

Halogen Free



# SPECIFICATION

## Surface Acoustic Wave Filter

USER

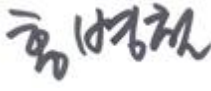


USER PART No.

WISOL PART No. **SFH942AA002**

DOC. No. SMS-51-L-SFT FX-23

DATE July 08, 2013

REVISION 000

WISOL					
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User					
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## 1. REVISION HISTORY

000	July 08, 2013	All page	Make specification
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## 2. DEFINITION

### 2-1. PART No.

S F H 942 A A0 02  
 (1) (2) (3) (4) (5) (6)

No.	EXPLANATION	
(1)	SAW Filter	
(2)	Design Type	
(3)	Center Frequency:	942.5MHz(925 ~ 960)
(4)	Input:50ohm,Output: 50ohm	
(5)	Package size: 1.1×0.9mm	
(6)	Design Revision (02: Molding type)	

### 2-2. APPLICATION : Band-Pass Filter for EGSM Rx etc (UMTS Band VIII)

## 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.

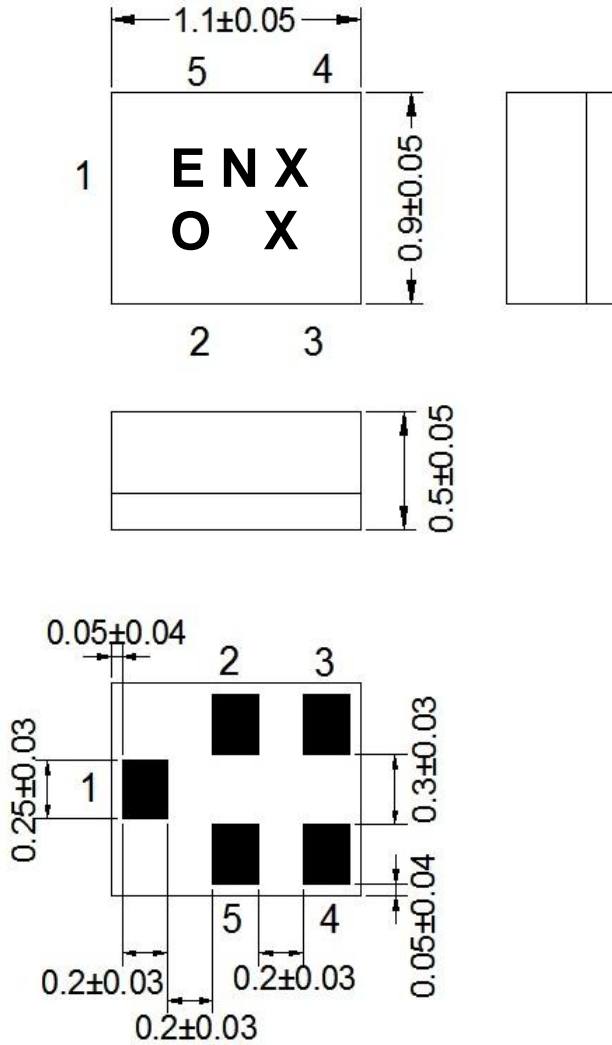
Please avoid static voltage during operation and storage.

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, 3, 5	Ground
1	Unbalanced Input
4	Unbalanced Output

## 5. MARKING



### 5-1. E N X X

- The 1st, 2nd character 'EN' indicates the model name of SAW Filter “SFH942AA002” .
- 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
<b>2013</b>	P	Q	R	S	T	U	V	W	X	Y	Z	a
<b>2014</b>	1	2	3	4	5	6	7	8	9	A	B	C
<b>2015</b>	D	E	F	G	H	I	J	K	L	M	N	O
<b>2016</b>	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

