



## SAW BANDPASS FILTER

**PART NO.: ACTFH003-1580SA-1109**

|                                       |                           |
|---------------------------------------|---------------------------|
| <b>Product Type:</b>                  | <b>Customer:</b>          |
| SAW filter for Beidou & GPS & GLONASS |                           |
|                                       | <b>Customer Part NO.:</b> |
|                                       |                           |
|                                       | <b>Issued Date:</b>       |
|                                       |                           |

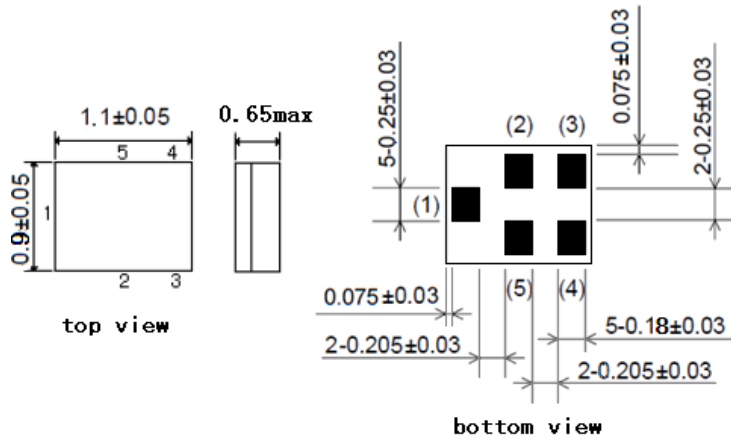
## Features

SAW filter for Beidou & GPS & GLONASS.

- 1 High stability and reliability with good performance and no adjustment.
- 2 Narrow and sharp pass band characteristics. RoHS compatible.
- 3 Low insertion loss and deep stop band attenuation for interference.
- 4 Low – loss SAW filter for GPS.
- 5 Package size 1.1mm\*0.9mm

## Package Dimensions

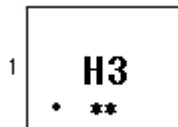
Ceramic Package: Unit: mm



## Pin Configuration

|       |        |
|-------|--------|
| 1     | Input  |
| 4     | Output |
| 2,3,5 | Ground |

## Marking



Top View, Laser Marking

"H3": Part number

"1": Terminal1

The first "\*": Month Code (The code shown below varies in a 4-year cycle)

| Code      | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|-----------|---|---|---|---|---|---|---|---|---|----|----|----|
| 2016/2020 | n | p | q | r | s | t | u | v | w | x  | y  | z  |
| 2017/2021 | A | B | C | D | E | F | G | H | J | K  | L  | M  |
| 2018/2022 | N | P | Q | R | S | T | U | V | W | X  | Y  | Z  |
| 2019/2023 | a | b | c | d | e | f | g | h | i | j  | k  | m  |

The second "\*": Date Code

| data | 1st  | 2nd  | 3rd  | 4th  | 5th  | 6th  | 7th  | 8th  | 9th  | 10th |      |
|------|------|------|------|------|------|------|------|------|------|------|------|
| code | A    | B    | C    | D    | E    | F    | G    | H    | J    | K    |      |
| data | 11th | 12th | 13th | 14th | 15th | 16th | 17th | 18th | 19th | 20th |      |
| code | L    | M    | N    | P    | Q    | R    | S    | T    | U    | V    |      |
| data | 21st | 22nd | 23rd | 24th | 25th | 26th | 27th | 28th | 29th | 30th | 31st |
| code | W    | X    | Y    | Z    | a    | b    | d    | e    | f    | g    | h    |

## Maximum Ratings

|                                    |           |           |     |
|------------------------------------|-----------|-----------|-----|
| DC Voltage (between any Terminals) | $V_{DC}$  | 10        | V   |
| RF Power (in <i>BW</i> )           | $P$       | 13        | dBm |
| Operating Temperature Range        | $T_A$     | -30 ~ +85 | °C  |
| Storage Temperature Range          | $T_{stg}$ | -40 ~ +85 | °C  |

