The RF Line NPN Silicon Power Transistor
25W(PEP), 30MHz, 28V

Designed for high gain driver and output linear amplifier stages in 1.5 to 30 MHz HF/SSB equipment.

- Specified 28 V, 30 MHz characteristics —
  - Output power = 25 W (PEP)
  - Minimum gain = 22 dB
  - Efficiency = 35%
- Intermodulation distortion @ 25 W (PEP) — IMD = −30 dB (max)
- 100% tested for load mismatch at all phase angles with 30:1 VSWR
- Class A and AB characterization
- BLX 13 equivalent

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>VCE0</td>
<td>35</td>
<td>Vdc</td>
</tr>
<tr>
<td>Collector–Base Voltage</td>
<td>VCEO</td>
<td>65</td>
<td>Vdc</td>
</tr>
<tr>
<td>Emitter–Base Voltage</td>
<td>VEO</td>
<td>4.0</td>
<td>Vdc</td>
</tr>
<tr>
<td>Collector Current — Continuous</td>
<td>IC</td>
<td>3.0</td>
<td>Adc</td>
</tr>
<tr>
<td>Withstand Current — 5 s</td>
<td>—</td>
<td>6.0</td>
<td>Adc</td>
</tr>
<tr>
<td>Total Device Dissipation @ TC = 25°C (1)</td>
<td>PO</td>
<td>70</td>
<td>Watts</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.4</td>
<td>W/C</td>
</tr>
<tr>
<td>Storage Temperature Range</td>
<td>Tstg</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>RjUC</td>
<td>2.5</td>
<td>°C/W</td>
</tr>
</tbody>
</table>

ELECTRICAL CHARACTERISTICS (TC = 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>
</table>

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>
</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.

(continued)
The RF Line NPN Silicon Power Transistor
25W(PEP), 30MHz, 28V

ELECTRICAL CHARACTERISTICS — continued (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>ON CHARACTERISTICS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DC Current Gain (I_C = 1.0 Adc, V_CE = 5.0 Vdc)</td>
<td>h_FE</td>
<td>10</td>
<td>35</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>DYNAMIC CHARACTERISTICS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Output Capacitance (V_CE = 30 Vdc, I_E = 0, f = 1.0 MHz)</td>
<td>C_ab</td>
<td>—</td>
<td>60</td>
<td>80</td>
<td>pF</td>
</tr>
<tr>
<td>FUNCTIONAL TESTS (SSB)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Common–Emitter Amplifier Gain (V_CC = 28 Vdc, P_out = 25 W (PEP), f1 = 30 MHz, f2 = 3.001 MHz, I_CQ = 25 mA)</td>
<td>G_FE</td>
<td>22</td>
<td>25</td>
<td>—</td>
<td>dB</td>
</tr>
<tr>
<td>Collector Efficiency (V_CC = 28 Vdc, P_out = 25 W (PEP), f1 = 30 MHz, f2 = 3.001 MHz, I_CQ = 25 mA)</td>
<td>η</td>
<td>35</td>
<td>—</td>
<td>—</td>
<td>%</td>
</tr>
<tr>
<td>Intermodulation Distortion (2) (V_CC = 28 Vdc, P_out = 25 W (PEP), f1 = 30 MHz, f2 = 3.001 MHz, I_CQ = 25 mA)</td>
<td>IMD_{(d3)}</td>
<td>—</td>
<td>—35</td>
<td>—30</td>
<td>dB</td>
</tr>
<tr>
<td>Load Mismatch (V_CC = 28 Vdc, P_out = 25 W (PEP), f1 = 30 MHz, f2 = 3.001 MHz, I_CQ = 25 mA, VSWR 30:1 at All Phase Angles)</td>
<td>Ψ</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>No Degradation in Output Power</td>
</tr>
<tr>
<td>CLASS A PERFORMANCE</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intermodulation Distortion (2) and Power Gain (V_CC = 28 Vdc, P_out = 8.0 W (PEP), f1 = 30 MHz, f2 = 3.001 MHz, I_CQ = 1.2 Adc)</td>
<td>G_FE</td>
<td>—</td>
<td>23.5</td>
<td>—</td>
<td>dB</td>
</tr>
<tr>
<td></td>
<td>IMD_{(d3)}</td>
<td>—</td>
<td>—40</td>
<td>—</td>
<td></td>
</tr>
<tr>
<td></td>
<td>IMD_{(d5)}</td>
<td>—</td>
<td>—55</td>
<td>—</td>
<td></td>
</tr>
</tbody>
</table>

