Multilayer Directional Coupler
For 2400-2500MHz

HHM2933A1

1.0x0.5mm [EIA 0402]*
* Dimensions Code JIS[EIA]
Multilayer Directional Coupler
For 2400-2500MHz

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**SHAPES AND DIMENSIONS**

[Top view]

- Terminal functions
  1. Coupling
  2. 50Ω terminate
  3. Output
  4. Input

Dimensions in mm

[Bottom view]

Terminal functions
- 1. Coupling
- 2. 50Ω terminate
- 3. Output
- 4. Input

Dimensions in mm

**RECOMMENDED LAND PATTERN**

Dimensions in mm


• All specifications are subject to change without notice.
• Before using these products, be sure to request the delivery specifications.
## ELECTRICAL CHARACTERISTICS

<table>
<thead>
<tr>
<th>Item</th>
<th>Frequency Range (MHz)</th>
<th>Min.</th>
<th>Typ.</th>
<th>Max.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coupling Factor (dB)</td>
<td>2400 to 2500</td>
<td>13.4</td>
<td>—</td>
<td>15.4</td>
</tr>
<tr>
<td>Insertion Loss (dB)</td>
<td>2400 to 2500</td>
<td>—</td>
<td>—</td>
<td>0.37</td>
</tr>
<tr>
<td>Return Loss (dB)</td>
<td>2400 to 2500</td>
<td>17.69</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Isolation (dB)</td>
<td>2400 to 2500</td>
<td>26</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Characteristic Impedance (Ω)</td>
<td>2400 to 2500</td>
<td>50 (Nominal)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Ta: +25°C

## TEMPERATURE RANGE

<table>
<thead>
<tr>
<th>Operating temperature (°C)</th>
<th>Storage temperature (°C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>−40 to +85</td>
<td>−40 to +85</td>
</tr>
</tbody>
</table>

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**FREQUENCY CHARACTERISTICS**

- **INSERTION LOSS**
  - Frequency (MHz): 2300, 2350, 2400, 2450, 2500, 2550, 2600
  - Insertion Loss (dB): 0.0, 0.2, 0.4, 0.6, 0.8, 1.0

- **COUPLING**
  - Frequency (MHz): 2300, 2350, 2400, 2450, 2500, 2550, 2600
  - Coupling (dB): 0.0, 0.2, 0.4, 0.6, 0.8, 1.0

- **RETURN LOSS**
  - Frequency (MHz): 2300, 2350, 2400, 2450, 2500, 2550, 2600
  - Return Loss (dB): 0.0, 10.0, 20.0, 30.0, 40.0, 50.0

- **ISOLATION**
  - Frequency (MHz): 2300, 2350, 2400, 2450, 2500, 2550, 2600
  - Isolation (dB): 0.0, 10.0, 20.0, 30.0, 40.0, 50.0

- **DIRECTIVITY**
  - Frequency (MHz): 2300, 2350, 2400, 2450, 2500, 2550, 2600
  - Directivity (dB): 0.0, 10.0, 20.0, 30.0, 40.0, 50.0

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RECOMMENDED REFLOW PROFILE

<table>
<thead>
<tr>
<th>Preheating</th>
<th>Soldering</th>
<th>Peak</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temp.</td>
<td>Time</td>
<td>Temp.</td>
</tr>
<tr>
<td>T1</td>
<td>T2</td>
<td>T3</td>
</tr>
<tr>
<td>150°C</td>
<td>t1</td>
<td>217°C</td>
</tr>
</tbody>
</table>

* t3 : Time within 5°C of actual peak temperature
The maximum number of reflow is 3.
REMINDES FOR USING THESE PRODUCTS

Before using these products, be sure to request the delivery specifications.

SAFETY REMINDERS

Please pay sufficient attention to the warnings for safe designing when using these products.

⚠️ REMINDERS

The products listed on this catalog are intended for use in general electronic equipment (AV equipment, telecommunications equipment, home appliances, amusement equipment, computer equipment, personal equipment, office equipment, measurement equipment, industrial robots) under a normal operation and use condition.

The products are not designed or warranted to meet the requirements of the applications listed below, whose performance and/or quality require a more stringent level of safety or reliability, or whose failure, malfunction or trouble could cause serious damage to society, person or property.

Please understand that we are not responsible for any damage or liability caused by use of the products in any of the applications below or for any other use exceeding the range or conditions set forth in this catalog.

1. Aerospace/Aviation equipment
2. Transportation equipment (cars, electric trains, ships, etc.)
3. Medical equipment
4. Power-generation control equipment
5. Atomic energy-related equipment
6. Seabed equipment
7. Transportation control equipment
8. Public information-processing equipment
9. Military equipment
10. Electric heating apparatus, burning equipment
11. Disaster prevention/crime prevention equipment
12. Safety equipment
13. Other applications that are not considered general-purpose applications

When using this product in general-purpose applications, you are kindly requested to take into consideration securing protection circuit/equipment or providing backup circuits, etc., to ensure higher safety.

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