Thin-film Directional Coupler
For 2400-2500MHz / 4900-5850MHz

TFSC06054125-2113A1

0.65x0.5mm [EIA 0202]*
* Dimensions Code JIS[EIA]
Thin-film Directional Coupler
For 2400-2500MHz / 4900-5850MHz

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- **SHAPES AND DIMENSIONS**

  **[Top view]**

  - (1) [Marking]
  - (2) [ ]
  - (3) [ ]
  - (4) [ ]

  - Dimensions in mm
    - 0.65 ± 0.04
    - 0.25 ± 0.05

  **[Bottom view]**

  - 0.025 ± 0.025
  - 0.20 ± 0.04
  - 0.25 ± 0.04

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

- **RECOMMENDED LAND PATTERN**

- **Dimensions in mm**
  - 0.30
  - 0.20
  - 0.30
  - 0.20
  - 0.25
  - 0.20


- All specifications are subject to change without notice.
- Before using these products, be sure to request the delivery specifications.
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**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>17.5</td>
<td>—</td>
<td>20.5</td>
</tr>
<tr>
<td></td>
<td>4900 to 5850</td>
<td>11.0</td>
<td>—</td>
<td>14.0</td>
</tr>
<tr>
<td>Insertion Loss (dB)</td>
<td>2400 to 2500</td>
<td>—</td>
<td>—</td>
<td>0.5</td>
</tr>
<tr>
<td></td>
<td>4900 to 5850</td>
<td>—</td>
<td>—</td>
<td>0.5</td>
</tr>
<tr>
<td>Return Loss (dB)</td>
<td>2400 to 2500</td>
<td>17.69</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td></td>
<td>4900 to 5850</td>
<td>17.69</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Directivity (dB)</td>
<td>2400 to 2500</td>
<td>15</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td></td>
<td>4900 to 5850</td>
<td>15</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Characteristic Impedance (Ω)</td>
<td>50 (Nominal)</td>
<td></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>

**MSL**

<table>
<thead>
<tr>
<th>Moisture Sensitivity Level (MSL)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
</tr>
</tbody>
</table>

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FREQUENCY CHARACTERISTICS

INSERTION LOSS

COUPLING

VSWR

ISOLATION

DIRECTIVITY

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RECOMMENDED REFLOW PROFILE

![Graph showing recommended reflow profile](image)

### Preheating
- **Temp.**
  - T1
- **Time**
  - t1

### Soldering (Critical zone (T3 to T4))
- **Temp.**
  - T3
- **Time**
  - t2

### Soldering (Peak)
- **Temp.**
  - T4
- **Time**
  - t3

- **Rise rate:** 3°C/sec. or lower
- **Cooling rate:** 6°C/sec. or lower

#### Table: Recommended Reflow Profile

<table>
<thead>
<tr>
<th>Preheating</th>
<th>Soldering (Critical zone (T3 to T4))</th>
<th>Peak</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Temp.</strong></td>
<td><strong>Time</strong></td>
<td><strong>Temp.</strong></td>
</tr>
<tr>
<td>T1</td>
<td>t1</td>
<td>T3</td>
</tr>
<tr>
<td>150°C</td>
<td>60 to 120sec</td>
<td>217°C</td>
</tr>
</tbody>
</table>

* t3 : Time within 5°C of actual peak temperature
The maximum number of reflow is 3.

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REMINDERS 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.