



SPECIFICATION

Surface Acoustic Wave Filter

USER

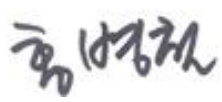


USER PART No.

WISOL PART No. **SFHG89YA002**

DOC. No. SMS-51-L-SFT FX-6

DATE June 3, 2013

REVISION 000

WISOL					
ISSUED BY	Hong, Byung-Chul 	APPROVED BY (R&D)	Hong, Seong-Su 	APPROVED BY (QC)	Chun, Hun-Chul 
User					
ISSUED BY		CHECKED BY		APPROVED BY	

WISOL CO., LTD.
373-7, GAJANG-DONG, OSAN-SI,
GYUNGGI-DO, KOREA, 447-210
<http://www.wisol.co.kr>

COMPASS Rx	1561.10MHz	1.1×0.9×0.5mm ³ 5pin lay-out	Version: 000
GPS Rx	1575.42MHz		
GLONASS Rx	1601.72MHz		

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COMPASS Rx 1561.10MHz

GPS Rx 1575.42MHz

GLONASS Rx 1601.72MHz

1.1×0.9×0.5mm³ 5pin lay-out

Version: 000

1. REVISION HISTORY

000 March 03, 2013 All page Make specification

COMPASS Rx 1561.10MHz

GPS Rx 1575.42MHz

GLONASS Rx 1601.72MHz

1.1×0.9×0.5mm³ 5pin lay-out

Version: 000

2. DEFINITION

2-1. PART No.

S F H G 8 9 Y A 0 0 2
 (1) (2) (3) (4) (5) (6)

No.	EXPLANATION	
(1)	SAW Filter	
(2)	Design Type: DMS	
(3)	Center Frequency:	1561.10MHz(1559.10 ~ 1563.10) 1575.42MHz(1574.42 ~ 1576.42) 1601.72MHz(1597.55 ~ 1605.89)
(4)	Input:50ohm,Output:100ohm Balanced	
(5)	Package size: 1.1×0.9mm	
(6)	Design Revision (02: Molding type)	

2-2. APPLICATION : Band-Pass Filter for COMPSS & GPS & GNSS Rx etc

3. PRECAUTIONS

3-1. This device should not be used in any type of fluid such as water, oil, organic solvent, etc.

3-2. This is a hermetic device.

MSL(Moisture Sensitive Level) is the '2a' level.

3-3. Ultrasonic cleaning shall be avoided.

3-4. Isopropyl Alcohol and Ethyl Alcohol can be used for cleaning. Contact us before using other cleaning solvents than above

3-5. This is an electrostatic sensitive device.

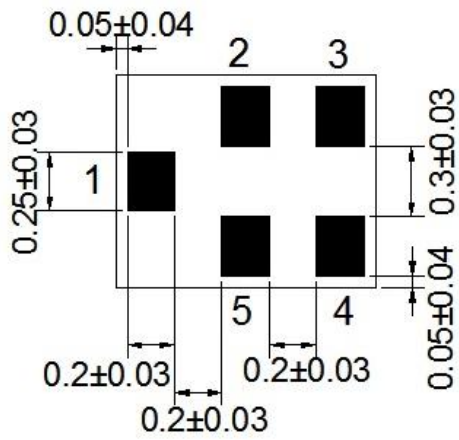
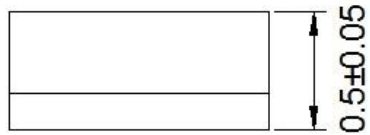
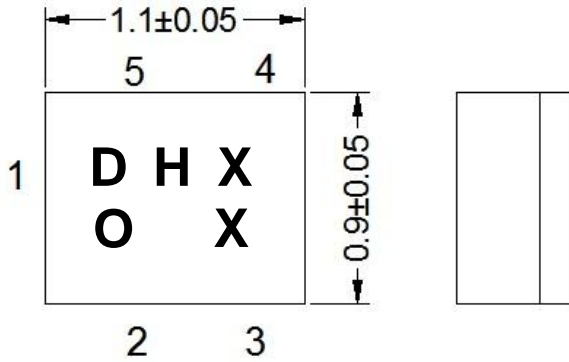
Please avoid static voltage during operation and storage.

3-6. Sudden change of temperature shall be avoided, deterioration of the characteristics can occur.

3-7. If any malfunction due to designing or manufacturing which is out of specification occurs within one year after the products have been delivered, the maker should exchange the defective products.

4. OUTLINE DRAWING & DIMENSIONS

[Unit: mm]



No.	Function
2, 5	Ground
1	Unbalanced Input
3, 4	Balanced Output

COMPASS Rx 1561.10MHz

GPS Rx 1575.42MHz

GLONASS Rx 1601.72MHz

1.1×0.9×0.5mm³ 5pin lay-out

Version: 000

5. MARKING



5-1. D H X X

- The 1st, 2nd character 'DH' indicates the model name of SAW Filter “SFHG89YA002” .
- The 3rd character 'X' indicates the year and the month of manufacture.

Year	Month											
	1	2	3	4	5	6	7	8	9	10	11	12
2013	P	Q	R	S	T	U	V	W	X	Y	Z	a
2014	1	2	3	4	5	6	7	8	9	A	B	C
2015	D	E	F	G	H	I	J	K	L	M	N	O
2016	P	Q	R	S	T	U	V	W	X	Y	Z	a

※ This rotates by the 3 years.

- The 4th character 'X' indicates day of manufacture.