## 6. PERFORMANCE

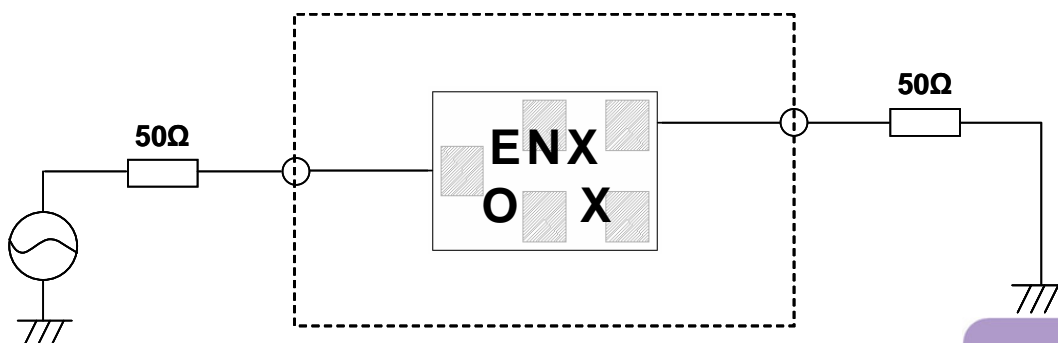
### 6-1. MAXIMUM RATINGS

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

**6-2. ELECTRICAL CHARACTERISTICS**
**6-2-1. TABLE**

Ta = -30 ~ +85°C

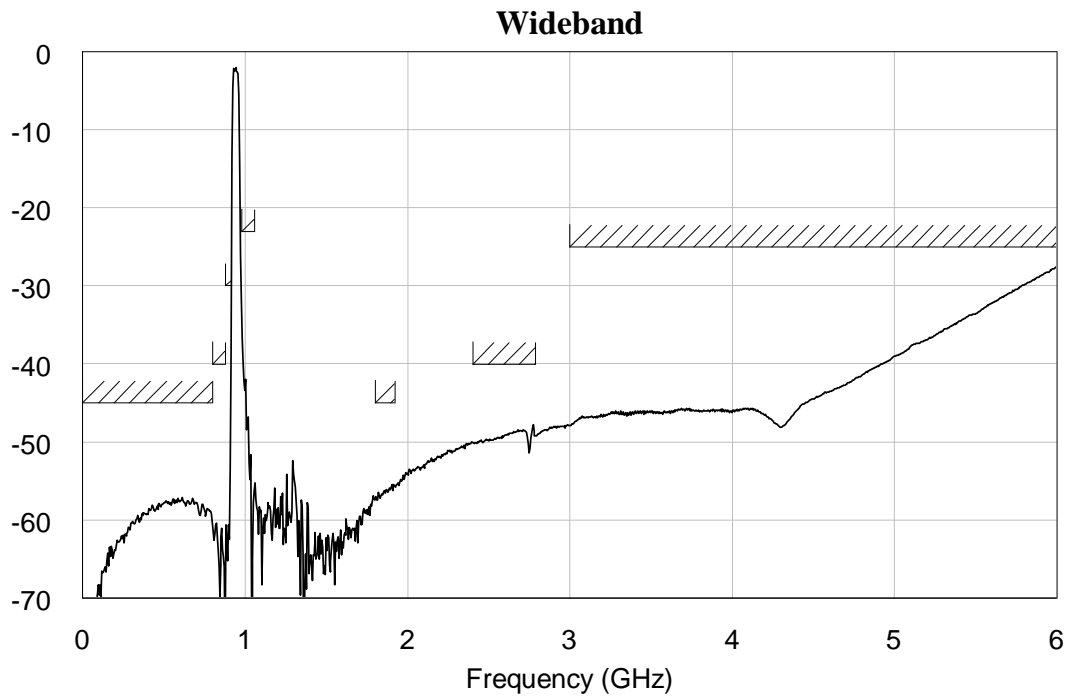
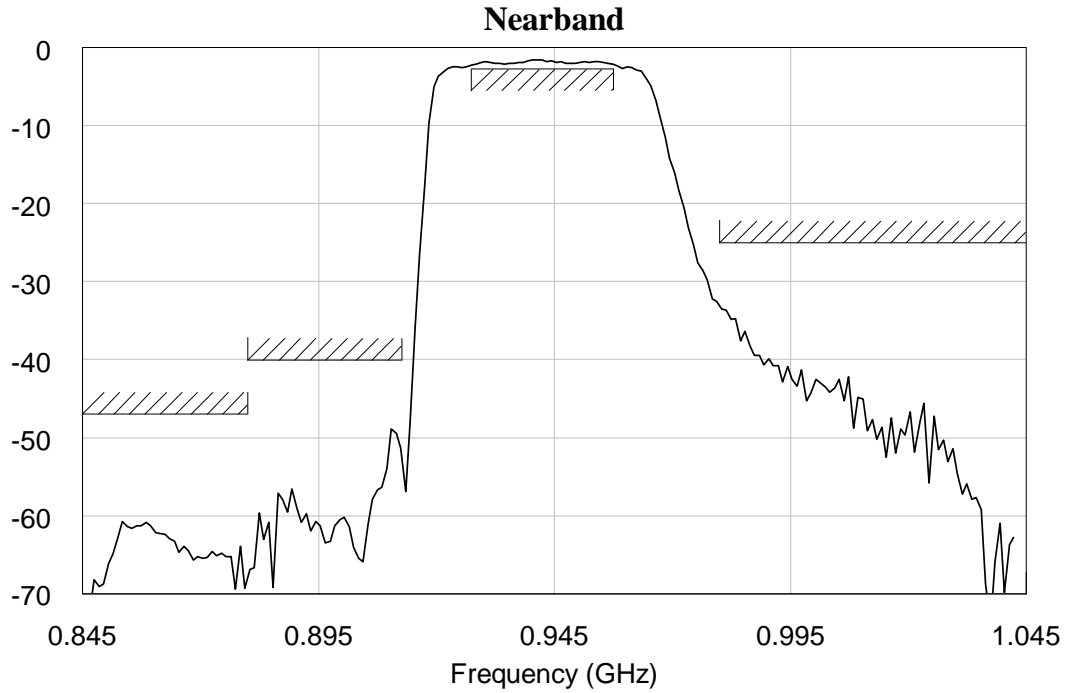
Item	FREQUENCY RANGE [MHz]	UNIT	SPECIFICATION (Target Specification)		
			Min.	Typ. (25°C)	Max.
Insertion Loss	925 ~ 960	dB	-	2.4	3.2
	927.4 ~ 957.6			2.2	2.7
Inband Ripple	925 ~ 960	dB	-	0.8	1.6
	927.4 ~ 957.6			0.5	1.2
Input VSWR	925 ~ 960	-	-	1.9	2.2
	927.4 ~ 957.6			1.8	2.1
Output VSWR	925 ~ 960	-	-	1.9	2.2
	927.4 ~ 957.6			1.8	2.1
Absolute Attenuation	DC ~ 800	dB	45	52	-
	800 ~ 880	dB	47	58	-
	880 ~ 915	dB	30	48	
	882.4 ~ 912.6		40		
	980 ~ 1060	dB	25	35	-
	1800 ~ 1920	dB	45	55	-
	2400 ~ 2790	dB	40	48	-
3000 ~ 6000	dB	25	32	-	
Termination Impedance		Input: Unbalanced 50 ohm Output: Unbalanced 50 ohm			

