Radar Pulsed Power Transistor
65W, 3.1-3.5 GHz, 100µs Pulse, 10% 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>VEBO</td>
<td>3.0</td>
<td>V</td>
</tr>
<tr>
<td>Collector Current (Peak)</td>
<td>IC</td>
<td>7.7</td>
<td>A</td>
</tr>
<tr>
<td>Power Dissipation @ +25°C</td>
<td>Ptot</td>
<td>350</td>
<td>W</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: TC = 25 ± 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>IC = 25mA</td>
<td></td>
<td>BVCES</td>
<td>65</td>
<td>-</td>
<td>V</td>
</tr>
<tr>
<td>Collector-Emitter Leakage Current</td>
<td>VCE = 36V</td>
<td></td>
<td>ICES</td>
<td>-</td>
<td>5.0</td>
<td>mA</td>
</tr>
<tr>
<td>Thermal Resistance</td>
<td>Vcc = 36V, Pout = 65W</td>
<td>F = 3.1, 3.3, 3.5 GHz</td>
<td>RTH(JC)</td>
<td>-</td>
<td>0.5</td>
<td>°C/W</td>
</tr>
<tr>
<td>Output Power</td>
<td>Vcc = 36V, Pout = 65W</td>
<td>F = 3.1, 3.3, 3.5 GHz</td>
<td>PIN</td>
<td>-</td>
<td>11.6</td>
<td>W</td>
</tr>
<tr>
<td>Power Gain</td>
<td>Vcc = 36V, Pout = 65W</td>
<td>F = 3.1, 3.3, 3.5 GHz</td>
<td>Gp</td>
<td>75</td>
<td>-</td>
<td>dB</td>
</tr>
<tr>
<td>Collector Efficiency</td>
<td>Vcc = 36V, Pout = 65W</td>
<td>F = 3.1, 3.3, 3.5 GHz</td>
<td>ηC</td>
<td>35</td>
<td>-</td>
<td>%</td>
</tr>
<tr>
<td>Input Return Loss</td>
<td>Vcc = 36V, Pout = 65W</td>
<td>F = 3.1, 3.3, 3.5 GHz</td>
<td>RL</td>
<td>-</td>
<td>-6</td>
<td>dB</td>
</tr>
<tr>
<td>Load Mismatch Tolerance</td>
<td>Vcc = 36V, Pout = 65W</td>
<td>F = 3.1, 3.3, 3.5 GHz</td>
<td>VSWR-T</td>
<td>-</td>
<td>2:1</td>
<td>-</td>
</tr>
</tbody>
</table>
Typical RF Performance

<table>
<thead>
<tr>
<th>Freq. (GHz)</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-T (2:1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.1</td>
<td>8.0</td>
<td>65</td>
<td>9.09</td>
<td>4.35</td>
<td>41.5</td>
<td>-10.5</td>
<td>P</td>
</tr>
<tr>
<td>3.3</td>
<td>8.3</td>
<td>65</td>
<td>8.95</td>
<td>4.24</td>
<td>42.6</td>
<td>-9.8</td>
<td>P</td>
</tr>
<tr>
<td>3.5</td>
<td>9.8</td>
<td>65</td>
<td>8.23</td>
<td>4.64</td>
<td>38.9</td>
<td>-17.3</td>
<td>P</td>
</tr>
</tbody>
</table>

Gain vs. Frequency

Collector Efficiency vs. Frequency

RF Test Fixture Impedance

<table>
<thead>
<tr>
<th>F (GHz)</th>
<th>(Z_{IF} (\Omega))</th>
<th>(Z_{DF} (\Omega))</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.1</td>
<td>8.9 - j11.2</td>
<td>5.2 - j11.0</td>
</tr>
<tr>
<td>3.3</td>
<td>8.7 - j8.6</td>
<td>4.2 - j8.8</td>
</tr>
<tr>
<td>3.5</td>
<td>8.6 - j6.0</td>
<td>4.7 - j7.0</td>
</tr>
</tbody>
</table>
Test Fixture Circuit Dimensions

Test Fixture Assembly