



# SPECIFICATION

## Surface Acoustic Wave Filter

USER

USER PART No.

MODEL: **SFDG75BQ102**

DOC. No.: SMS-51-L-SFT-FN-39

DATE: NOV 6, 2009

REVISION: 001

WISOL					
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CUSTOMER					
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WISOL CO., LTD.

314, MAETAN3-DONG, YEONGTONG-GU,  
GYUNGGI-DO, KOREA, 443-743

<http://www.wisol.co.kr>

SUWON

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## 1. REVISION HISTORY

001 NOV. 6, 2009 All pages make out the approval specification

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## 2. DEFINITION

2-1. PART No.

S F D G 7 5 B Q 1 0 2  
 ①      ②              ③              ④              ⑤              ⑥

No.	EXPLANATION
①	SAW Filter
②	Design Type: Ladder
③	Center Frequency: 1575.42MHz (1574.42~1576.42MHz)
④	Unalanced filter, Input/output 50ohm
⑤	Package size: 1.4×1.1mm <sup>2</sup>
⑥	Design Revision (01: default)

2-2. APPLICATION: Band-pass Filter for GPS 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.

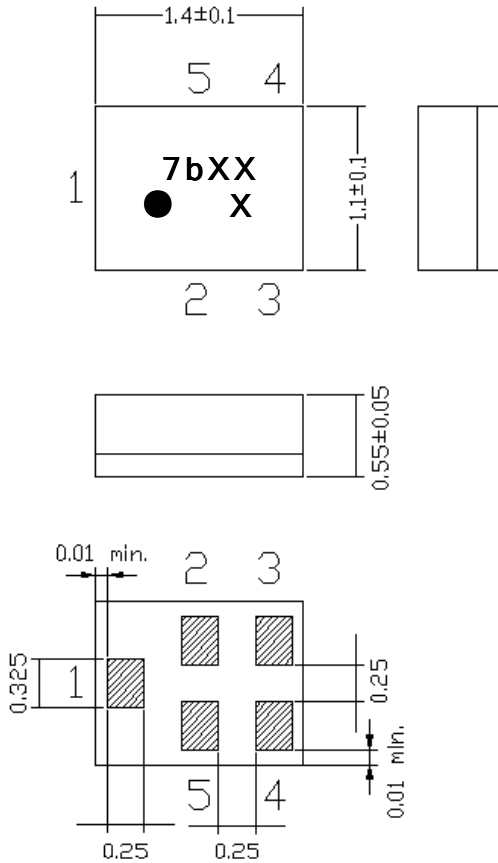
3-6. Sudden change of temperature shall be avoided, deterioration of the characteristics can occur.

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.

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#### 4. OUTLINE DRAWING & DIMENSIONS

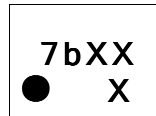
[Unit: mm]



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

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## 5. MARKING



### 5-1. 7 b X X X

- The 1st, 2nd character '7b' indicates the model name of SAW Filter SFDG75BQ102.
- 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>2007</b>	P	Q	R	S	T	U	V	W	X	Y	Z	a
<b>2008</b>	1	2	3	4	5	6	7	8	9	A	B	C
<b>2009</b>	D	E	F	G	H	I	J	K	L	M	N	O
<b>2010</b>	P	Q	R	S	T	U	V	W	X	Y	Z	a

※ This rotates by the 3 years.

- The 4th, 5th character 'X' indicates Lot No.

