



SPECIFICATION

Surface Acoustic Wave Filter

USER

USER PART No.

SEMCO PART No. **SFH942PA002**

DOC. No. SMS-51-L-SFT FX-18

DATE July 24, 2013

REVISION 000

WISOL					
ISSUED BY	Kim, Kyung-Sik 	APPROVED BY (R&D)	Hong, Seong-Su 	APPROVED BY (QC)	Jeon. Hyeon Cheol
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>

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1. REVISION HISTORY

000	July 24, 2013	All Page	Make specification
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2. DEFINITION

2-1. PART No.

SFH942PA002

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:150ohm				
⑤	Package size: 1.1×0.9mm ²				
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.

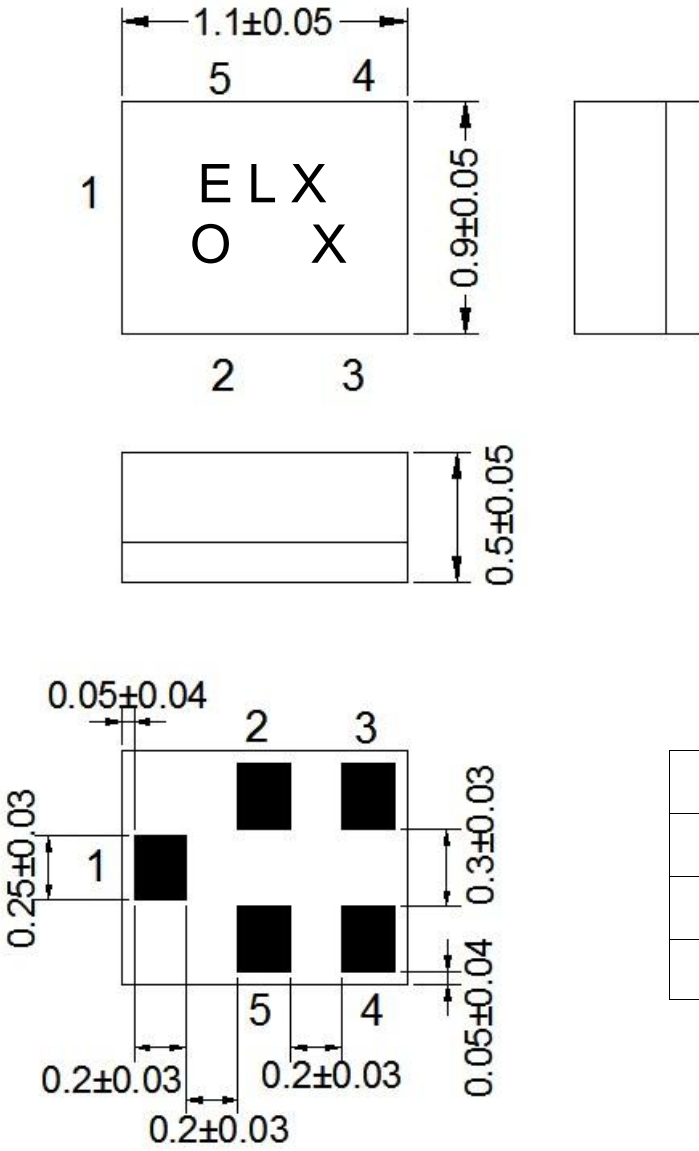
3-6. Sudden change of temperature shall be avoided, deterioration of the characteristics can occur.

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.

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4. OUTLINE DRAWING & DIMENSIONS

[Unit: mm]



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

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5. MARKING



5-1. E L X X

- The 1st 2nd character 'EL' indicates the model name of SAW Filter SFH942PA002.
- 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 Lot No.

5-2. ○

- This symbol indicates input pin 1.
- This indicates the producing center
 - : China,

