



APPROVAL SHEET

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

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Part No.	:	SF1640
Pages	:	6
Date	:	2017/3/13
Revision	:	1.0

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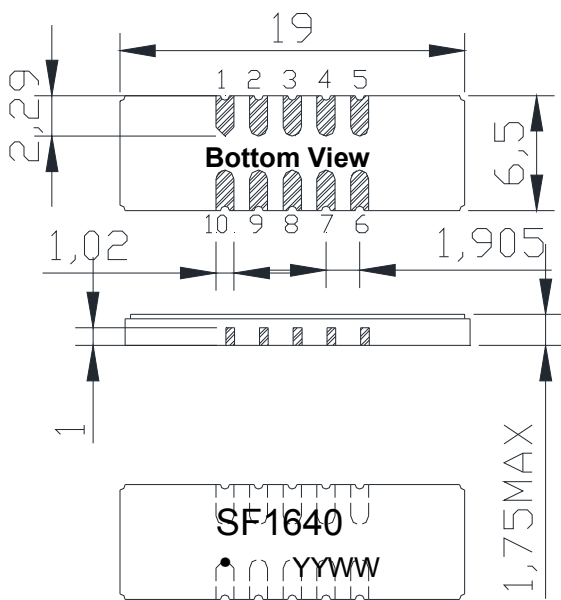
Application

- High-loss SAW component
- Low amplitude ripple
- Sharp rejections at both out-bands
- Passband 0.50 MHz

Features

- Ceramic Package for **Surface Mounted Technology (SMT)**
- **RoHS** compatible
- Package size 19.00x6.50x1.75mm³
- Package Code SMD19
- **Electrostatic Sensitive Device(ESD)**

Package Dimensions (Unit: mm)



Pin Configuration

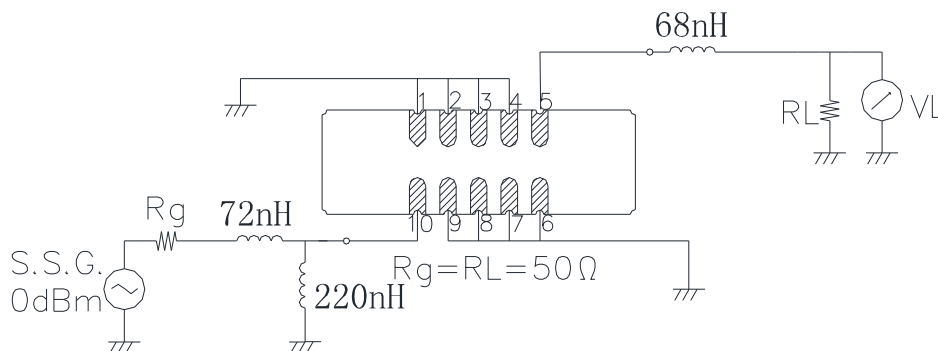
Pin No.	Description
10	Input
5	Output
1,2,3,4,6,7,8,9	Ground

Marking Description

S	Trademark
F	SAW Filter
1640	Part Number
●	Pin 1
YYWW	Year Code & Week Code

*Fig: If the products produced in 06th week of 2012, The year code & week code is 1206.

Test Circuit(Bottom View)



Performance**Maximum Rating**

Item		Value	Unit
DC Voltage	V_{DC}	3	V
Operation Temperature	T	-25 ~ +55	°C
Storage Temperature	T_{stg}	-50~ +70	°C
RF Power Dissipation	P	10	dBm