### 5-2. ○

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

### 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	℃
Storage Temperature Range	-40 ~ +85	℃

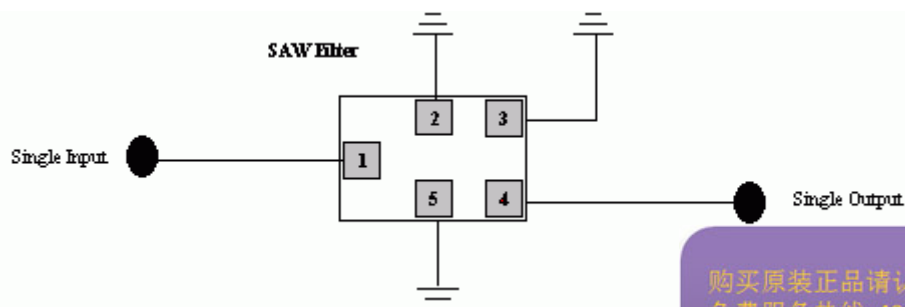
### 6-2. ELECTRICAL CHARACTERISTICS

#### 6-2-1. TABLE

Ta = -30 ~ +85℃

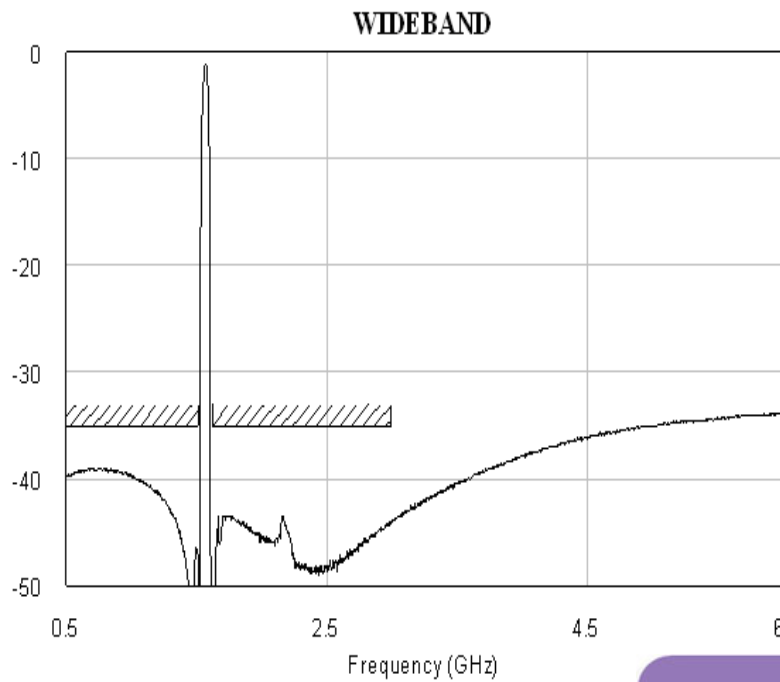
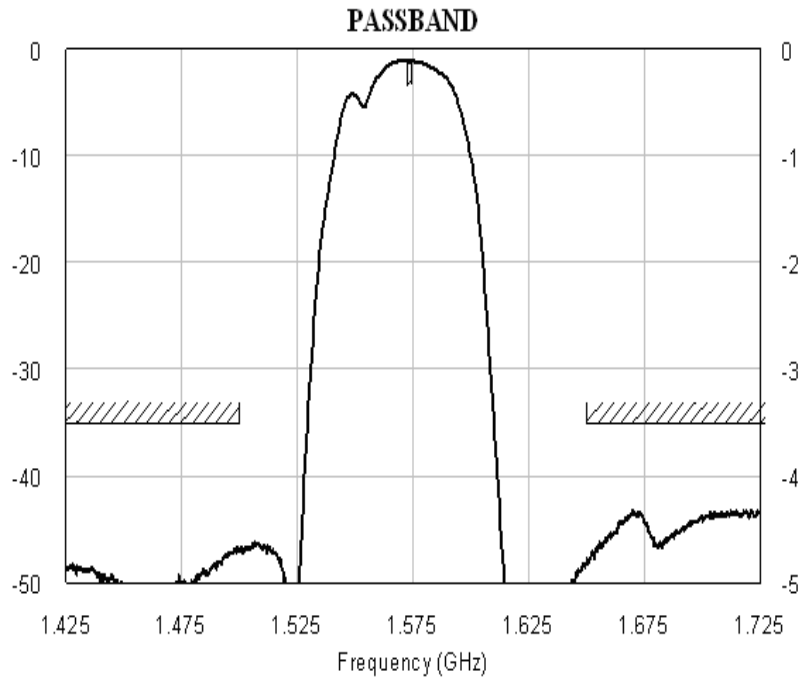
Item	FREQUENCY RANGE [MHz]	UNIT	SPECIFICATION		
			Min.	Typ. (25℃)	Max.
Insertion Loss	1574.42 ~ 1576.42	dB	-	1.0	1.3
Input VSWR	1574.42 ~ 1576.42	-	-	1.2	1.7
Output VSWR	1574.42 ~ 1576.42	-	-	1.2	1.7
Absolute Attenuation	DC ~ 894	dB	35	40	-
	894 ~ 1515	dB	35	47	-
	1625 ~ 2000	dB	35	43	-
	2000 ~ 3000	dB	35	43	-
Termination Impedance		Input: Unbalanced 50 ohm Output: Unbalanced 50 ohm			

