

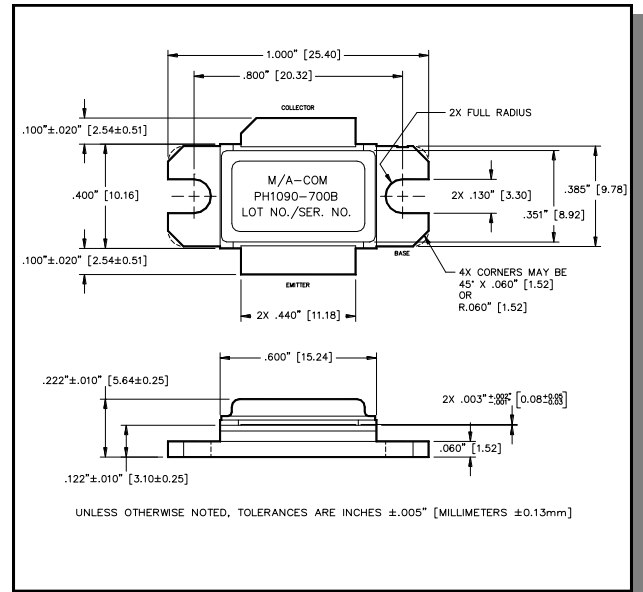
Avionics Pulsed Power Transistor 700W, 1030-1090 MHz, 32μs Pulse, 2% Duty

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 | 70 | A |
| Power Dissipation @ +25°C | P_{TOT} | 2.9 | kW |
| 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)

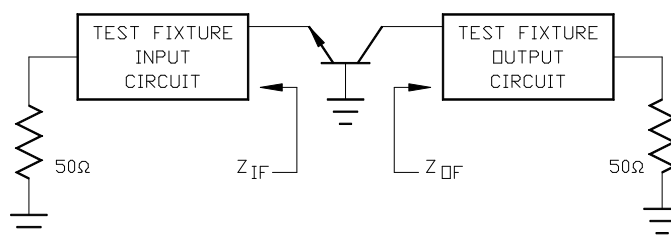
| Parameter | Test Conditions | Frequency | Symbol | Min | Max | Units |
|-------------------------------------|---|-----------------------------|--------------|-----|-------|-------|
| Collector-Emitter Breakdown Voltage | $I_C = 250\text{mA}$ | | BV_{CES} | 80 | - | V |
| Collector-Emitter Leakage Current | $V_{CE} = 50\text{V}$ | | I_{CES} | - | 25 | mA |
| Thermal Resistance | $V_{CC} = 50\text{V}$, $P_{out} = 700\text{W}$ | $F = 1030, 1090\text{ MHz}$ | $R_{TH(JC)}$ | - | 0.06 | °C/W |
| Input Power | $V_{CC} = 50\text{V}$, $P_{out} = 700\text{W}$ | $F = 1030, 1090\text{ MHz}$ | P_{IN} | - | 125 | W |
| Power Gain | $V_{CC} = 50\text{V}$, $P_{out} = 700\text{W}$ | $F = 1030, 1090\text{ MHz}$ | G_P | 7.5 | - | dB |
| Collector Efficiency | $V_{CC} = 50\text{V}$, $P_{out} = 700\text{W}$ | $F = 1030, 1090\text{ MHz}$ | η_C | 50 | - | % |
| Input Return Loss | $V_{CC} = 50\text{V}$, $P_{out} = 700\text{W}$ | $F = 1030, 1090\text{ MHz}$ | RL | - | -10 | dB |
| Load Mismatch Tolerance | $V_{CC} = 50\text{V}$, $P_{out} = 700\text{W}$ | $F = 1030, 1090\text{ MHz}$ | VSWR-T | - | 5:1 | - |
| Load Mismatch Stability | $V_{CC} = 50\text{V}$, $P_{out} = 700\text{W}$ | $F = 1030, 1090\text{ MHz}$ | VSWR-S | - | 1.5:1 | - |

