | VSWR-T (3:1) |
|-------------|---------|----------|-----------|--------|---------|---------|----------------|--------------|
| 1.2         | 13      | 106      | 9.13      | 4.83   | 55.1    | -15.4   | S              | P            |
| 1.3         | 13      | 98       | 8.78      | 4.66   | 52.7    | -15.5   | S              | P            |
| 1.4         | 13      | 102      | 8.96      | 4.61   | 55.6    | -14.9   | 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) |
|---------|---------------------|---------------------|
| 1.2     | 9.4 - j4.5          | 7.0 - j2.8          |
| 1.3     | 8.3 - j2.8          | 4.5 - j3.2          |
| 1.4     | 7.9 - j1.3          | 3.0 + j2.1          |