## Electrical Characteristics:

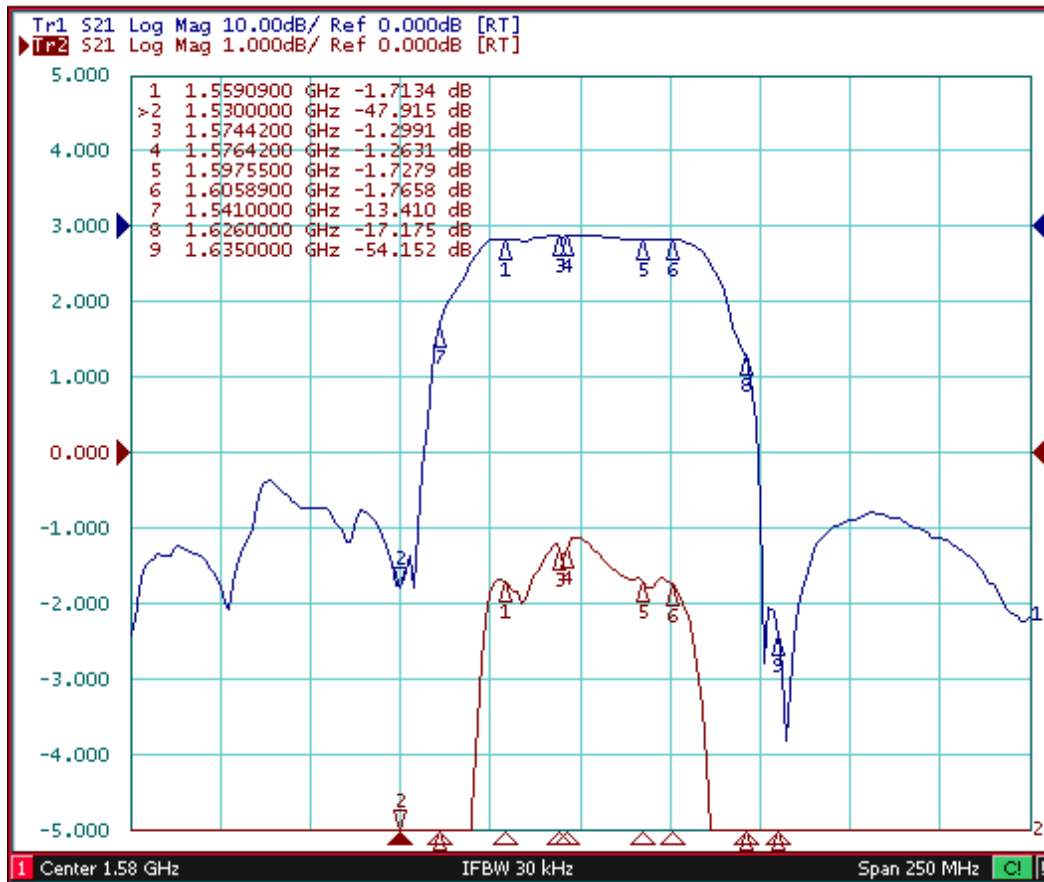
|                                    |           |    |      |     |          |
|------------------------------------|-----------|----|------|-----|----------|
| Insertion Loss                     | $IL$      |    |      |     |          |
| 1559.09 .... 1563.09 MHz           |           |    | 1.8  | 2.1 | dB       |
| 1574.42 .... 1576.42 MHz           |           |    | 1.3  | 1.6 | dB       |
| 1597.55 .... 1605.89 MHz           |           |    | 1.8  | 2.1 | dB       |
| Passband Ripple                    | $Pr$      |    |      |     |          |
| 1559.09 .... 1563.09 MHz           |           |    | 0.2  | 0.5 | dB       |
| 1574.42 .... 1576.42 MHz           |           |    | 0.2  | 0.4 | dB       |
| 1597.55 .... 1605.89 MHz           |           |    | 0.3  | 0.6 | dB       |
| VSWR Input                         | $V_{swr}$ |    |      |     |          |
| 1559.052 .... 1563.144 MHz         |           |    | 1.5  | 1.9 |          |
| 1574.42 .... 1576.42 MHz           |           |    | 1.25 | 1.8 |          |
| 1597.55 .... 1605.89 MHz           |           |    | 1.55 | 1.9 |          |
| VSWR Output                        | $V_{swr}$ |    |      |     |          |
| 1559.052 .... 1563.144 MHz         |           |    | 1.5  | 1.9 |          |
