M50A / M50AC

Triple-Balanced Mixer

Features
- LO 2 TO 26 GHz
- RF 2 TO 18 GHz
- IF 1 TO 12 GHz
- LO DRIVE: +10 dBm (NOMINAL)
- HIGH COMPRESSION POINT

Description
The M50A is a triple balanced mixer, designed for use in military, commercial and test equipment applications. The design utilizes Schottky ring quad diodes and broadband soft dielectric baluns to attain excellent performance. The use of high temperature solder and welded assembly processes used internally makes it ideal for use in manual, semi-automated assembly. Environmental screening available to MIL-STD-883, MIL-STD-202 or MIL-DTL-28837, consult factory.

Ordering Information

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Package</th>
</tr>
</thead>
<tbody>
<tr>
<td>M50A</td>
<td>Minpac</td>
</tr>
<tr>
<td>M50AC</td>
<td>SMA Connectorized</td>
</tr>
</tbody>
</table>

Electrical Specifications: $Z_0 = 50\,\Omega$  \(\text{Lo} = +10\,\text{dBm}\) (Downconverter application only)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Test Conditions</th>
<th>Units</th>
<th>Typical</th>
<th>Guaranteed</th>
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</table>
| SSB Conversion Loss (max) & SSB Noise      | $f_R = 2.5 \text{ to } 18\,\text{GHz, } f_L = 2 \text{ to } 18\,\text{GHz, } f_I = 1 \text{ to } 10\,\text{GHz}$  
$ f_R = 2 \text{ to } 18\,\text{GHz, } f_L = 2 \text{ to } 26\,\text{GHz, } f_I = 1 \text{ to } 12\,\text{GHz}$ | dB    | 7.5  | 9.5  | 10.0 |
|                                           |                                                                 | dB    | 8.0  | 10.5 | 11.0 |
| Isolation, L to R (min)                   | $f_L = 2 \text{ to } 3\,\text{GHz}$  
$ f_L = 3 \text{ to } 26\,\text{GHz}$                                                                 | dB    | 22  | 15  | 20  |
|                                           |                                                                 | dB    | 30  | 20  | 15  |
| Isolation, L to I (min)                   | $f_L = 7 \text{ to } 26\,\text{GHz}$  
$ f_L = 2 \text{ to } 7\,\text{GHz}$                                                                 | dB    | 30  | 20  | 15  |
|                                           |                                                                 | dB    | 22  | 20  | 15  |
| 1 dB Conversion Comp.                     | $f_{R1} = 5\,\text{GHz} \text{ @ } -6\,\text{dBm}$  
$f_R = 5.01\,\text{GHz} \text{ @ } -6\,\text{dBm}$  
$f_L = 8\,\text{GHz} \text{ @ } 10\,\text{dBm}$  
$f_R = 15\,\text{GHz} \text{ @ } -6\,\text{dBm}$  
$f_R = 15.01\,\text{GHz} \text{ @ } -6\,\text{dBm}$  
$f_L = 25\,\text{GHz} \text{ @ } 10\,\text{dBm}$ | dBm  | +5  |      |      |
| Input IP3                                  | $f_{R1} = 5\,\text{GHz} \text{ @ } -6\,\text{dBm}$  
$f_R = 5.01\,\text{GHz} \text{ @ } -6\,\text{dBm}$  
$f_L = 8\,\text{GHz} \text{ @ } 10\,\text{dBm}$  
$f_R = 15\,\text{GHz} \text{ @ } -6\,\text{dBm}$  
$f_R = 15.01\,\text{GHz} \text{ @ } -6\,\text{dBm}$  
$f_L = 25\,\text{GHz} \text{ @ } 10\,\text{dBm}$ | dBm  | +15 |      |      |
|                                           |                                                                                | dBm  | +12 |      |      |

* The M50AC specification limits apply at 0ºC to +50ºC.
Triple-Balanced Mixer

Typical Performance Curves

Conversion Loss vs. Frequency
LO @ +10 dBm

Conversion Loss vs. Frequency
LO @ +10 dBm

Conversion Loss vs. Frequency
LO @ +10 dBm

Conversion Loss vs. Frequency
LO @ +10 dBm

Isolation vs. Frequency

Isolation vs. Frequency

Isolation vs. Frequency

Isolation vs. Frequency

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

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Absolute Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating Temperature</td>
<td>-54°C to +100°C</td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>-65°C to +100°C</td>
</tr>
<tr>
<td>Peak Input Power</td>
<td>+26 dBm max @ +25°C</td>
</tr>
<tr>
<td></td>
<td>+22 dBm max @ +100°C</td>
</tr>
<tr>
<td>Peak Input Current</td>
<td>mA DC</td>
</tr>
</tbody>
</table>

Outline Drawing: Minpac *

Outline Drawing: SMA Connectorized *

Dimensions are inches (millimeters) ±0.015 (0.38) unless otherwise specified.
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