

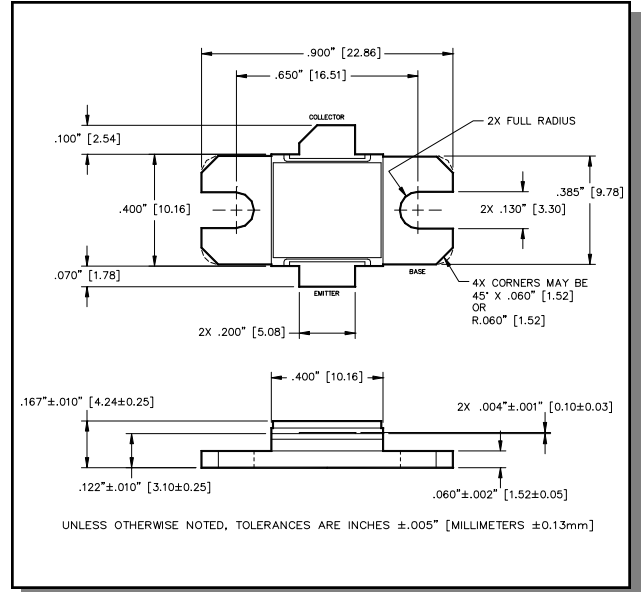
**Radar Pulsed Power Transistor**  
**65W, 3.1-3.5 GHz, 100µs Pulse, 10% Duty**

**M/A-COM Products**  
**Released, 10 Aug 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 | $V_{CES}$ | 65          | V     |
| Emitter-Base Voltage      | $V_{EBO}$ | 3.0         | V     |
| Collector Current (Peak)  | $I_C$     | 7.7         | A     |
| Power Dissipation @ +25°C | $P_{TOT}$ | 350         | 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 | $I_C = 25\text{mA}$                            |                                | $BV_{CES}$   | 65  | -    | V     |
| Collector-Emitter Leakage Current   | $V_{CE} = 36\text{V}$                          |                                | $I_{CES}$    | -   | 5.0  | mA    |
| Thermal Resistance                  | $V_{CC} = 36\text{V}$ , $P_{out} = 65\text{W}$ | $F = 3.1, 3.3, 3.5\text{ GHz}$ | $R_{TH(JC)}$ | -   | 0.5  | °C/W  |
| Output Power                        | $V_{CC} = 36\text{V}$ , $P_{out} = 65\text{W}$ | $F = 3.1, 3.3, 3.5\text{ GHz}$ | $P_{IN}$     | -   | 11.6 | W     |
| Power Gain                          | $V_{CC} = 36\text{V}$ , $P_{out} = 65\text{W}$ | $F = 3.1, 3.3, 3.5\text{ GHz}$ | $G_P$        | 75  | -    | dB    |
| Collector Efficiency                | $V_{CC} = 36\text{V}$ , $P_{out} = 65\text{W}$ | $F = 3.1, 3.3, 3.5\text{ GHz}$ | $\eta_C$     | 35  | -    | %     |
| Input Return Loss                   | $V_{CC} = 36\text{V}$ , $P_{out} = 65\text{W}$ | $F = 3.1, 3.3, 3.5\text{ GHz}$ | RL           | -   | -6   | dB    |
| Load Mismatch Tolerance             | $V_{CC} = 36\text{V}$ , $P_{out} = 65\text{W}$ | $F = 3.1, 3.3, 3.5\text{ GHz}$ | VSWR-T       | -   | 2:1  | -     |