5-2. ○

- This symbol indicates input pin 1.
- This indicates the producing center

○: China

5-3. Marking: Laser Marking

COMPASS Rx 1561.10MHz
GPS Rx 1575.42MHz
GLONASS Rx 1601.72MHz
1.1×0.9×0.5mm³ 5pin lay-out
Version: 000

6. PERFORMANCE

6-1. MAXIMUM RATINGS

CHARACTERISTICS	RATINGS	UNITS
DC Permissive Voltage	5	V
Maximum Input Power	15	dBm
Operating Temperature Range	- 30 ~ +85	℃
Storage Temperature Range	- 40 ~ +85	℃

COMPASS Rx 1561.10MHz

GPS Rx 1575.42MHz

1.1×0.9×0.5mm³ 5pin lay-out

Version: 000

GLONASS Rx 1601.72MHz

6-2. ELECTRICAL CHARACTERISTICS

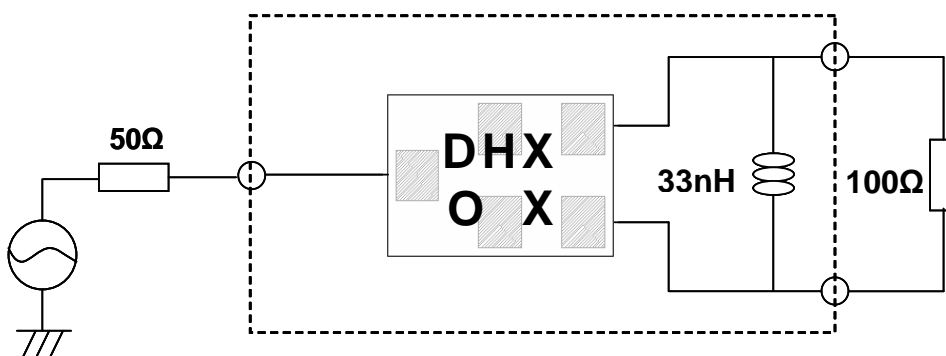
6-2-1. TABLE

Ta = -30 ~ +85°C

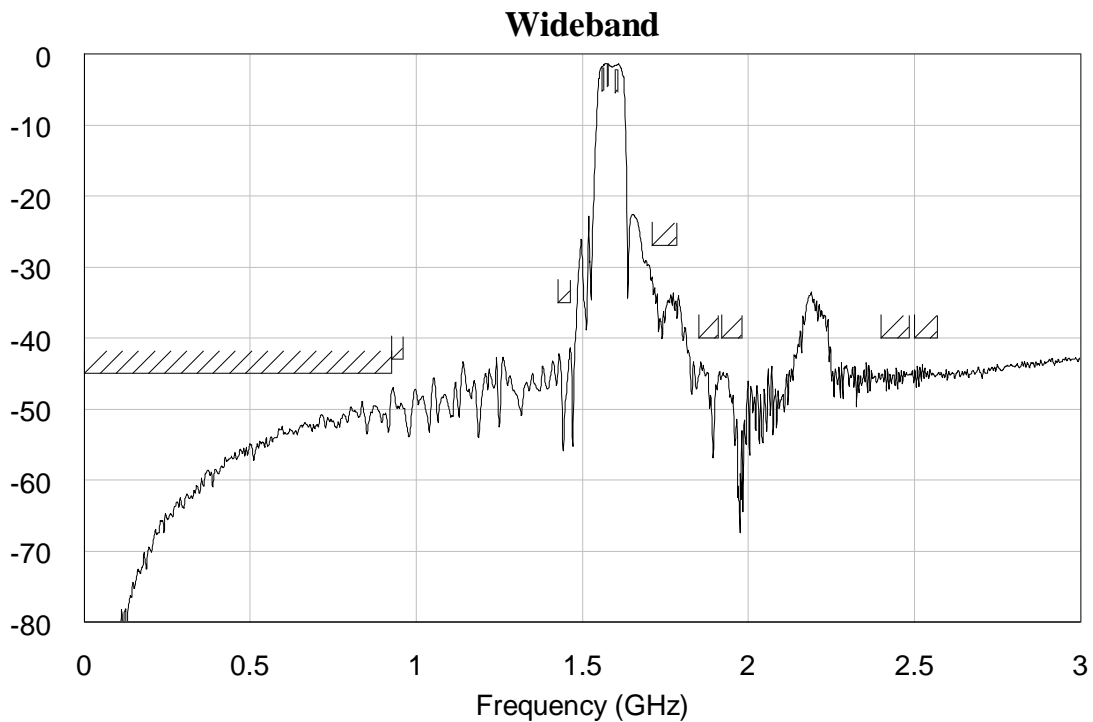