5-3. Marking : Laser Marking

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6. PERFORMANCE

6-1. MAXIMUM RATINGS

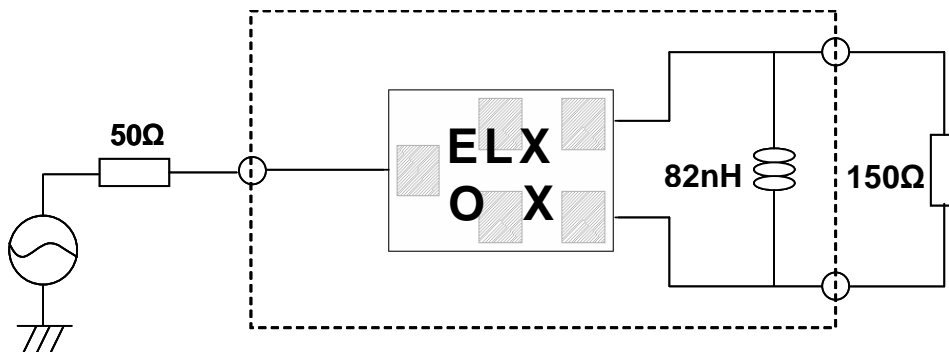
CHARACTERISTICS	RATINGS	UNITS
DC Permissive Voltage	5	V
Maximum Input Power	15	dBm
Operating Temperature Range	- 30 ~ +85	°C
Storage Temperature Range	- 40 ~ +85	°C

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

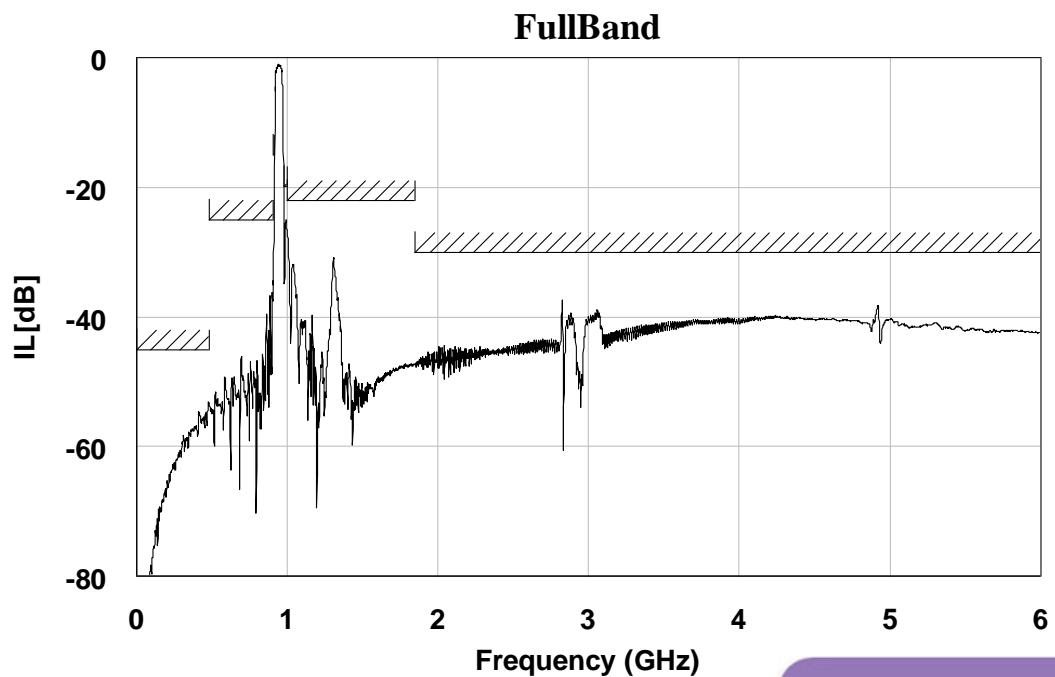
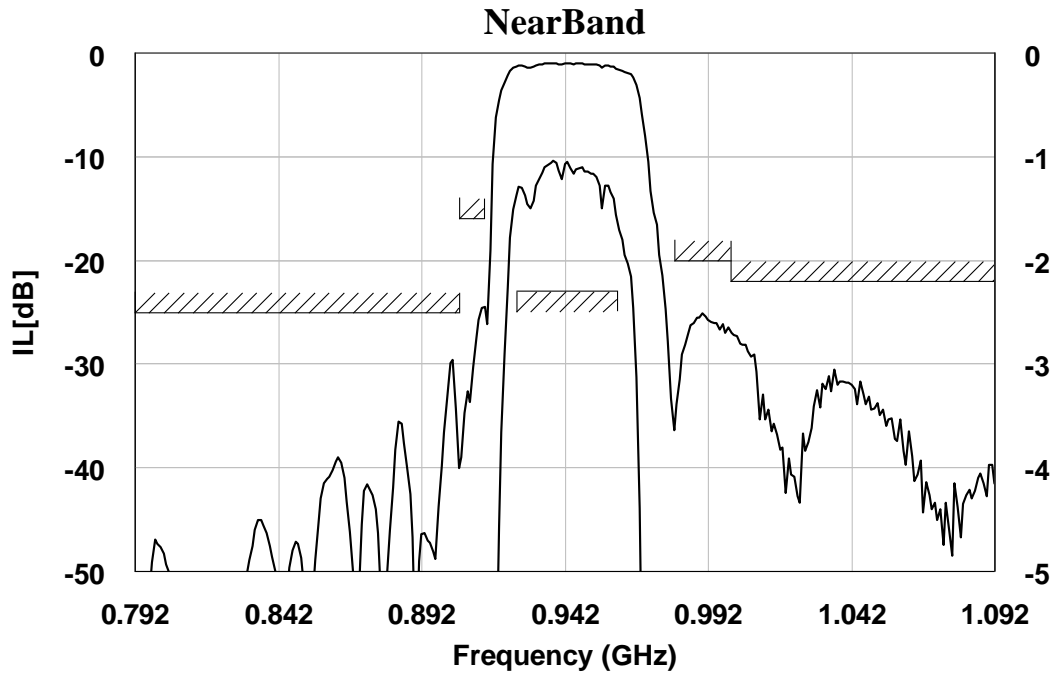
Ta = -30 ~ +85°C