#### 6-2-2. TEST FIXTURE



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6-2-3. GRAPH

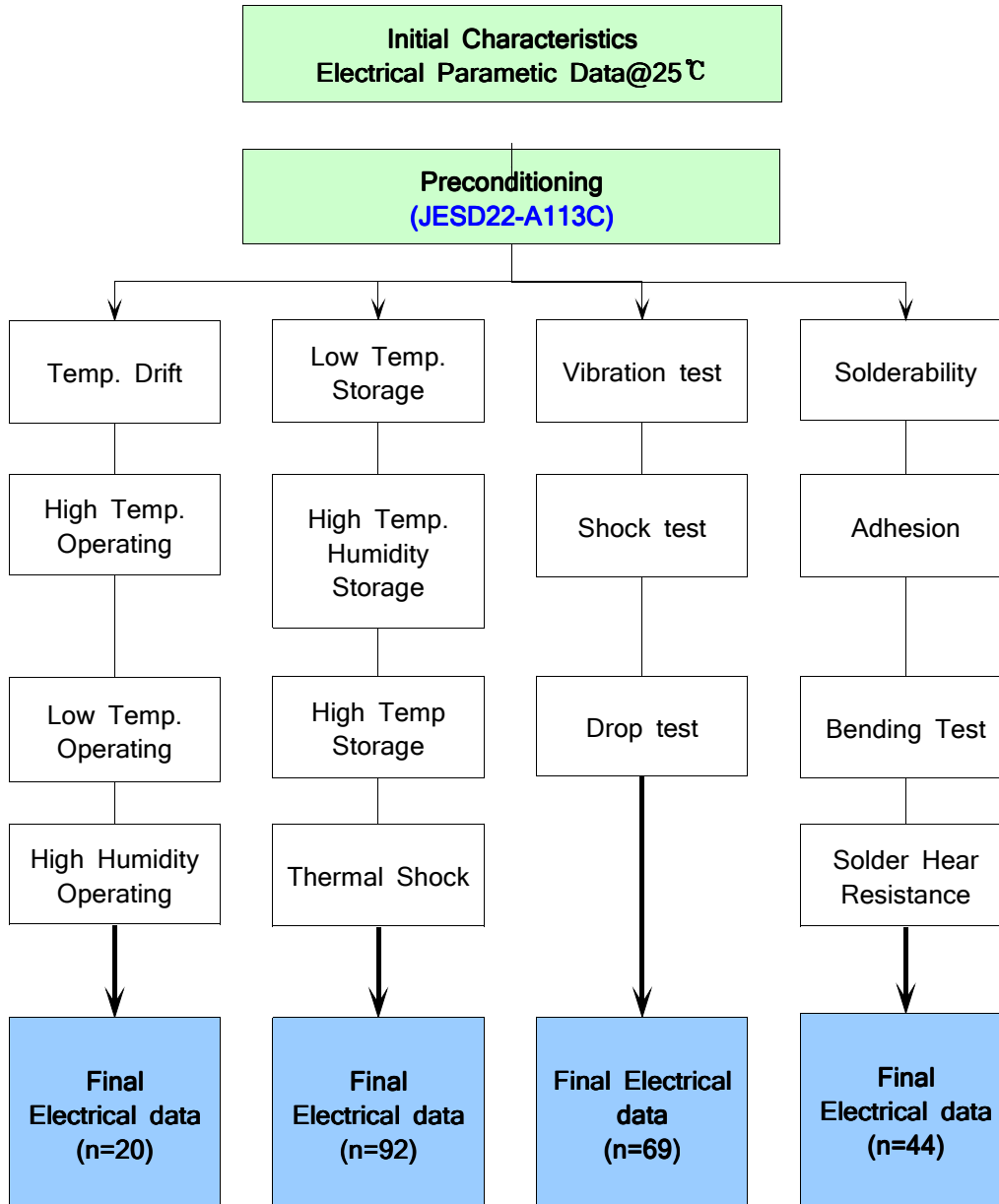


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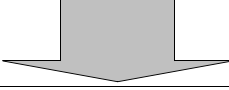