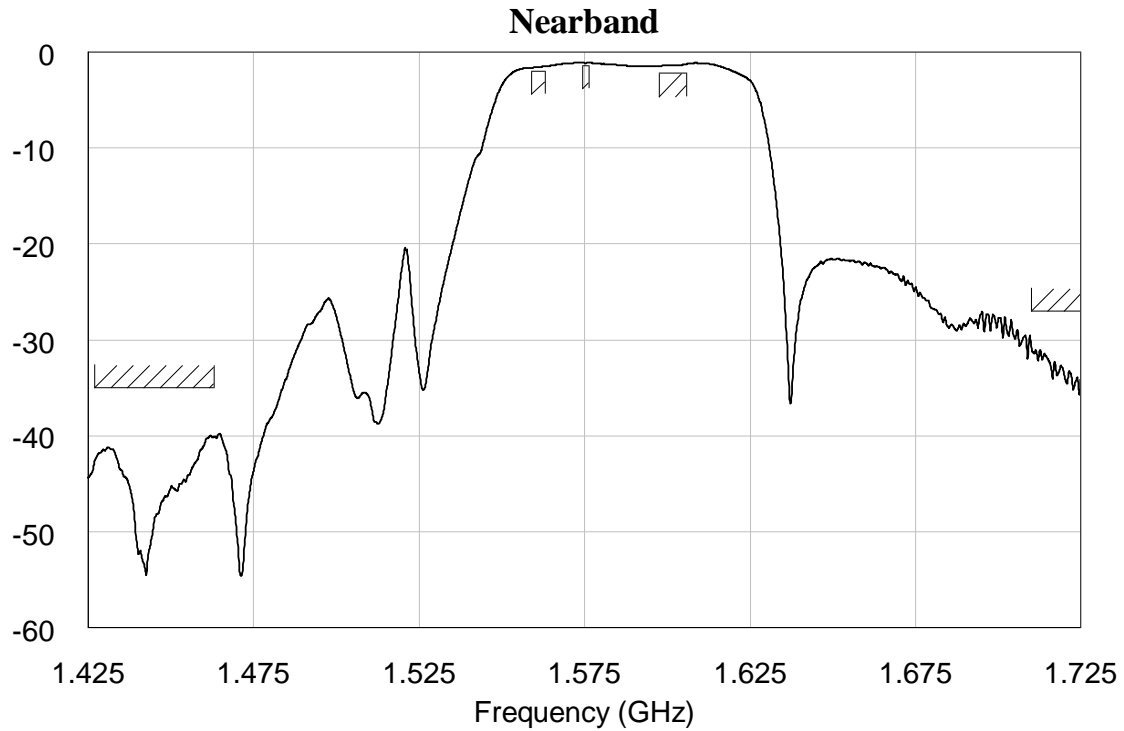
Item	FREQUENCY RANGE [MHz]	UNIT	SPECIFICATIONS		
			Min.	Typ. (25°C)	Max.
Insertion Loss	1559.10 ~ 1563.10	dB	-	1.4	2.0
Insertion Loss	1574.42 ~ 1576.42	dB	-	1.1	1.4
Insertion Loss	1597.55 ~ 1605.89	dB	-	1.5	2.2
VSWR(IN/OUT)	1559.052 ~ 1563.144	-	-	1.4	2.1
VSWR(IN/OUT)	1574.42 ~ 1576.42	dB	-	1.4	2.1
VSWR(IN/OUT)	1597.55 ~ 1605.89	dB	-	1.4	2.1
Absolute Attenuation	DC ~ 925	dB	45	48	-
	925 ~ 960	dB	43	46	-
	1427 ~ 1463	dB	35	40	-
	1710 ~ 1785	dB	27	32	-
	1850 ~ 1910	dB	40	44	-
	1920 ~ 1980	dB	40	46	-
	2401 ~ 2483	dB	40	46	-
	2500 ~ 2570	dB	40	45	-
Terminating impedance		Input: Unbalanced 50 ohm Output: Balanced 100 ohm // 33 nH			