Electronic Characteristics

Test Temperature: $25^{\circ}\text{C} \pm 2^{\circ}\text{C}$

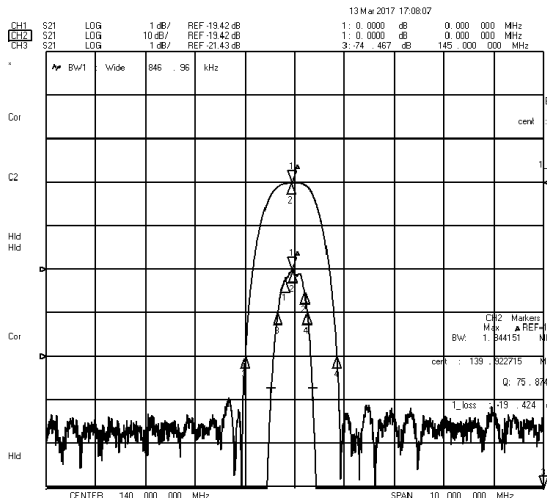
Terminating source impedance: 50Ω

Terminating load impedance: 50Ω

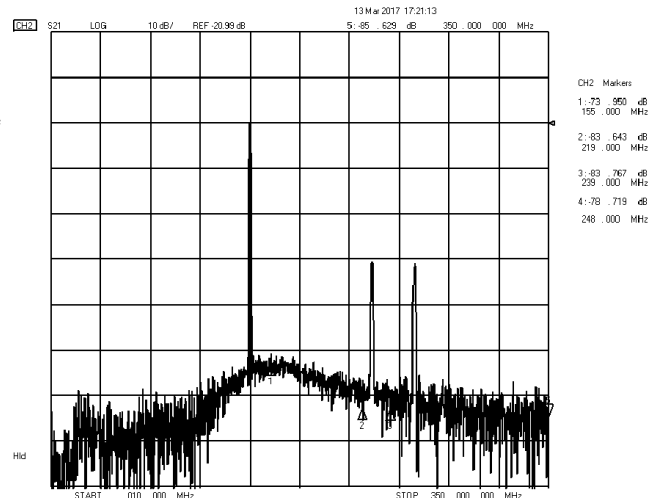
Item		Minimum	Typical	Maximum	Unit
Center Frequency	f_c		140		MHz
Insertion Loss(min)	IL		19.4	23.0	dB
Amplitude Ripple (p-p) 139.805~140.195 MHz	$\Delta\alpha$		0.7	1.0	dB
1 dB Bandwidth	BW_{1dB}	0.50	0.58		MHz
3dB Bandwidth	BW_{3dB}		0.84		MHz
40 dB Bandwidth	BW_{40dB}		1.84	1.93	MHz
Absolute Attenuation	α				
15.00-138.50 MHz		50.0	53		dB
141.50-155.00 MHz		43.0	52		dB
155.00-219.00 MHz		48.0	52		dB
219.00-239.00 MHz			31		dB
239.00-248.00 MHz		48.0	56		dB
248.00-268.00 MHz			31		dB
268.00-350.00 MHz		50.0	57		dB

Frequency Characteristics

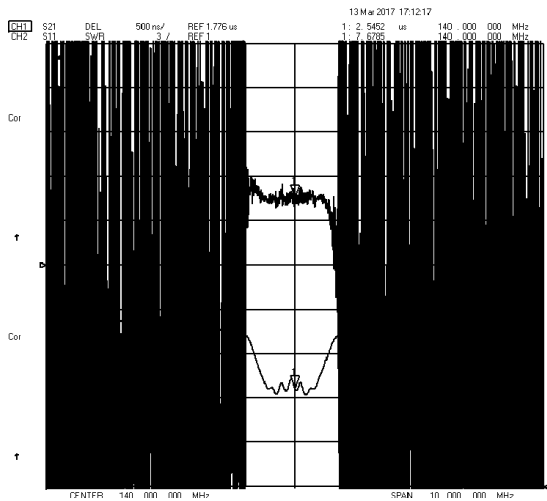
Frequency Response



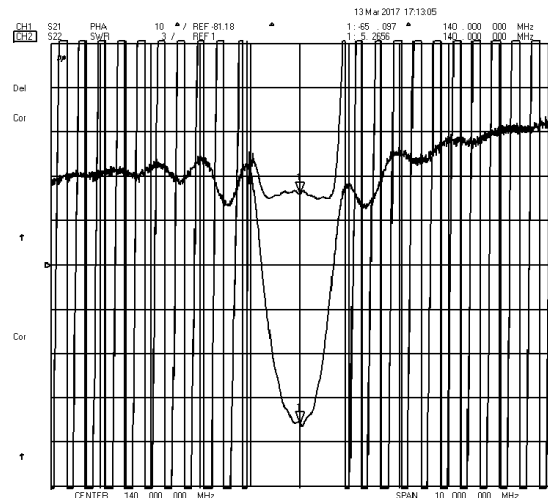
Frequency Response (wideband)