**6-2-2. TEST FIXTURE**
**[X-Ray Top View]**


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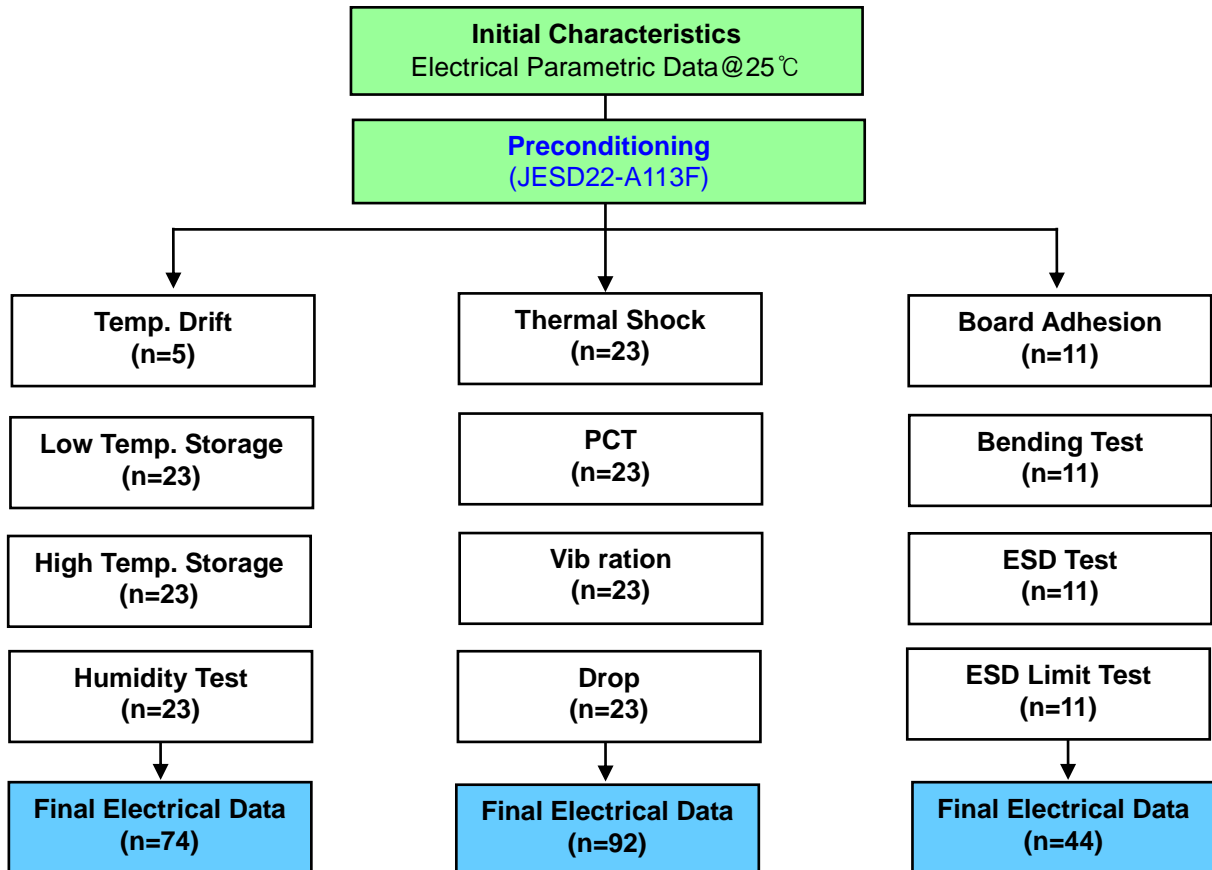