6-2-2. TEST FIXTURE

[X-Ray Top View]

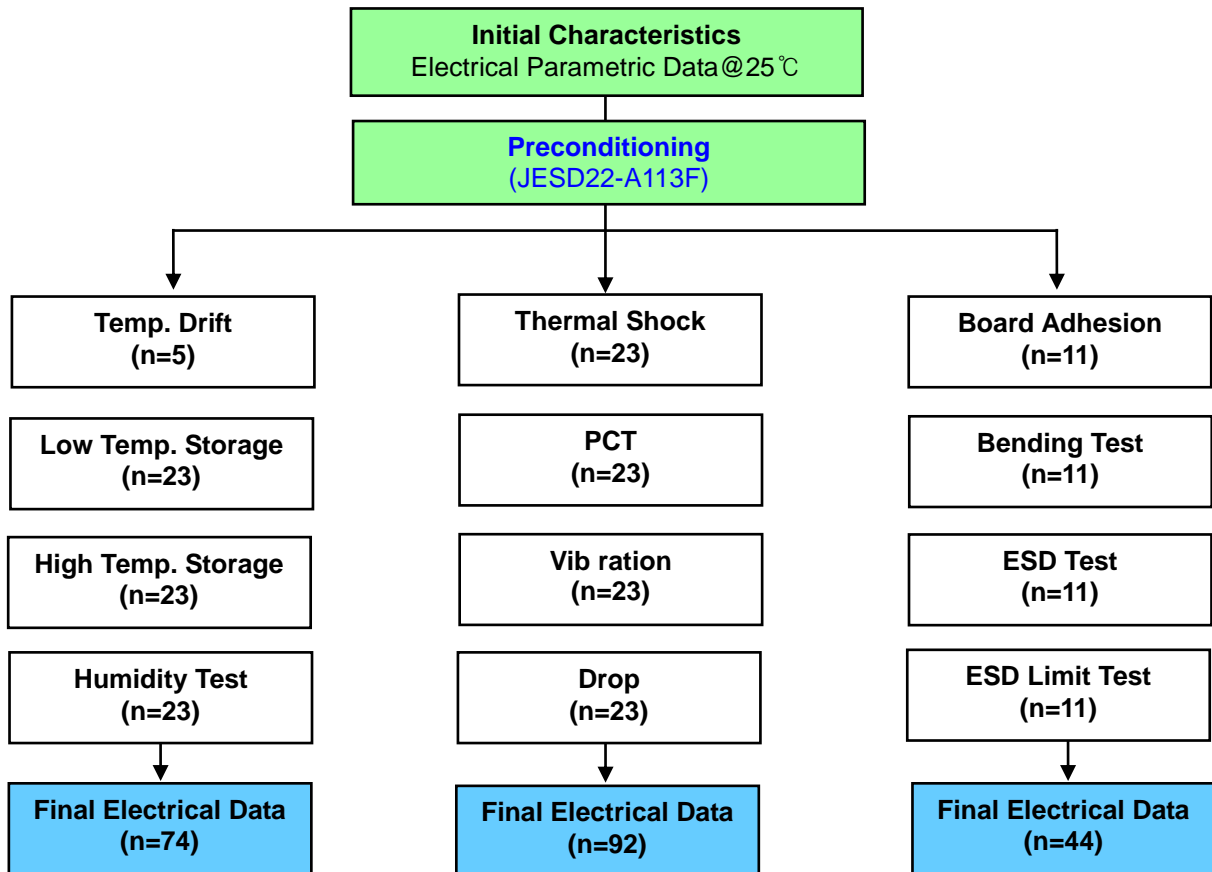


6-2-3. GRAPH



7. RELIABILITY

7-1. ENGINEERING SAMPLE FLOW CHART



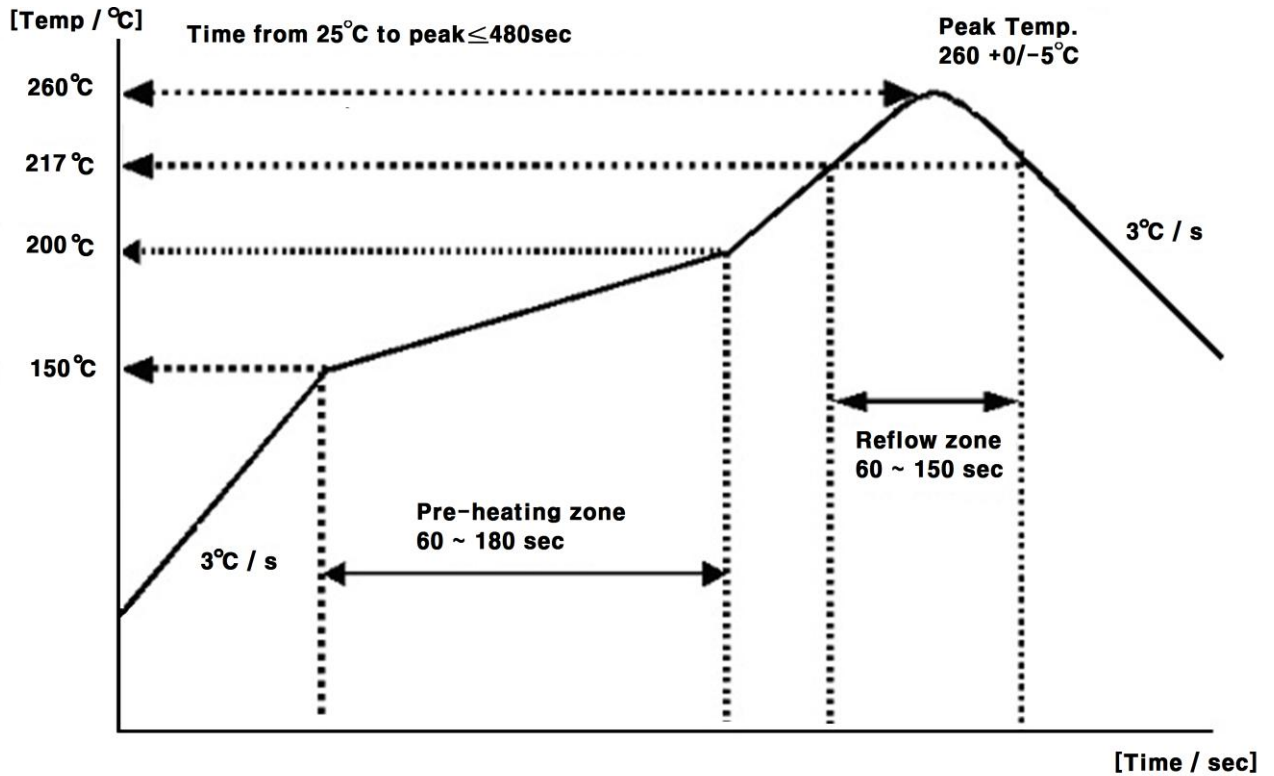
COMPASS Rx 1561.10MHz
GPS Rx 1575.42MHz
1.1×0.9×0.5mm³ 5pin lay-out
Version: 000
GLONASS Rx 1601.72MHz
7-2. TEST ITEM & CONDITION

CATEGORY	TEST ITEM	TEST CONDITION	REMARK
	Preconditioning	+125℃ 24hr Baking → +60℃ 60%RH 120hr → Reflow Test(3times)	JESD22A113F

