# APPROVAL SHEET

| Approval Specification | | Customer's Approval Certificate |
|---|---|---|
| **TO:**<br><br>**Part No.:**<br><br>**Customer's Part No.:** | | Please return this copy as a certification of your approval<br><br>**Checked & Approved by:**<br><br>**Date:** |

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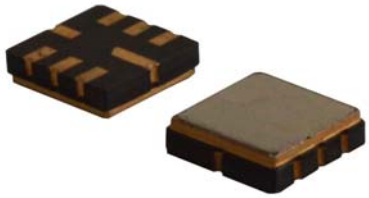
| | | |
|---|---|---|
| Part No. | : | SF2152 |
| Pages | : | 6 |
| Date | : | 2013/3/15 |
| Revision | : | 1.0 |

| | |
|---|---|
| **Prepared by:** | 郑宝琴 |
| **Checked by:** | |
| **Approved by:** | |

## Application

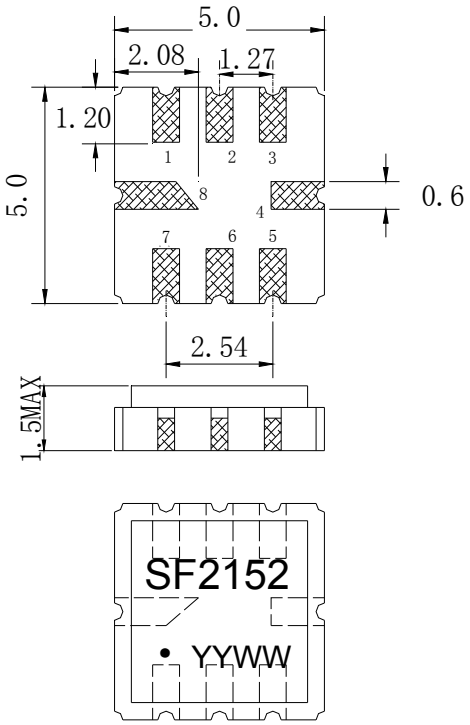
- Low-loss SAW component
- Low amplitude ripple
- Usable passband 10 MHz



## Features

- Ceramic Package for **S**urface **M**ounted **T**echnology (**SMT**)
- **RoHS** compatible
- Package size 5.00x5.00x1.50mm$^3$
- Package Code QCC8C
- **E**lectrostatic **S**ensitive **D**evice(**ESD)**

## Package Dimensions (Unit: mm)



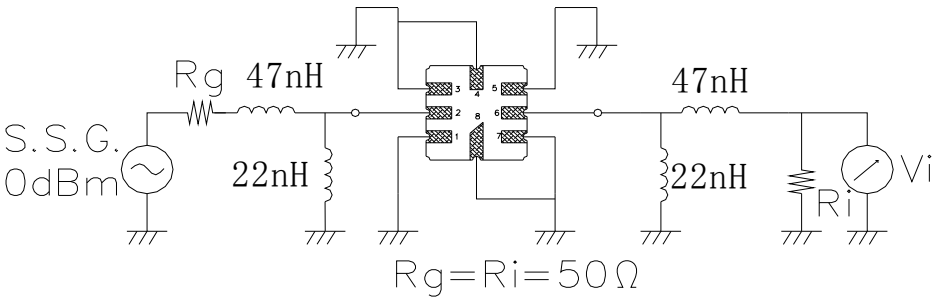

## Pin Configuration

| Pin No. | Description |
|---|---|
| 2 | Input |
| 6 | Output |
| 1,3,4,5,7,8 | Ground |

## Marking Description

| | |
|---|---|
| **S** | Trademark |
| **F** | SAW Filter |
| **2152** | Part Number |
| ● | Pin 1 |
| **YYWW** | Year Code & Week Code |