Item	FREQUENCY RANGE [MHz]	UNIT	SPECIFICATION		
			Min.	Typ. (25°C)	Max.
Insertion Loss	925 ~ 960	dB	-	1.5	2.3
Inband Ripple	925 ~ 960	dB	-	0.5	1.4
Input VSWR	925 ~ 960	-	-	1.6	2.0
Output VSWR	925 ~ 960	-	-	1.6	2.0
Amplitude Imbalance	925 ~ 960	dB	-1.2	-	+1.2
Phase Imbalance	925 ~ 960	degree	-10	-	+10
Absolute Attenuation	DC ~ 480	dB	45	54	-
	480 ~ 905	dB	25	30	-
	905 ~ 915	dB	15	24	-
	980 ~ 1000	dB	20	25	-
	1000 ~ 1850	dB	22	27	-
	1850 ~ 6000	dB	30	37	-
Termination Impedance		Input: Unbalanced 50 ohm Output: Balanced 150 ohm // 82nH			

6-2-2. TEST FIXTURE

[X-Ray Top View]

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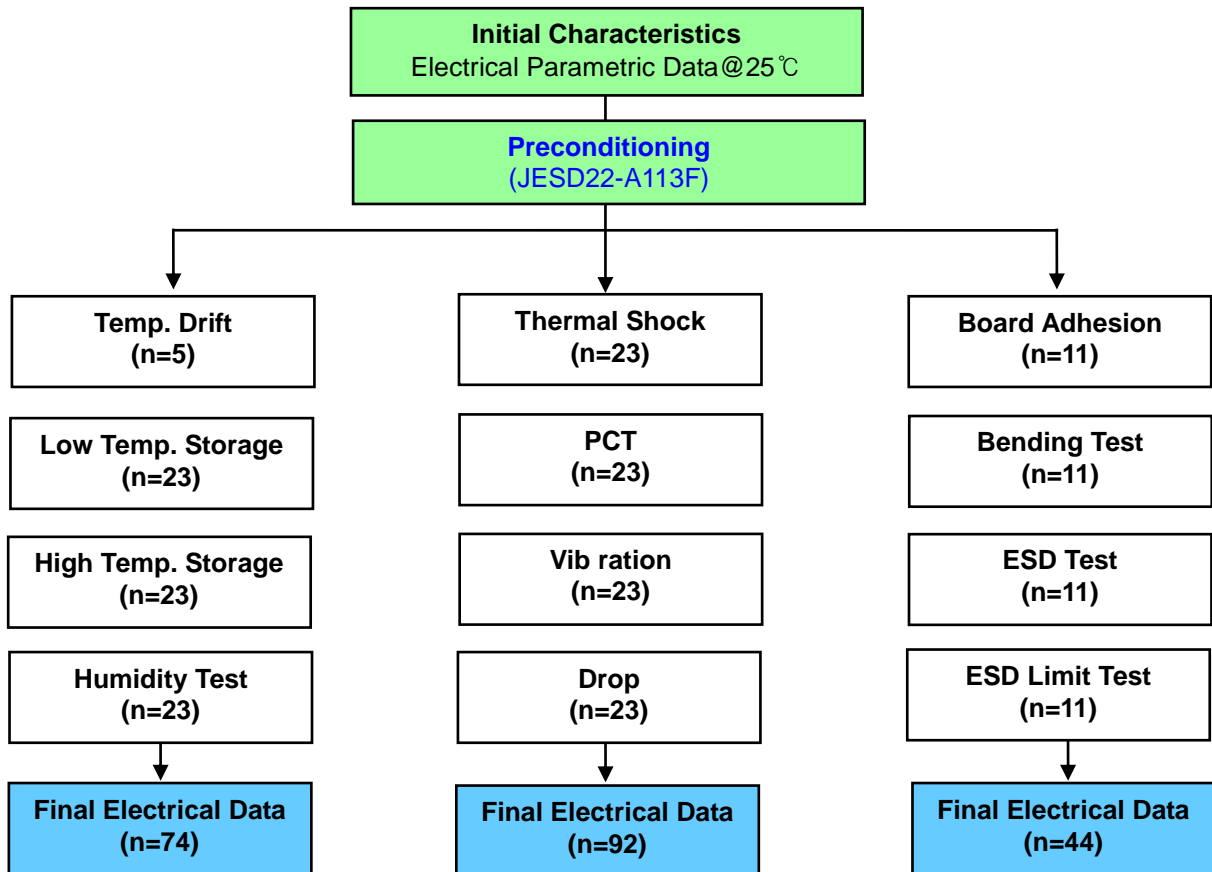
6-2-3. GRAPH