NOTE:
2. To Mil-Std-1311 Version A, Test Method 2204B, Two Tone, Reference each Tone.
The RF Line NPN Silicon Power Transistor
25W(PEP), 30MHz, 28V

Adjust Bias (Base) for I_{CO} = 20 mA with No RF Applied

Figure 1. 30 MHz Linear Test Circuit
MRF426

The RF Line NPN Silicon Power Transistor
25W(PEP), 30MHz, 28V

Rev. V1

M/A-COM Technology Solutions Inc. (MACOM) and its affiliates reserve the right to make changes to the product(s) or information contained herein without notice. Visit www.macom.com for additional data sheets and product information.

For further information and support please visit: https://www.macom.com/support

Figure 2. Output Power versus Input Power

Figure 3. Output Power versus Supply Voltage

Figure 4. Power Gain versus Frequency

Figure 5. Intermodulation Distortion versus Output Power
MRF426

The RF Line NPN Silicon Power Transistor
25W(PEP), 30MHz, 28V

Rev. V1

Figure 6. DC Safe Operating Area
The RF Line NPN Silicon Power Transistor
25W(PEP), 30MHz, 28V

Figure 7. Output Capacitance versus Frequency

Figure 8. Output Resistance versus Frequency

Figure 9. Series Equivalent Input Impedance
MRF426

The RF Line NPN Silicon Power Transistor
25W(PEP), 30MHz, 28V

Rev. V1

Unless otherwise noted, tolerances are inches ±.005" [millimeters ±0.13mm]

For further information and support please visit:
https://www.macom.com/support
The RF Line NPN Silicon Power Transistor
25W(PEP), 30MHz, 28V

M/A-COM Technology Solutions Inc. All rights reserved.
Information in this document is provided in connection with M/A-COM Technology Solutions Inc ("MACOM") products. These materials are provided by MACOM as a service to its customers and may be used for informational purposes only. Except as provided in MACOM's Terms and Conditions of Sale for such products or in any separate agreement related to this document, MACOM assumes no liability whatsoever. MACOM assumes no responsibility for errors or omissions in these materials. MACOM may make changes to specifications and product descriptions at any time, without notice. MACOM makes no commitment to update the information and shall have no responsibility whatsoever for conflicts or incompatibilities arising from future changes to its specifications and product descriptions. No license, express or implied, by estoppels or otherwise, to any intellectual property rights is granted by this document.

THESE MATERIALS ARE PROVIDED "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, RELATING TO SALE AND/OR USE OF MACOM PRODUCTS INCLUDING LIABILITY OR WARRANTIES RELATING TO FITNESS FOR A PARTICULAR PURPOSE, CONSEQUENTIAL OR INCIDENTAL DAMAGES, MERCHANTABILITY, OR INFRINGEMENT OF ANY PATENT, COPYRIGHT OR OTHER INTELLECTUAL PROPERTY RIGHT. MACOM FURTHER DOES NOT WARRANT THE ACCURACY OR COMPLETENESS OF THE INFORMATION, TEXT, GRAPHICS OR OTHER ITEMS CONTAINED WITHIN THESE MATERIALS. MACOM SHALL NOT BE LIABLE FOR ANY SPECIAL, INDIRECT, INCIDENTAL, OR CONSEQUENTIAL DAMAGES, INCLUDING WITHOUT LIMITATION, LOST REVENUES OR LOST PROFITS, WHICH MAY RESULT FROM THE USE OF THESE MATERIALS.

MACOM products are not intended for use in medical, lifesaving or life sustaining applications. MACOM customers using or selling MACOM products for use in such applications do so at their own risk and agree to fully indemnify MACOM for any damages resulting from such improper use or sale.

For further information and support please visit:
https://www.macom.com/support