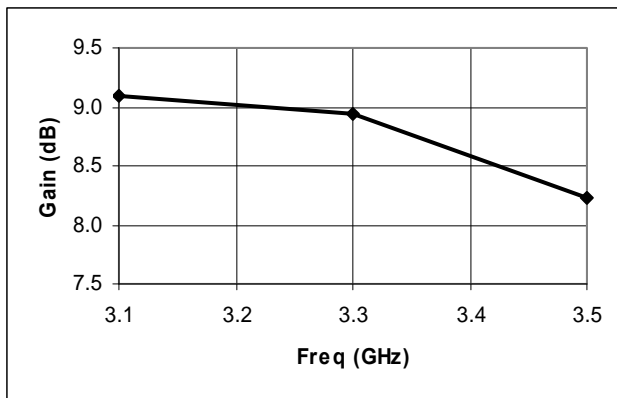
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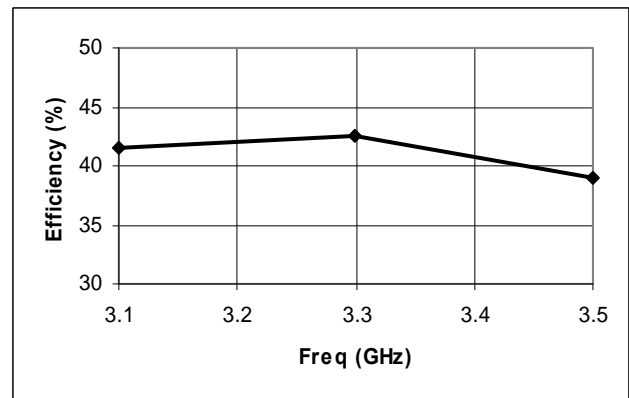
## Typical RF Performance

| Freq. (GHz) | Pin (W) | Pout (W) | Gain (dB) | Ic (A) | Eff (%) | RL (dB) | VSWR-T (2:1) |
|-------------|---------|----------|-----------|--------|---------|---------|--------------|
| 3.1         | 8.0     | 65       | 9.09      | 4.35   | 41.5    | -10.5   | P            |
| 3.3         | 8.3     | 65       | 8.95      | 4.24   | 42.6    | -9.8    | P            |
| 3.5         | 9.8     | 65       | 8.23      | 4.64   | 38.9    | -17.3   | P            |

## Gain vs. Frequency

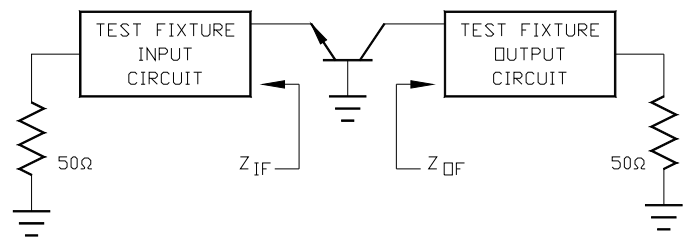


## Collector Efficiency vs. Frequency



## RF Test Fixture Impedance

| F (GHz) | Z <sub>IF</sub> (Ω) | Z <sub>OF</sub> (Ω) |
|---------|---------------------|---------------------|
| 3.1     | 8.9 - j11.2         | 5.2 - j11.0         |
| 3.3     | 8.7 - j8.6          | 4.2 - j8.8          |
| 3.5     | 8.6 - j6.0          | 4.7 - j7.0          |