## Test Circuit



## Performance

### Maximum Rating

| Item | | Value | Unit |
|---|---|---|---|
| DC Voltage | $V_{DC}$ | 3 | V |
| Operation Temperature | T | -40 ~ +85 | ℃ |
| Storage Temperature | $T_{stg}$ | -55 ~ +125 | ℃ |
| RF Power Dissipation | P | 10 | dBm |

### Electronic Characteristics

Test Temperature: 25℃±2℃

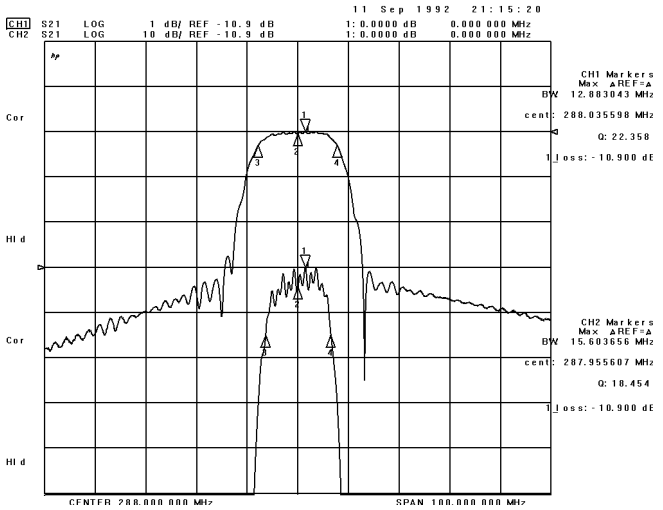
Terminating source impedance: 50Ω

Terminating load impedance: 50Ω

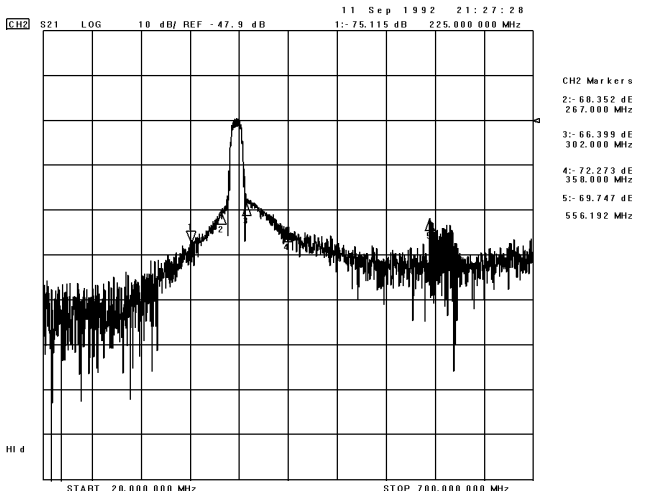
| Item | | Minimum | Typical | Maximum | Unit |
|---|---|---|---|---|---|
| Center Frequency | fc | 287.75 | 288.0 | 288.25 | MHz |
| Insertion Loss(min) | IL | | 11.0 | 15.0 | dB |
| Amplitude Ripple (p-p) 283.00-293.00MHz | △α | | 0.9 | 1.0 | dB |
| 1.5 dB Bandwidth | $BW_{1.5dB}$ | 11.1 | 12.9 | | MHz |
| Group Delay Ripple 282.50-293.50MHz | GDR | | 50.0 | 200.0 | ns |
| Absolute Attenuation | α | | | | |
| 250.90 MHz | | 43.0 | 50.0 | | dB |
| 269.40 MHz | | 42.0 | 45.0 | | dB |
| 273.70 MHz | | 30.0 | 35.0 | | dB |
| 279.40 MHz | | 4.5 | 4.8 | | dB |
| 296.60 MHz | | 4.5 | 5.2 | | dB |
| 302.30 MHz | | 30.0 | 45.0 | | dB |
| 306.60 MHz | | 42.0 | 46.0 | | dB |
| 325.10 MHz | | 43.0 | 51.0 | | dB |
| Input VSWR 282.50-293.50MHz | | | 1.7:1 | 2.0:1 | / |
| Output VSWR 282.50-293.50MHz | | | 1.7:1 | 2.0:1 | / |