| 1574.42 .... 1576.42 MHz           |           |    | 1.25 | 1.8 |          |
| 1597.55 .... 1605.89 MHz           |           |    | 1.55 | 1.9 |          |
| Group delay Ripple                 | $Gdr$     |    |      |     |          |
| 1597.55 .... 1605.89 MHz           |           |    | 3    | 12  | ns       |
| Absolute Attenuation               | $\alpha$  |    |      |     |          |
| 10 .... 960.00 MHz                 |           | 47 | 50   |     | dB       |
| 960.00 .... 1463.00 MHz            |           | 36 | 40   |     | dB       |
| 1710.00 .... 1785.00 MHz           |           | 37 | 39   |     | dB       |
| 1785.00 .... 1990.00 MHz           |           | 37 | 39   |     | dB       |
| 1990.00 .... 2280.00 MHz           |           | 35 | 39   |     | dB       |
| 2280.00 .... 2400.00 MHz           |           | 35 | 39   |     | dB       |
| 2400.00 .... 2500.00 MHz           |           | 33 | 38   |     | dB       |
| 2500.00 .... 2700.00 MHz           |           | 32 | 36   |     | dB       |
| 2700.00 .... 3000.00 MHz           |           | 28 | 33   |     | dB       |
| 3000.00 .... 6000.00 MHz           |           | 15 | 22   |     | dB       |
| Input / Output Impedance (Nominal) |           |    | 50   |     | $\Omega$ |

