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_{CEO} )</td>
<td>65</td>
<td>Vdc</td>
</tr>
<tr>
<td>Emitter–Base Voltage</td>
<td>( V_{ESO} )</td>
<td>4.0</td>
<td>Vdc</td>
</tr>
<tr>
<td>Collector Current — Continuous</td>
<td>( I_C )</td>
<td>9.0</td>
<td>Adc</td>
</tr>
<tr>
<td>Peak</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>1.25</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.)

OFF CHARACTERISTICS

<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 (( I_C = 50 ) mAdc, ( I_B = 0 ))</td>
<td>( V_{BRJCEO} )</td>
<td>35</td>
<td>—</td>
<td>—</td>
<td>Vdc</td>
</tr>
<tr>
<td>Collector–Emitter Breakdown Voltage (( I_C = 50 ) mAdc, ( V_{BE} = 0 ))</td>
<td>( V_{BRJCES} )</td>
<td>65</td>
<td>—</td>
<td>—</td>
<td>Vdc</td>
</tr>
<tr>
<td>Collector–Base Breakdown Voltage (( I_C = 50 ) mAdc, ( I_E = 0 ))</td>
<td>( V_{BRJCEO} )</td>
<td>65</td>
<td>—</td>
<td>—</td>
<td>Vdc</td>
</tr>
<tr>
<td>Emitter–Base Breakdown Voltage (( I_E = 5.0 ) mAdc, ( I_C = 0 ))</td>
<td>( V_{BRJESO} )</td>
<td>4.0</td>
<td>—</td>
<td>—</td>
<td>Vdc</td>
</tr>
<tr>
<td>Collector Cutoff Current (( V_{CE} = 30 ) Vdc, ( I_E = 0 ))</td>
<td>( I_{CEO} )</td>
<td>—</td>
<td>—</td>
<td>5.0</td>
<td>mAdc</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>DC Current Gain</td>
<td>hFE</td>
<td>10</td>
<td>—</td>
<td>80</td>
<td>—</td>
</tr>
<tr>
<td>Output Capacitance</td>
<td>Coss</td>
<td>—</td>
<td>100</td>
<td>130</td>
<td>pF</td>
</tr>
</tbody>
</table>

**NOTE.**
1. This device is designed for RF operation. The total device dissipation rating applies only when the device is operated as an RF amplifier.

**ELECTRICAL CHARACTERISTICS — continued** (Tamb = 25°C unless otherwise noted.)

**NARROW BAND FUNCTIONAL TESTS (Figure 1)**

<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–Emitter Amplifier Power Gain</td>
<td>GmE</td>
<td>10</td>
<td>13</td>
<td>—</td>
<td>dB</td>
</tr>
<tr>
<td>Collector Efficiency</td>
<td>η</td>
<td>55</td>
<td>—</td>
<td>—</td>
<td>%</td>
</tr>
<tr>
<td>Load Mismatch</td>
<td>Ψ</td>
<td>No Degradation in Output Power</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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**PRELIMINARY:** Data Sheets contain information regarding a product M/A-COM Technology Solutions has under development. Performance is based on engineering tests. Specifications are typical. Mechanical outline has been fixed. Engineering samples and/or test data may be available. Commitment to produce in volume is not guaranteed.
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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 μF Ene 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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M/A-COM Products
Released - Rev. 07.07

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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PACKAGE DIMENSIONS

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