6-2-3. GRAPH



## 7. RELIABILITY

### 7-1. ENGINEERING SAMPLE FLOW CHART



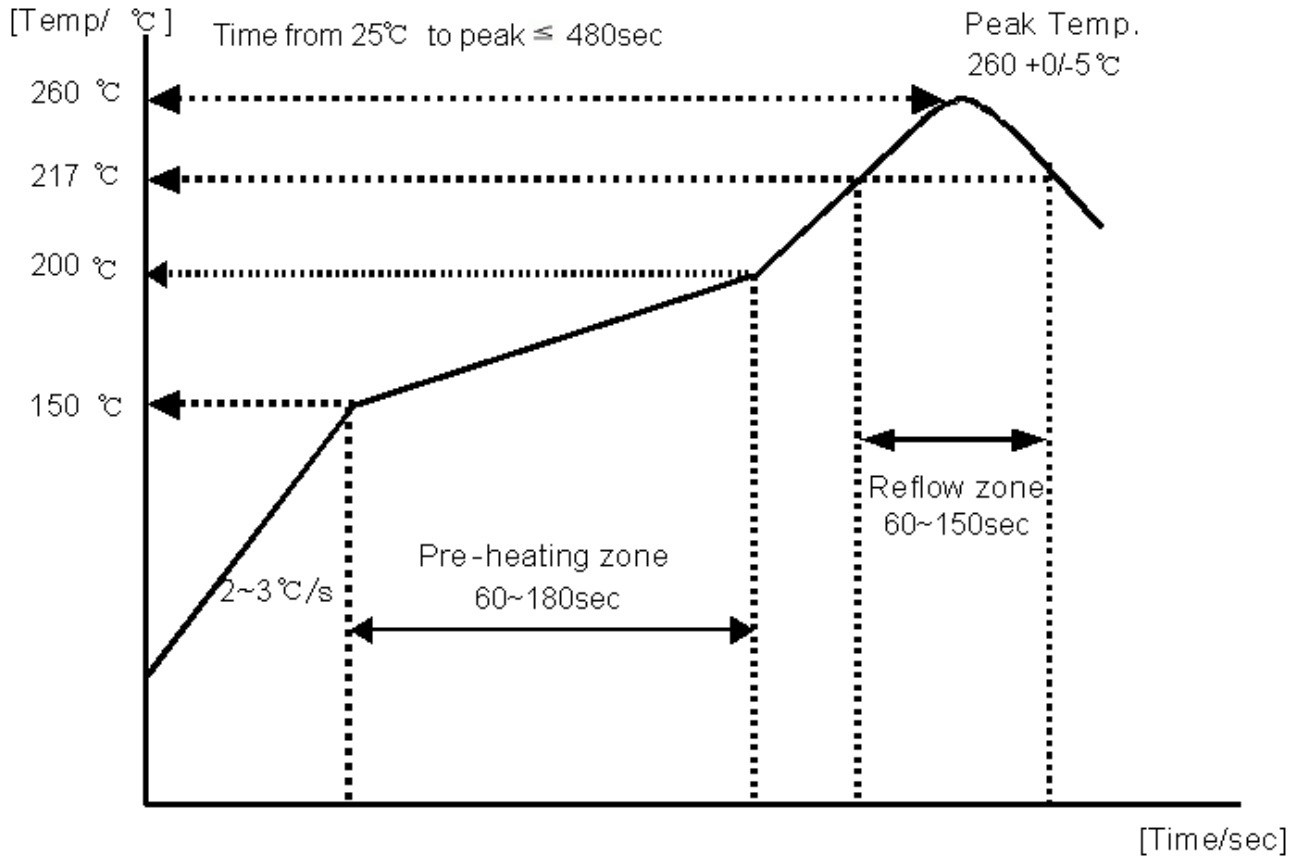
**7-2. TEST ITEM & CONDITION**

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

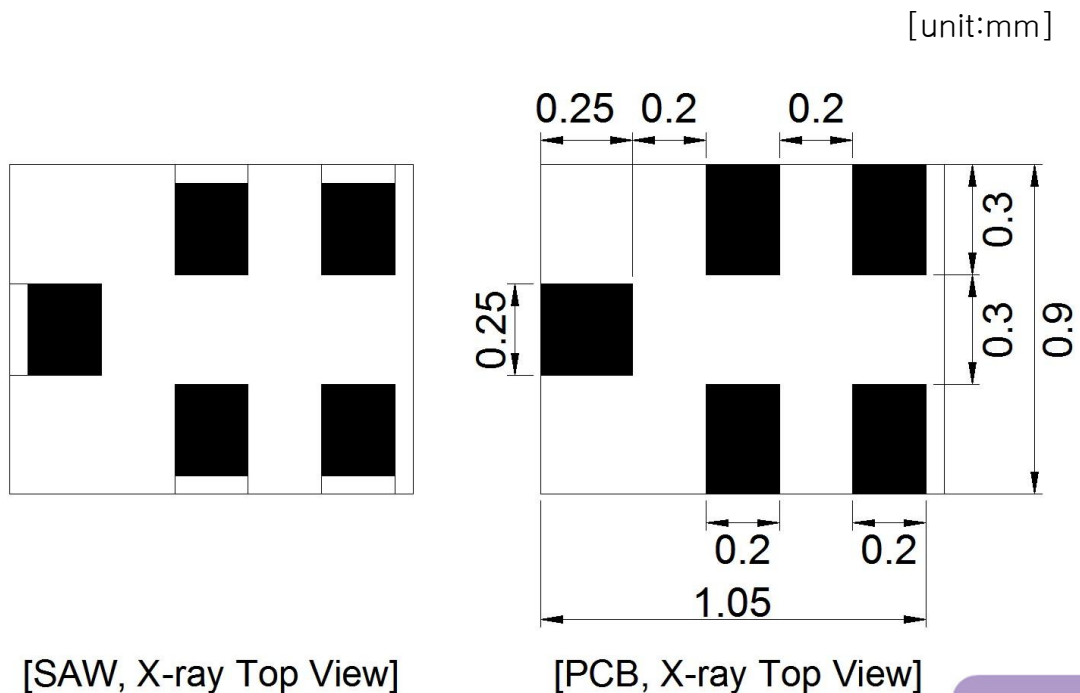


Environment Test	Temp. Drift	-30℃ → +25℃ → +85℃	description
	High Temp. Storage	+85℃ 240hr	JESD22-A103C
	Low Temp. Storage	-40℃ 240hr	JESD22-A119
	High Temp. High Humidity Storage	+85℃ 85%RH 240hr	JESD22-A106B
	Thermal Shock	-40℃/30min ⇔ +85℃/30min , 100cycle	JESD22-A106A
	High Temp. Operating	+121℃ 100%RH 96hr	JESD22-A102C
Mechanical Test	Vibration Test (Random)	20 Hz~2000 Hz,0.053G/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



## 10. CAUTION

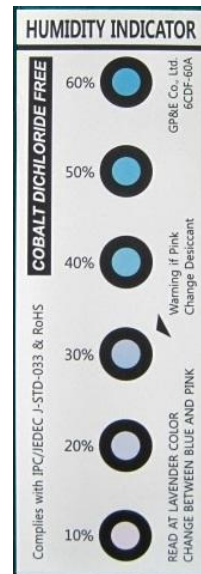
### Moisture Sensitivity Device Caution (MSL LEVEL=2a)

1. Calculated shelf life in sealed bag : 12 month at < 40°C and < 90% relative Humidity(RH)
  2. Peak package body temperature : **260°C**
  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 °C/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°C
    - (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)

