

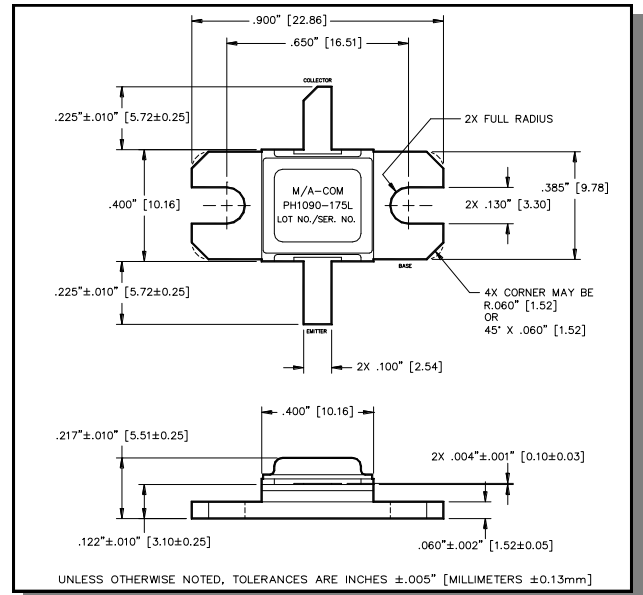
## Avionics Pulsed Power Transistor 175W, 1090 MHz, 250µs Pulse, 10% Duty

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 | $V_{CES}$ | 80          | V     |
| Emitter-Base Voltage      | $V_{EBO}$ | 3.0         | V     |
| Collector Current (Peak)  | $I_C$     | 10.5        | A     |
| Power Dissipation @ +25°C | $P_{TOT}$ | 375         | 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 )

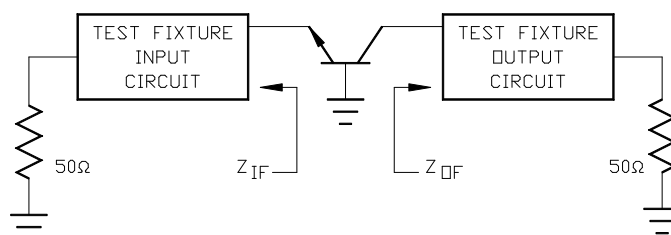
| Parameter                           | Test Conditions                               | Frequency             | Symbol       | Min | Max   | Units |
|-------------------------------------|---|-----------------------|--------------|-----|-------|-------|
| Collector-Emitter Breakdown Voltage | $I_C = 125\text{mA}$                          |                       | $BV_{CES}$   | 80  | -     | V     |
| Collector-Emitter Leakage Current   | $V_{CE} = 45\text{V}$                         |                       | $I_{CES}$    | -   | 12.5  | mA    |
| Thermal Resistance                  | $V_{CC} = 45\text{V}$ , $P_{in} = 26\text{W}$ | $F = 1090\text{ MHz}$ | $R_{TH(JC)}$ | -   | 0.4   | °C/W  |
| Output Power                        | $V_{CC} = 45\text{V}$ , $P_{in} = 26\text{W}$ | $F = 1090\text{ MHz}$ | $P_{OUT}$    | 175 | -     | W     |
| Power Gain                          | $V_{CC} = 45\text{V}$ , $P_{in} = 26\text{W}$ | $F = 1090\text{ MHz}$ | $G_P$        | 8.3 | -     | dB    |
| Collector Efficiency                | $V_{CC} = 45\text{V}$ , $P_{in} = 26\text{W}$ | $F = 1090\text{ MHz}$ | $\eta_C$     | 55  | -     | %     |
| Input Return Loss                   | $V_{CC} = 45\text{V}$ , $P_{in} = 26\text{W}$ | $F = 1090\text{ MHz}$ | RL           | -   | -9    | dB    |
| Load Mismatch Tolerance             | $V_{CC} = 45\text{V}$ , $P_{in} = 26\text{W}$ | $F = 1090\text{ MHz}$ | VSWR-T       | -   | 3:1   | -     |
| Load Mismatch Stability             | $V_{CC} = 45\text{V}$ , $P_{in} = 26\text{W}$ | $F = 1090\text{ MHz}$ | VSWR-S       | -   | 1.5:1 | -     |