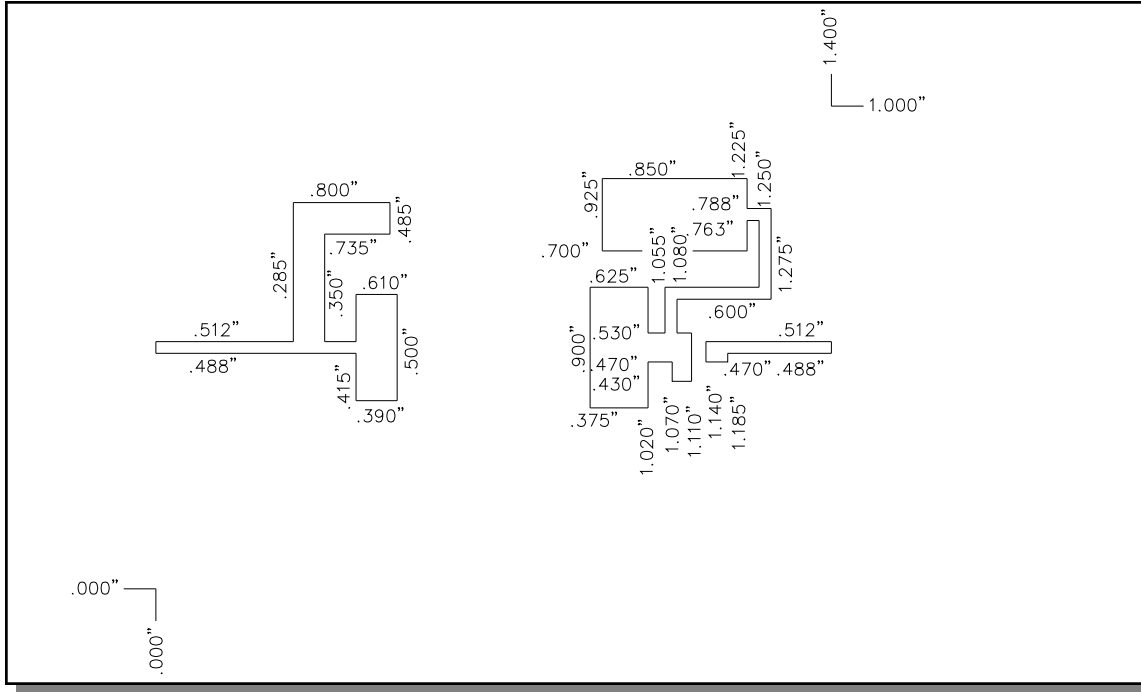
# PH3135-65M



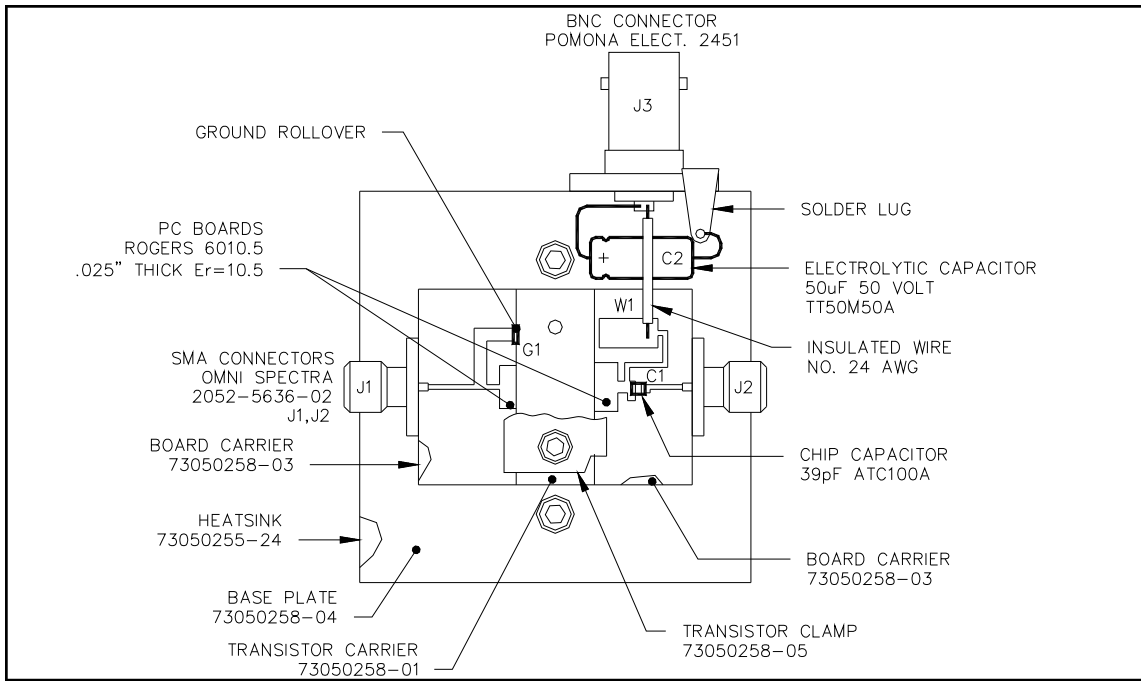
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## Test Fixture Circuit Dimensions



## Test Fixture Assembly



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