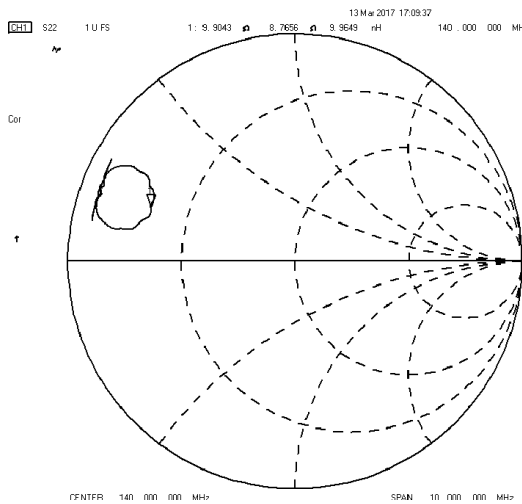
Delay Ripple & S11 VSWR



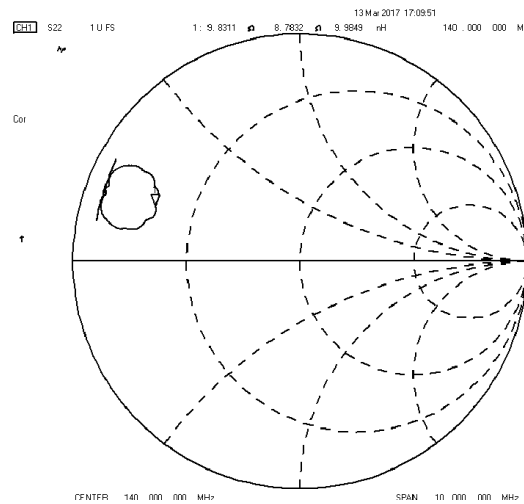
Phase Linearity & S22 VSWR



S11 Smith Chart

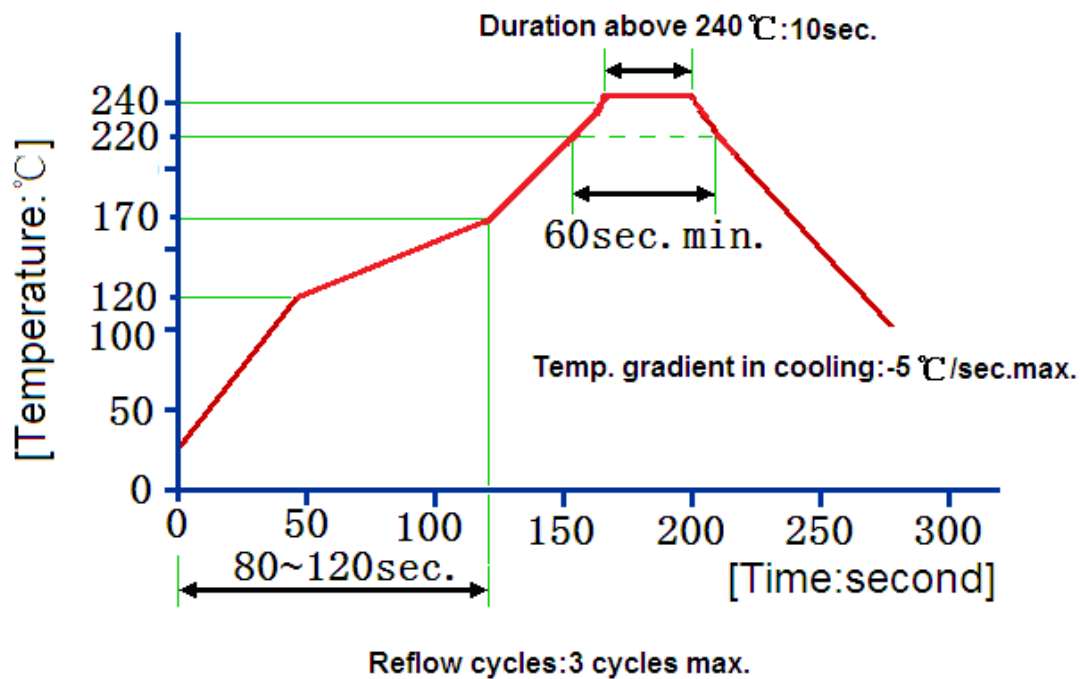


S22 Smith Chart



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

No.	Test item	Test condition
1	Temperature Storage	(1) Temperature: $85^{\circ}\text{C}\pm 2^{\circ}\text{C}$, Duration: 250h , Recovery time: $2\text{h}\pm 0.5\text{h}$ (2) Temperature: $-55^{\circ}\text{C}\pm 3^{\circ}\text{C}$, Duration: 250h , Recovery time: $2\text{h}\pm 0.5\text{h}$
2	Humidity Test	Conditions: $60^{\circ}\text{C}\pm 2^{\circ}\text{C}$, 90~95% RH Duration: 250h
3	Thermal Shock	Heat cycle conditions: $T_A=-55^{\circ}\text{C}\pm 3^{\circ}\text{C}$, $T_B=85^{\circ}\text{C}\pm 2^{\circ}\text{C}$, $t_1=t_2=30\text{min}$, Switch time: $\leq 3\text{min}$, Cycle time: 100 times, Recovery time: $2\text{h}\pm 0.5\text{h}$.
4	Vibration Fatigue	Frequency of vibration: 10~55Hz Amplitude: 1.5mm Directions: X, Y and Z Duration: 2h
5	Drop Test	Cycle time: 10 times Height: 1.0m
6	Solder Ability Test	Temperature: $245^{\circ}\text{C}\pm 5^{\circ}\text{C}$ Duration: 3.0s--5.0s Depth: DIP--2/3 , SMD--1/5
7	Resistance to Soldering Heat	(1) Thickness of PCB: 1mm , Solder condition: $260^{\circ}\text{C}\pm 5^{\circ}\text{C}$, Duration: $10\pm 1\text{s}$ (2) Temperature of Soldering Iron: $350^{\circ}\text{C}\pm 10^{\circ}\text{C}$, Duration: 3~4s , Recovery time : $2\pm 0.5\text{h}$

Recommended Reflow Soldering Diagram

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.