## Typical RF Performance

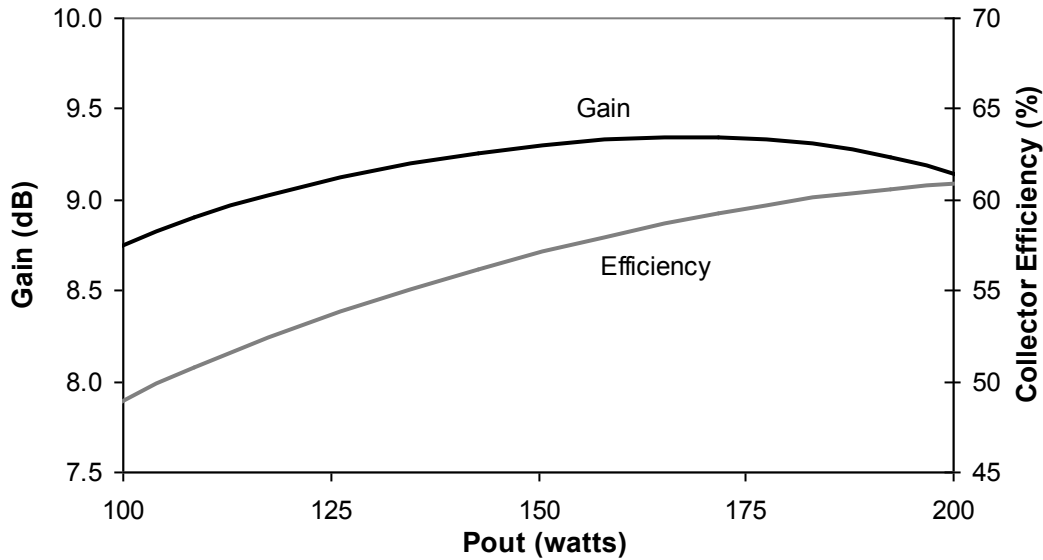
| Freq. (MHz) | Pin (W) | Pout (W) | Gain (dB) | Ic (A) | Eff (%) | RL (dB) | VSWR-S (1.5:1) | VSWR-T (3:1) |
|-------------|---------|----------|-----------|--------|---------|---------|----------------|--------------|
| 1090        | 26.0    | 188      | 8.58      | 7.16   | 58.3    | -16.0   | S              | P            |

## RF Test Fixture Impedance

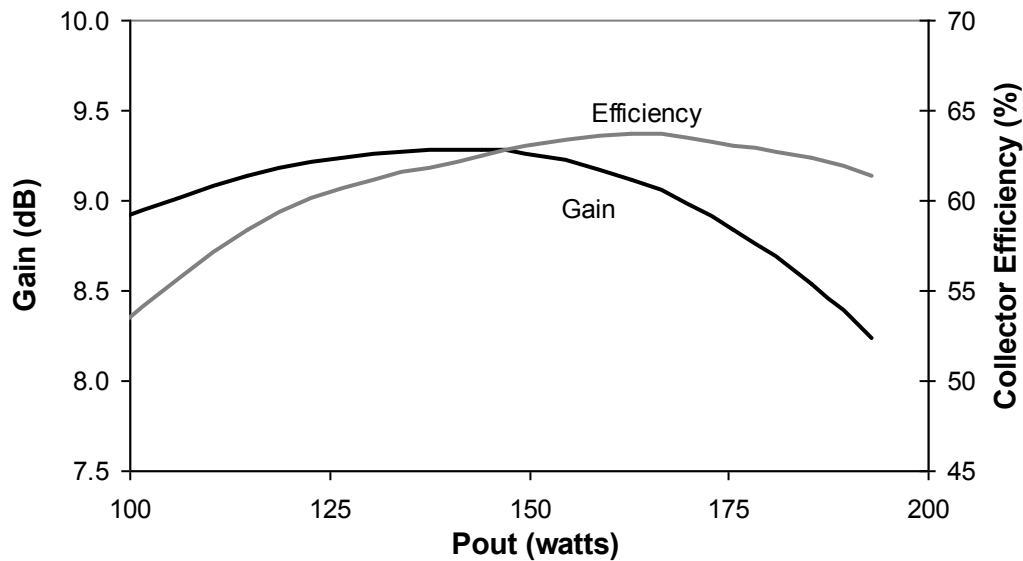
| F (MHz) | Z <sub>IF</sub> (Ω) | Z <sub>OF</sub> (Ω) |
|---------|---------------------|---------------------|
| 1030    | 3.4 - j5.6          | 2.3 - j2.2          |
| 1090    | 3.2 - j5.1          | 2.3 - j1.7          |