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7. RELIABILITY

7-1. ENGINEERING SAMPLE FLOW CHART



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7-2. TEST ITEM & CONDITION

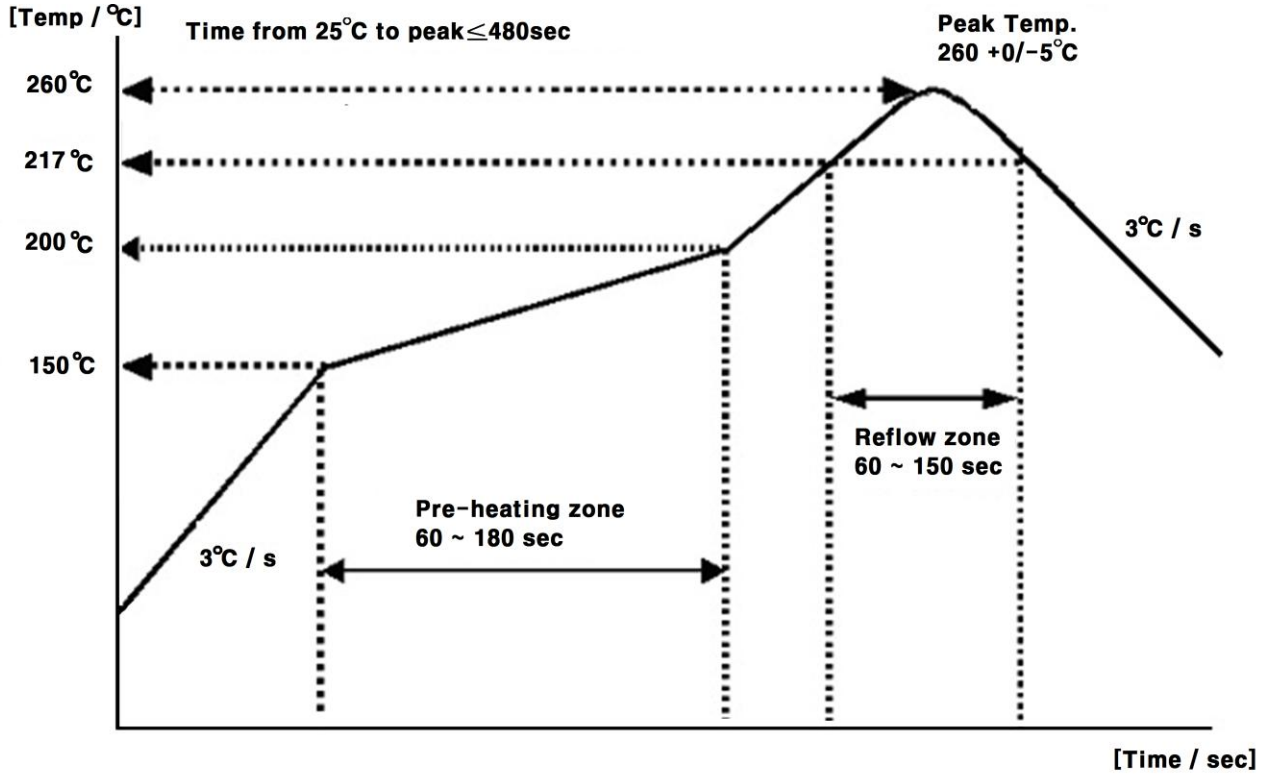
CATEGORY	TEST ITEM	TEST CONDITION	REMARK
	Preconditioning	+125℃ 24hr Baking → +60℃ 60%RH 120hr → Reflow Test(3times)	JESD22A113F



