



# 0910 – 150M

150 Watts - 48 Volts, 150 $\mu$ s, 5%  
Radar 890 - 1000 MHz

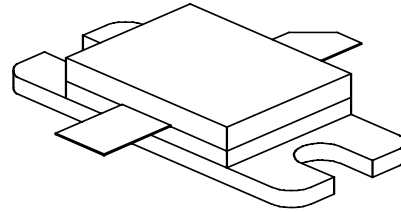
## GENERAL DESCRIPTION

The 0910-150M is an internally matched, COMMON BASE transistor capable of providing 150 Watts of pulsed RF output power at 150  $\mu$ s 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.

## ABSOLUTE MAXIMUM RATINGS

|                                    |                 |
|------------------------------------|-----------------|
| Maximum Power Dissipation @ 25°C   | 400 Watts       |
| <b>Maximum Voltage and Current</b> |                 |
| BVces Collector to Emitter Voltage | 65 Volts        |
| BVebo Emitter to Base Voltage      | 3.5 Volts       |
| Ic Collector Current               | 12 Amps         |
| <b>Maximum Temperatures</b>        |                 |
| Storage Temperature                | - 65 to + 200°C |
| Operating Junction Temperature     | + 200°C         |

## CASE OUTLINE 55KT, STYLE 1



## ELECTRICAL CHARACTERISTICS @ 25 °C

| SYMBOL            | CHARACTERISTICS           | TEST CONDITIONS           | MIN | TYP | MAX | UNITS |
|-------------------|---------------------------|---------------------------|-----|-----|-----|-------|
| Pout              | Power Out                 | Freq = 890 – 1000 MHz     | 150 |     | 210 | Watts |
| Pg                | Power Gain                | Vcc = 48 Volts            | 8.1 | 8.5 |     | dB    |
| $\eta$ c          | Collector Efficiency      | Pin = 23 Watts            | 40  | 45  |     | %     |
| Pd                | Pulse Droop               | Pulse Width = 150 $\mu$ s |     |     | 0.5 | dB    |
| RI                | Input Return loss         | Duty Factor = 5%          | -9  |     |     | dB    |
| VSWR <sup>1</sup> | Load Mismatch Tolerance   |                           |     |     | 3:1 |       |
| VSWRs             | Load Mismatch - Stability |                           |     |     | 2:1 |       |

Note 1: Pulse condition of 150 $\mu$ sec, 5%.

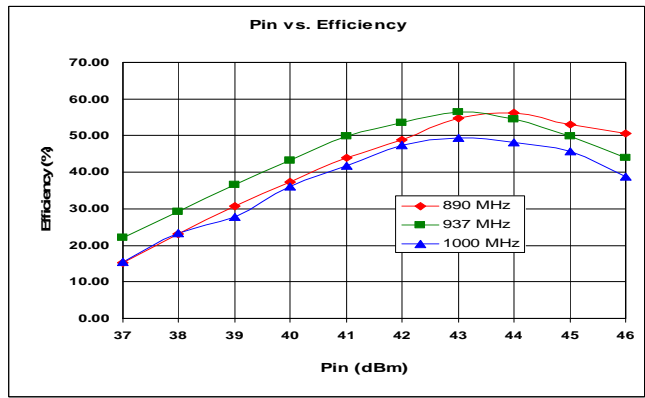
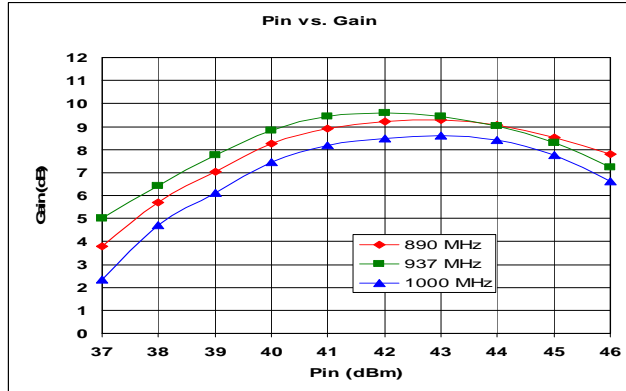
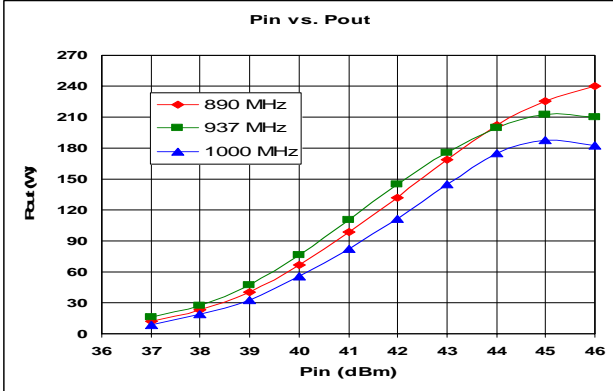
|                          |                                |                       |    |  |      |       |
|--------------------------|--------------------------------|-----------------------|----|--|------|-------|
| Bvces                    | Collector to Emitter Breakdown | Ic = 10 mA            | 65 |  |      | Volts |
| Ices                     | Collector to Emitter Leakage   | Vce = 50 Volts        |    |  | 10   | mA    |
| Iebo                     | Emitter to Base Leakage        | Vebo = 2.5 Volts      |    |  | 5.0  | mA    |
| $\theta$ jc <sup>1</sup> | Thermal Resistance             | Rated Pulse Condition |    |  | 0.48 | °C/W  |