Typical RF Performance

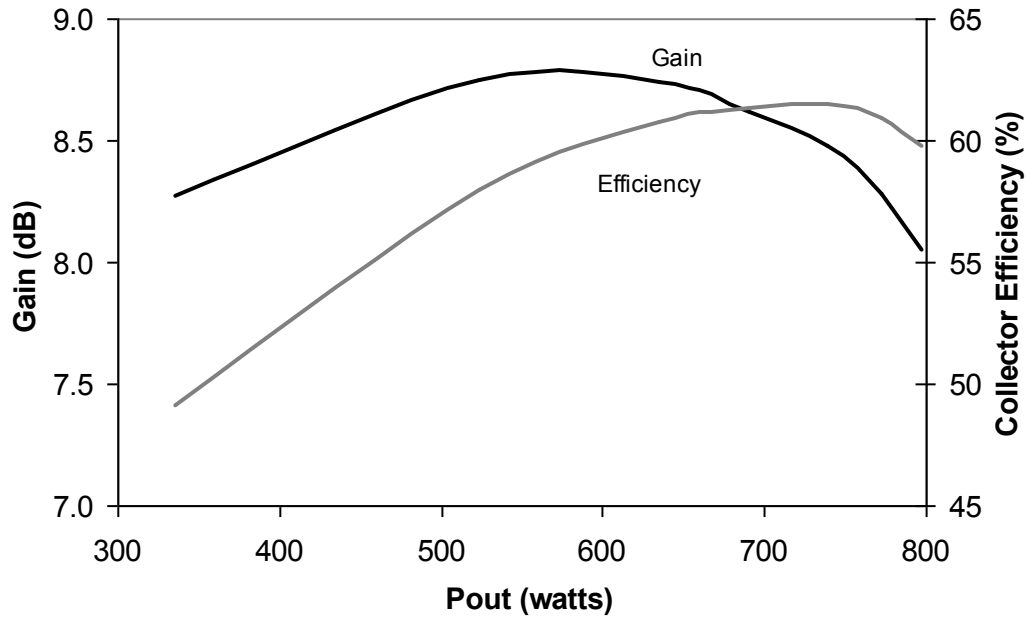
| Freq. (MHz) | Pin (W) | Pout (W) | Gain (dB) | Ic (A) | Eff (%) | RL (dB) | VSWR-S (1.5:1) | VSWR-T (5:1) |
|-------------|---------|----------|-----------|--------|---------|---------|----------------|--------------|
| 1030 | 96 | 700 | 8.66 | 25.4 | 55.3 | -17.5 | S | P |
| 1090 | 101 | 700 | 8.42 | 25.7 | 54.5 | -16.7 | S | P |

RF Test Fixture Impedance

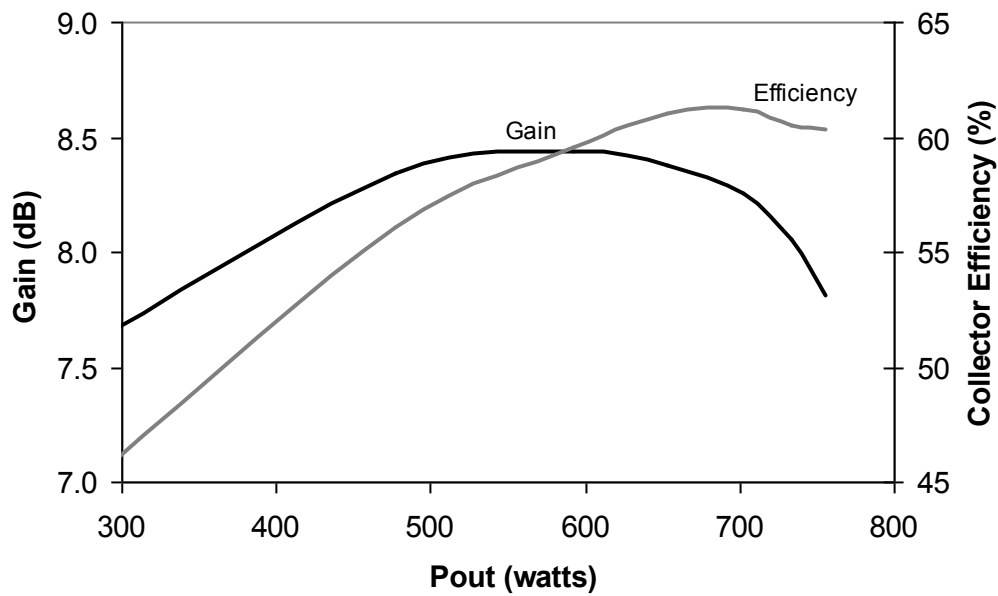
| F (MHz) | Z _{IF} (Ω) | Z _{OF} (Ω) |
|---------|---------------------|---------------------|
| 1030 | 1.1 - j1.4 | 1.2 - j0.8 |
| 1060 | 1.1 - j1.2 | 1.0 - j0.7 |
| 1090 | 1.0 - j1.0 | 0.8 - j0.7 |