**RF Power Transfer Curve**  
 1030 MHz, Gain & Efficiency vs. Output Power



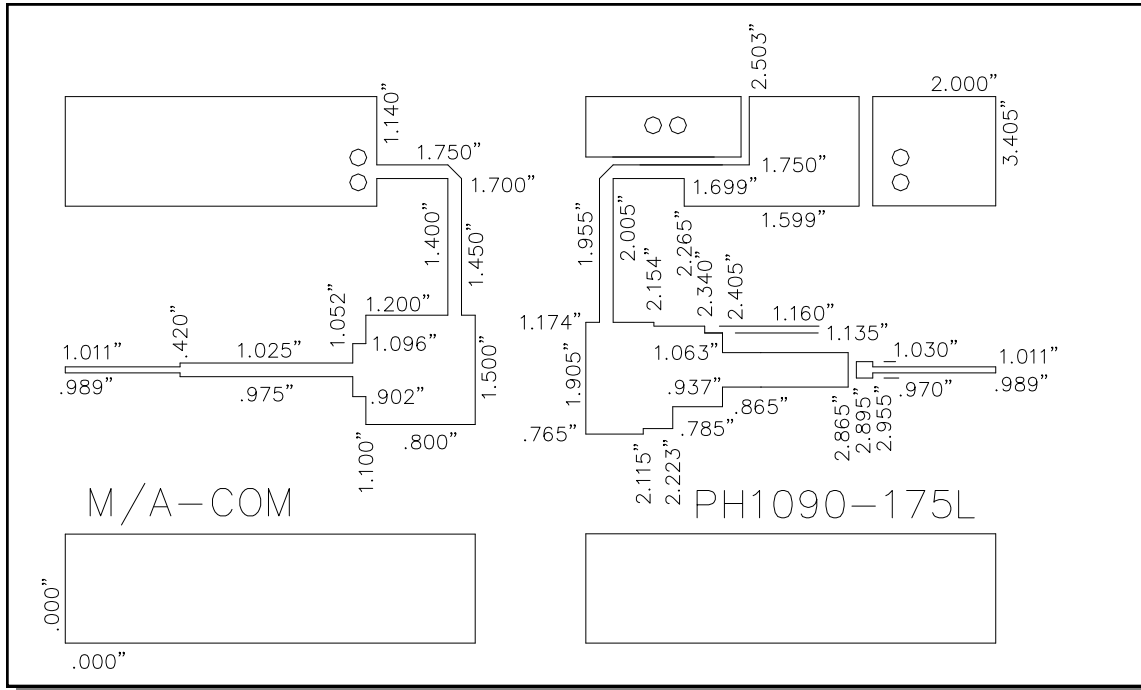
**RF Power Transfer Curve**  
 1090 MHz, Gain & Efficiency vs. Output Power



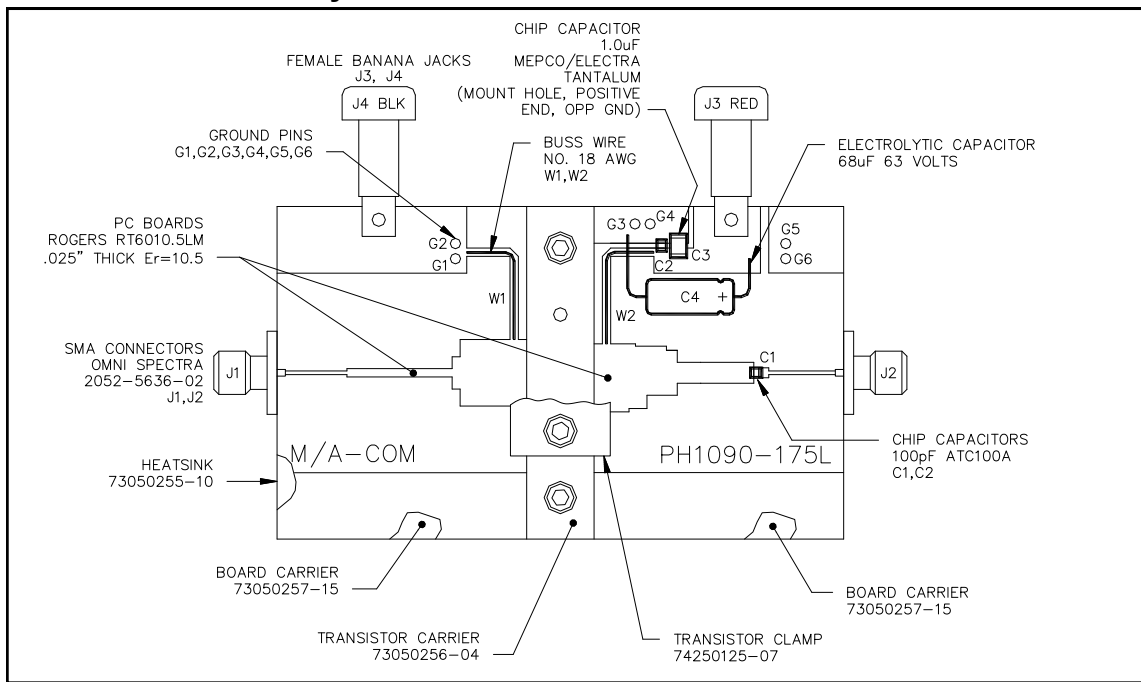
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### Test Fixture Circuit Dimensions



### Test Fixture Assembly



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