## 7. RELIABILITY

### 7-1. ENGINEERING SAMPLE FLOW CHART



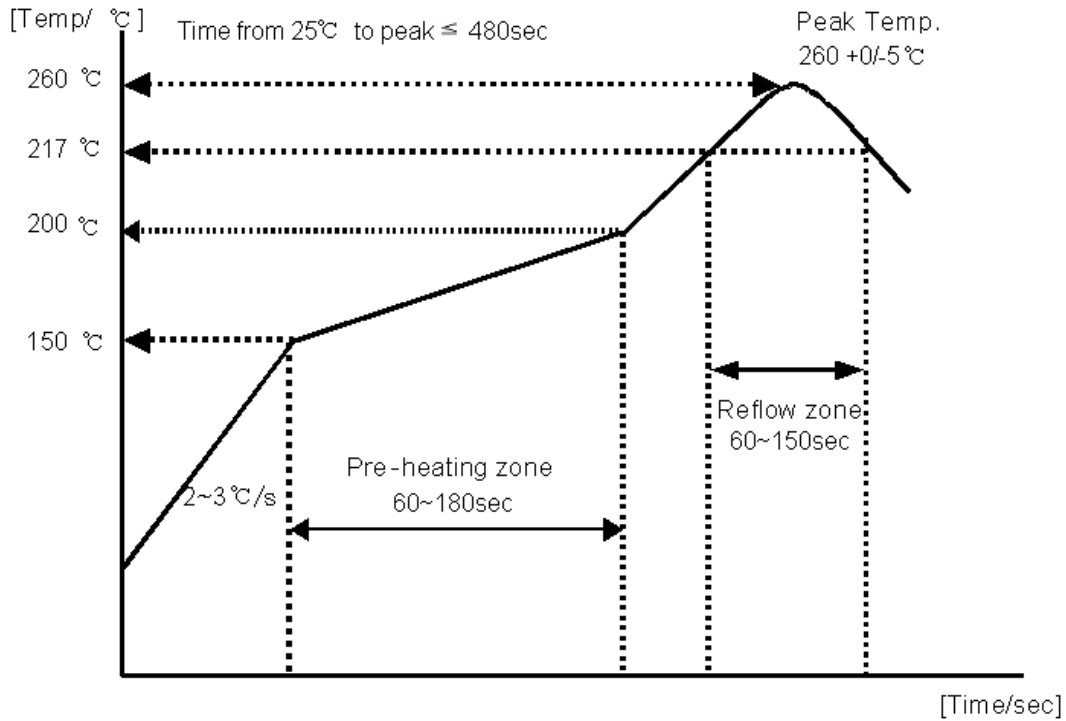
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**7-2. TEST ITEM & CONDITION**

CATEGORY	TEST ITEM	TEST CONDITION	REMARK
Preconditioning		125℃ 24H Baking → 60℃ 60%RH 120H → Reflow 3 times	JESD22-A113C
			
