



RoHS Compliant
Directive 2011/65/EU

REFERENCE SPECIFICATION

Customer: _____

Item: _____ SAW Filter

Type: _____ WFF95A1603FF

Nominal Frequency: _____ 1603 MHz

Customer's Spec. No.: _____

NDK Spec. No.: _____ WFF95A

For your reference we submit this specification. Please study and keep in your related document file.

Charge:

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Revision Record

Rev.	Date	Items	Contents	Approved	Checked	Drawn
---	May. 13 th , 2014	Issue	---	R.Kajihara	Y.Watanabe	N.Matsuoka

1. Scope

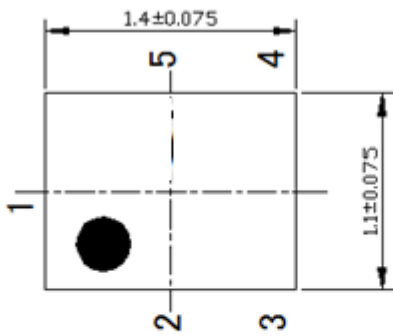
This document contains specifications which apply to GLONASS SAW filter.
This product is not compliant to AEC-Q200.

2. Type

Type	Nominal Frequency	Shipment
WFF95A1603FF	1603 MHz	Tape and reel

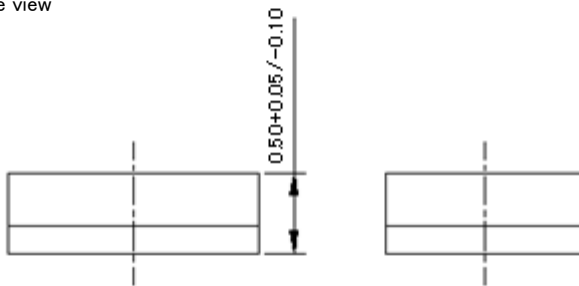
3. Dimensions

Top view

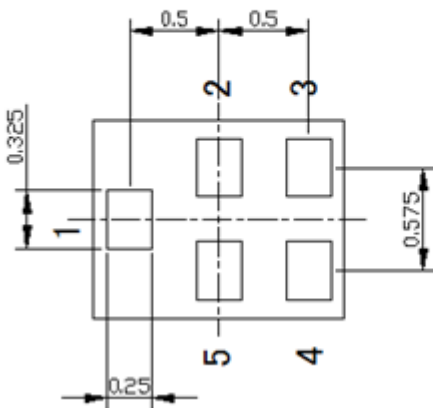


Unit [mm]

Side view



Bottom view



Pin No.	Connection
#1	Input
#4	Output
Others	Ground

4. Maximum Ratings

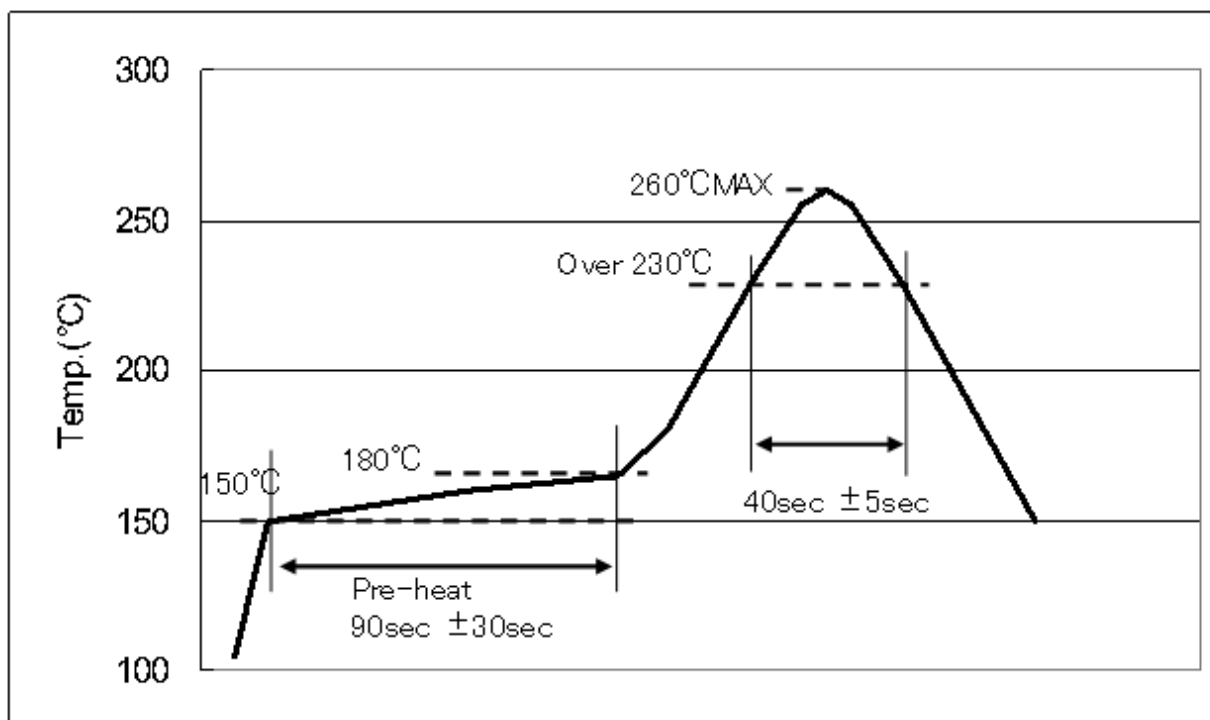
4-1 Operating temperature range: -40degC ~ +85degC