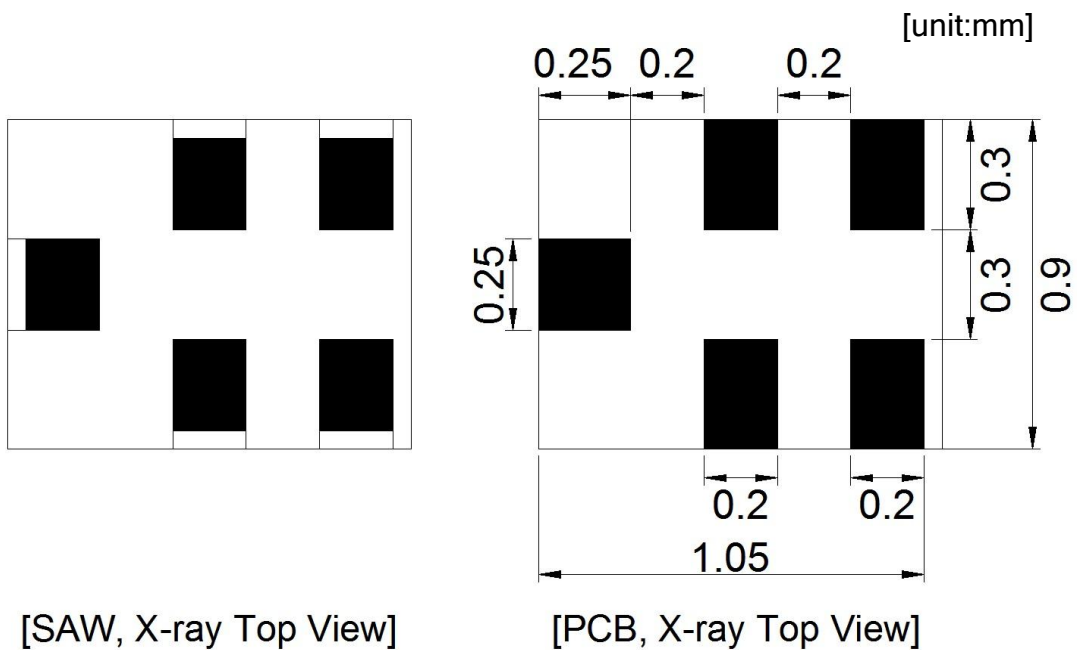


Environment Test	Temp. Drift	-30℃ → +25℃ → +85℃	description
	High Temp. Storage	+85℃ 240hr	JESD22-A103C
	Low Temp. Storage	-40℃ 240hr	JESD22-A119
	High Temp. High Humidity Storage	+85℃ 85%RH 240hr	JESD22-A106B
	Thermal Shock	-40℃/30min ⇔ +85℃/30min , 100cycle	JESD22-A106A
	High Temp. Operating	+121℃ 100%RH 96hr	JESD22-A102C
Mechanical Test	Vibration Test (Random)	20 Hz~2000 Hz,0.053G ² /Hz or 8g's RMS,15min/plane	IEC 68-2-36 Fdb
	Drop Test	152 cm 12times Steel floor JIG(110g~150g)	IEC 1178-1.4.8.9
	Board Adhesion	0.5 mm/sec 1point push	IEC 68-2-21 Ue3
	Bending Test	0.5 mm/sec 3times -PCB : FR4 , PCB SIZE : 100*40 mm	IEC 68-2-21 Ue3
Physical Test	Solder Heat Resistance	±250V,C=100pF,R=1.5 kΩ,1times	IEC 68-2-21 Ue3
	static marginal test	C=100pF,R=1.5 kΩ,1times(demand of customer)	JESD22-A114F

8. REFLOW CONDITION



9. RECOMMENDED PCB DIMENSIONS



COMPASS Rx 1561.10MHz
GPS Rx 1575.42MHz
1.1×0.9×0.5mm³ 5pin lay-out
Version: 000
GLONASS Rx 1601.72MHz

10. CAUTION

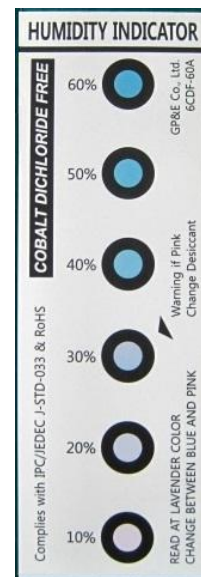
Moisture Sensitivity Device Caution (MSL LEVEL=2a)

1. Calculated shelf life in sealed bag : 12 month at <40℃ and <90% relative Humidith(RH)
 2. Peak package body temperature : **260℃**
 3. After bag is opened, devices that will be subjected to reflow solder or other high temperature process must be
 - (a) Mounted within : 672 hours of factory conditions ≤30℃/60% RH, or
 - (b) Stored per J-STD-033
 4. Device require bake, before mounting, if :
 - (a) Humidity Indicator Card reads > 60% when read at 23±5℃
 - (b) 3(a) or 3(b) are not met
 5. If baking is required, refer to IPC/JEDEC J-STD-033 for bake procedure
- Note : Level and body temperature defined by IPC/JEDEC J-STD-020

Aluminum Pack & Level (310mm X 370mm)



HIC(Humidity Indication Card)