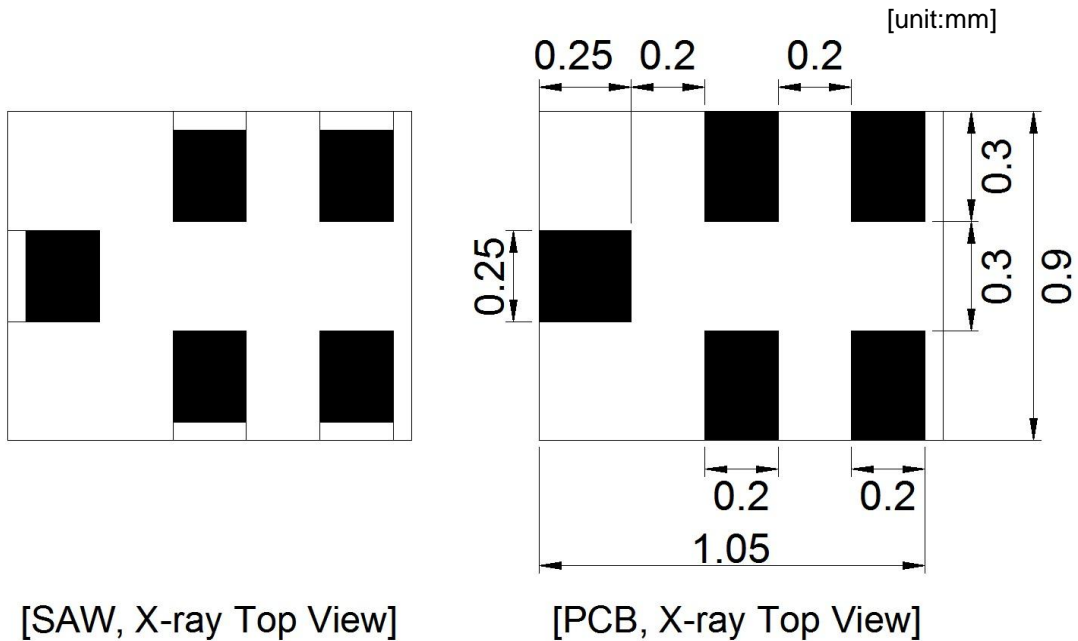
Environment Test	Temp. Drift	-30℃ → +25℃ → +85℃	description
	High Temp. Storage	+85℃ 240hr	JESD22-A103C
	Low Temp. Storage	-40℃ 240hr	JESD22-A119
	High Temp. High Humidity Storage	+85℃ 85%RH 240hr	JESD22-A106B
	Thermal Shock	-40℃/30min ⇔ +85℃/30min , 100cycle	JESD22-A106A
	High Temp. Operating	+121℃ 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

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8. REFLOW CONDITION



9. RECOMMENDED PCB DIMENSIONS



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10. CAUTION

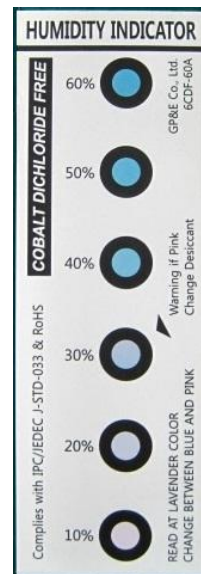
Moisture Sensitivity Device Caution (MSL LEVEL=2a)

1. Calculated shelf life in sealed bag : 12 month at <40℃ and <90% relative Humidity(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 (310mmX370mm)



HIC(Humidity Indication Card)