4-2 Storage temperature range: -40degC ~ +85degC

4-3 Moisture Sensitivity Level: **MSL3**

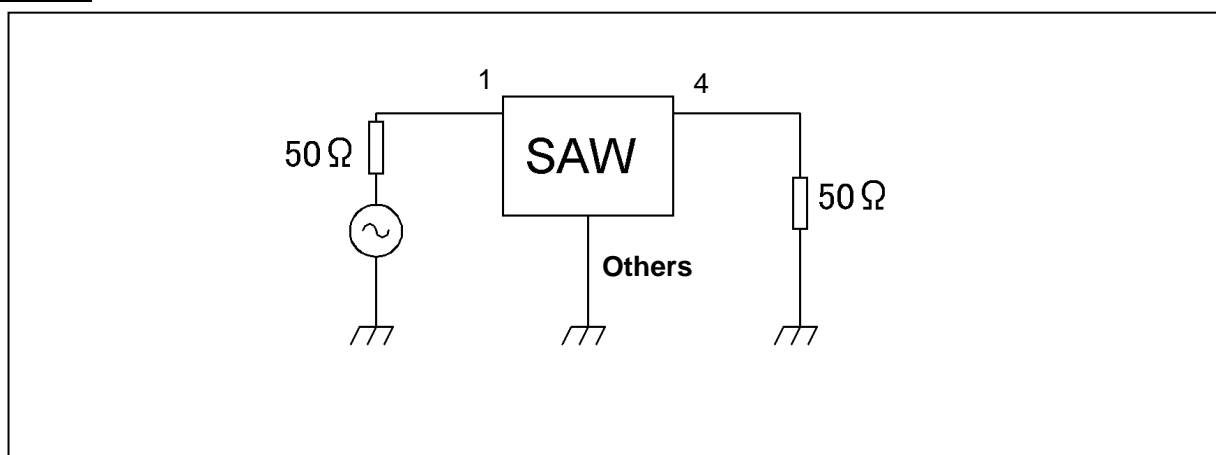
4-4 Max. input power: +10dBm, CW, 55°C, 50000h max.

4-5 Reflow condition (recommended)



1. Ramp1 : typ2.5degC /sec, max 3.0degC /sec to 150degC
2. Pre-heat : 150~180degC for 60~120sec, typ90sec
3. Ramp2 : typ2.5degC /sec, max 3.0degC /sec to 230degC
4. Over Melting Pt : Liquids time 35~ 45sec, typ40sec
5. Peak Duration : max temp 260degC
6. Ramp3 : typ-2.5degC /sec to room temp