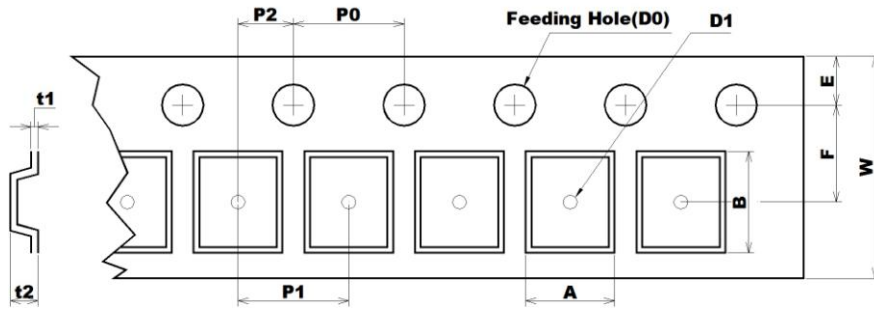


10 to 60% RH

11. PACKING

11-1. DIMENSIONS

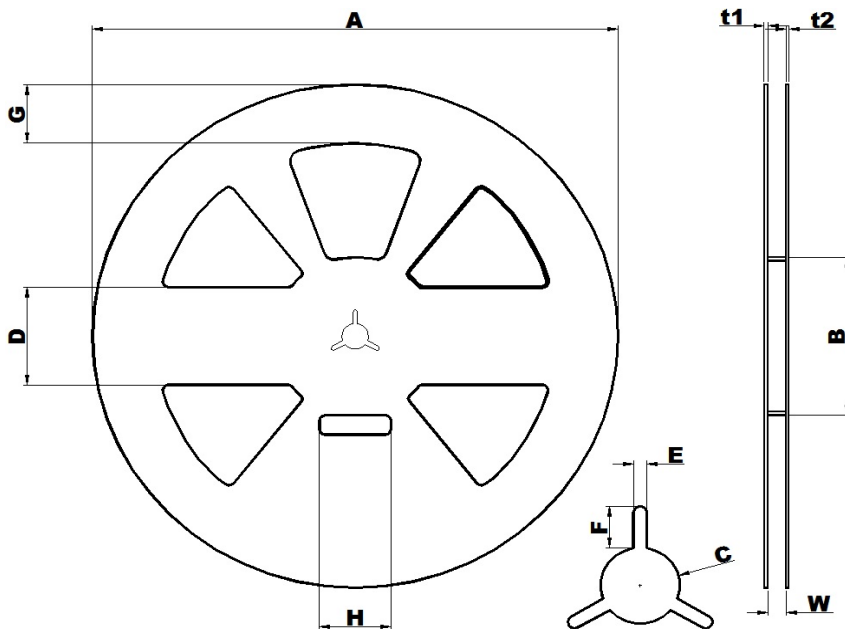
- Carrier Tape



[Unit:mm]

A	B	D0	D1	E	F	P0	P1	P2	t1	t2	W
1.1	1.35	Ø1.50	Ø0.50	1.75	3.5	4	4	2	0.25	0.7	8
0.05	0.05	+0.10 -0.00	0.05	0.10	0.05	0.10	0.10	0.05	0.02	0.07	+0.30 -0.10

- Reel



[Unit:mm]

A	B	C	D	E	F	G	H	t1	t2	W
Ø258.0	Ø81.0	Ø13.0	50.0	2.2	7.0	30.0	35.0	1.8	1.5	9.0
+1.0	1.0	0.5	0.8	0.3	0.5	0.8	1.0	0.5	0.5	+1.0
-0.5										-0.5

- The product shall be packed properly not to damaged during transportation and storage.

COMPASS Rx 1561.10MHz

GPS Rx 1575.42MHz

1.1×0.9×0.5mm³ 5pin lay-out

Version: 000

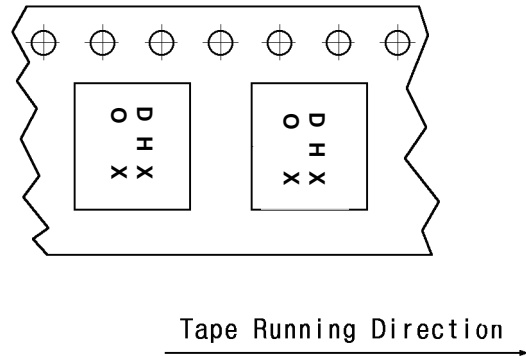
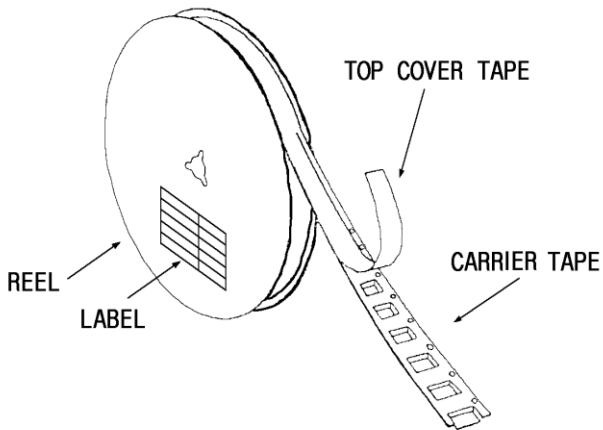
GLONASS Rx 1601.72MHz

11-2. REELING QUANTITY

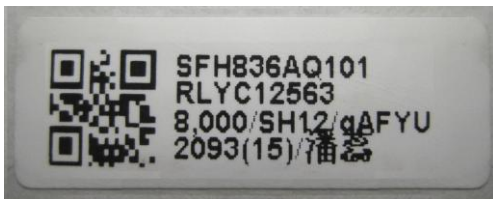
10 inch reel: 10,000 pcs/reel


11-3. TAPING STRUCTURE

11-3-1. The tape shall be wound around the reel in direction shown below.



