SAW Filter 1585.6530MHz
Part No: MP09248
Model: TA1859A
Rev No: 1

A. MAXIMUM RATING:

1. Maximum input power: +10dBm (in passband)
2. Maximum DC Voltage: ±5V (device only)
3. Operating temperature: -30°C to +85°C
4. Device storage temperature: -40°C to +100°C
5. Moisture Sensitive Level: Level 1

Electrostatic Sensitive Device (ESD)

B. ELECTRICAL CHARACTERISTICS:

1. Terminating source impedance: $Z_S = 50 \Omega$ (single-ended)
2. Terminating load impedance: $Z_L = 100 \Omega / 18nH$ (balanced)

<table>
<thead>
<tr>
<th>Parameters Description</th>
<th>Unit</th>
<th>Min.</th>
<th>Typ.</th>
<th>Max.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Insertion Loss</td>
<td>dB(*1)</td>
<td>-</td>
<td>1.5</td>
<td>1.9</td>
</tr>
<tr>
<td>1574.42~1576.42MHz</td>
<td>dB(*1)</td>
<td>-</td>
<td>1.6</td>
<td>2.0</td>
</tr>
<tr>
<td>1597.5515~1605.8860MHz</td>
<td>dB(*1)</td>
<td>-</td>
<td>1.7</td>
<td>2.1</td>
</tr>
<tr>
<td>VSWR (Input/Output)</td>
<td>dB</td>
<td>-</td>
<td>1.4</td>
<td>2.0</td>
</tr>
<tr>
<td>1574.42~1576.42MHz</td>
<td>dB</td>
<td>-</td>
<td>1.5</td>
<td>2.0</td>
</tr>
<tr>
<td>1597.5515~1605.8860MHz</td>
<td>dB</td>
<td>-</td>
<td>1.6</td>
<td>2.0</td>
</tr>
<tr>
<td>Amplitude balance ([</td>
<td>S21</td>
<td>/</td>
<td>S31</td>
<td>])</td>
</tr>
<tr>
<td>1574.42~1576.42MHz</td>
<td>dB</td>
<td>-5</td>
<td>-0.2/+2.7</td>
<td>+5</td>
</tr>
<tr>
<td>1597.5515~1605.8860MHz</td>
<td>dB</td>
<td>-1.8</td>
<td>+1/-0.6</td>
<td>+1.8</td>
</tr>
<tr>
<td>Phase balance ([\psi</td>
<td>S21</td>
<td>- \psi</td>
<td>S31</td>
<td>]+180)</td>
</tr>
<tr>
<td>1574.42~1576.42MHz</td>
<td>deg</td>
<td>-10</td>
<td>-2/+7</td>
<td>+10</td>
</tr>
<tr>
<td>1597.5515~1605.8860MHz</td>
<td>deg</td>
<td>-15</td>
<td>-10/-8</td>
<td>+15</td>
</tr>
<tr>
<td>Attenuation:</td>
<td>dB</td>
<td>45</td>
<td>50</td>
<td>-</td>
</tr>
<tr>
<td>10~794MHz</td>
<td>dB</td>
<td>40</td>
<td>47</td>
<td>-</td>
</tr>
<tr>
<td>794~925MHz</td>
<td>dB</td>
<td>40</td>
<td>46</td>
<td>-</td>
</tr>
<tr>
<td>925~960MHz</td>
<td>dB</td>
<td>30</td>
<td>34</td>
<td>-</td>
</tr>
<tr>
<td>1427~1463MHz</td>
<td>dB</td>
<td>35</td>
<td>42</td>
<td>-</td>
</tr>
<tr>
<td>1710~1785MHz</td>
<td>dB</td>
<td>35</td>
<td>42</td>
<td>-</td>
</tr>
<tr>
<td>1850~1910MHz</td>
<td>dB</td>
<td>34</td>
<td>39</td>
<td>-</td>
</tr>
<tr>
<td>2401~2483MHz</td>
<td>dB</td>
<td>30</td>
<td>35</td>
<td>-</td>
</tr>
<tr>
<td>2500~2570MHz</td>
<td>dB</td>
<td>30</td>
<td>34</td>
<td>-</td>
</tr>
</tbody>
</table>

(*1) Specification of insertion loss includes loss that comes from the test board. (0.1dB)
C. FREQUENCY CHARACTERISTIC:

1. Pass-band

![Pass-band graph]

