APPROVAL SHEET

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

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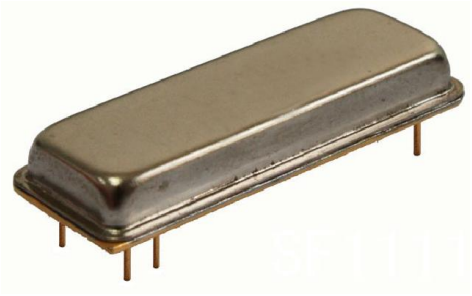
RoHS compliance Pb free

Part No.	:	SF1613
Pages	:	6
Date	:	2016/11/25
Revision	:	1.0

Prepared by:	刘建伟
Checked by:	卢翠
Approved by:	

Application

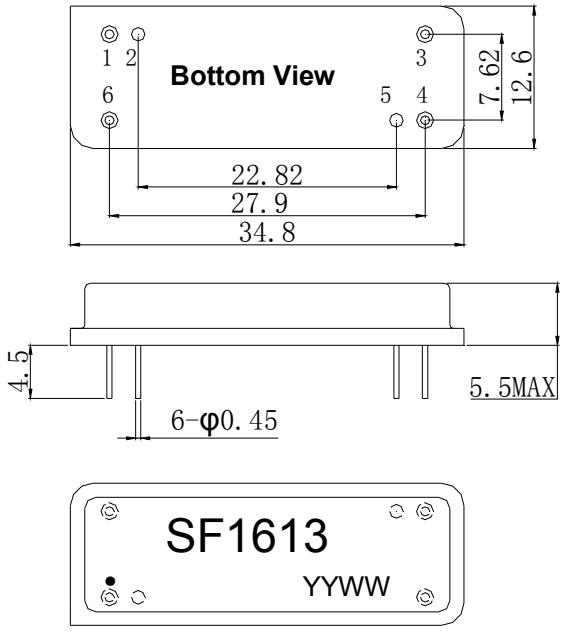
- High-loss SAW component
- Low amplitude ripple
- Sharp rejections at both out-bands
- Passband 5.0/12.5 MHz



Features

- **RoHS** compatible
- Package size 34.8x12.6x5.50mm^3
- Package Code DIP3512
- **E**lectrostatic **S**ensitive **D**evice(**ESD)**

Package Dimensions (Unit: mm)



Pin Configuration

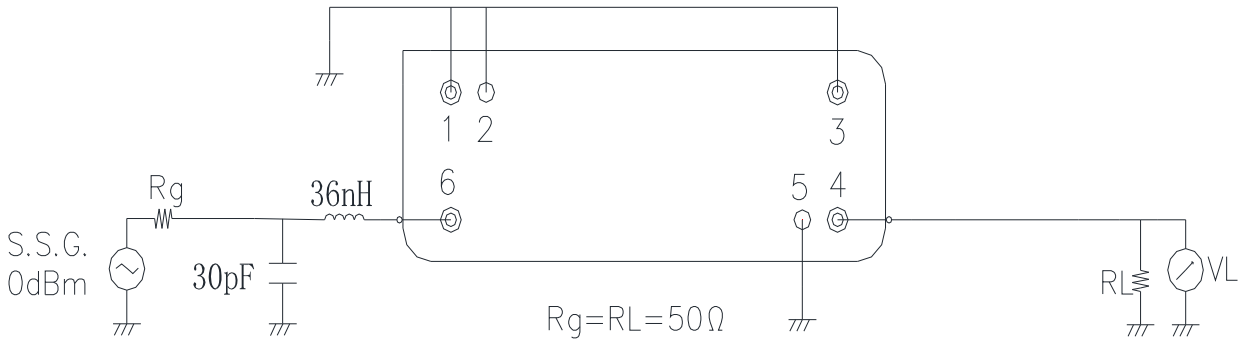
Pin No.	Description
6	Input
4	Output
1,2,3,5	Ground

Marking Description

S	Trademark
F	SAW Filter
1613	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	-40 ~ +85	℃
Storage Temperature	T_{stg}	-45 ~ +105	℃
RF Power Dissipation	P	10	dBm