5. Test Circuit



6. Electrical Characteristics

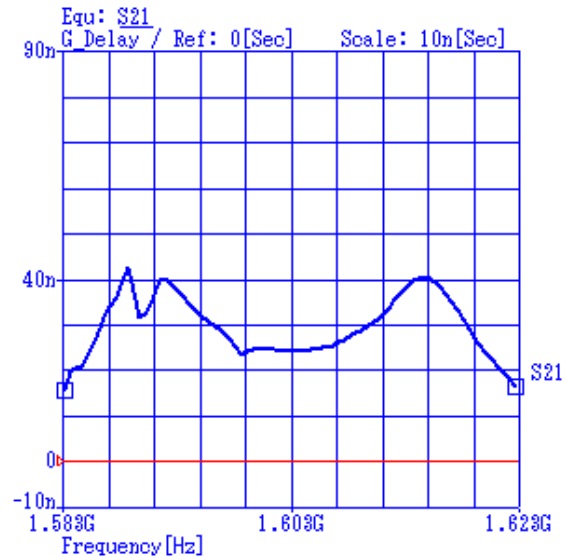
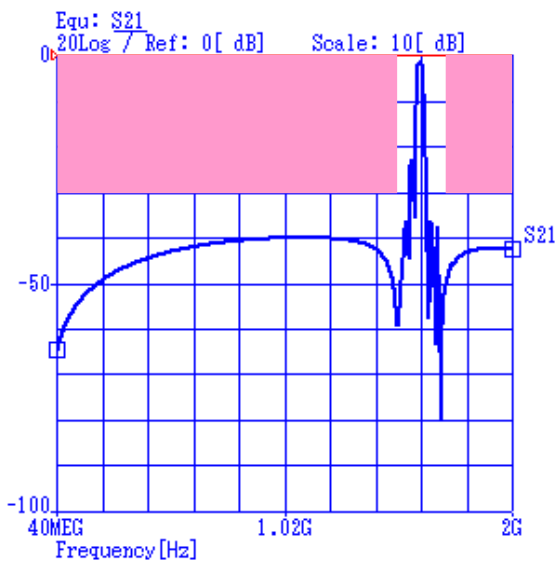
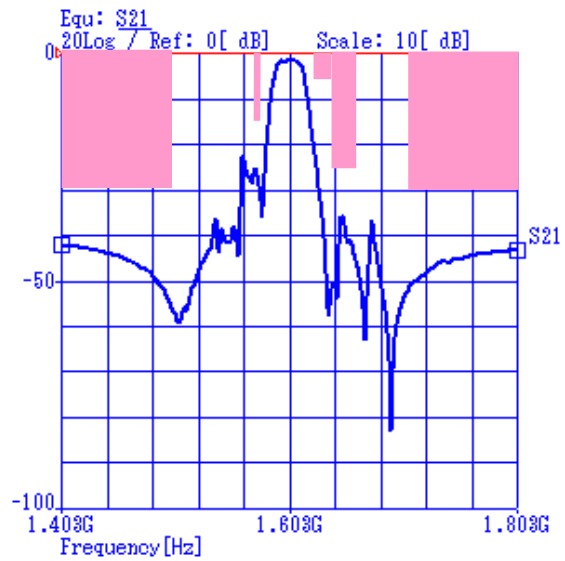
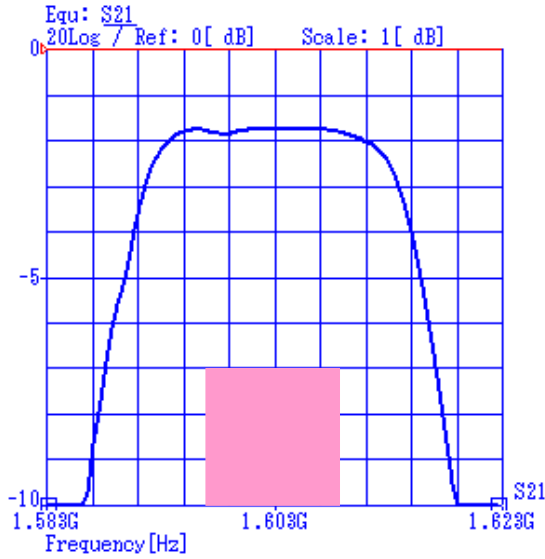
6-1 Specification

Please note that our proposal is based on the theoretical values by our simulation, and its values might be changed after our trial production.

