GENERAL DESCRIPTION
The 0910-150M is an internally matched, COMMON BASE transistor capable of providing 150 Watts of pulsed RF output power at 150 µs pulse width, 5% duty factor across the band 890 to 1000 MHz. This hermetically solder-sealed transistor is specifically designed for P-Band radar applications. It utilizes gold metallization to provide high reliability.

CASE OUTLINE
55KT, STYLE 1

ABSOLUTE MAXIMUM RATINGS
Maximum Power Dissipation @ 25°C  400 Watts

Maximum Voltage and Current
BVces  Collector to Emitter Voltage  65 Volts
BVeb  Emitter to Base Voltage  3.5 Volts
Ic  Collector Current  12 Amps

Maximum Temperatures
Storage Temperature  -65 to +200°C
Operating Junction Temperature  +200°C

ELECTRICAL CHARACTERISTICS @ 25°C

<table>
<thead>
<tr>
<th>SYMBOL</th>
<th>CHARACTERISTICS</th>
<th>TEST CONDITIONS</th>
<th>MIN</th>
<th>TYP</th>
<th>MAX</th>
<th>UNITS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pout</td>
<td>Power Out</td>
<td>Freq = 890 – 1000 MHz</td>
<td>150</td>
<td>8.1</td>
<td>8.5</td>
<td>Watts</td>
</tr>
<tr>
<td>Pg</td>
<td>Power Gain</td>
<td>Vcc = 48 Volts</td>
<td>40</td>
<td>45</td>
<td>0.5</td>
<td>%</td>
</tr>
<tr>
<td>ηc</td>
<td>Collector Efficiency</td>
<td>Pin = 23 Watts</td>
<td>-9</td>
<td>-9</td>
<td>3:1</td>
<td>dB</td>
</tr>
<tr>
<td>Pd</td>
<td>Pulse Droop</td>
<td>Pulse Width = 150µs</td>
<td>40</td>
<td>45</td>
<td>0.5</td>
<td>dB</td>
</tr>
<tr>
<td>RI</td>
<td>Input Return loss</td>
<td>Duty Factor = 5%</td>
<td>-9</td>
<td>-9</td>
<td>3:1</td>
<td>dB</td>
</tr>
<tr>
<td>VSWR¹</td>
<td>Load Mismatch Tolerance</td>
<td></td>
<td>40</td>
<td>45</td>
<td>0.5</td>
<td>dB</td>
</tr>
<tr>
<td>VSWRs</td>
<td>Load Mismatch - Stability</td>
<td></td>
<td>40</td>
<td>45</td>
<td>0.5</td>
<td>dB</td>
</tr>
</tbody>
</table>

Note 1: Pulse condition of 150µsec, 5%.

<table>
<thead>
<tr>
<th>SYMBOL</th>
<th>CHARACTERISTICS</th>
<th>UNITS</th>
</tr>
</thead>
<tbody>
<tr>
<td>BVces</td>
<td>Collector to Emitter Breakdown</td>
<td>Volts</td>
</tr>
<tr>
<td>Ices</td>
<td>Collector to Emitter Leakage</td>
<td>mA</td>
</tr>
<tr>
<td>Iebo</td>
<td>Emitter to Base Leakage</td>
<td>mA</td>
</tr>
<tr>
<td>θje¹</td>
<td>Thermal Resistance</td>
<td>°C/W</td>
</tr>
</tbody>
</table>

Issue Mar 2005
Performance Curves –

**Pin vs. Pout**

- 890 MHz
- 937 MHz
- 1000 MHz

**Pin vs. Gain**

- 890 MHz
- 937 MHz
- 1000 MHz

**Pin vs. Efficiency**

- 890 MHz
- 937 MHz
- 1000 MHz

### Impedance Information

- Input Matching Circuit
- Output Matching Circuit

<table>
<thead>
<tr>
<th>Frequencies (MHz)</th>
<th>(Z_{Source} (\Omega))</th>
<th>(Z_{Load} (\Omega)^2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>890</td>
<td>4.0 - j4.2</td>
<td>1.85 – j3.2</td>
</tr>
<tr>
<td>937</td>
<td>4.0 - j3.5</td>
<td>1.97 – j3.0</td>
</tr>
<tr>
<td>1000</td>
<td>4.1 - j2.5</td>
<td>2.1 – j3.0</td>
</tr>
</tbody>
</table>

*Note 2: \(Z_{Load}\) exclusive of C1 and C4 on the test circuit*
Test Circuit

<table>
<thead>
<tr>
<th>Item</th>
<th>Value</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>C1, C4</td>
<td>82pF</td>
<td>Cap. Chip, MIC 100A</td>
</tr>
<tr>
<td>C7</td>
<td>1.0 μF</td>
<td>Ceramic Chip Cap (AVX Corp.)</td>
</tr>
<tr>
<td>C5</td>
<td>0.01 μF</td>
<td>Ceramic Chip Cap (AVX Corp.)</td>
</tr>
<tr>
<td>CS</td>
<td>4000μF</td>
<td>Cap. electrolytic 65V, Sotax 256</td>
</tr>
</tbody>
</table>

Board: RT/avoid 6010
E=10.2, 4x20mils

CASE SWG NO. OPJR2 0910–150M REV B

Scale 1:1 SHEET
0910–150M

Case Outline

DIM MILLIMETER TOL INCHES TOL
A 10.16 .13 .400 .005
B 20.32 .76 .800 .030
C 9.78 .13 .385 .005
D 12.70 .13 .500 .005
E 1.52R .13 .060R .005
F 1.52R .13 .060R .005
G 3.81 .13 .150 .005
H 5.84 MAX .230 MAX
I 1.52 .13 .060 .005
J 17.78 .13 .700 .005
K 22.86 .13 .900 .005
M 3.05 +.05 -.03 .120 .010
N 0.0B +.05 -.03 .003 -.001

STYLE 1:
PIN1 = COLLECTOR
2 = BASE
3 = Emitter

STYLE 2:
PIN1 = COLLECTOR
2 = Emitter
3 = BASE

ADVANCED POWER TECHNOLOGY INC. RESERVES THE RIGHT TO MAKE CHANGES WITHOUT FURTHER NOTICE. TO VERIFY THE CURRENT VERSION PLEASE CHECK OUR WEB SITE AT WWW.ADVANCEDPOWER.COM OR CONTACT OUR FACTORY DIRECT.
Advanced Power Technology Inc. 3000 Oakmead Village Drive, Santa Clara, CA 95051-0808 Tel. 408 / 986-8031 Fax 408 /869-2324