Electronic Characteristics

Test Temperature: 25℃±2℃

Terminating source impedance: 50Ω

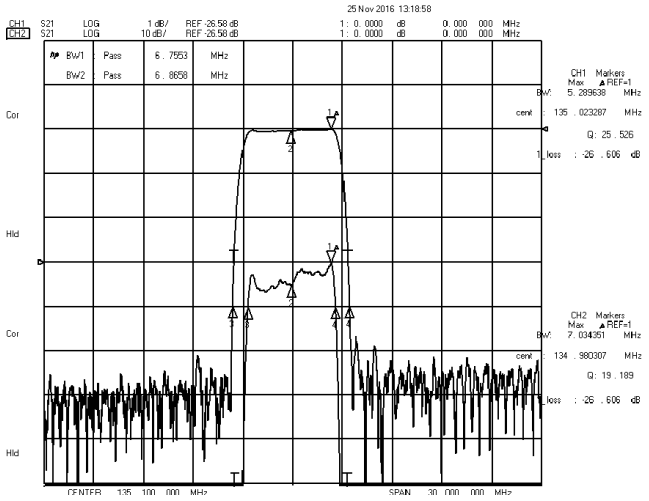
Terminating load impedance: 50Ω

Item		Minimum	Typical	Maximum	Unit
Center Frequency	fc		135.10		MHz
Insertion Loss(min)	IL		26.6	28.0	dB
Amplitude Ripple (p-p)	△α		0.7	1.0	dB
1 dB Bandwidth	BW_{1dB}	5.00	5.28		MHz
25 dB Bandwidth	BW_{25dB}		6.75	7.00	MHz
30dB Bandwidth	BW_{30dB}		6.86	8.00	MHz
40 dB Bandwidth	BW_{40dB}		7.03	8.50	MHz
Absolute Delay @Fc	AD		1.96		us
Absolute Attenuation	α	45	47		dB

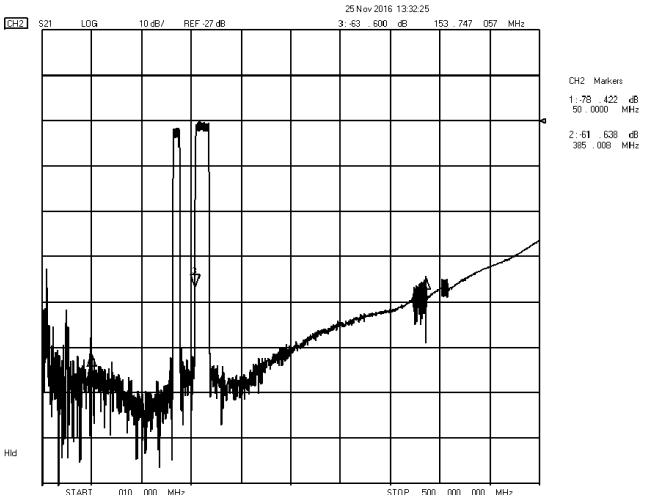
Item		Minimum	Typical	Maximum	Unit
Center Frequency	fc		161.20		MHz
Insertion Loss(min)	IL		25.4	28.0	dB
Amplitude Ripple (p-p)	△α		0.8	1.3	dB
1.3dB Bandwidth	$BW_{1.3dB}$	12.50	12.63		MHz
25 dB Bandwidth	BW_{25dB}		14.18	14.50	MHz
30dB Bandwidth	BW_{30dB}		14.31	15.50	MHz
40 dB Bandwidth	BW_{40dB}		14.52	16.00	MHz
Absolute Delay @Fc	AD		1.96		us
Absolute Attenuation	α	45	48		dB