## Frequency Characteristics

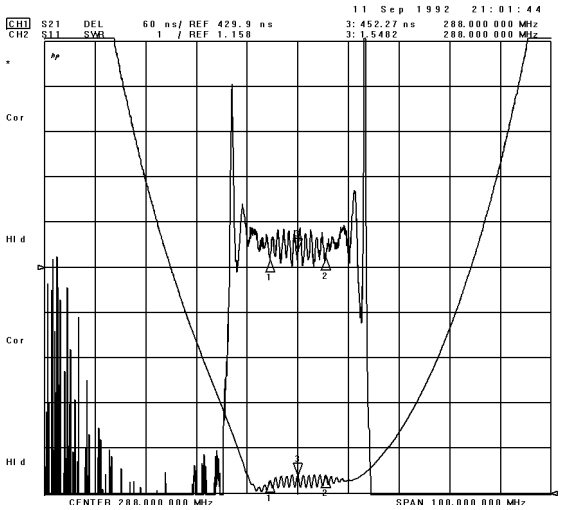
Frequency Response



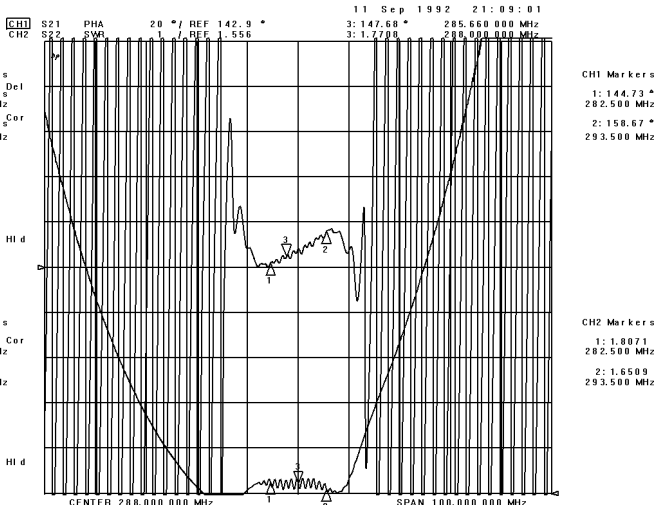

Frequency Response（wideband）



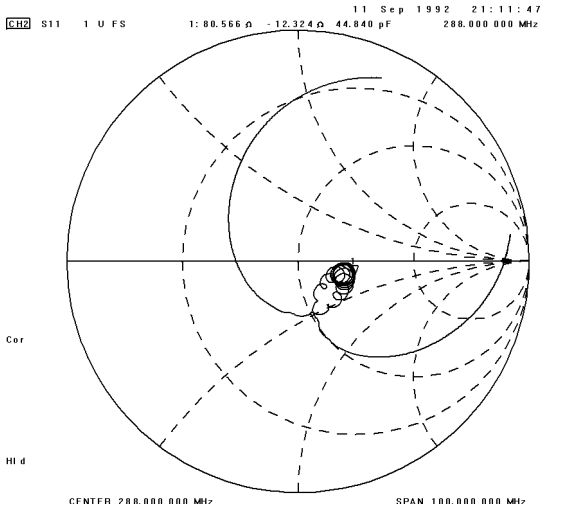

Delay Ripple & S11 VSWR



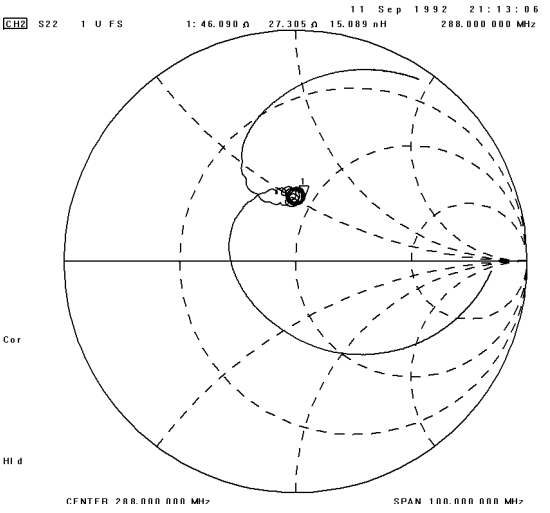

Phase Linearity & S22 VSWR




S11 Smith Chart



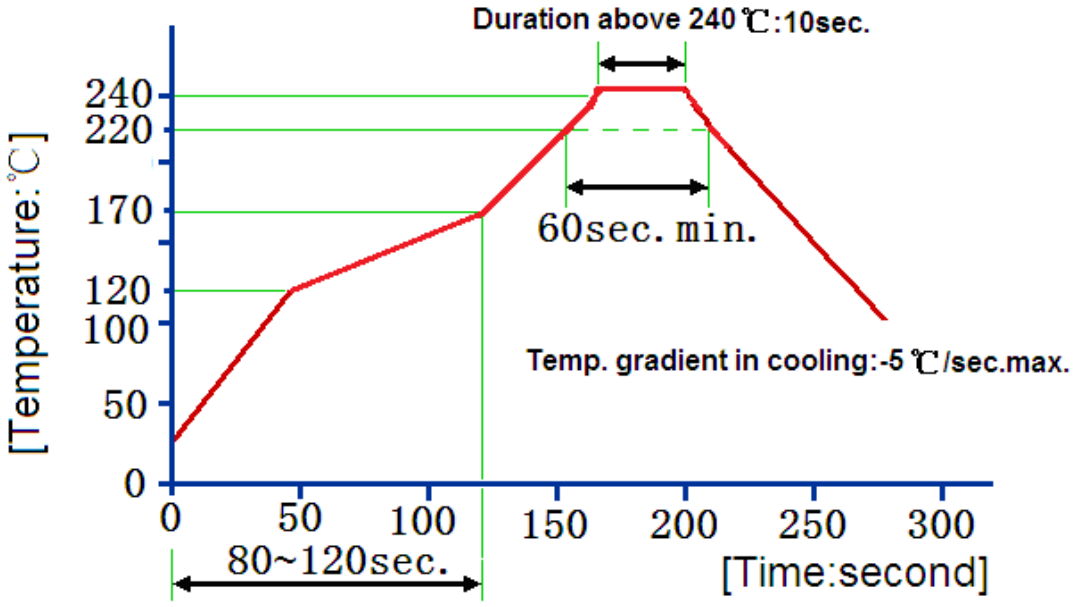

S22 Smith Chart



**Reliability（The SAW components shall remain electrical performance after tests）**

| No. | Test item | Test condition |
|---|---|---|
| 1 | Temperature Storage | (1) Temperature: 85℃±2℃ , Duration: 250h , Recovery time: 2h±0.5h<br>(2) Temperature: –55℃±3℃ , Duration: 250h ,Recovery time: 2h±0.5h |
| 2 | Humidity Test | Conditions: 60℃±2℃ , 90~95% RH Duration: 250h |
| 3 | Thermal Shock | Heat cycle conditions: TA=-55℃±3℃, TB=85℃±2℃, t1=t2=30min, Switch time: ≤3min, Cycle time: 100 times, Recovery time: 2h±0.5h. |
| 4 | Vibration Fatigue | Frequency of vibration: 10~55Hz Amplitude:1.5mm<br>Directions: X,Y and Z Duration: 2h |
| 5 | Drop Test | Cycle time: 10 times Height: 1.0m |
| 6 | Solder Ability Test | Temperature: 245℃±5℃ Duration: 3.0s--5.0s<br>Depth: DIP--2/3 , SMD--1/5 |
| 7 | Resistance to Soldering Heat | (1)Thickness of PCB:1mm , Solder condition: 260℃±5℃ , Duration: 10±1s<br>(2)Temperature of Soldering Iron: 350℃±10℃ , Duration: 3~4s ,<br>Recovery time : 2 ± 0.5h |