 **RoHS Compliant**

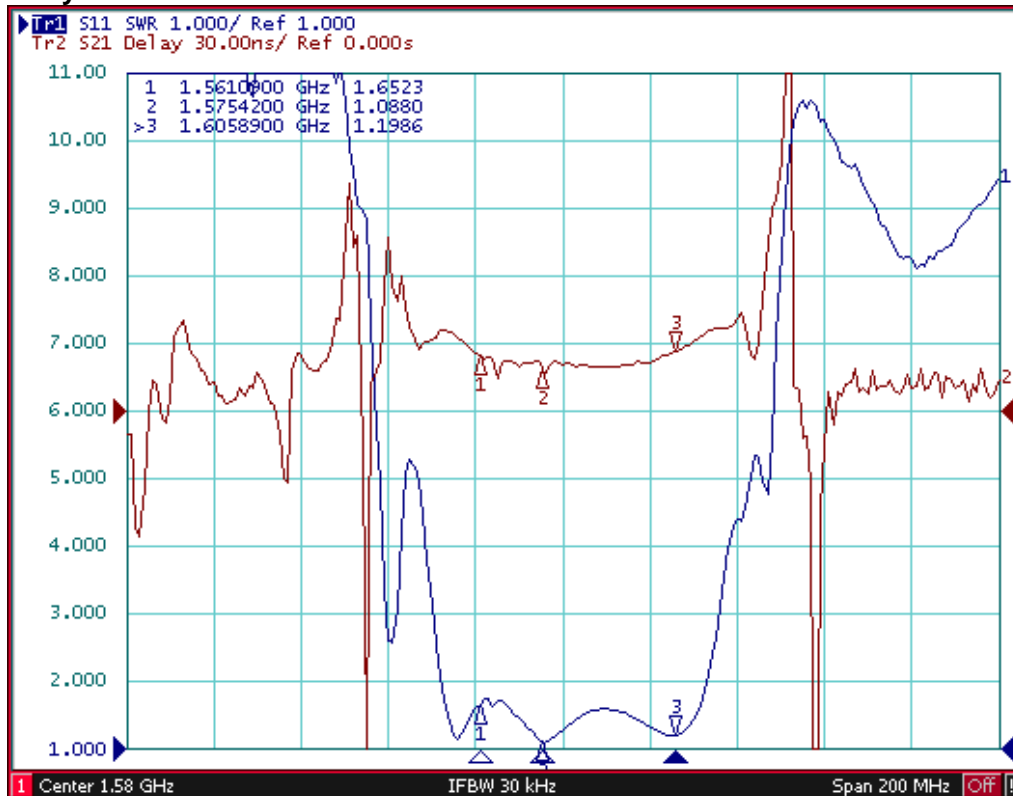
 **Electrostatic Sensitive Device**

### Typical Frequency Response

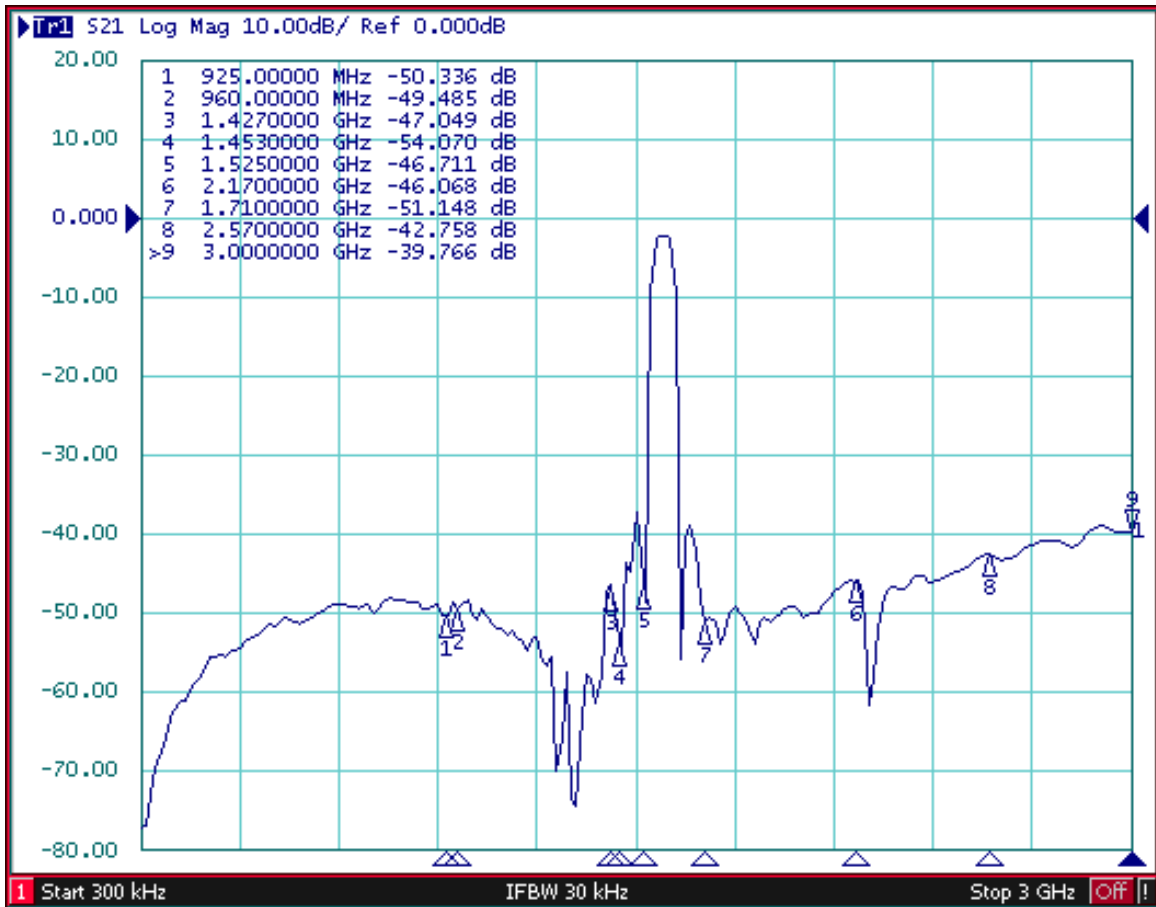
S21



### S11 Group Delay



Far side





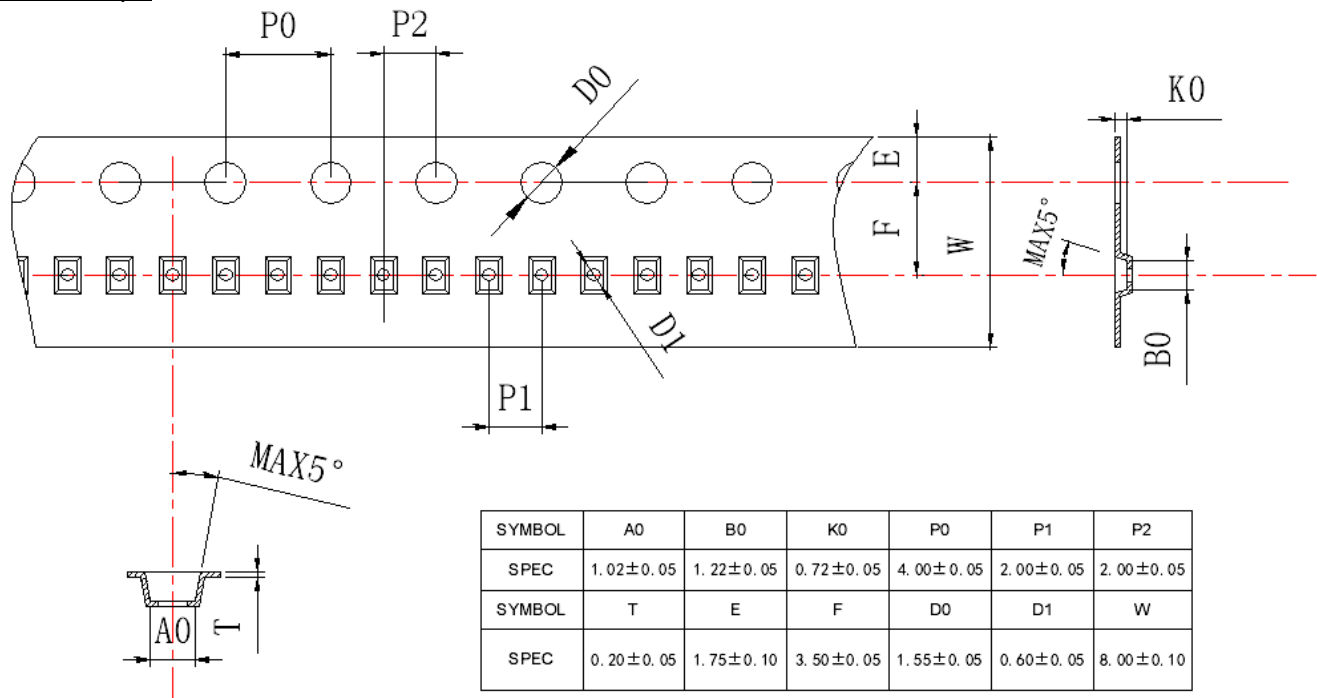
## Stability Characteristic

| Item No. | Test Item                    | STD Reference    | Test Conditions  | per lot    |
|----------|------------------------------|------------------|--|------------|
|          | Preconditioning              | JESD22-A113      | 1) Temperature Cycling, 5 cycles -40°C to 85°C;<br>2) Bake, 24 hrs @85±5°C;<br>3)Moisture Soak, Soak