MACP-010121-B8180X

E-Series RF 20dB Coupler
136 - 174 MHz

Features

- Typical 19dB Coupling
- Surface Mount
- Tape and reel packaging available
- 260°C Reflow Compatible
- Pb Free Solder to attach wires
- RoHS* compliant

Description

M/A-COM Technology Solutions MACP-010121-B8180X is a RoHS Compliant 20dB RF coupler in a low cost, surface mount package. It offers low loss, good isolation, good input/output matching and exceptional coupling repeatability. Ideally suited for high volume cellular and wireless applications.

The MACP-010121-B8180X is available in a surface mount package and is designed to be utilized in a RoHS reflow profile.

Pin Configuration

<table>
<thead>
<tr>
<th>Pin No.</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Input</td>
</tr>
<tr>
<td>2</td>
<td>Coupled</td>
</tr>
<tr>
<td>3</td>
<td>Output</td>
</tr>
<tr>
<td>4</td>
<td>Ground</td>
</tr>
<tr>
<td>5</td>
<td>External 50 Ohms</td>
</tr>
</tbody>
</table>

Dimensions in mm, Tolerance: ±0.2mm, unless otherwise stated. Coplanarity spec of 0.25mm to customer PCB. Drawing Not to Scale.

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Electrical Specifications: \( T_A = 25^\circ C, \ Z_0 = 50\Omega \)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Test Conditions</th>
<th>Frequency</th>
<th>Units</th>
<th>Min.</th>
<th>Typ.</th>
<th>Max.</th>
</tr>
</thead>
<tbody>
<tr>
<td>RF Frequency</td>
<td>—</td>
<td>136 - 174</td>
<td>MHz</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Coupling ( F_L-f_U )</td>
<td>—</td>
<td>136 - 174</td>
<td>dB</td>
<td>—</td>
<td>19±1</td>
<td>—</td>
</tr>
<tr>
<td>Main Line Loss</td>
<td>( F_L-f_U )</td>
<td>136 - 174</td>
<td>dB</td>
<td>—</td>
<td>0.2</td>
<td>—</td>
</tr>
<tr>
<td>Directivity</td>
<td>( F_L-f_U )</td>
<td>136 - 174</td>
<td>dB</td>
<td>13</td>
<td>15</td>
<td>—</td>
</tr>
</tbody>
</table>

Recommended Maximum Ratings \(^1\),\(^2\)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>RF Power</td>
<td>7W</td>
</tr>
<tr>
<td>DC Current</td>
<td>240 mA(^2)</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>-40°C to +85°C</td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>-55°C to +125°C</td>
</tr>
</tbody>
</table>

1. Exceeding any one or combination of these limits may cause permanent damage to this device.
2. M/A-COM Technology Solutions does not recommend sustained operation near these survivability limits.
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Typical Performance Curves: $T_A = 25^\circ C$, $Z_0 = 50\, \Omega$

**Coupling**

-21
-20
-19
-18
-17
-16
-15
-14
-13
-12
-11
-10

136 145.5 155 164.5 174 MHz

**Directivity**

-20
-18
-16
-14
-12
-10

136 145.5 155 164.5 174 MHz

**Insertion Loss**

0
-0.1
-0.2
-0.3
-0.4
-0.5

136 145.5 155 164.5 174 MHz
Tape Specification:

<table>
<thead>
<tr>
<th>Item</th>
<th>Dimension</th>
<th>Tolerance</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ao</td>
<td>7.30</td>
<td>± 0.10</td>
<td>mm</td>
</tr>
<tr>
<td>Bo</td>
<td>7.40</td>
<td>± 0.10</td>
<td>mm</td>
</tr>
<tr>
<td>Ko</td>
<td>4.00</td>
<td>± 0.10</td>
<td>mm</td>
</tr>
<tr>
<td>W</td>
<td>16.00</td>
<td>± 0.30</td>
<td>mm</td>
</tr>
<tr>
<td>P1</td>
<td>12.00</td>
<td>± 0.10</td>
<td>mm</td>
</tr>
</tbody>
</table>

Ordering Information

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Package</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>MACP-010121-B8180X</td>
<td>T&amp;R</td>
<td>900</td>
</tr>
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</table>