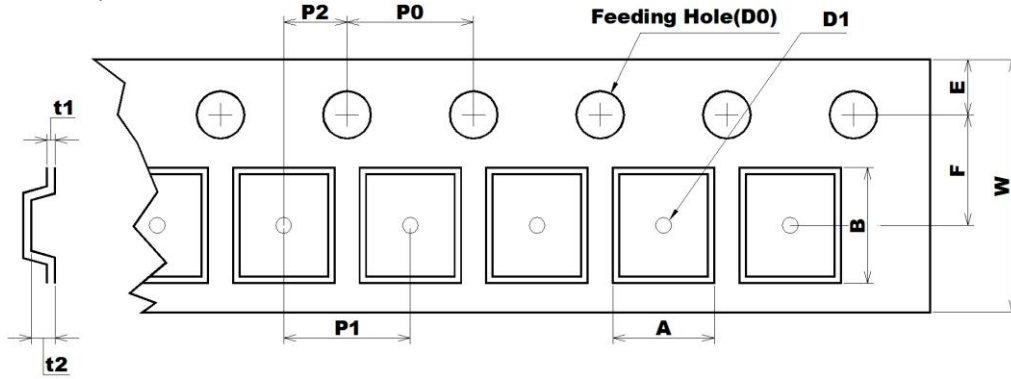


10 to 60% RH

11. PACKING

11-1. DIMENSIONS

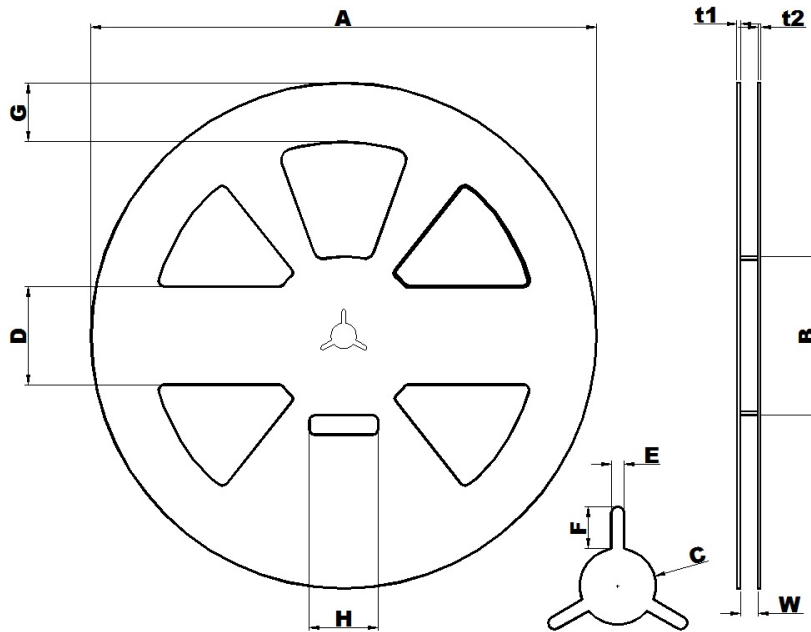
- Carrier Tape



[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

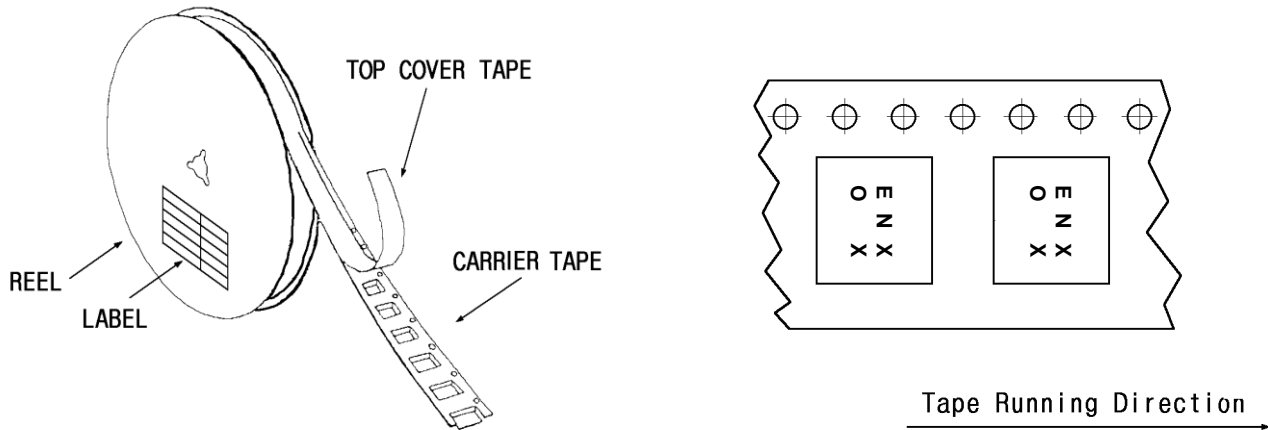
- The product shall be packed properly not to damaged during transportation and storage

