Product Specifications Approval Sheet

Product Name: SAW DPX 782 / 751MHz Band13 un-bal SMD1.8X1.4 mm (BW=10 MHz)
TST Parts No.: TF0169A
Customer Part No.:______________________________

Customer signature required

Company:______________________________________

Division:______________________________________

Approved by:__________________________________

Date:__________________________________________

Checked by:____________________ Anne Chen

Approved by:____________________ Andy Yu

Date:____________________ 2018.05.14

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.
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E-mail: tstsales@mail.taisaw.com    Web: www.taisaw.com

SAW DPX 782/751MHz Band13 Un-balanced SMD1.8X1.4 mm (BW=10 MHz)
MODEL NO.: TF0169A  REV. No.: 1.0

### A. MAXIMUM RATING:
1. Input power: 29dBm (Ta=+50deg C,50000h,CW)
2. Maximum DC Voltage: +/-5 V
3. Operating temperature range: -20 °C to +85 °C
4. Storage temperature range: -20 °C to +85 °C
5. Moisture Sensitivity Level: Level 1 (MSL 1)
6. ESD 100V(MM)  200V(HBM)

### B. ELECTRICAL CHARACTERISTICS:
- Terminating impedance(Tx Port): 50 Ω (Single-ended)
- Terminating impedance(Rx Port): 50 Ω (Single-ended)
- Terminating impedance(Ant Port): 50//12nH (Ω=∞) (Single-ended)

#### Tx to ANT

<table>
<thead>
<tr>
<th>Parameters Description</th>
<th>Unit</th>
<th>Minimum</th>
<th>Typical</th>
<th>Maximum</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>Insertion Loss</td>
<td>Db</td>
<td>-</td>
<td>1.9</td>
<td>2.5</td>
<td></td>
</tr>
<tr>
<td>Ripple</td>
<td>dB</td>
<td>-</td>
<td>0.8</td>
<td>1.6</td>
<td></td>
</tr>
<tr>
<td>VSWR</td>
<td>-</td>
<td>-</td>
<td>1.6</td>
<td>2.0</td>
<td></td>
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</tbody>
</table>

#### Attenuation:

<table>
<thead>
<tr>
<th>Frequency Range</th>
<th>Unit</th>
<th>Minimum</th>
<th>Typical</th>
<th>Maximum</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>746 ~ 756 MHz</td>
<td>dB</td>
<td>44</td>
<td>51</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>758 ~ 768 MHz</td>
<td>dB</td>
<td>10</td>
<td>32</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>768 ~ 775 MHz</td>
<td>dB</td>
<td>1</td>
<td>2.5</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>1554 ~ 1565 MHz</td>
<td>dB</td>
<td>41</td>
<td>46</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>1565 ~ 1607 MHz</td>
<td>dB</td>
<td>41</td>
<td>46</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>2331 ~ 2361 MHz</td>
<td>dB</td>
<td>35</td>
<td>53</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>2400 ~ 2484 MHz</td>
<td>dB</td>
<td>40</td>
<td>50</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>3108 ~ 3148 MHz</td>
<td>dB</td>
<td>23</td>
<td>28</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>4900 ~ 5950 MHz</td>
<td>dB</td>
<td>8</td>
<td>12</td>
<td>-</td>
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</table>
### ANT to Rx

<table>
<thead>
<tr>
<th>Parameters Description</th>
<th>Unit</th>
<th>Minimum</th>
<th>Typical</th>
<th>Maximum</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>Insertion Loss</td>
<td>dB(*1)</td>
<td>-</td>
<td>1.7</td>
<td>2.3</td>
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<tr>
<td>Ripple</td>
<td>dB</td>
<td>-</td>
<td>0.4</td>
<td>1.0</td>
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<tr>
<td>VSWR</td>
<td>-</td>
<td>-</td>
<td>1.4</td>
<td>2.0</td>
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<tr>
<td>VSWR</td>
<td>-</td>
<td>-</td>
<td>1.5</td>
<td>2.0</td>
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### Attenuation:

<table>
<thead>
<tr>
<th>Frequency Range</th>
<th>Unit</th>
<th>Minimum</th>
<th>Typical</th>
<th>Maximum</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>777 ~ 787 MHz</td>
<td>dB</td>
<td>50</td>
<td>62</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>2400 ~ 2500 MHz</td>
<td>dB</td>
<td>40</td>
<td>45</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>787 ~ 6000 MHz</td>
<td>dB</td>
<td>23</td>
<td>28</td>
<td>-</td>
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### Tx to Rx

<table>
<thead>
<tr>
<th>Isolation</th>
<th>Unit</th>
<th>Minimum</th>
<th>Typical</th>
<th>Maximum</th>
<th>Note</th>
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<tbody>
<tr>
<td>746 ~ 756 MHz</td>
<td>dB</td>
<td>52</td>
<td>58</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>777 ~ 787 MHz</td>
<td>dB</td>
<td>56</td>
<td>61</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