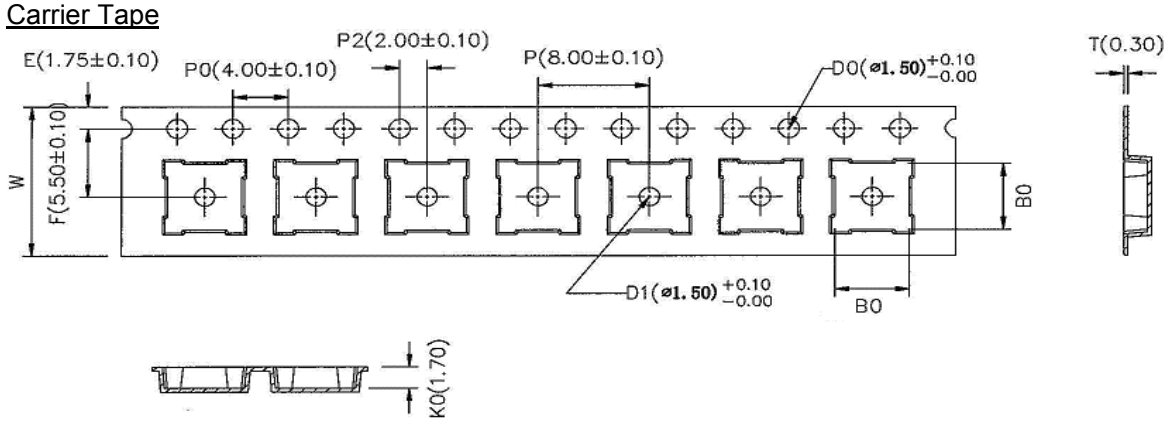
## Recommended Reflow Soldering Diagram




Reflow cycles:3 cycles max.

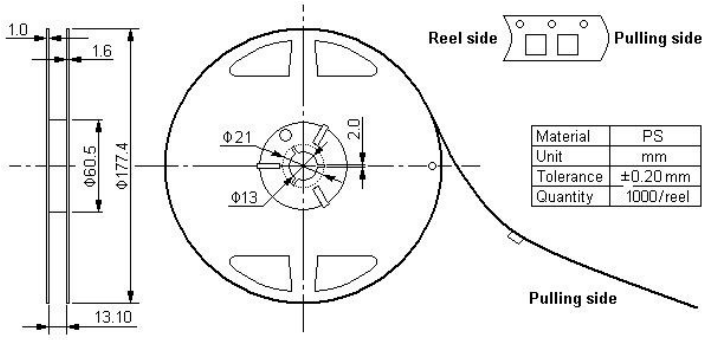
## Packing Information

Carrier Tape




* B0: 5.35 for QCC8C; 4.15 for DCC6/QCC8B; 3.35 for DCC6C/QCC8D

Reel Dimensions




Outer Packing

| Type | Quantity | Dimension | Description | Weight |
|---|---|---|---|---|
| Internal box | 1000 | 190×188×42 | carton box<br>2 reel / internal box<br>5 boxes / external box | 0.18 |
| External box | 10000 | 235×205×210 | | 1.80 |
| | | Unit: mm | | Unit: kg |

## Notes

1. As a result of the particularity of inner structure of SAW products, it easy to be breakdown by electrostatic, so we should pay attention to **ESD protect** in the test.
2. **Static voltage** between signal load and ground may cause deterioration and destruction of the component. Please avoid static voltage.
3. **Ultrasonic cleaning** may cause deterioration and destruction of the component. Please avoid ultrasonic cleaning.
4. Only leads of component may **be soldered**. Please avoid soldering another part of component.
5. There is a close relationship between the device's performance and **matching network**. The specifications of this device are based on the test circuit shown above. L and C values may change depending on board layout. Values shown are intended as a guide only.