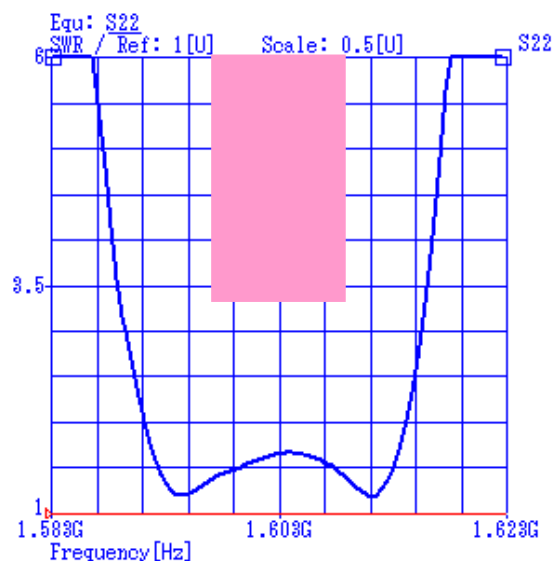
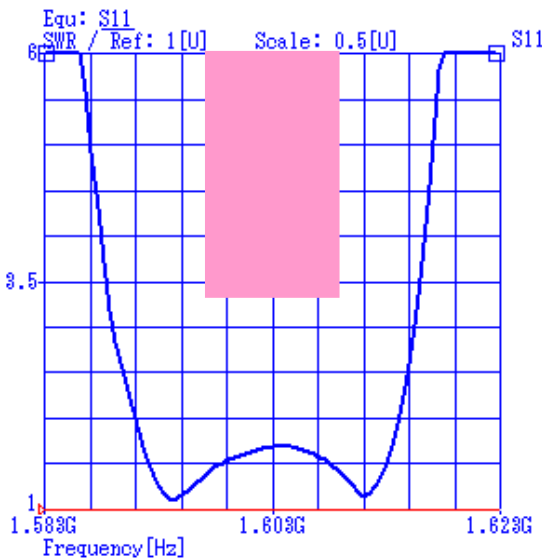
Parameter	Unit	Min.	Typ.	Max.	
Nominal Frequency (fn)	MHz	-	1603	-	
Pass band	MHz	1597	-	1609	
Insertion Loss (1597~1609 MHz)	dB	-	2.0	7.0	
Amplitude Ripple (1597~1609 MHz)	dB	-	0.6	6.0	
VSWR (1597~1609 MHz)		-	1.8	3.3	
Group delay variation (1597~1609 MHz)	nsec	-	10	35	
Attenuation (Absolute value)					
1	40 ~ 1000 MHz	dB	30	40	-
2	1000 ~ 1500 MHz	dB	30	40	-
3	1574 ~ 1577 MHz	dB	14	25	-
4	1625 ~ 1640 MHz	dB	6	20	-
5	1640 ~ 1660 MHz	dB	25	30	-
6	1710 ~ 2000 MHz	dB	30	40	-

6-2 Characteristics based on simulation

Frequency response



VSWR



7. Reliability

No	Test Item	Test Methods	Specification
1	High Temperature	Temperature: +85degC Duration: 500H	*
2	Low Temperature	Temperature: -40degC Duration: 500H	
3	High Temperature, High Humidity	Temperature:+85degC Humidity:85% Duration: 500H	
4	Thermal shock	Temperature: -40degC to 85degC Dwell time: each 30min (1H/cycle) Number of cycles: 200 cycles	
5	Vibration	Frequency :10 to 2,000Hz, Sweep time: 20 minute Amplitude : 1.52mm, Direction : XYZ Duration : 4 hours in each direction	
6	Drop	Pasted on a object(150g) 6 directions each 3 time, 8 corner each 2 time and 12 edge each 1 time from 1.8m height.	
7	ESD	HBM: ±50V(each pin), MM:±50V(each pin)	
8	Resistance to Soldering heat	Exposed to the reflow profile(Peak temperature : 260+/-5degC) by 2 times	
9	Solderability	95% of each pad should be covered with solder after recommended reflow	

***Electrical characteristic of 6-1 is satisfied.**

8. Usage Conditions

8-1 Static electricity

Static electricity between signal terminals and grounds may cause degradation or destruction of this component. Please avoid the static electricity when you treat this component.

8-2 Pyro-electricity

The pyro-electricity is phenomenon to make electric charge by applying rapid temperature change on the component. It causes degradation or destruction of this component.

8-3 Cleaning method

Cleaning may cause degradation of the electrical characteristics of the component.

8-4 Soldering with soldering iron

Do not use a soldering iron. Please use the reflow soldering.

8-5 Blower (hot jet)

When you would use a blower machine, please pay attention that temperature of the component doesn't go up to 300°C and use it within 3 seconds.

8-6 Limitation of application

This component is designed for the general cellular phone. If you would use the parts in the other applications, please contact us in advance.

9. Notice

Order items are manufactured according to specification. As to conditions, which are not indicated in the specification and unpredictable such as applied condition and oscillation margin, please check them beforehand.