time and conditions per IPC/JEDEC J-STD-020 based on device MSL level;<br>4) Reflow, 3 reflow cycles;<br>5) Drying, Room ambient temperature. | All behind |
| 1        | Temperature Cycling          | JESD22-A104      | -40°C / +85°C,5°C/min,15min dwell,<1 min transfer time,500cycles   | 3*25 pcs   |
| 2        | High Temperature Storage     | JESD22-A103      | Temperature=85°C, 1000 hours.  | 3*25 pcs   |
| 3        | Temperature Humidity no bias | JEDEC Std A101-B | 85°C 85%RH 240 hours   | 3*25 pcs   |
| 4        | Human Body Mode ESD          | JESD22-A114      | Ta=25°C, ≥100V   | 3 pcs      |
| 5        | Charge Device Mode ESD       | JESD22-C101      | Ta=25°C, ≥100V   | 3 pcs      |
| 6        | Solderability                | JESD22-B102      | Wetting: 245°C, 5s.  | 22 pcs     |
| 7        | Drop Test                    | JESD22-B111      | 1500 Gs, 0.5 millisecond duration, half-sine pulse.  | 20 pcs     |
| 8        | Mechanical Shock             | JESD-47          | Shock pulse of 1500g with pulse duration of 0.5+/-0.1msec (X ,Y & Z); 5 shocks per axis.   | 3*25 pcs   |

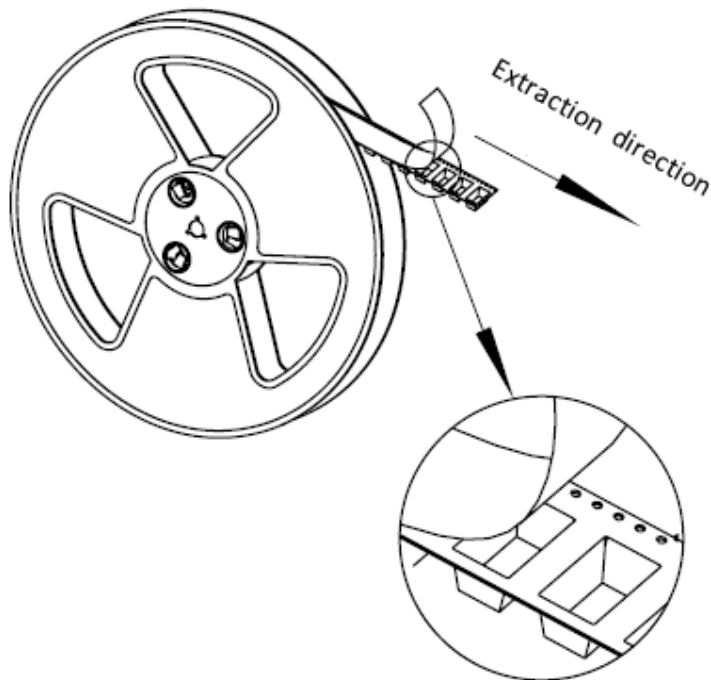
**Requirements:** The SAW filer shall remain within the electrical specifications after tests.

