The RF Line NPN Silicon Power Transistor
80W, 3.0-200MHz, 28V

Designed primarily for wideband large–signal output amplifier stages in the 30–200 MHz frequency range.

- Guaranteed performance at 150 MHz, 28 Vdc
  Output power = 80 W
  Minimum gain = 10 dB
- Built–in matching network for broadband operation
- 100% tested for load mismatch at all phase angles with 30:1 VSWR
- Gold metallization system for high reliability applications

MAXIMUM RATINGS

<table>
<thead>
<tr>
<th>Rating</th>
<th>Symbol</th>
<th>Value</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Collector–Emitter Voltage</td>
<td>V_CEO</td>
<td>35</td>
<td>Vdc</td>
</tr>
<tr>
<td>Collector–Base Voltage</td>
<td>V_CBO</td>
<td>65</td>
<td>Vdc</td>
</tr>
<tr>
<td>Emitter–Base Voltage</td>
<td>V_EBO</td>
<td>4.0</td>
<td>Vdc</td>
</tr>
<tr>
<td>Collector Current — Continuous Peak</td>
<td>I_C</td>
<td>9.0</td>
<td>Adc</td>
</tr>
<tr>
<td></td>
<td></td>
<td>13.5</td>
<td></td>
</tr>
<tr>
<td>Total Device Dissipation @ T_C = 25°C (1)</td>
<td>P_D</td>
<td>220</td>
<td>Watts</td>
</tr>
<tr>
<td>Derate above 25°C</td>
<td></td>
<td>1.26</td>
<td>W/°C</td>
</tr>
<tr>
<td>Storage Temperature Range</td>
<td>T_stg</td>
<td>-65 to +150</td>
<td>°C</td>
</tr>
</tbody>
</table>

THERMAL CHARACTERISTICS

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Symbol</th>
<th>Max</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thermal Resistance, Junction to Case</td>
<td>R_JUC</td>
<td>0.8</td>
<td>°C/W</td>
</tr>
</tbody>
</table>

ELECTRICAL CHARACTERISTICS (T_C = 25°C unless otherwise noted.)

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Symbol</th>
<th>Min</th>
<th>Typ</th>
<th>Max</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Collector–Emitter Breakdown Voltage</td>
<td>V_BR_CE (I_C = 50 mAdc, I_B = 0)</td>
<td>V_BR_CE</td>
<td>35</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Collector–Emitter Breakdown Voltage</td>
<td>V_BR_CES (I_C = 50 mAdc, V_BE = 0)</td>
<td>V_BR_CES</td>
<td>65</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Collector–Base Breakdown Voltage</td>
<td>V_BR_CBO</td>
<td>V_BR_CBO</td>
<td>65</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Emitter–Base Breakdown Voltage</td>
<td>V_BR_EBO</td>
<td>V_BR_EBO</td>
<td>4.0</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Collector Cutoff Current (V_C = 30 Vdc, I_E = 0)</td>
<td>I_CBO</td>
<td>I_CBO</td>
<td>—</td>
<td>—</td>
<td>5.0</td>
</tr>
</tbody>
</table>
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<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Symbol</th>
<th>Min</th>
<th>Typ</th>
<th>Max</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Common-Collector Power Gain</td>
<td>$G_{pe}$</td>
<td>10</td>
<td>13</td>
<td>—</td>
<td>dB</td>
</tr>
<tr>
<td>Collector Efficiency</td>
<td>$\eta$</td>
<td>55</td>
<td>—</td>
<td>—</td>
<td>%</td>
</tr>
<tr>
<td>Load Mismatch</td>
<td>$\psi$</td>
<td>No Degradation in Output Power</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
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M/A-COM Products
Released - Rev. 07.07

Figure 1. 150 MHz Test Amplifier

C1 — 22 pF 100 mil ATC
C2, C3 — 24 pF 100 mil ATC
C4, C11 — 0.8–20 pF JMC #5501 Johanson
C5 — 200 pF 100 mil ATC
C6 — 240 pF 100 mil ATC
C7 — Dipped Mica 1000 pF
C8 — 0.1 uF Ernie Red Cap
C9, C10, C12 — 30 pF 100 mil ATC
C13 — 1.0 µF Tantalum

L1 — 0.8", #20 Wire
L2 — 1.0", #20 Wire
RFC1, RFC4 — 0.15 µH Molded Coil
RFC5 — 2.5", #20 Wire, 1.5 Turns
RFC6 — Ferroxcube VK200–19/4B
R1 — 10 Ω, 1/2 W
R2, R3 — 10 Ω, 1.0 W

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TYPICAL PERFORMANCE CURVES

Figure 2. Output Power versus Input Power

Figure 3. Power Gain versus Frequency

Figure 4. Output Power versus Supply Voltage

Figure 5. Output Power versus Supply Voltage

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Figure 6. Output Power versus Supply Voltage

Figure 7. Series Equivalent Input–Output Impedance
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