11-3-2. BAR CODE LABEL



- (1)  MODEL NAME BARCODE
- (2) SFH836AQ101 Model Name
- (3) RLYC12563 Reel number
- (4) 8000 / qAFYU Quantity / Marking

COMPASS Rx 1561.10MHz

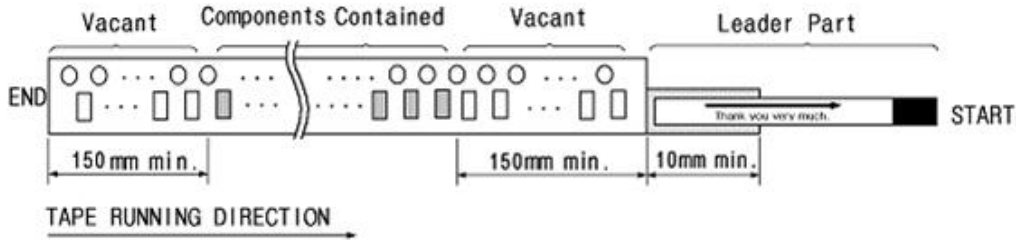
GPS Rx 1575.42MHz

1.1×0.9×0.5mm³ 5pin lay-out

Version: 000

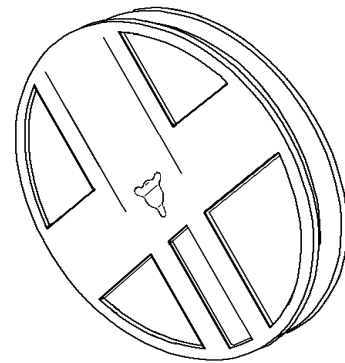
GLONASS Rx 1601.72MHz

11-3-3. Leader part and vacant position specifications.



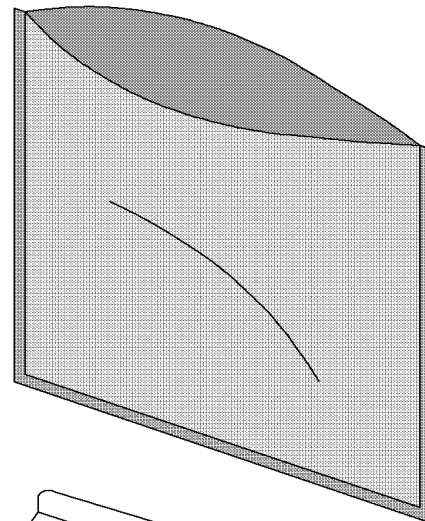
11-4. INNER BOX(Reel Packing) STRUCTURE

Material: Poly Carbonate



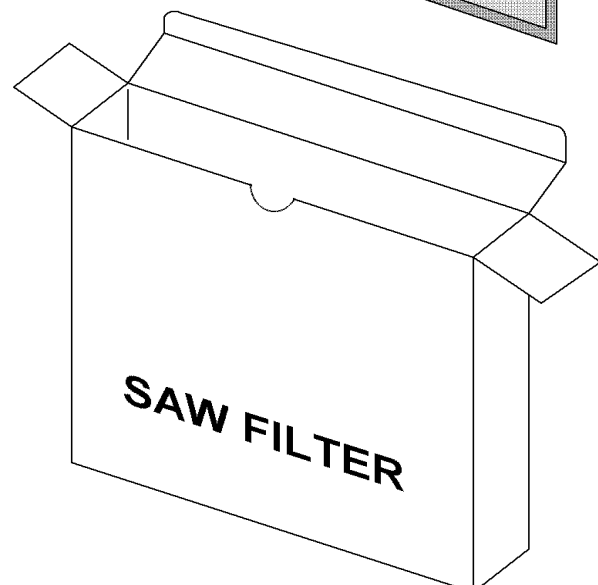
Material: Polyethylene + Aluminium

Size: 310×370mm²



Material: Paper(SW1D(E))

Size: 260×37×265mm³



COMPASS Rx 1561.10MHz

GPS Rx 1575.42MHz

1.1×0.9×0.5mm³ 5pin lay-out

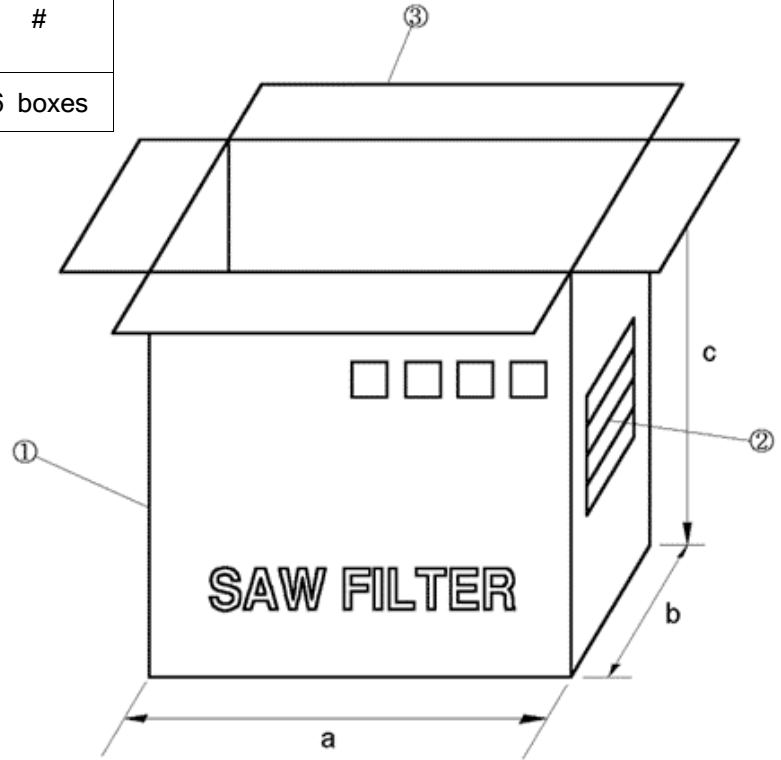
Version: 000

GLONASS Rx 1601.72MHz

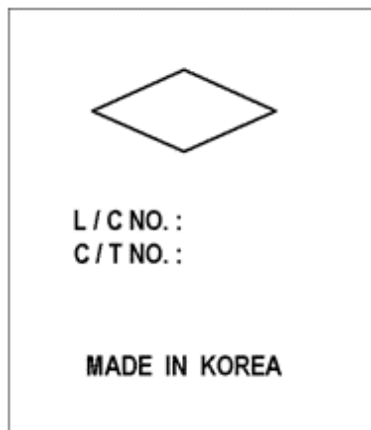
11-5. OUTER BOX STRUCTURE

Material: Paper(SW3B(A))

TYPE	SIZE(mm)			Inner Box #
	a	b	c	
A	270	240	275	6 boxes



SIDE ①



SIDE ②

MODEL	
Q'TY	EA
USER	
DATE	. . .

