Avionics Pulsed Power Transistor
350W, 1025-1150 MHz, 10µs Pulse, 1% Duty

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

Absolute Maximum Ratings at 25°C

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Symbol</th>
<th>Rating</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Collector-Emitter Voltage</td>
<td>VCES</td>
<td>65</td>
<td>V</td>
</tr>
<tr>
<td>Emitter-Base Voltage</td>
<td>VCEO</td>
<td>3.0</td>
<td>V</td>
</tr>
<tr>
<td>Collector Current (Peak)</td>
<td>IC</td>
<td>25</td>
<td>A</td>
</tr>
<tr>
<td>Power Dissipation @ +25°C</td>
<td>PTOT</td>
<td>1.1</td>
<td>kW</td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>TSTG</td>
<td>-65 to +200</td>
<td>°C</td>
</tr>
<tr>
<td>Junction Temperature</td>
<td>TJ</td>
<td>200</td>
<td>°C</td>
</tr>
</tbody>
</table>

Electrical Specifications: $T_C = 25 \pm 5°C$ (Room Ambient)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Test Conditions</th>
<th>Frequency</th>
<th>Symbol</th>
<th>Min</th>
<th>Max</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Collector-Emitter Breakdown Voltage</td>
<td>$I_C = 250mA$</td>
<td>$F = 1090 MHz$</td>
<td>$BV_{CES}$</td>
<td>65</td>
<td>-</td>
<td>V</td>
</tr>
<tr>
<td>Collector-Emitter Leakage Current</td>
<td>$V_CE = 50V$</td>
<td></td>
<td>$I_{CES}$</td>
<td>-</td>
<td>15</td>
<td>mA</td>
</tr>
<tr>
<td>Thermal Resistance</td>
<td>$V_{cc} = 50V$, $P_{out} = 350W$</td>
<td>$F = 1090 MHz$</td>
<td>$R_{TH(C)}$</td>
<td>0.16</td>
<td>-</td>
<td>°C/W</td>
</tr>
<tr>
<td>Input Power</td>
<td>$V_{cc} = 50V$, $P_{out} = 350W$</td>
<td>$F = 1090 MHz$</td>
<td>$P_{in}$</td>
<td>-</td>
<td>44</td>
<td>W</td>
</tr>
<tr>
<td>Power Gain</td>
<td>$V_{cc} = 50V$, $P_{out} = 350W$</td>
<td>$F = 1090 MHz$</td>
<td>$G_P$</td>
<td>9.0</td>
<td>-</td>
<td>dB</td>
</tr>
<tr>
<td>Collector Efficiency</td>
<td>$V_{cc} = 50V$, $P_{out} = 350W$</td>
<td>$F = 1090 MHz$</td>
<td>$\eta_C$</td>
<td>45</td>
<td>-</td>
<td>%</td>
</tr>
<tr>
<td>Input Return Loss</td>
<td>$V_{cc} = 50V$, $P_{out} = 350W$</td>
<td>$F = 1090 MHz$</td>
<td>$RL$</td>
<td>-</td>
<td>-9</td>
<td>dB</td>
</tr>
<tr>
<td>Load Mismatch Tolerance</td>
<td>$V_{cc} = 50V$, $P_{out} = 350W$</td>
<td>$F = 1090 MHz$</td>
<td>$VSWR-T$</td>
<td>-</td>
<td>10:1</td>
<td>-</td>
</tr>
<tr>
<td>Load Mismatch Stability</td>
<td>$V_{cc} = 50V$, $P_{out} = 350W$</td>
<td>$F = 1090 MHz$</td>
<td>$VSWR-S$</td>
<td>-</td>
<td>1.5:1</td>
<td>-</td>
</tr>
</tbody>
</table>
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Typical Broadband RF Performance
(Provided for information only - 100% Production testing performed at 1090MHz only)

<table>
<thead>
<tr>
<th>Freq. (MHz)</th>
<th>Pin (W)</th>
<th>Pout (W)</th>
<th>Gain (dB)</th>
<th>Ic (A)</th>
<th>Eff (%)</th>
<th>RL (dB)</th>
<th>VSWR-S (1.5:1)</th>
<th>VSWR-T (10:1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1025</td>
<td>37</td>
<td>350</td>
<td>9.81</td>
<td>12.8</td>
<td>54.6</td>
<td>-14.8</td>
<td>S</td>
<td>P</td>
</tr>
<tr>
<td>1090</td>
<td>35</td>
<td>350</td>
<td>9.96</td>
<td>12.5</td>
<td>55.8</td>
<td>-16.7</td>
<td>S</td>
<td>P</td>
</tr>
<tr>
<td>1150</td>
<td>34</td>
<td>350</td>
<td>10.10</td>
<td>12.4</td>
<td>56.6</td>
<td>-26.1</td>
<td>S</td>
<td>P</td>
</tr>
</tbody>
</table>

Gain vs. Frequency

Collector Efficiency vs. Frequency

RF Test Fixture Impedance

<table>
<thead>
<tr>
<th>F (MHz)</th>
<th>Z_{IF} (Ω)</th>
<th>Z_{OF} (Ω)</th>
</tr>
</thead>
<tbody>
<tr>
<td>960</td>
<td>1.8 - j3.7</td>
<td>2.2 - j2.8</td>
</tr>
<tr>
<td>1025</td>
<td>1.8 - j3.2</td>
<td>2.3 - j2.2</td>
</tr>
<tr>
<td>1090</td>
<td>1.8 - j2.7</td>
<td>2.4 - j1.7</td>
</tr>
<tr>
<td>1150</td>
<td>1.9 - j2.3</td>
<td>2.6 - j1.5</td>
</tr>
<tr>
<td>1215</td>
<td>2.0 - j1.9</td>
<td>2.8 - j1.3</td>
</tr>
</tbody>
</table>

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RF Power Transfer Curve
1090 MHz, Output Power vs. Input Power

RF Power Transfer Curve
1090 MHz, Gain & Efficiency vs. Output Power
Test Fixture Circuit Dimensions

Test Fixture Assembly

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