MAPDCC0014

Four Way SMT Power Splitter/Combiner
1700 – 2000 MHz

Features

- Low Cost
- Small Size and Low Profile
- Excellent Repeatability (Lot-to-Lot Variation)
- Typical Isolation: 23 dB
- Typical Amplitude Balance: 0.8 dB
- Typical Insertion Loss: 1.4 dB
- Lead-Free SOIC-16 Package
- 100% Matte Tin Plating over Copper
- Halogen-Free “Green” Mold Compound
- 260°C Reflow Compatible
- RoHS* Compliant Version of DS54-0006

Description

M/A-COM’s MAPDCC0014 is an IC-based monolithic power splitter/combiner in a low cost SOIC-16 plastic package. This device is ideally suited for applications where PCB real estate is at a premium and standard packaging for automated assembly and low cost are critical. Typical applications include infrastructure, portables, and peripheral devices (PCMCIA cards) for wireless standards such as PCS, PCN, DECT, PHS, and DCS-1800. Available in Tape and Reel.

The MAPDCC0014 is fabricated using a passive-integrated circuit process. The process features full-chip passivation for increased performance and reliability.

Ordering Information

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Package</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAPDCC0014</td>
<td>Bulk Packaging</td>
</tr>
<tr>
<td>MAPDCC0014-TR</td>
<td>1000 piece reel</td>
</tr>
<tr>
<td>MAPDCC0014-TB</td>
<td>Sample Test Board</td>
</tr>
</tbody>
</table>

Note: Reference Application Note M513 for reel size information.

Functional Block Diagram

![Functional Block Diagram Image]

1. All unused pins must be RF and DC grounded.

Pin Configuration

<table>
<thead>
<tr>
<th>Pin No.</th>
<th>Function</th>
<th>Pin No.</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>GND</td>
<td>9</td>
<td>GND</td>
</tr>
<tr>
<td>2</td>
<td>GND</td>
<td>10</td>
<td>GND</td>
</tr>
<tr>
<td>3</td>
<td>GND</td>
<td>11</td>
<td>RF 4 OUT</td>
</tr>
<tr>
<td>4</td>
<td>RF 2 OUT</td>
<td>12</td>
<td>GND</td>
</tr>
<tr>
<td>5</td>
<td>GND</td>
<td>13</td>
<td>RF 3 OUT</td>
</tr>
<tr>
<td>6</td>
<td>RF 1 OUT</td>
<td>14</td>
<td>GND</td>
</tr>
<tr>
<td>7</td>
<td>GND</td>
<td>15</td>
<td>GND</td>
</tr>
<tr>
<td>8</td>
<td>RF IN</td>
<td>16</td>
<td>GND</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Units</th>
<th>Min</th>
<th>Typ</th>
<th>Max</th>
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</thead>
<tbody>
<tr>
<td>Insertion Loss above 6.0 dB</td>
<td>dB</td>
<td>—</td>
<td>1.4</td>
<td>1.7</td>
</tr>
<tr>
<td>Isolation</td>
<td>dB</td>
<td>18</td>
<td>23</td>
<td>—</td>
</tr>
<tr>
<td>VSWR Output</td>
<td>—</td>
<td>—</td>
<td>1.2:1</td>
<td>1.7:1</td>
</tr>
<tr>
<td>Input 1700 – 1880</td>
<td>—</td>
<td>—</td>
<td>1.6:1</td>
<td>2.0:1</td>
</tr>
<tr>
<td>Input 1880 – 2000</td>
<td>—</td>
<td>—</td>
<td>1.4:1</td>
<td>1.7:1</td>
</tr>
<tr>
<td>Amplitude Balance</td>
<td>dB</td>
<td>—</td>
<td>0.8</td>
<td>1.3</td>
</tr>
<tr>
<td>Phase Balance</td>
<td>Deg</td>
<td>—</td>
<td>5</td>
<td>10</td>
</tr>
</tbody>
</table>

Absolute Maximum Ratings

### Handling Procedures

Please observe the following precautions to avoid damage:

**Static Sensitivity**

GMIC Circuits are sensitive to electrostatic discharge (ESD) and can be damaged by static electricity. Proper ESD control techniques should be used when handling these devices.

Typical Performance Curves @25°C

**Insertion Loss vs. Frequency**

![Insertion Loss vs. Frequency Graph](image)

**Amplitude Balance vs. Frequency**

![Amplitude Balance vs. Frequency Graph](image)
Typical Performance Curves @25°C

**Isolation vs. Frequency**

![Isolation vs. Frequency Graph](image)

**Phase Balance vs. Frequency**

![Phase Balance vs. Frequency Graph](image)

**I/P VSWR vs. Frequency**

![I/P VSWR vs. Frequency Graph](image)

**O/P VSWR vs. Frequency**

![O/P VSWR vs. Frequency Graph](image)
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Rev. V2

Lead-Free, SOIC-16†

† Reference Application Note M538 for lead-free solder reflow recommendations.
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