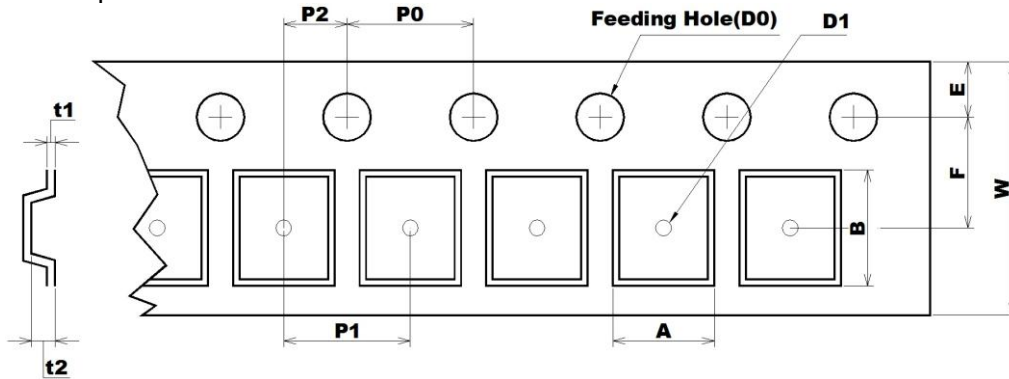
10 to 60% RH

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11. PACKING

11-1. DIMENSIONS

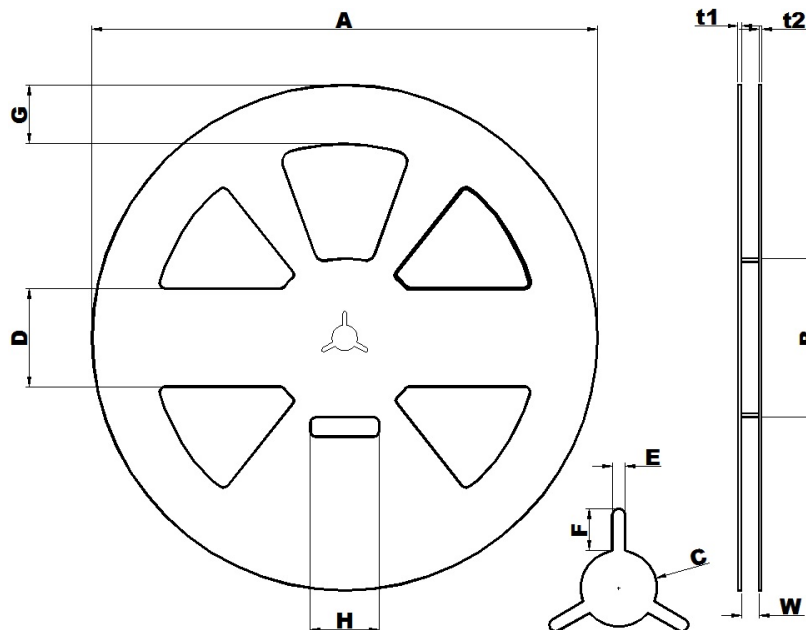
- Carrier Tape



[Unit: mm]

A	B	D0	D1	E	F	P0	P1	P2	t1	t2	W
1.10	1.35	Ø1.50	Ø0.50	1.75	3.50	4.00	4.00	2.00	0.25	0.70	8.00
+0.05	+0.05	+0.10	+0.05	+0.10	+0.05	+0.10	+0.10	+0.05	+0.02	+0.05	+0.30
-0.05	-0.05	-0.00	-0.05	-0.10	-0.05	-0.10	-0.10	-0.05	-0.02	-0.05	-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	-1.0	-0.5	-0.8	-0.3	-0.5	-0.8	-1.0	-0.5	-0.5	-0.5