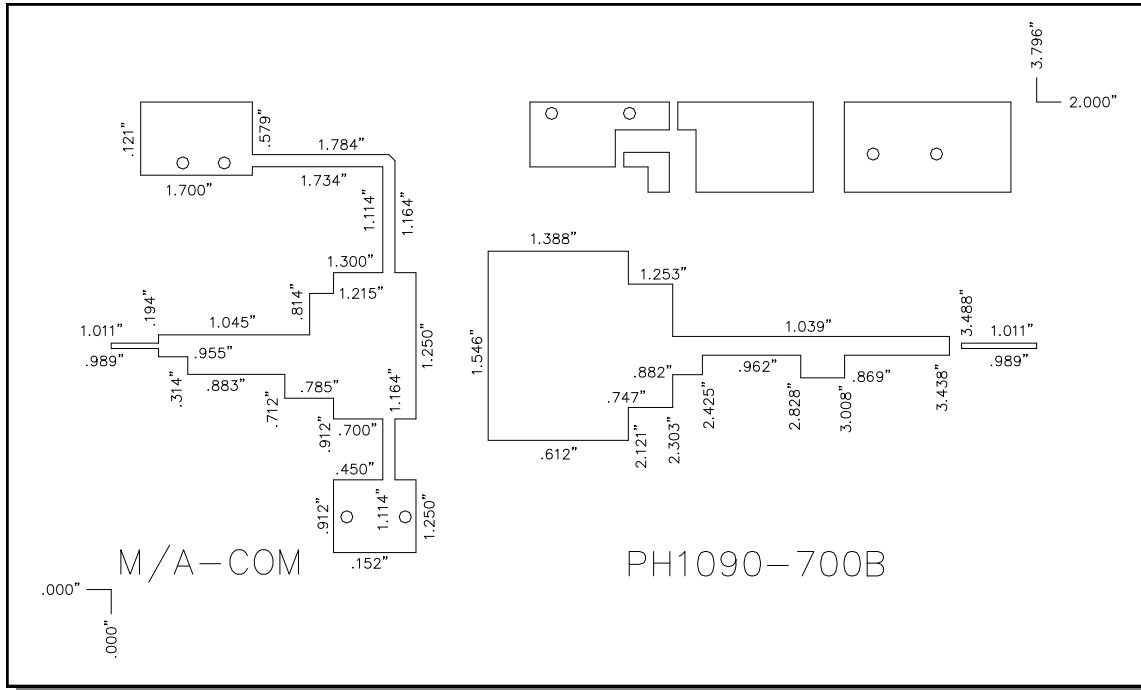
RF Power Transfer Curve 1030 MHz, Gain & Efficiency vs. Output Power



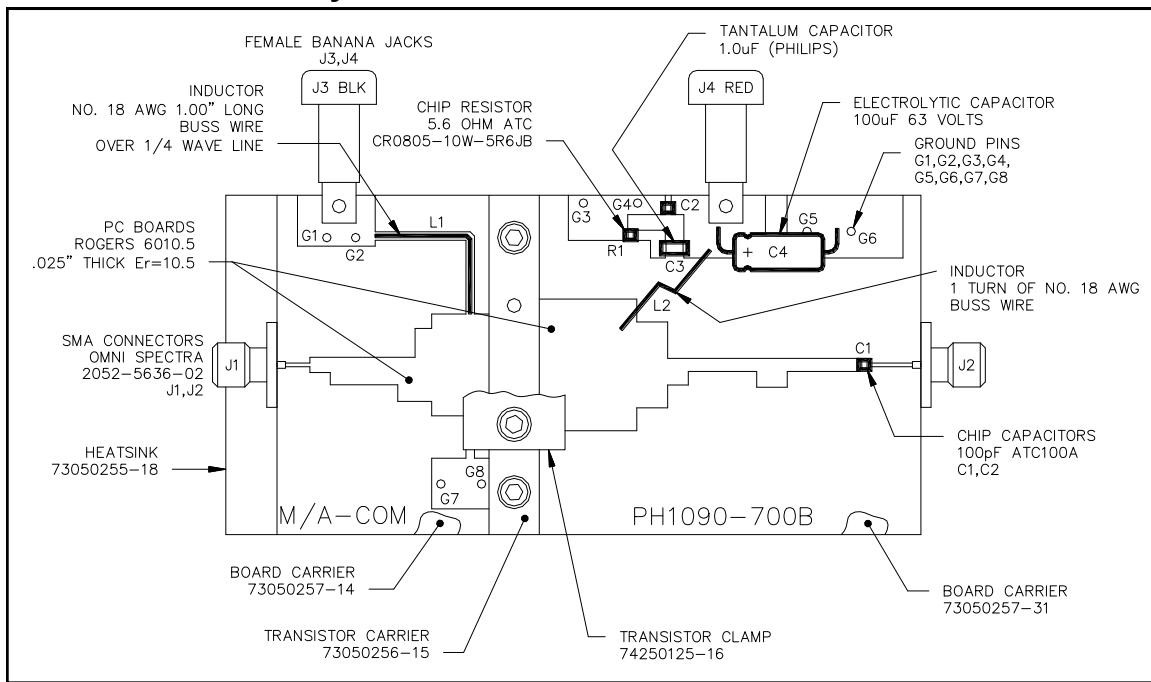
RF Power Transfer Curve 1090 MHz, Gain & Efficiency vs. Output Power



Test Fixture Circuit Dimensions



Test Fixture Assembly



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