- SIDE is the same as front side.

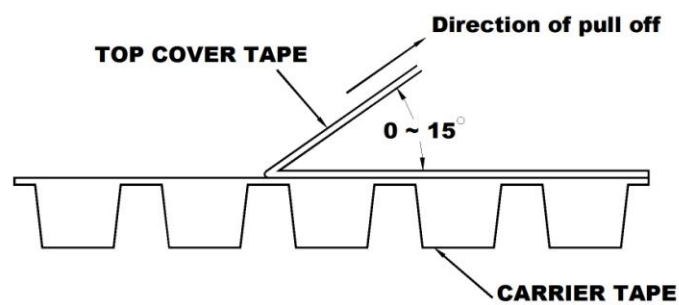
COMPASS Rx 1561.10MHz
GPS Rx 1575.42MHz
1.1×0.9×0.5mm³ 5pin lay-out
Version: 000
GLONASS Rx 1601.72MHz

12. TAPE SPECIFICATIONS

12-1. Tensile Strength of Carrier Tape: 4.4N/mm width

12-2. Top Cover Tape Adhesion (See the below figure)

- pull of angle: 0~15 degree
- speed: 300mm/min.
- force: 20~70g



COMPASS Rx 1561.10MHz
 GPS Rx 1575.42MHz 1.1×0.9×0.5mm³ 5pin lay-out Version: 000
 GLONASS Rx 1601.72MHz

13. RoHS DATA



Test Report No. F690101/LF-CTSAYAA11-28285

Issued Date: 2011. 09. 06 Page 1 of 2

To: **WISOL CO., LTD.**
 373-7
 Gajang-dong
 Osan-si
 Gyeonggi-do
 Korea

The following merchandise was submitted and identified by the client as :

SGS File No. : AYAA11-28285
Product Name : SAW FILTER
Item No./Part No. : N/A
Received Date : 2011. 08. 31
Test Period : 2011. 09. 01 to 2011. 09. 06
Test Results : For further details, please refer to following page(s)
Test Performed : SGS Korea tested the sample(s) selected by applicant with following results.
Test Comments : By the applicant's specific request, the sampling and testing was performed only for the part indicated in the photo without disassembly.

SGS Korea Co. Ltd.



Jeff Jang / Chemical Lab Mgr

Timothy Jeon
 Jinhee Kim
 Cindy Park
 Jerry Jung / Testing Person

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F052 Version4

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 t +82 (0)31 4608 000 f +82 (0)31 4608 059 <http://www.sgslab.co.kr> www.kr.sgs.com/greenlab

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COMPASS Rx 1561.10MHz

GPS Rx 1575.42MHz

GLONASS Rx 1601.72MHz

1.1×0.9×0.5mm³ 5pin lay-out

Version: 000



Test Report No. F690101/LF-CTSAYAA11-28285

Issued Date: 2011. 09. 06 Page 2 of 2

Sample No. : AYAA11-28285.001

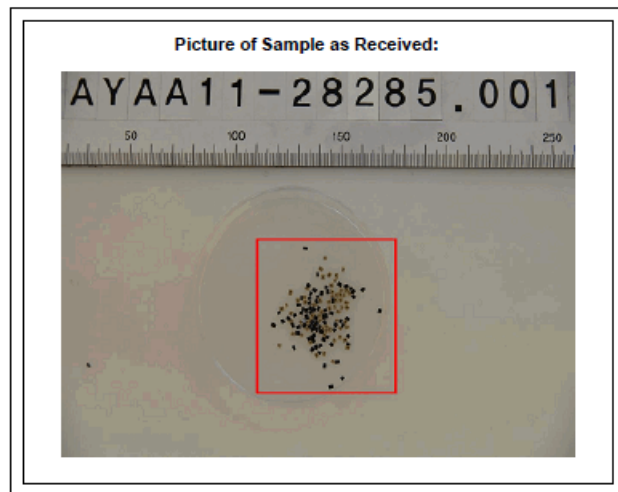
Sample Description : SAW FILTER

Item No./Part No. : N/A

Materials : N/A

Heavy Metals

Test Items	Unit	Test Method	MDL	Results
Antimony (Sb)	mg/kg	With reference to EPA 3052(1996), US EPA 8010B(1996), ICP	10	N.D.



*** End ***

- NOTE: (1) N.D. = Not detected.(<MDL)
 (2) mg/kg = ppm
 (3) MDL = Method Detection Limit
 (4) - = No regulation
 (5) ** = Qualitative analysis (No Unit)
 (6) * = Boiling-water-extraction:
 Negative = Absence of CrVI coating
 Positive = Presence of CrVI coating; the detected concentration in boiling-water-extraction solution is equal or greater than 0.02 mg/kg with 50 cm² sample surface area.

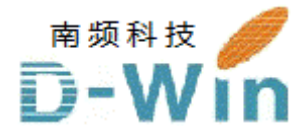
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