Environment Test	Temp. Drift	-30℃ → 25℃ → 85℃	description
	High Temp. Storage	125℃ 240H	IEC 1178-1.4.8.11
	Low Temp. Storage	-40℃ 240H	IEC 1178-1.4.8.13
	High Temp. High Humidity Storage	85℃ 85%RH 240H	IEC 1178-1.4.8.15
	Thermal Shock	-40℃/30min ⇔ +85℃/30min, 100cycle	JESD22-A106A
	High Temp. Operating	85℃, 13dBm, Center Frequency, 72H	option
	Low Temp. Operating	-30℃, 13dBm, Center Frequency, 72H	
	High Temp. High Humidity Operating	85℃, 85%RH, 13dBm, Center Frequency, 72H	
Mechanical Test	Vibration Test (Random)	20Hz~2000Hz, 0.053G <sup>2</sup> /Hz or 8g's RMS 15min/plane	IEC 68-2-36 Fdb
	Vibration (Sine wave)	10~55Hz, Amplitude:1.5mm(p-p) Sweep time:1min, X.Y.Z direction, 2H/direction	IEC 1178-1.4.8.7
	Shock Test	3000g's, 0.3ms, half SINE wave pulse, 3 impacts per axis	JIS C7021 (option)
	Drop Test	120 <sub>cm</sub> (12times), 152 <sub>cm</sub> (19times) total(31times) Steel floor JIG(110g~150g)	IEC 68-2-27Ea
	Board Adhesion	0.5 <sub>mm</sub> /sec 1point push	IEC 68-2-21 Ue3
	Bending Test	0.5 <sub>mm</sub> /sec 3times -PCB: FR4 , PCB SIZE: 100*40 <sub>mm</sub>	IEC 68-2-21 Ue3
Physical Test	Solder Heat Resistance	260±5℃, 10±1sec(Solder Pot)	JIS C 5201 4.17
	Solderability	235±5℃, 3±0.5sec(Solder Pot)	JIS C 5201 4.17

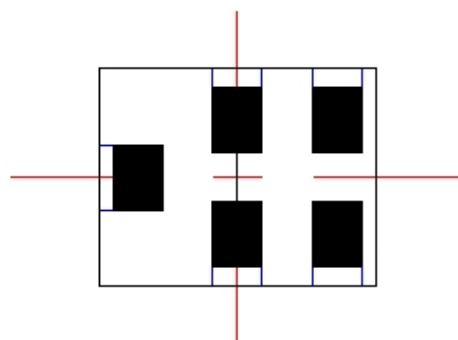
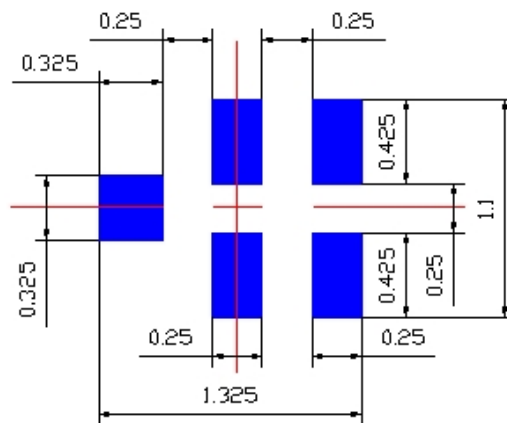
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### 8. REFLOW CONDITION



### 9. RECOMMENDED PCB DIMENSIONS

[Unit mm]



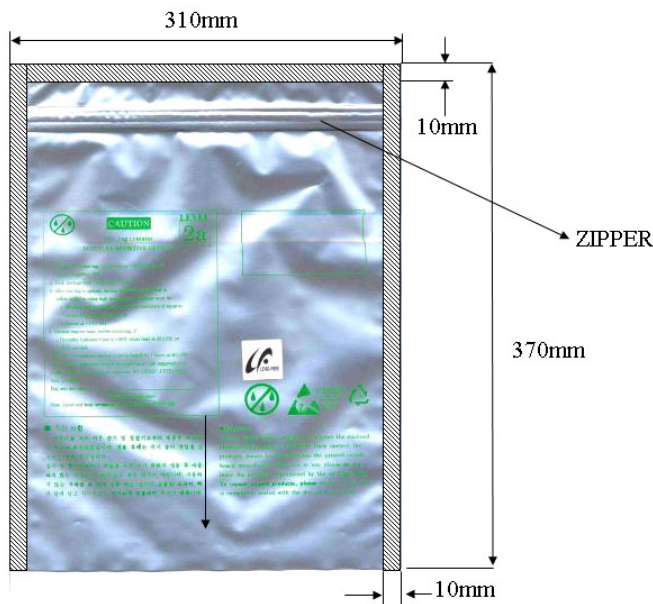
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## 10. CAUTION