Frequency Characteristics（Center Frequency 135.10 MHz）

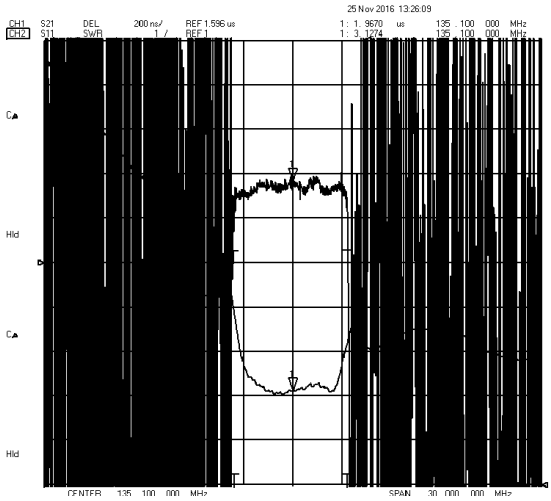
Frequency Response



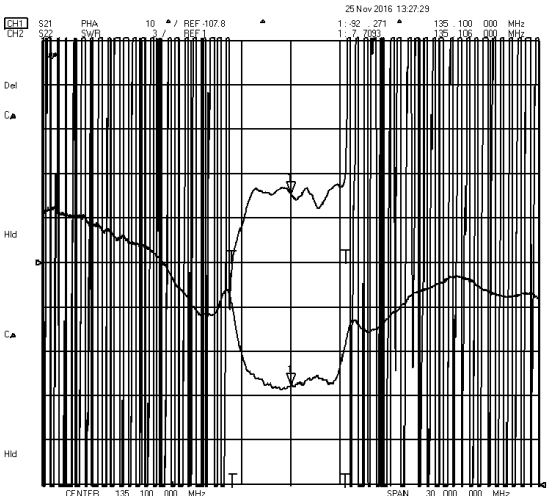
Frequency Response（wideband）



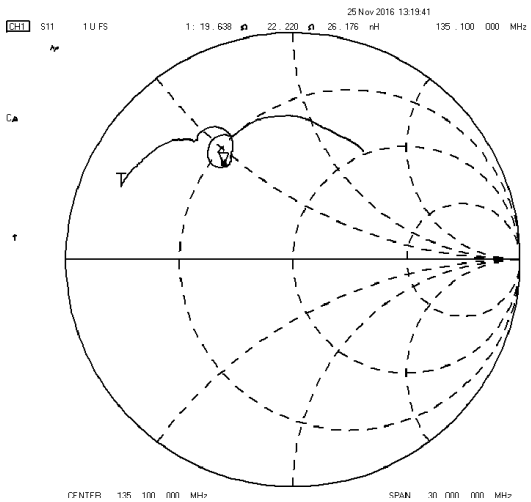
Delay Ripple & S11 VSWR



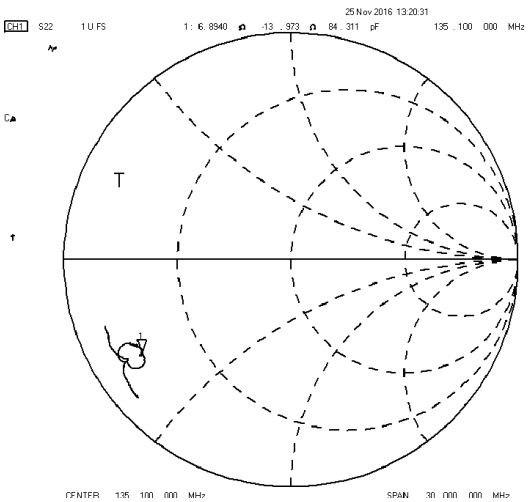
Phase Linearity & S22 VSWR



S11 Smith Chart

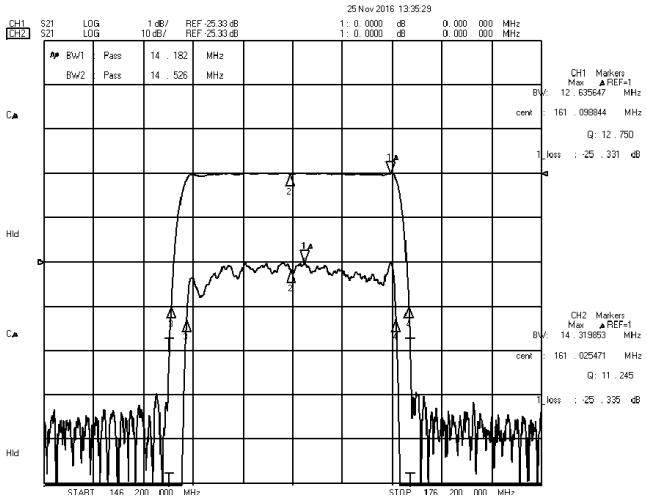


S22 Smith Chart

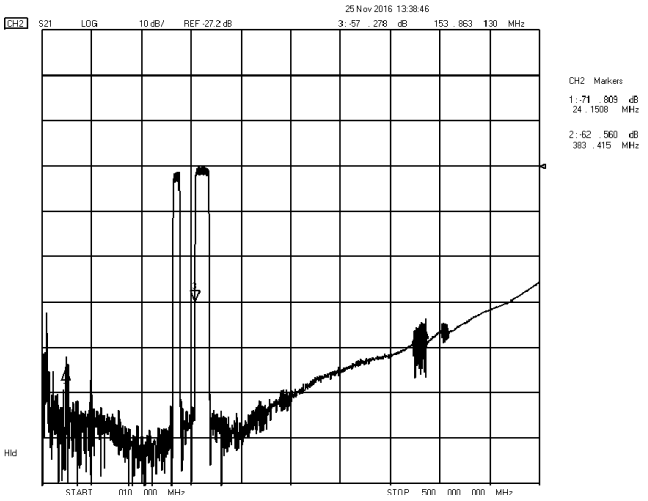