11-2. REELING QUANTITY

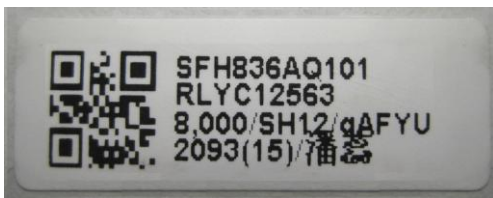
10 inch reel: 10,000 pcs/reel


11-3. TAPING STRUCTURE

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

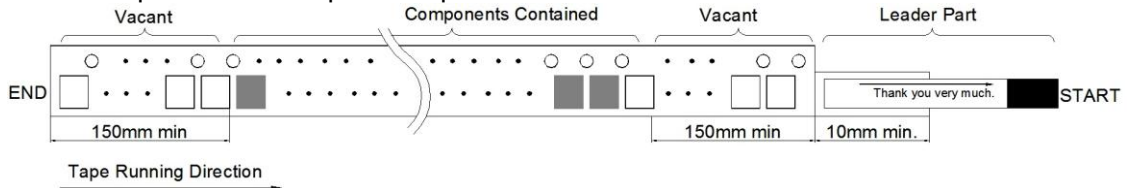


11-3-2. BAR CODE LABEL



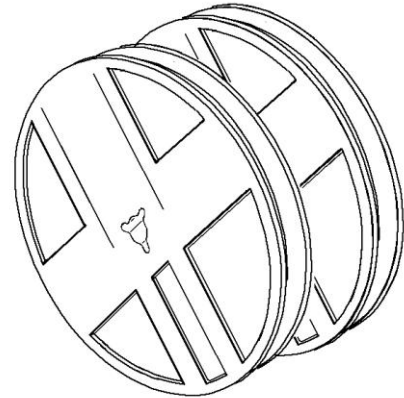
- (1)  MODEL NAME BARCODE
- (2) SFH836AQ101 Model Name
- (3) RLYC12563 Reel number
- (4) 8000 / qAFYU Quantity / Marking