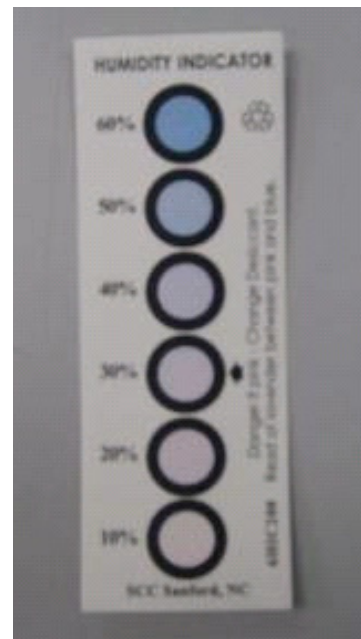
Moisture Sensitivity Device Caution (MSL LEVEL=2A)

1. Calculated shelf life in sealed bag : 12 month at <math>\lt; 40^{\circ}\text{C}</math> and <math>\lt; 90\%</math> relative Humidith(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  $\leq 30^{\circ}\text{C}/60\% \text{ RH}$ , or
    - (b) Stored per J-STD-033
  4. Device require bake, before mounting, if :
    - (a) Humidity Indicator Card reads  $> 60\%$  when read at  $23 \pm 5^{\circ}\text{C}$
    - (b) 3(a) or 3(b) are not met
  5. If baking is required, refer to IPC/JEDEC J-STD-033 for bake proceddure
- Note : Level and body temperature defined by IPC/JEDEC J-STD-020

Aluminum Pack & Level (310mm X 370mm)



HIC(Humidity Indication Card)