- Frequency: 1535 MHz to 1635 MHz
- Attenuation: -10 dB to 0 dB
- Key Points:
  - Mi1: 1565.4 MHz, S21 = -1.442 dB
  - Mi2: 1565.9 MHz, S21 = -1.530 dB
  - Mi3: 1583.0 MHz, S21 = -39.893 dB
  - Mi4: 1610.0 MHz, S21 = -43.017 dB
  - Mi5: 1678.5 MHz, S21 = -49.754 dB

2. In-band

![In-band graph]

- Frequency: 1535 MHz to 1635 MHz
- Attenuation: -5 dB to 0 dB
- Key Points:
  - Mi1: 1565.4 MHz, S21 = -1.442 dB
  - Mi2: 1575.4 MHz, S21 = -1.400 dB
  - Mi3: 1583.4 MHz, S21 = -1.438 dB
  - Mi4: 1597.8 MHz, S21 = -1.514 dB
  - Mi5: 1605.9 MHz, S21 = -1.530 dB

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TA1859A v1
3. Wide-band

![Wide-band Graph](image)

- M1: 1575.4MHz
  - S21 = -1.39dB
- M2: 925.0MHz
  - S21 = -47.43dB
- M3: 1910.0MHz
  - S21 = -41.51dB
- M4: 2500.0MHz
  - S21 = -35.57dB
- M5: 6000.0MHz
  - S21 = -21.87dB

4. VSWR (Input)

![VSWR Graph](image)

- M1: 1555.4MHz
  - VSWR1 = 1.368
- M2: 1575.4MHz
  - VSWR1 = 1.259
- M3: 1585.4MHz
  - VSWR1 = 1.272
- M4: 1597.6MHz
  - VSWR1 = 1.361
- M5: 1605.9MHz
  - VSWR1 = 1.188
5. VSWR (Output)

6. Input Impedance
7. Output Impedance

8. Amplitude balance
9. Phase balance

![Graph showing phase balance over frequency range. Points labeled 1 to 5 with phase balance values at specific frequencies.]

Mi1: 1565.4MHz
P Bal=3.315deg

Mi2: 1575.4MHz
P Bal=5.795deg

Mi3: 1585.4MHz
P Bal=1.503deg

Mi4: 1595.8MHz
P Bal=-0.485deg

Mi5: 1605.9MHz
P Bal=-8.781deg
SAW Filter 1585.6530MHz
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D. MEASUREMENT CIRCUIT:

![](image)

E. OUTLINE DRAWING:

Device size: 1.1mm typ. x 0.9mm typ. x 0.5mm max.

Pin Configuration

<table>
<thead>
<tr>
<th>Pin No.</th>
<th>Symbol</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>IN</td>
<td>Unbalanced pin</td>
</tr>
<tr>
<td>2</td>
<td>GND</td>
<td>Ground</td>
</tr>
<tr>
<td>3</td>
<td>OUT</td>
<td>Balanced pin</td>
</tr>
<tr>
<td>4</td>
<td>OUT</td>
<td>Balanced pin</td>
</tr>
<tr>
<td>5</td>
<td>GND</td>
<td>Ground</td>
</tr>
</tbody>
</table>
F. PACKING:

1. Reel Dimension

Materials of Reel
Material: Polystyrene + Carbon
Characteristics: Conforms to EIAJ-ET-7200A
Color: Black
Surface resistance (reference value): $10^0 \Omega / \text{sq} \ \text{Max.}$

<table>
<thead>
<tr>
<th>Code</th>
<th>Quantity</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>W1</th>
<th>W2</th>
</tr>
</thead>
<tbody>
<tr>
<td>J</td>
<td>5,000 pcs</td>
<td>$\phi 180.0 \pm 0.0/\pm 1.5$</td>
<td>$\phi 66.0 \pm 0.5$</td>
<td>$\phi 13.0 \pm 0.2$</td>
<td>9.0 +1.0/0.0</td>
<td>11.4 +1.0</td>
</tr>
</tbody>
</table>

2. Tape Dimension

Empty cavities

Component fixed area

Empty cavities

Direction of feed

Unit: mm
G. RECOMMENDED TEMPERATURE PROFILE OF REFLOW SOLDERING:

The figure below shows the recommended temperature profile for reflow soldering in the case of lead-free solder alloy Sn3.0Ag0.5Cu. Recommended number of reflow cycles is 5 maximum. Suitable condition for solder heating is different depending on composition and manufacturing method. Please contact the solder manufacturer for details.