Frequency Characteristics（Center Frequency 161.20 MHz）

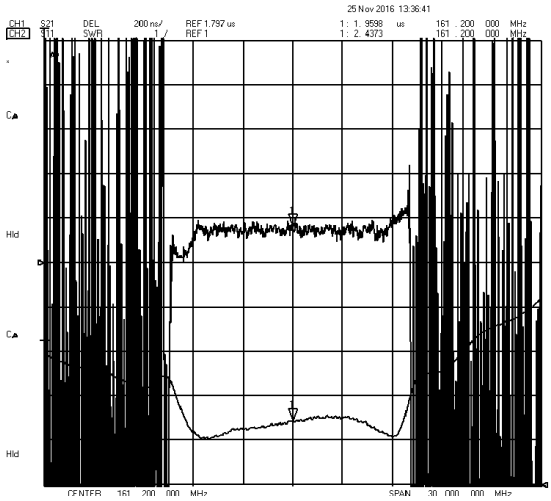
Frequency Response



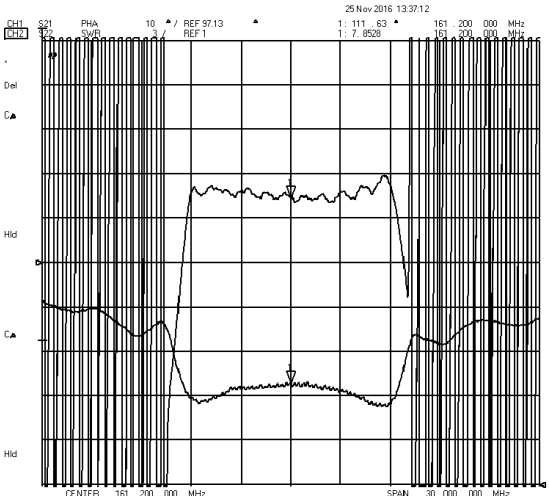
Frequency Response（wideband）



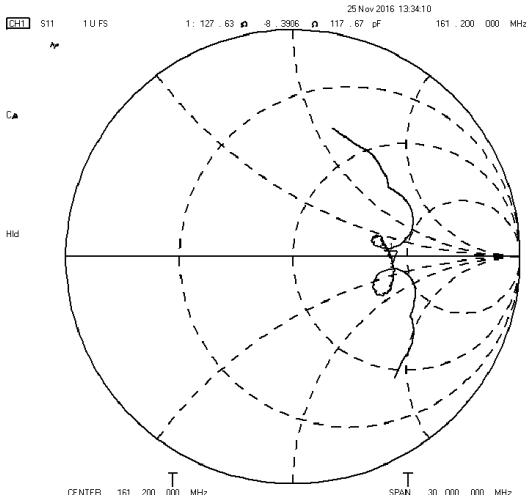
Delay Ripple & S11 VSWR



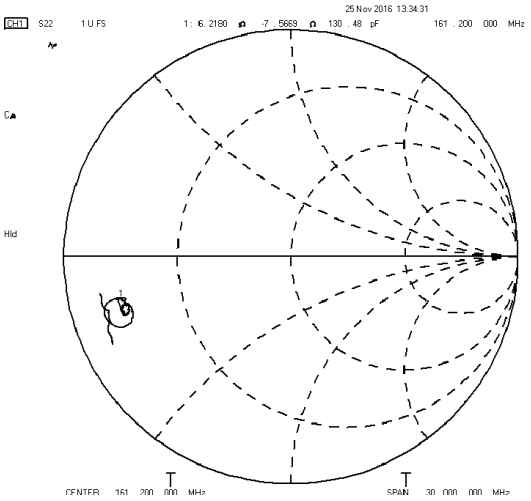
Phase Linearity & S22 VSWR



S11 Smith Chart



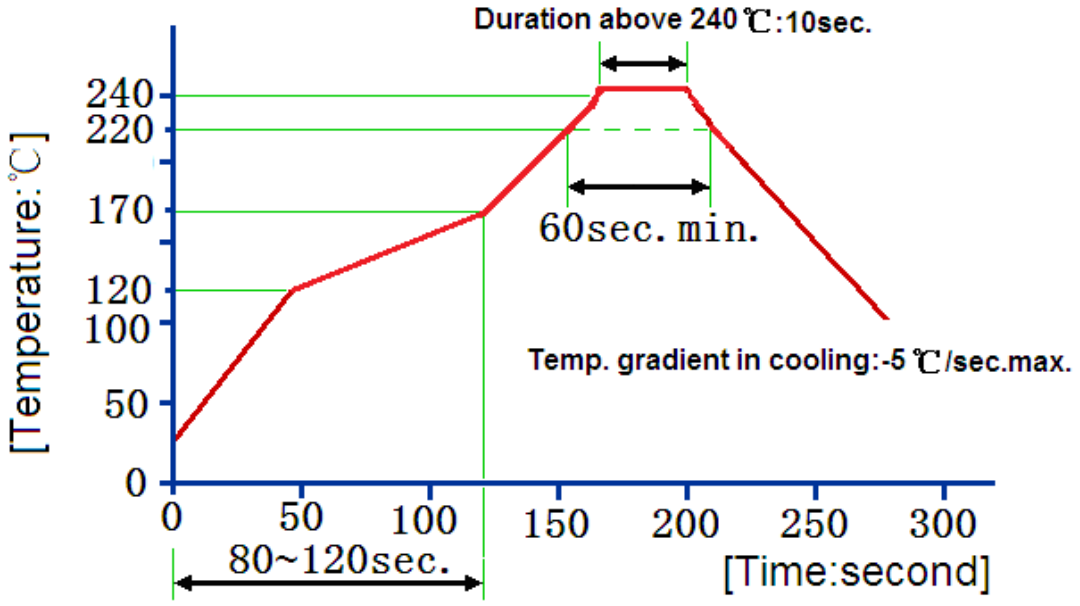
S22 Smith Chart



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 (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 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 Depth: DIP--2/3 , SMD--1/5
7	Resistance to Soldering Heat	(1)Thickness of PCB:1mm , Solder condition: 260℃±5℃ , Duration: 10±1s (2)Temperature of Soldering Iron: 350℃±10℃ , Duration: 3~4s , Recovery time : 2 ± 0.5h

Recommended Reflow Soldering Diagram



Reflow cycles:3 cycles max.

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.