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

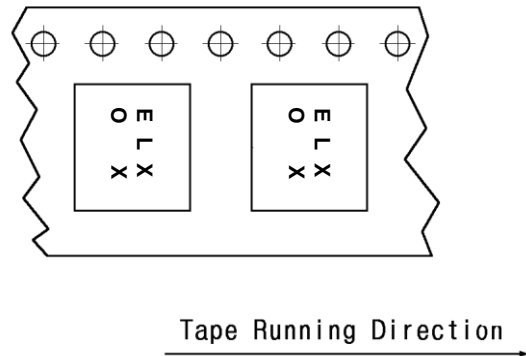
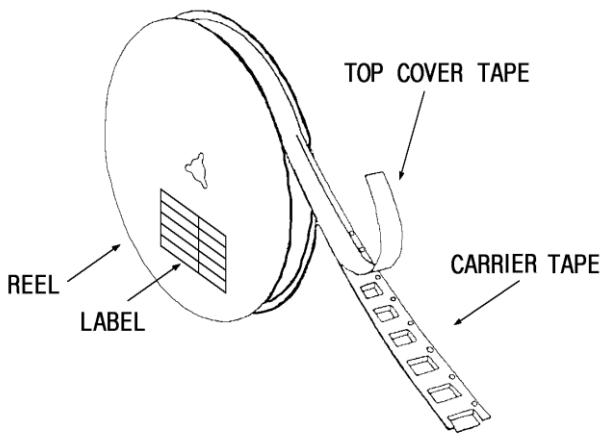
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11-2. REELING QUANTITY

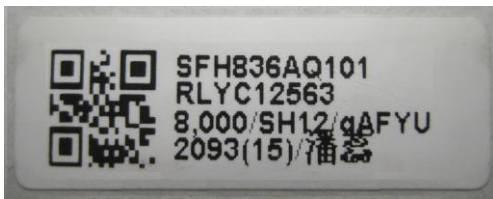
10 inch reel : 10,000 pcs/reel


11-3. TAPING STRUCTURE

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



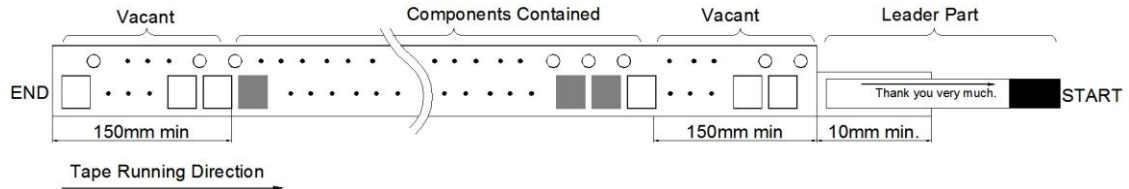
11-3-2. BAR CODE LABEL



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

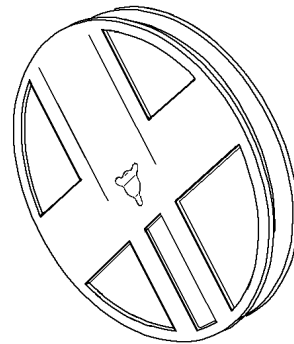
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1-3-3. Leader part and vacant position specifications.



