**Avionics Pulsed Power Transistor**  
1000W, 1030 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>( 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>250</td>
<td>A</td>
</tr>
<tr>
<td>Power Dissipation @ +25°C</td>
<td>( P_{TOT} )</td>
<td>11.6</td>
<td>kW</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:**  \( T_C = 25 \pm 5°C \) (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>-</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_C )</td>
<td>-</td>
<td>30</td>
<td>mA</td>
</tr>
<tr>
<td>Thermal Resistance</td>
<td>( V_{cc} = 50V, P_{out} = 1000W )</td>
<td>( F = 1030 MHz )</td>
<td>( R_{THJC} )</td>
<td>-</td>
<td>0.015</td>
<td>°C/W</td>
</tr>
<tr>
<td>Input Power</td>
<td>( V_{cc} = 50V, P_{out} = 1000W )</td>
<td>( F = 1030 MHz )</td>
<td>( P_{IN} )</td>
<td>-</td>
<td>158</td>
<td>W</td>
</tr>
<tr>
<td>Power Gain</td>
<td>( V_{cc} = 50V, P_{out} = 1000W )</td>
<td>( F = 1030 MHz )</td>
<td>( G_{P} )</td>
<td>8.0</td>
<td>-</td>
<td>dB</td>
</tr>
<tr>
<td>Collector Efficiency</td>
<td>( V_{cc} = 50V, P_{out} = 1000W )</td>
<td>( F = 1030 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} = 1000W )</td>
<td>( F = 1030 MHz )</td>
<td>( RL )</td>
<td>-</td>
<td>-10</td>
<td>dB</td>
</tr>
<tr>
<td>Load Mismatch Tolerance</td>
<td>( V_{cc} = 50V, P_{out} = 1000W )</td>
<td>( F = 1030 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} = 1000W )</td>
<td>( F = 1030 MHz )</td>
<td>( VSWR-S )</td>
<td>-</td>
<td>1.5:1</td>
<td>-</td>
</tr>
</tbody>
</table>

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**For further information and support please visit:**  
[https://www.macom.com/support](https://www.macom.com/support)
Typical RF Performance

<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>
<th>P1dB Overdrive</th>
<th>ΔPo</th>
</tr>
</thead>
<tbody>
<tr>
<td>1030</td>
<td>134</td>
<td>1000</td>
<td>8.74</td>
<td>39.5</td>
<td>50.8</td>
<td>-21.3</td>
<td>S</td>
<td>P</td>
<td>1180</td>
<td>0.74</td>
</tr>
</tbody>
</table>

Note: ΔPo(dB) is the difference between Pout at 1dB overdrive and Pout at Pout = 1000W.

RF Power Transfer Curve
(Output Power Vs. Input Power)
RF Power Transfer Curve
(Gain & Collector Efficiency vs. Output Power)

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>1030</td>
<td>1.8 - j2.2</td>
<td>0.5 - j1.0</td>
</tr>
</tbody>
</table>
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Test Fixture Circuit Dimensions

Visit www.macom.com for additional data sheets and product information.

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