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

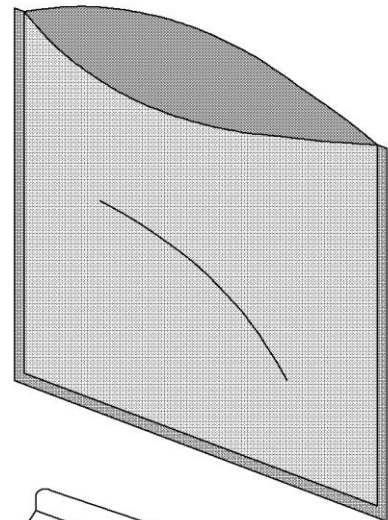


11-4. INNER BOX(Reel Packing) STRUCTURE

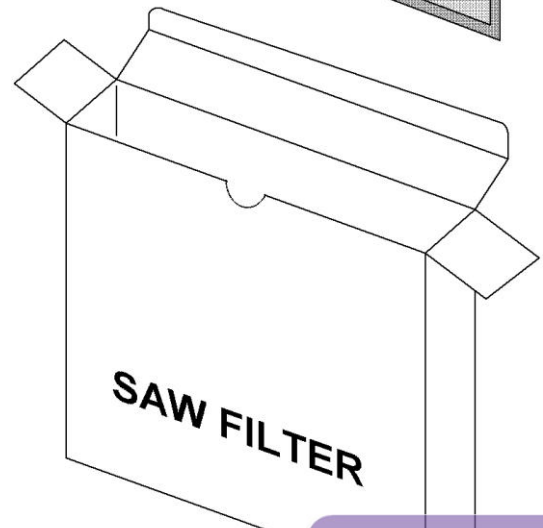
Material: Plastic Reel



Material: Antistatic Vinyl Bag  
Size: 310×340mm<sup>2</sup>



Material: Paper(SW1D(E))  
Size: 260×37×265mm<sup>3</sup>

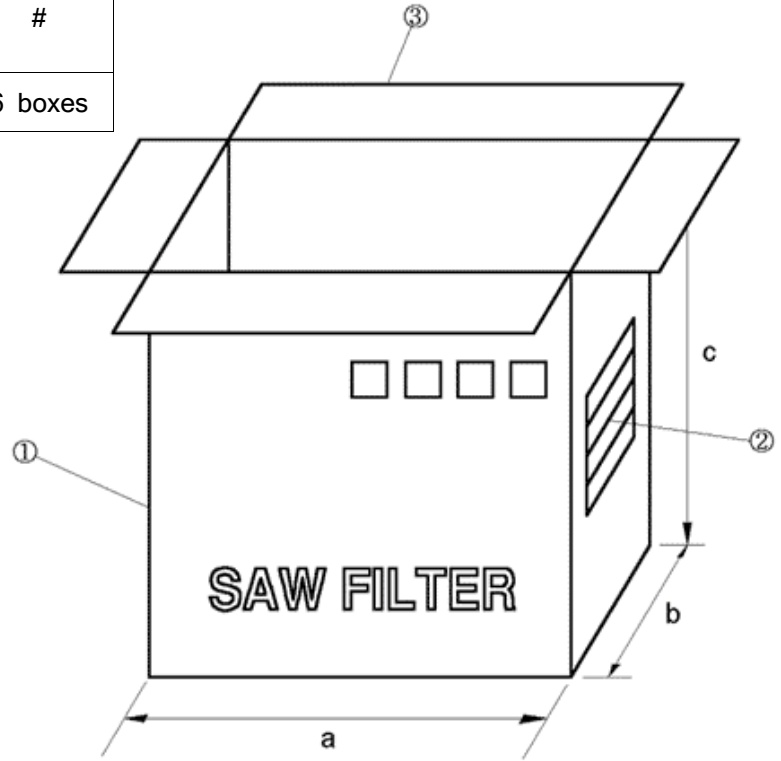




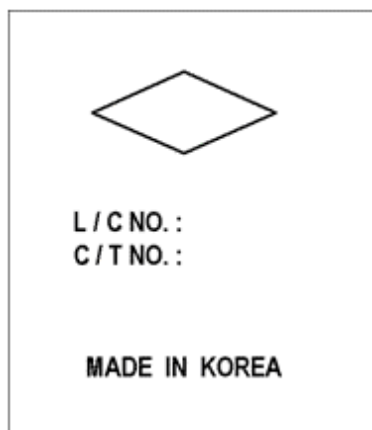
11-5. OUTER BOX STRUCTURE

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	. . .

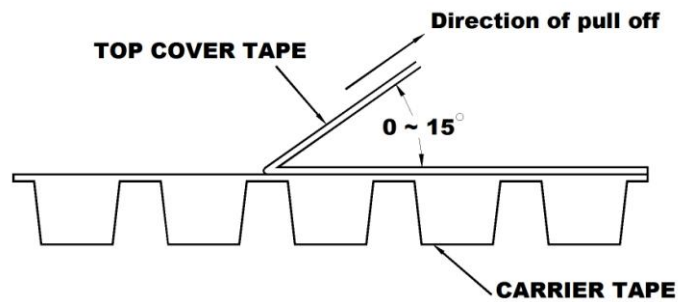
- SIDE is the same as front side.

## 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



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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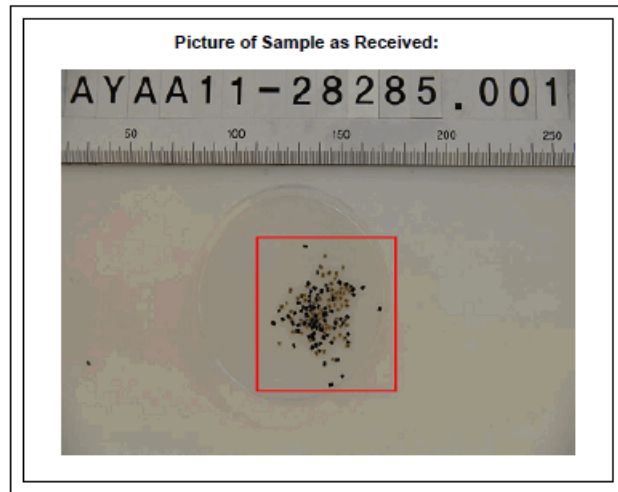
**Test Report No.** F690101/LF-CTSAYAA11-28285

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 cm<sup>2</sup> sample surface area.

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