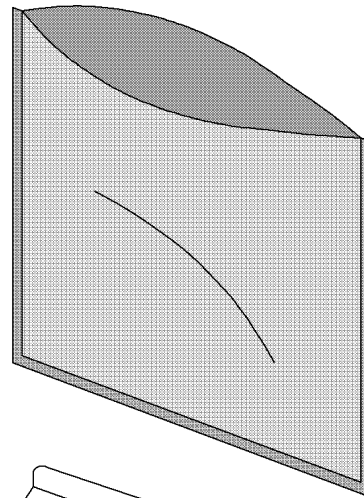
11-4. INNER BOX(Reel Packing) STRUCTURE

Material: Polycarbonate



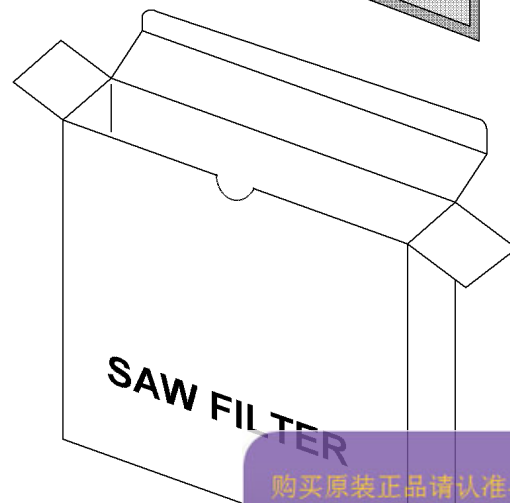
Material: Polyethylene + Aluminium

Size: 310×370mm²



Material: Paper

Size: (D)260×(W)37×(H)265mm³

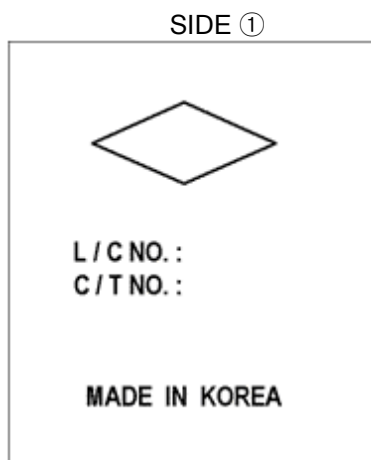
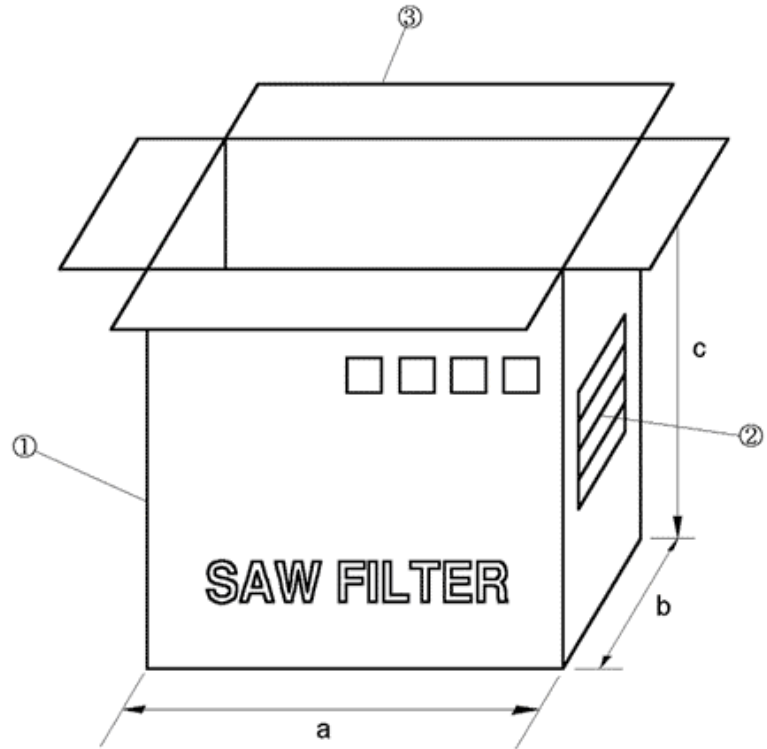


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11-5. OUTER BOX STRUCTURE

Material : Paper

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



SIDE ②

MODEL	
Q'TY	EA
USER	
DATE	

- SIDE is the same as front side.

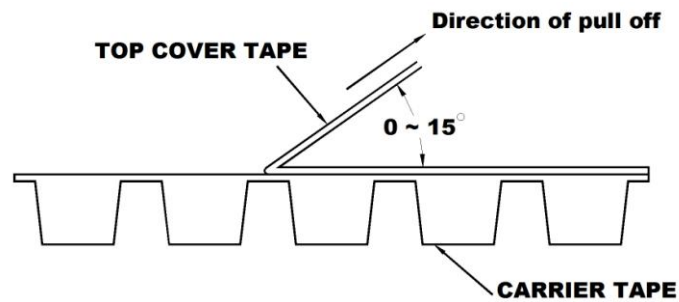
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12. TAPE SPECIFICATIONS

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



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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

SGS Korea Co., Ltd.

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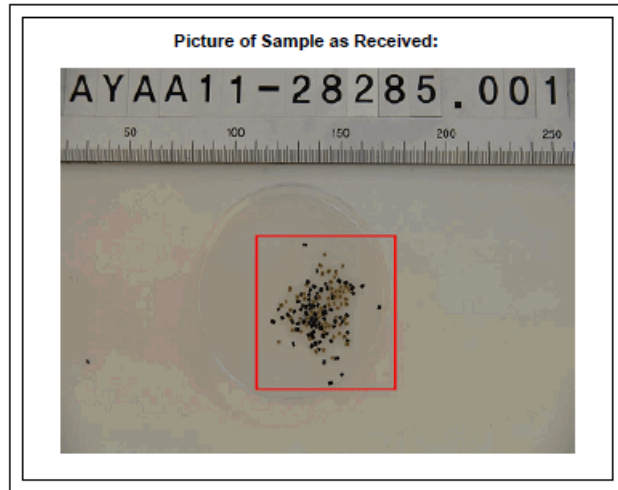
Test Report No. F690101/LF-CTSAYAA11-28285

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 6010B(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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