

# APPROVAL SHEET

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

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Part No.	:	SF1602
Pages	:	6
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Revision	:	1.0



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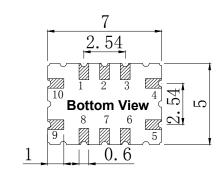
#### **Application**

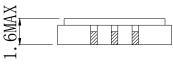
- Low -loss SAW component
- Low amplitude ripple
- Sharp rejections at both out-bands
- Passband 20 MHz

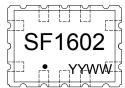
#### **Features**

- Ceramic Package for Surface Mounted Technology (SMT)
- RoHS compatible
- Package size 7.00x5.00x1.60mm<sup>3</sup>
- Package Code QCC12C
- Electrostatic Sensitive Device(ESD)

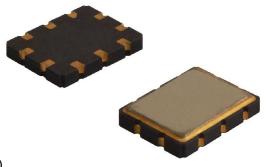
### Package Dimensions (Unit: mm)







#### **Test Circuit(Bottom View)**



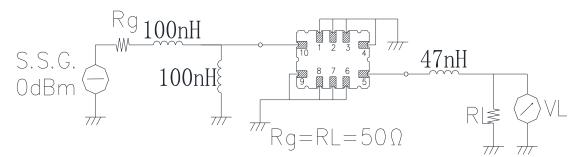
# Pin Configuration

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

#### **Marking Description**

S	Trademark		
F	SAW Filter		
1602	Part Number		
•	Pin 1		
YYWW	Year Code & Week Code		

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



#### **Performance**

#### **Maximum Rating**

Item		Value	Unit
DC Voltage	V <sub>DC</sub>	3	V
Operation Temperature	Т	-55 ~ +85	$\mathbb{C}$
Storage Temperature	T <sub>stg</sub>	-55 ~ +125	$^{\circ}$
RF Power Dissipation	Р	10	dBm

#### **Electronic Characteristics**

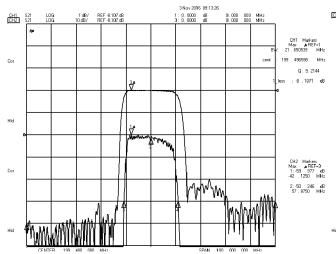
Test Temperature:  $25^{\circ}C \pm 2^{\circ}C$ 

Terminating source impedance:  $50\Omega$ Terminating load impedance:  $50\Omega$ 

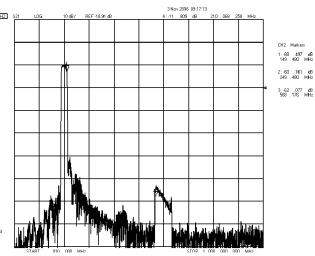
Item		Minimum	Typical	Maximum	Unit
Center Frequency	fc		199.48		MHz
Insertion Loss(min)	IL		8.1	14.5	dB
3 dB Bandwidth	BW3dB	18.00	21.65	22.00	MHz
Absolute Attenuation	α				
F0-50MHz		35	59		dB
F0+50MHz		35	50		dB

#### **Frequency Characteristics**

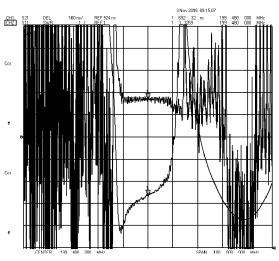
#### Frequency Response



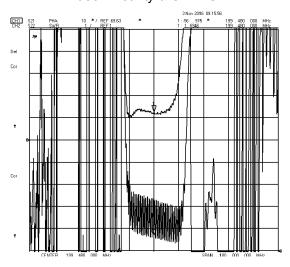
#### Frequency Response (wideband)



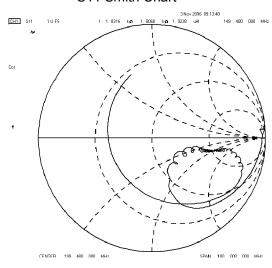
Delay Ripple & S11 VSWR



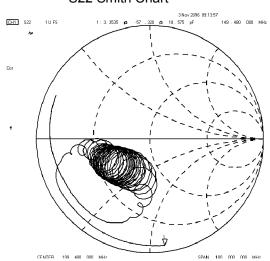
Phase Linearity & S22 VSWR



#### S11 Smith Chart



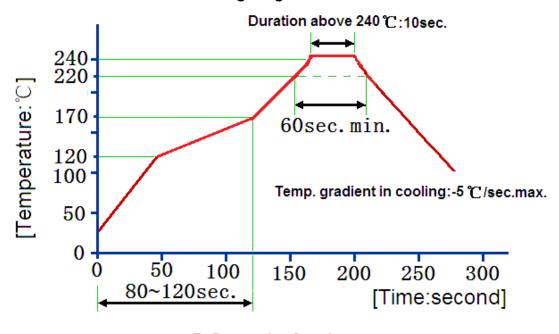
S22 Smith Chart



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

No.	Test item	Test condition		
1	Temperature	(1) Temperature: 85°C±2°C , Duration: 250h , Recovery time: 2h±0.5h		
	Storage	(2) Temperature: –55℃±3℃, Duration: 250h, Recovery time: 2h±0.5h		
2	Humidity Test	Conditions: 60℃±2℃, 90~95% RH Duration: 250h		
	T. 101 1	Heat cycle conditions: TA=-55℃±3℃, TB=85℃±2℃, t1=t2=30min, Switch		
3	Thermal Shock	time: ≤3min, Cycle time: 100 times, Recovery time: 2h±0.5h.		
4	4 \\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	Frequency of vibration: 10~55Hz Amplitude:1.5mm		
4	Vibration Fatigue	Directions: X,Y and Z Duration: 2h		
5	Drop Test	Cycle time: 10 times Height: 1.0m		
		Temperature: 245℃±5℃ Duration: 3.0s5.0s		
6	Solder Ability Test	Depth: DIP2/3 , SMD1/5		
		(1)Thickness of PCB:1mm , Solder condition: 260 ℃±5 ℃ , Duration: 10±1s		
7	Resistance to Soldering Heat	(2)Temperature of Soldering Iron: 350℃±10℃, Duration: 3~4s,		
		Recovery time: 2 ± 0.5h		

## **Recommended Reflow Soldering Diagram**



Reflow cycles:3 cycles max.

199.48MHz SAW Filter SF1602 20.00 MHz Bandwidth

#### **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.

Please read notes at the end of this document.

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