Product Specifications Approval Sheet

Product Description: SAW DPX 836.5/881.5 MHz Band 5 SMD 1.8x1.4 mm (BW=25 MHz)

TST Part No.: TF0129B (This part is compliant with AEC-Q200)

Customer Part No.: ____________________________

Customer signature required

Company: ________________________________

Division: ________________________________

Approved by: ______________________________

Date: ________________________________

Checked by: _______ Anne Chen

Approved by: _______ Andy Yu

Date: _______ 04/01/2020

1. Customer signed back is required before TST can proceed with sample build and receive orders.

2. Orders received without customer signed back will be regarded as agreement on the specifications.

3. Any specifications changes must be approved upon by both parties and a new revision of specifications shall be released to reflect the change.
SAW DPX 836.5/881.5 MHz Band 5 SMD 1.8X1.4 mm (BW=25 MHz)
MODEL NO.: TF0129B

A. MAXIMUM RATING:
1. Operating temperature range: -40 °C to +85 °C
2. Storage temperature range: -40 °C to +85 °C
3. Input power: 29dBm (Ta=+50deg C, 50000h, CW)
4. Maximum DC Voltage: +/-3 V
5. Moisture Sensitivity Level: Level 1

B. ELECTRICAL CHARACTERISTICS:
Terminating impedance (Tx Port): 50 Ω (Single-ended)
Terminating impedance (Rx Port): 100 Ω (Differential)
Terminating impedance (Ant Port): 50//8.2nH Ω (Single-ended)

<table>
<thead>
<tr>
<th>Parameters Description</th>
<th>Unit</th>
<th>Min</th>
<th>Typ</th>
<th>Max</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Insertion Loss</td>
<td>dB(1)</td>
<td>-</td>
<td>1.4</td>
<td>2.3</td>
<td></td>
</tr>
<tr>
<td>Amplitude ripple</td>
<td>dB</td>
<td>-</td>
<td>0.5</td>
<td>1.2</td>
<td></td>
</tr>
<tr>
<td>VSWR</td>
<td>-</td>
<td>-</td>
<td>1.4</td>
<td>2.1</td>
<td></td>
</tr>
<tr>
<td>Attenuation:</td>
<td>-</td>
<td>-</td>
<td>1.5</td>
<td>2.0</td>
<td></td>
</tr>
<tr>
<td>779~804 MHz</td>
<td>dB</td>
<td>30</td>
<td>38</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>869~894 MHz</td>
<td>dB</td>
<td>45</td>
<td>50</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>1574~1577 MHz</td>
<td>dB</td>
<td>43</td>
<td>46</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>1648~1698 MHz</td>
<td>dB</td>
<td>35</td>
<td>44</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>2472~2547 MHz</td>
<td>dB</td>
<td>24</td>
<td>30</td>
<td>-</td>
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</tbody>
</table>

ANT to Rx (f_{T0}=881.5 MHz)
<table>
<thead>
<tr>
<th>Parameters Description</th>
<th>Unit</th>
<th>Min</th>
<th>Typ</th>
<th>Max</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Insertion Loss</td>
<td>869~894 MHz</td>
<td>dB(*)</td>
<td>1.7</td>
<td>2.5</td>
<td></td>
</tr>
<tr>
<td>Amplitude ripple</td>
<td>869~894 MHz</td>
<td>dB</td>
<td>0.4</td>
<td>1.2</td>
<td></td>
</tr>
<tr>
<td>Phase balance</td>
<td>869~894 MHz</td>
<td>Deg</td>
<td>-10</td>
<td>-1/+3</td>
<td>+10</td>
</tr>
<tr>
<td>Amplitude balance</td>
<td>869~894 MHz</td>
<td>dB</td>
<td>-1.0</td>
<td>-0.3/+0.2</td>
<td>+1.0</td>
</tr>
<tr>
<td>VSWR</td>
<td>869~894 MHz</td>
<td></td>
<td>1.4</td>
<td>2.1</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1.5</td>
<td>2.0</td>
<td></td>
</tr>
</tbody>
</table>

**Attenuation:**

<table>
<thead>
<tr>
<th>Frequency Range</th>
<th>Unit</th>
<th>Min</th>
<th>Typ</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>824~849 MHz</td>
<td>dB</td>
<td>50</td>
<td>56</td>
<td></td>
</tr>
<tr>
<td>1738~1788 MHz</td>
<td>dB</td>
<td>40</td>
<td>51</td>
<td></td>
</tr>
<tr>
<td>1850~1910 MHz</td>
<td>dB</td>
<td>40</td>
<td>50</td>
<td></td>
</tr>
<tr>
<td>1920~1980 MHz</td>
<td>dB</td>
<td>40</td>
<td>50</td>
<td></td>
</tr>
<tr>
<td>2400~2500 MHz</td>
<td>dB</td>
<td>38</td>
<td>48</td>
<td></td>
</tr>
<tr>
<td>3476~3576 MHz</td>
<td>dB</td>
<td>35</td>
<td>44</td>
<td></td>
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</tbody>
</table>

**Tx to Rx**

<table>
<thead>
<tr>
<th>Isolation</th>
<th>Frequency Range</th>
<th>Unit</th>
<th>Min</th>
<th>Typ</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>824~849 MHz</td>
<td>dB</td>
<td>55</td>
<td>58</td>
<td>-</td>
</tr>
<tr>
<td>Isolation</td>
<td>869~894 MHz</td>
<td>dB</td>
<td>45</td>
<td>52</td>
<td>-</td>
</tr>
</tbody>
</table>

(*1) Specification of insertion loss excludes loss that comes from the test board. (Approximately 0.05dB)

**C. Evaluation Circuit**

![Figure 2. Evaluation Circuit](image-url)
D. FREQUENCY CHARACTERISTICS:

Tx to Ant

These data exclude loss that comes from the test board.