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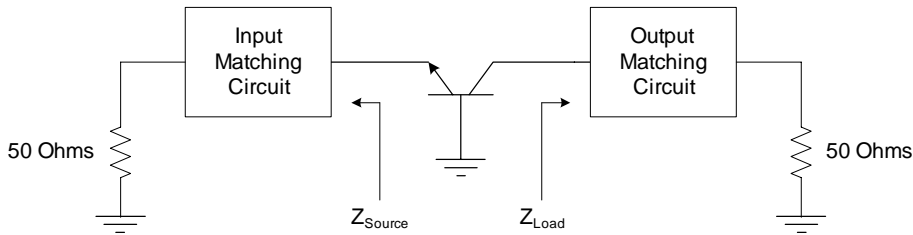


# 0910-150M

## Performance Curves –



## Impedance Information



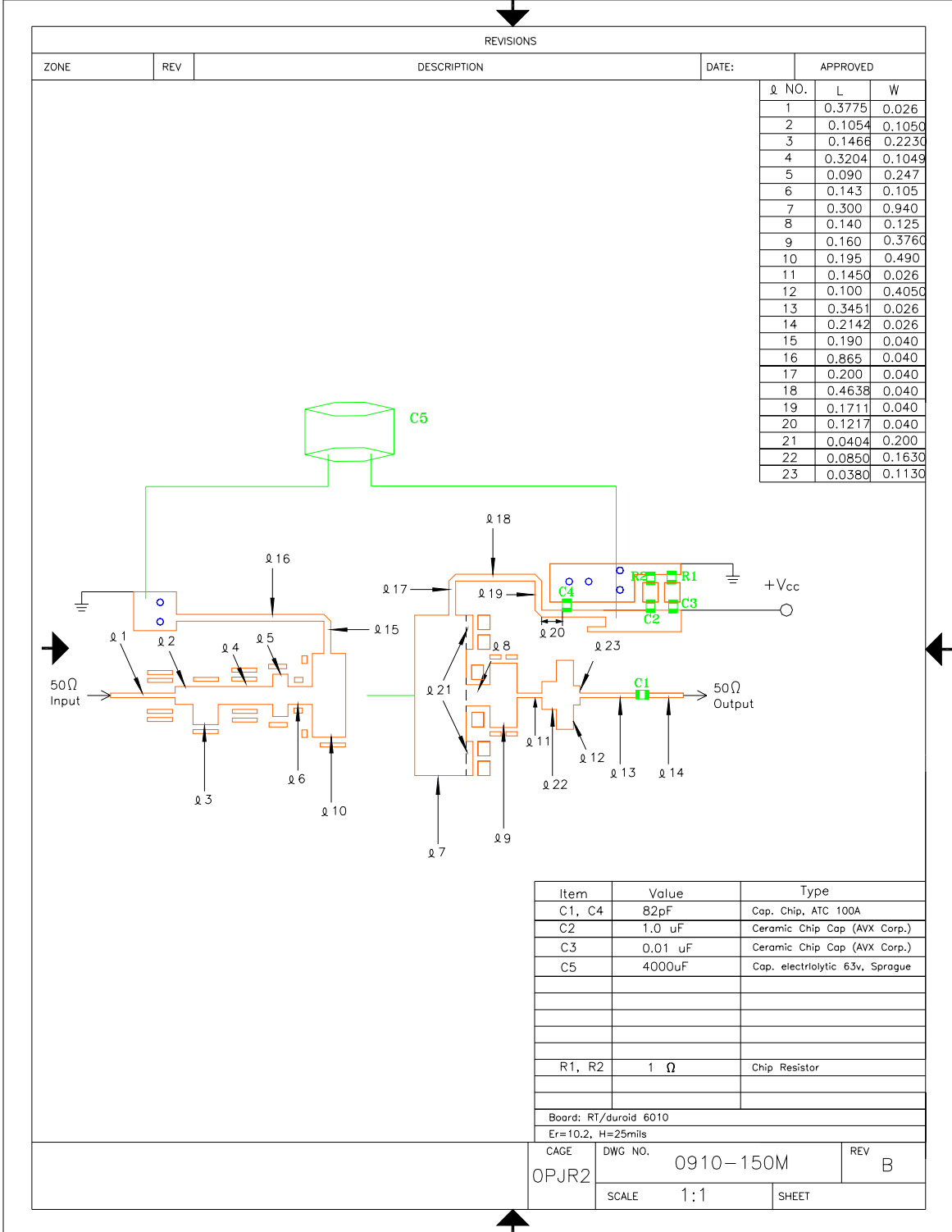
| Frequencies (MHz) | $Z_{Source} (\Omega)$ | $Z_{Load} (\Omega)^2$ |
|-------------------|-----------------------|-----------------------|
| 890               | 4.0 - j4.2            | 1.85 - j3.2           |
| 937               | 4.0 - j3.5            | 1.97 - j3.0           |
| 1000              | 4.1 - j2.5            | 2.1 - j3.0            |

