MACP-009943-CH07F0

Broadband CATV 17 dB Directional Coupler
5 to 1000 MHz

Macom Technology Solutions

Features

- Surface Mount
- Typical Coupling +17dB
- 260°C Reflow Compatible
- RoHS* Compliant, lead free
- Available on Tape and Reel
- All wires are welded to the substrate

Description

M/A-COM Technology Solutions MACP-009943-CH07F0 is a 17dB broadband 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 CATV/Broadband applications.

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>Not Used (short to ground)</td>
</tr>
<tr>
<td>3</td>
<td>Coupled</td>
</tr>
<tr>
<td>4</td>
<td>Isolated (external 75 Ohms termination)</td>
</tr>
<tr>
<td>5</td>
<td>Ground</td>
</tr>
<tr>
<td>6</td>
<td>Output</td>
</tr>
</tbody>
</table>

Schematic

Case Style: SM-55A

Ordering Information

<table>
<thead>
<tr>
<th>Part number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>MACP-009943-CH07F0</td>
<td>900 piece reel</td>
</tr>
<tr>
<td>MABA-009943-CH07TB</td>
<td>Customer Test Board</td>
</tr>
</tbody>
</table>

Note: Reference Application Note M513 for reel size information.


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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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Electrical Specifications:  \( T_A = 25^\circ C, \ 0\text{dBm}, \ Z_0 = 75\Omega, \ P_{in} = 0\text{dBm} \)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Test Conditions</th>
<th>Units</th>
<th>Min</th>
<th>Typ</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coupling</td>
<td>5 - 860 MHz</td>
<td>dB</td>
<td>-</td>
<td>17.2</td>
<td>±0.7</td>
</tr>
<tr>
<td></td>
<td>860 - 1000 MHz</td>
<td>dB</td>
<td>-</td>
<td>17.0</td>
<td>±0.8</td>
</tr>
<tr>
<td>Main Line Loss</td>
<td>5 - 860 MHz</td>
<td>dB</td>
<td>-</td>
<td>0.6</td>
<td>1.0</td>
</tr>
<tr>
<td></td>
<td>860 - 1000 MHz</td>
<td>dB</td>
<td>-</td>
<td>0.8</td>
<td>1.2</td>
</tr>
<tr>
<td>Coupling Flatness</td>
<td>5 - 1000 MHz</td>
<td>dB</td>
<td>-</td>
<td>-</td>
<td>1.0</td>
</tr>
<tr>
<td>Directivity</td>
<td>5 - 50 MHz</td>
<td>dB</td>
<td>30</td>
<td>40</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>50 - 500 MHz</td>
<td>dB</td>
<td>12</td>
<td>20</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>500 - 1000 MHz</td>
<td>dB</td>
<td>5</td>
<td>12</td>
<td>-</td>
</tr>
<tr>
<td>Input Return Loss</td>
<td>5 - 50 MHz</td>
<td>dB</td>
<td>24</td>
<td>28</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>50 - 500 MHz</td>
<td>dB</td>
<td>24</td>
<td>28</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>500 - 1000 MHz</td>
<td>dB</td>
<td>20</td>
<td>25</td>
<td>-</td>
</tr>
<tr>
<td>Output Return Loss</td>
<td>5 - 50 MHz</td>
<td>dB</td>
<td>20</td>
<td>25</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>50 - 500 MHz</td>
<td>dB</td>
<td>20</td>
<td>25</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>500 - 1000 MHz</td>
<td>dB</td>
<td>20</td>
<td>23</td>
<td>-</td>
</tr>
<tr>
<td>Coupling Return Loss</td>
<td>5 - 50 MHz</td>
<td>dB</td>
<td>20</td>
<td>25</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>50 - 500 MHz</td>
<td>dB</td>
<td>20</td>
<td>25</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>500 - 1000 MHz</td>
<td>dB</td>
<td>18</td>
<td>23</td>
<td>-</td>
</tr>
</tbody>
</table>

Recommended Maximum Ratings

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max Input Power</td>
<td>250mW</td>
</tr>
<tr>
<td>DC current</td>
<td>30mA</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>-40°C to +85°C</td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>-55°C to +100°C</td>
</tr>
</tbody>
</table>

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Typical Performance Curves: \( T_A = 25^\circ C, 0\text{dBm}, Z_0 = 75\Omega, P_{in} = 0\text{dBm} \)

**Coupling (Pin1 - Pin3)**

![Graph showing coupling performance across frequency (MHz)]

**Return Loss: Input (Pin 1)**

![Graph showing return loss for input across frequency (MHz)]

**Main Line Loss (Pin1 - Pin6)**

![Graph showing main line loss performance across frequency (MHz)]

**Return Loss: Output (Pin 6)**

![Graph showing return loss for output across frequency (MHz)]

**Directivity**

![Graph showing directivity performance across frequency (MHz)]

**Return Loss: Coupled (Pin 3)**

![Graph showing return loss for coupled across frequency (MHz)]

**Typical Performance Curves:**

- **Return Loss: Input (Pin 1)**
  - Frequency (MHz): 5 to 1000
  - Return Loss in dB:
    - 5 MHz: -20 dB
    - 204 MHz: -19.5 dB
    - 403 MHz: -19 dB
    - 602 MHz: -18.5 dB
    - 801 MHz: -18 dB
    - 1000 MHz: -17.5 dB

- **Return Loss: Output (Pin 6)**
  - Frequency (MHz): 5 to 1000
  - Return Loss in dB:
    - 5 MHz: -35 dB
    - 204 MHz: -30 dB
    - 403 MHz: -25 dB
    - 602 MHz: -20 dB
    - 801 MHz: -15 dB
    - 1000 MHz: -10 dB

- **Return Loss: Coupled (Pin 3)**
  - Frequency (MHz): 5 to 1000
  - Return Loss in dB:
    - 5 MHz: -35 dB
    - 204 MHz: -30 dB
    - 403 MHz: -25 dB
    - 602 MHz: -20 dB
    - 801 MHz: -15 dB
    - 1000 MHz: -10 dB