Radar Pulsed Power Transistor
110W, 2.2-2.6GHz, 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>V_{CES}</td>
<td>65</td>
<td>V</td>
</tr>
<tr>
<td>Emitter-Base Voltage</td>
<td>V_{EBO}</td>
<td>3.0</td>
<td>V</td>
</tr>
<tr>
<td>Collector Current (Peak)</td>
<td>I_{C}</td>
<td>15</td>
<td>A</td>
</tr>
<tr>
<td>Power Dissipation @ +25°C</td>
<td>P_{TOT}</td>
<td>583</td>
<td>W</td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>T_{STG}</td>
<td>-65 to +200</td>
<td>°C</td>
</tr>
<tr>
<td>Junction Temperature</td>
<td>T_{J}</td>
<td>200</td>
<td>°C</td>
</tr>
</tbody>
</table>

Electrical Specifications: T_c = 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>I_{C} = 40mA</td>
<td></td>
<td>V_{CES}</td>
<td>65</td>
<td>-</td>
<td>V</td>
</tr>
<tr>
<td>Collector-Emitter Leakage Current</td>
<td>V_{CE} = 36V</td>
<td></td>
<td>I_{CES}</td>
<td>-</td>
<td>3.0</td>
<td>mA</td>
</tr>
<tr>
<td>Thermal Resistance</td>
<td>Vcc = 36V, Pin = 20W</td>
<td>F = 2.25, 2.55 GHz</td>
<td>R_{THJC}</td>
<td>-</td>
<td>0.3</td>
<td>°C/W</td>
</tr>
<tr>
<td>Output Power</td>
<td>Vcc = 36V, Pin = 20W</td>
<td>F = 2.25, 2.55 GHz</td>
<td>P_{OUT}</td>
<td>110</td>
<td>-</td>
<td>W</td>
</tr>
<tr>
<td>Power Gain</td>
<td>Vcc = 36V, Pin = 20W</td>
<td>F = 2.25, 2.55 GHz</td>
<td>G_p</td>
<td>7.4</td>
<td>-</td>
<td>dB</td>
</tr>
<tr>
<td>Collector Efficiency</td>
<td>Vcc = 36V, Pin = 20W</td>
<td>F = 2.25, 2.55 GHz</td>
<td>η_{C}</td>
<td>40</td>
<td>-</td>
<td>%</td>
</tr>
<tr>
<td>Pulse Droop</td>
<td>Vcc = 36V, Pin = 20W</td>
<td>F = 2.25, 2.55 GHz</td>
<td>Droop</td>
<td>-</td>
<td>1.0</td>
<td>dB</td>
</tr>
<tr>
<td>Input Return Loss</td>
<td>Vcc = 36V, Pin = 20W</td>
<td>F = 2.25, 2.55 GHz</td>
<td>RL</td>
<td>-</td>
<td>-9</td>
<td>dB</td>
</tr>
<tr>
<td>Load Mismatch Tolerance</td>
<td>Vcc = 36V, Pin = 20W</td>
<td>F = 2.25, 2.55 GHz</td>
<td>VSWR-T</td>
<td>-</td>
<td>3:1</td>
<td>-</td>
</tr>
<tr>
<td>Load Mismatch Stability</td>
<td>Vcc = 36V, Pin = 20W</td>
<td>F = 2.25, 2.55 GHz</td>
<td>VSWR-S</td>
<td>-</td>
<td>1.5:1</td>
<td>-</td>
</tr>
</tbody>
</table>
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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>Droop (dB)</th>
<th>VSWR-S (1.5:1)</th>
<th>VSWR-T (3:1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.25</td>
<td>20.0</td>
<td>134</td>
<td>8.26</td>
<td>0.83</td>
<td>45.3</td>
<td>-14.0</td>
<td>0.33</td>
<td>S</td>
<td>P</td>
</tr>
<tr>
<td>2.55</td>
<td>20.0</td>
<td>128</td>
<td>8.07</td>
<td>0.77</td>
<td>46.1</td>
<td>-18.0</td>
<td>0.18</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 (GHz)</th>
<th>Z_{IF} (Ω)</th>
<th>Z_{DF} (Ω)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.25</td>
<td>2.8 - j3.4</td>
<td>4.1 - j2.9</td>
</tr>
<tr>
<td>2.40</td>
<td>2.9 - j3.0</td>
<td>3.8 - j2.9</td>
</tr>
<tr>
<td>2.55</td>
<td>3.1 - j2.6</td>
<td>3.3 - j2.7</td>
</tr>
</tbody>
</table>
**PH2226-110M**

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**M/A-COM Products**
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**Test Fixture Circuit Dimensions**

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**Test Fixture Assembly**

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