Note 2:  $Z_{Load}$  exclusive of C1 and C4 on the test circuit



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## Test Circuit



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 Advanced Power Technology Inc. 3000 Oakmead Village Drive, Santa Clara, CA 95051-0808 Tel. 408 / 986-8031 Fax 408 / 869-2324



# 0910-150M

## Case Outline

| REVISIONS  |            |  |                  |  |     |            |       |        |      |   |       |     |      |      |   |       |     |      |      |   |      |     |      |      |   |       |     |      |      |   |       |     |       |      |   |       |     |       |      |   |      |     |      |      |   |      |     |      |     |   |      |     |      |      |   |       |     |      |      |   |       |     |      |      |   |      |     |      |      |   |      |  |      |  |
|--|------------|--|------------------|--|-----|------------|-------|--------|------|---|-------|-----|------|------|---|-------|-----|------|------|---|------|-----|------|------|---|-------|-----|------|------|---|-------|-----|-------|------|---|-------|-----|-------|------|---|------|-----|------|------|---|------|-----|------|-----|---|------|-----|------|------|---|-------|-----|------|------|---|-------|-----|------|------|---|------|-----|------|------|---|------|--|------|--|
| ZONE   | REV        | DESCRIPTION                                | DATE             | APPROVED                                     |     |            |       |        |      |   |       |     |      |      |   |       |     |      |      |   |      |     |      |      |   |       |     |      |      |   |       |     |       |      |   |       |     |       |      |   |      |     |      |      |   |      |     |      |     |   |      |     |      |      |   |       |     |      |      |   |       |     |      |      |   |      |     |      |      |   |      |  |      |  |
|  |            |  |                  |  |     |            |       |        |      |   |       |     |      |      |   |       |     |      |      |   |      |     |      |      |   |       |     |      |      |   |       |     |       |      |   |       |     |       |      |   |      |     |      |      |   |      |     |      |     |   |      |     |      |      |   |       |     |      |      |   |       |     |      |      |   |      |     |      |      |   |      |  |      |  |
| <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>DIM</th> <th>MILLIMETER</th> <th>± TOL</th> <th>INCHES</th> <th>±TOL</th> </tr> </thead> <tbody> <tr><td>A</td><td>10.16</td><td>.13</td><td>.400</td><td>.005</td></tr> <tr><td>B</td><td>20.32</td><td>.76</td><td>.800</td><td>.030</td></tr> <tr><td>C</td><td>9.78</td><td>.13</td><td>.385</td><td>.005</td></tr> <tr><td>D</td><td>12.70</td><td>.13</td><td>.500</td><td>.005</td></tr> <tr><td>E</td><td>1.52R</td><td>.13</td><td>.060R</td><td>.005</td></tr> <tr><td>F</td><td>1.52R</td><td>.13</td><td>.060R</td><td>.005</td></tr> <tr><td>G</td><td>3.81</td><td>.13</td><td>.150</td><td>.005</td></tr> <tr><td>H</td><td>5.84</td><td>MAX</td><td>.230</td><td>MAX</td></tr> <tr><td>I</td><td>1.52</td><td>.13</td><td>.060</td><td>.005</td></tr> <tr><td>J</td><td>17.78</td><td>.13</td><td>.700</td><td>.005</td></tr> <tr><td>K</td><td>22.86</td><td>.13</td><td>.900</td><td>.005</td></tr> <tr><td>M</td><td>3.05</td><td>.13</td><td>.120</td><td>.010</td></tr> <tr><td>N</td><td>0.08</td><td><math>\begin{matrix} +.05 \\ -.03 \end{matrix}</math></td><td>.003</td><td><math>\begin{matrix} +.002 \\ -.001 \end{matrix}</math></td></tr> </tbody> </table> |            |  |                  |  | 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 | .13 | .120 | .010 | N | 0.08 | $\begin{matrix} +.05 \\ -.03 \end{matrix}$ | .003 | $\begin{matrix} +.002 \\ -.001 \end{matrix}$ |