(*1) Specification of insertion loss excludes loss that comes from the test board.
C. Frequency Characteristics:

**Tx to Ant**

![Graph showing frequency characteristics for Tx to Ant](image1)

- **Mk1**: 777.0 MHz, S21 = -1.678 dB
- **Mk2**: 787.0 MHz, S21 = -1.076 dB
- **Mk3**: 746.0 MHz, S21 = -57.346 dB
- **Mk4**: 756.0 MHz, S21 = -49.132 dB

**Ant to Rx**

![Graph showing frequency characteristics for Ant to Rx](image2)

- **Mk1**: 777.0 MHz, S31 = -69.115 dB
- **Mk2**: 787.0 MHz, S31 = -64.102 dB
- **Mk3**: 746.0 MHz, S31 = -1.436 dB
- **Mk4**: 756.0 MHz, S31 = -1.368 dB
Tx to Ant, Ant to Rx

![Graph showing Tx to Ant, Ant to Rx]

Tx to Rx Isolation

![Graph showing Tx to Rx Isolation]

Mk1: 777.0 MHz
S21 = -1.678 dB
S31 = -69.115 dB

Mk2: 787.0 MHz
S21 = -1.076 dB
S31 = -64.102 dB

Mk3: 746.0 MHz
S21 = -57.340 dB
S31 = -1.436 dB

Mk4: 756.0 MHz
S21 = -48.132 dB
S31 = -1.366 dB
Rx Port

![Graph of VSWR and Frequency](image)

- Mk1: 777.0 MHz
  - VSWR = 69.125
- Mk2: 787.0 MHz
  - VSWR = 4.564
- Mk3: 746.0 MHz
  - VSWR = 1.283
- Mk4: 756.0 MHz
  - VSWR = 1.178

![Smith Chart](image)

- Mk1: 777.0
  - S33 = 0.630 - j 7.464
- Mk2: 787.0
  - S33 = 0.341 - j 3.846
- Mk3: 746.0
  - S33 = 0.813 - j 0.230
- Mk4: 756.0
  - S33 = 0.872 - j 0.085
Ant Port

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**Graph 1:**

- **Frequency (MHz):** 730 to 810
- **VSWR:**
  - **Mk1:** 777.0 MHz, VSWR = 1.473
  - **Mk2:** 787.0 MHz, VSWR = 1.381
  - **Mk3:** 746.0 MHz, VSWR = 1.255
  - **Mk4:** 756.0 MHz, VSWR = 1.215

**Graph 2:**

- **Angle:**
  - **Mk1:** 777.0
  - **Mk2:** 787.0
  - **Mk3:** 746.0
  - **Mk4:** 756.0

- **Magnitude:**
  - **S11:**
    - Mk1: 1.016 - |0.393|
    - Mk2: 1.303 + |0.213|
    - Mk3: 0.969 - |0.222|
    - Mk4: 0.685 - |0.103|
Tx to Ant (Wide span)

Ant to Rx (Wide span)
D. MEASUREMENT CIRCUIT:

![Measurement Circuit Diagram]

**Recommended foot print pattern**

- Common GND
- External appearance in Chip carrier
- Pad pattern
- Resist pattern

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TAI-SAW TECHNOLOGY CO., LTD.

TST DCC
Release document

Preliminary
Marking name: J6
\(\Delta\): Date code (2016 May → s ,..........., 2019 Dec→m.)
◇◇: Lot Code.
Product Date Code. Follow below table.

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<th>Feb</th>
<th>Mar</th>
<th>Apr</th>
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<td>u</td>
<td>v</td>
<td>w</td>
<td>x</td>
<td>y</td>
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<td>g</td>
<td>h</td>
<td>j</td>
<td>k</td>
<td>l</td>
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</tr>
</tbody>
</table>

**Pin Configuration**

<table>
<thead>
<tr>
<th>Pin No.</th>
<th>Pin name</th>
<th>Description</th>
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<tbody>
<tr>
<td>1</td>
<td>Rx</td>
<td>Receiver Pin</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>GND</td>
<td>Ground Pin</td>
</tr>
</tbody>
</table>

**Figure 1. Dimensions and Pin assignment**
Top View (Sample Production):

F. PACKING:
1. REEL DIMENSION
(Please refer to FR-75D10 for packing quantity)

2. TAPE DIMENSION

G. RECOMMENDED REFLOW PROFILE:
1. Preheating shall be fixed at 150~180℃ for 60~90 seconds.
2. Ascending time to preheating temperature 150℃ shall be 30 seconds min.
3. Heating shall be fixed at 220℃ for 50~80 seconds and at 260℃ +0/-5℃ peak (20~40sec).
4. Time: 2 times.