### Packing Information

#### Carrier Tape



#### Reel Dimensions



|           |            |
|-----------|------------|
| Material  | PS         |
| Unit      | mm         |
| Tolerance | ±0.20 mm   |
| Quantity  | 10000/reel |

#### Outer Packing

|              |       |             |  |      |
|--------------|-------|-------------|--|------|
| Carton Box I | 20000 | 470×310×285 | anti-static plastic bag & carton box<br>1 reel / bag<br>30 bags / box (20000pcs) | 5.21 |
|--------------|-------|-------------|--|------|

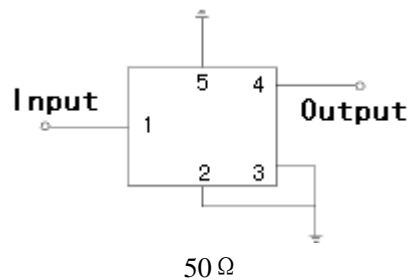
Unit: mm

Unit: kg

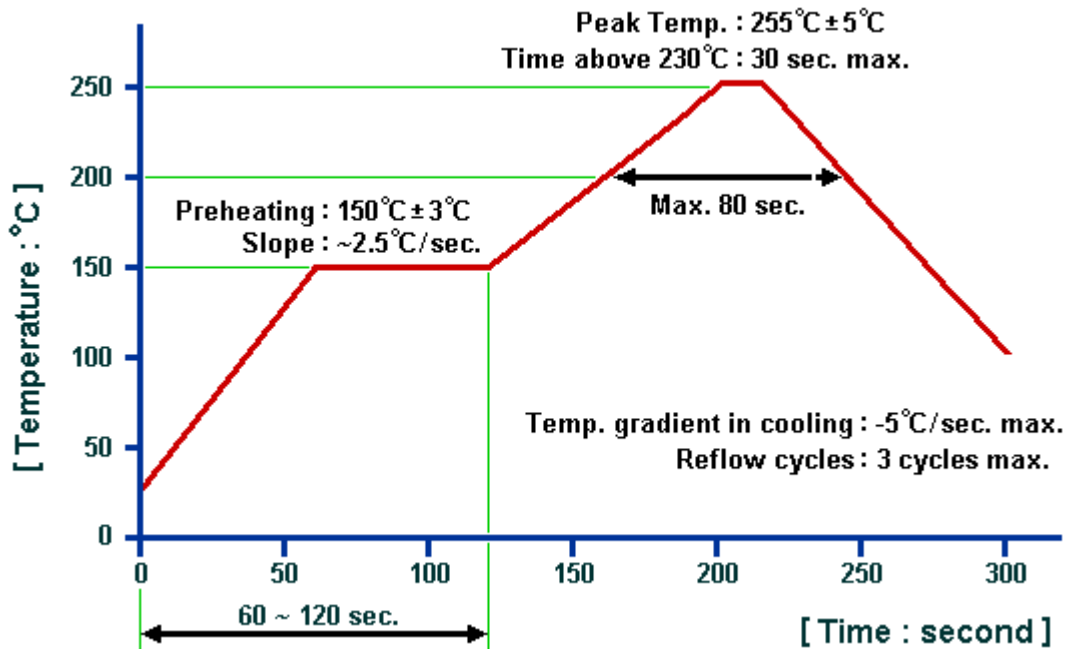
## Remarks

- SAW devices should not be used in any type of fluid such as water, oil, organic solvent, etc.
- Be certain not to apply voltage exceeding the rated voltage of components.
- Do not operate outside the recommended operating temperature range of components.
- Sudden change of temperature shall be avoided, deterioration of the characteristics can occur.
- Be careful of soldering temperature and duration of components when soldering.
- Do not place soldering iron on the body of components.
- Be careful not to subject the terminals or leads of components to excessive force.
- SAW devices are electrostatic sensitive. Please avoid static voltage during operation and storage.
- Ultrasonic cleaning shall be avoided. Ultrasonic vibration may cause destruction of components.

## Test Circuit



## Recommended Soldering Profile



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1. The specifications of this device are subject to change or obsolescence without notice.
2. Typically, equipment utilizing this device requires emissions testing and government approval, which is the responsibility of the equipment manufacturer.
3. Our liability is only assumed for the Surface Acoustic Wave (SAW) component(s) per se, not for applications, processes and circuits implemented within components or assemblies.