Ant to Rx
Tx to Ant, Ant to Rx

These data exclude loss that comes from the test board.
Tx Port
Ant Port

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TST DCC
Release document
Ant to Rx (Amplitude balance)

![Amplitude balance graph]

Ant to Rx (Phase balance)

![Phase balance graph]
Tx to Ant (Wide span)

Ant to Rx (Wide span)
E. OUTLINE DRAWING:

Marking name: SBH
\(\triangle\): Date code (2016 May \(\rightarrow\) s, \ldots, 2019 Dec \(\rightarrow\) m.)
\(\bigtriangleup\bigtriangledown\): Lot Code.
Product Date Code. Follow below table.

<table>
<thead>
<tr>
<th>Year</th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
<th>Apr</th>
<th>May</th>
<th>Jun</th>
<th>Jul</th>
<th>Aug</th>
<th>Sep</th>
<th>Oct</th>
<th>Nov</th>
<th>Dec</th>
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<tbody>
<tr>
<td>2016</td>
<td>n</td>
<td>p</td>
<td>q</td>
<td>r</td>
<td>s</td>
<td>t</td>
<td>u</td>
<td>v</td>
<td>w</td>
<td>x</td>
<td>y</td>
<td>z</td>
</tr>
<tr>
<td>2017</td>
<td>A</td>
<td>B</td>
<td>C</td>
<td>D</td>
<td>E</td>
<td>F</td>
<td>G</td>
<td>H</td>
<td>J</td>
<td>K</td>
<td>L</td>
<td>M</td>
</tr>
<tr>
<td>2018</td>
<td>N</td>
<td>P</td>
<td>Q</td>
<td>R</td>
<td>S</td>
<td>T</td>
<td>U</td>
<td>V</td>
<td>W</td>
<td>X</td>
<td>Y</td>
<td>Z</td>
</tr>
<tr>
<td>2019</td>
<td>a</td>
<td>b</td>
<td>c</td>
<td>d</td>
<td>e</td>
<td>f</td>
<td>g</td>
<td>h</td>
<td>j</td>
<td>k</td>
<td>l</td>
<td>m</td>
</tr>
</tbody>
</table>

**Pin Configuration**

<table>
<thead>
<tr>
<th>Pin No.</th>
<th>Pin name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Rx</td>
<td>Receiver Pin (balanced)</td>
</tr>
<tr>
<td>2</td>
<td>GND</td>
<td>Ground Pin</td>
</tr>
<tr>
<td>3</td>
<td>Tx</td>
<td>Transmitter Pin</td>
</tr>
<tr>
<td>4</td>
<td>GND</td>
<td>Ground Pin</td>
</tr>
<tr>
<td>5</td>
<td>GND</td>
<td>Ground Pin</td>
</tr>
<tr>
<td>6</td>
<td>ANT</td>
<td>Antenna Pin</td>
</tr>
<tr>
<td>7</td>
<td>GND</td>
<td>Ground Pin</td>
</tr>
<tr>
<td>8</td>
<td>Rx</td>
<td>Receiver Pin (balanced)</td>
</tr>
</tbody>
</table>

Figure 1. Dimensions and Pin assignment

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TST DCC
Release document
F. FOOTPRINT:

- Pad pattern
- Resist pattern
**G. PACKING:**

1. **REEL DIMENSION**

   ![Reel Diagram]

   **Materials of Reel**
   
   Material: Polystyrene + Carbon  
   Characteristics: Conforms to EIAJ-ET-7200A  
   Color: Black  
   Surface resistance (reference value): 10\(^9\)\(\Omega\)/sq Max.

   Unit: mm

<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>Z</td>
<td>3,000 pcs</td>
<td>180.0 +/-0.0/1.5</td>
<td>66.0 +/-0.5</td>
<td>13.0 +/-0.2</td>
<td>9.0 +1.0/-0.0</td>
<td>114 +/-1.0</td>
</tr>
</tbody>
</table>

2. **TAPE DIMENSION**

   ![Tape Diagram]

   Unit: mm

   Direction of feed
H. RECOMMENDED REFLOW PROFILE:

1. Preheating shall be fixed at 150~180°C for 60~90 seconds.
2. Ascending time to preheating temperature 150°C shall be 30 seconds min.
3. Heating shall be fixed at 220°C for 50~80 seconds and at 245~260°C peak (min. 10sec).
4. Time: 2 times.