| 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       | .13  | .120             | .010   |     |            |       |        |      |   |       |     |      |      |   |       |     |      |      |   |      |     |      |      |   |       |     |      |      |   |       |     |       |      |   |       |     |       |      |   |      |     |      |      |   |      |     |      |     |   |      |     |      |      |   |       |     |      |      |   |       |     |      |      |   |      |     |      |      |   |      |  |      |  |
| N  | 0.08       | $\begin{matrix} +.05 \\ -.03 \end{matrix}$ | .003             | $\begin{matrix} +.002 \\ -.001 \end{matrix}$ |     |            |       |        |      |   |       |     |      |      |   |       |     |      |      |   |      |     |      |      |   |       |     |      |      |   |       |     |       |      |   |       |     |       |      |   |      |     |      |      |   |      |     |      |     |   |      |     |      |      |   |       |     |      |      |   |       |     |      |      |   |      |     |      |      |   |      |  |      |  |
| <p><b>STYLE 1:</b><br/>                 PIN1 = COLLECTOR<br/>                 2 = BASE<br/>                 3 = EMITTER</p> <p><b>STYLE 2:</b><br/>                 PIN1 = COLLECTOR<br/>                 2 = EMITTER<br/>                 3 = BASE</p>  |            |  |                  |  |     |            |       |        |      |   |       |     |      |      |   |       |     |      |      |   |      |     |      |      |   |       |     |      |      |   |       |     |       |      |   |       |     |       |      |   |      |     |      |      |   |      |     |      |     |   |      |     |      |      |   |       |     |      |      |   |       |     |      |      |   |      |     |      |      |   |      |  |      |  |
|  |            |  |                  |  |     |            |       |        |      |   |       |     |      |      |   |       |     |      |      |   |      |     |      |      |   |       |     |      |      |   |       |     |       |      |   |       |     |       |      |   |      |     |      |      |   |      |     |      |     |   |      |     |      |      |   |       |     |      |      |   |       |     |      |      |   |      |     |      |      |   |      |  |      |  |
|  |            | CAGE<br>0PJR2                              | DWG. NO.<br>55KT | REV<br>E                                     |     |            |       |        |      |   |       |     |      |      |   |       |     |      |      |   |      |     |      |      |   |       |     |      |      |   |       |     |       |      |   |       |     |       |      |   |      |     |      |      |   |      |     |      |     |   |      |     |      |      |   |       |     |      |      |   |       |     |      |      |   |      |     |      |      |   |      |  |      |  |
|  |            | SCALE<br>2/1                               | SHEET            |  |     |            |       |        |      |   |       |     |      |      |   |       |     |      |      |   |      |     |      |      |   |       |     |      |      |   |       |     |       |      |   |       |     |       |      |   |      |     |      |      |   |      |     |      |     |   |      |     |      |      |   |       |     |      |      |   |       |     |      |      |   |      |     |      |      |   |      |  |      |  |