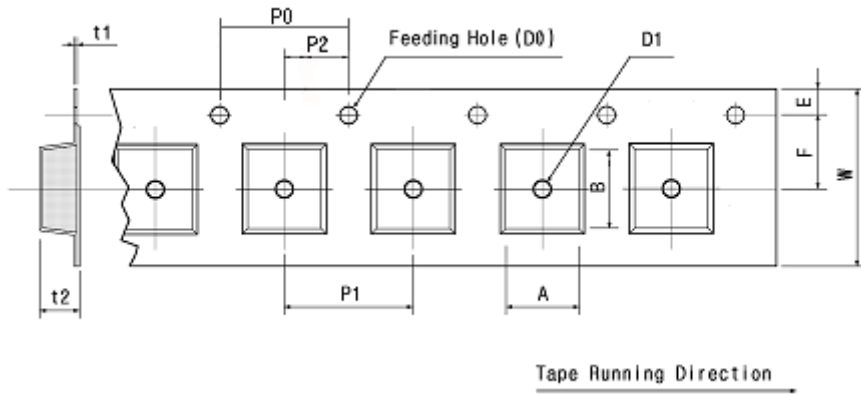


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### 11. PACKING

#### 11-1. DIMENSIONS

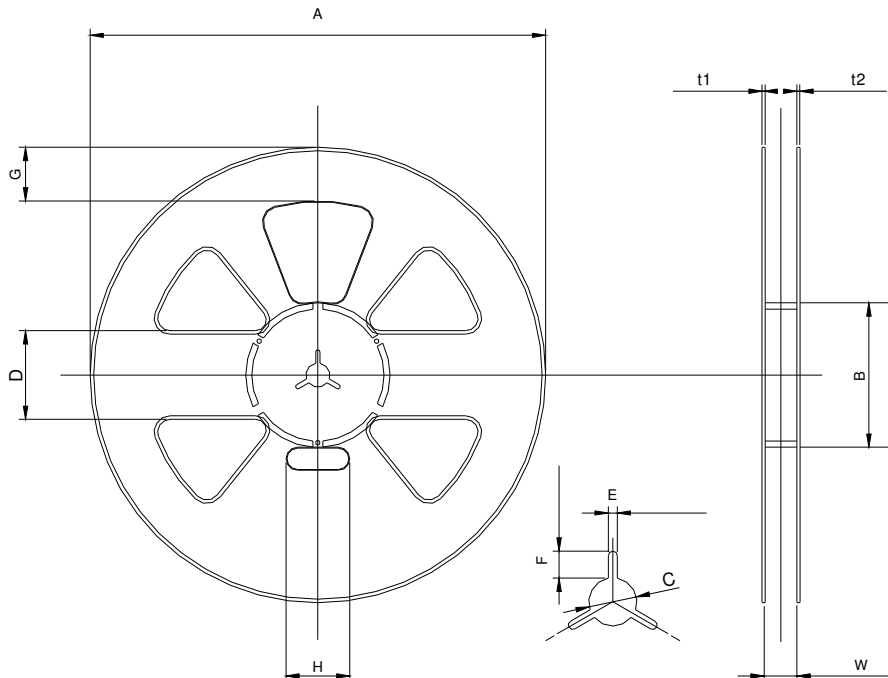
- Carrier Tape



[Unit: mm]

A	B	D0	D1	E	F	P0	P1	P2	t1	t2	W
1.30	1.65	Ø1.50	Ø0.50	1.75	3.50	4.00	4.00	2.00	0.254	1.00	8.00
+0.05	+0.05	+0.10	+0.05	+0.10	+0.05	+0.10	+0.10	+0.05	+0.02	+0.07	+0.30
-0.05	-0.05	-0.00	-0.05	-0.10	-0.05	-0.10	-0.10	-0.05	-0.02	-0.07	-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

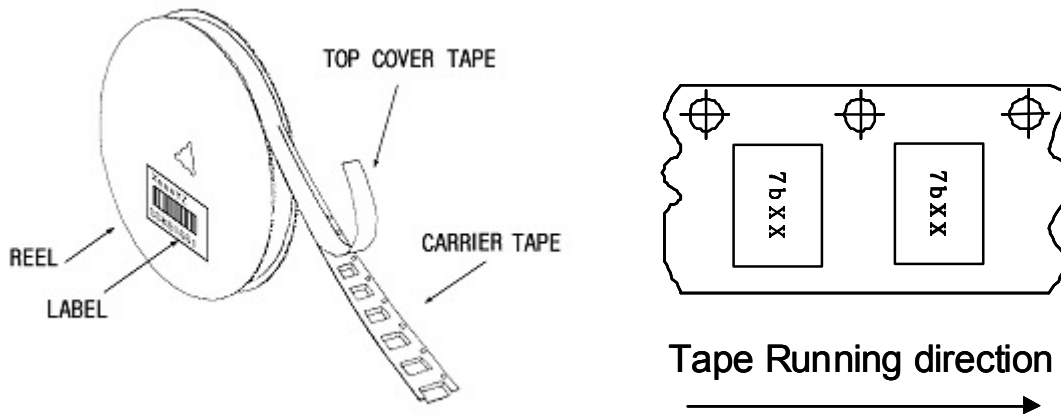
- The product shall be packed properly not to damaged during transportation and storage.

11-2. REELING QUANTITY

10 inch reel : 8,000 pcs/reel (min. 4,000 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

- Label Size: 58×30mm<sup>2</sup>



①		The Bar Code of the Model	
②	SFH942PQ102	The Model Name	
③	7308	7	The Year of Manufacture
		308	The Total of Number of Days
	(45)		The Point of Week
④	Box	This indicates an Inner Box Label.	
⑤		The Bar Code of the Lot No.	
⑥	SARD90230	Lot No.(page 14)	
⑦	4,000	The Quantity of the Product	

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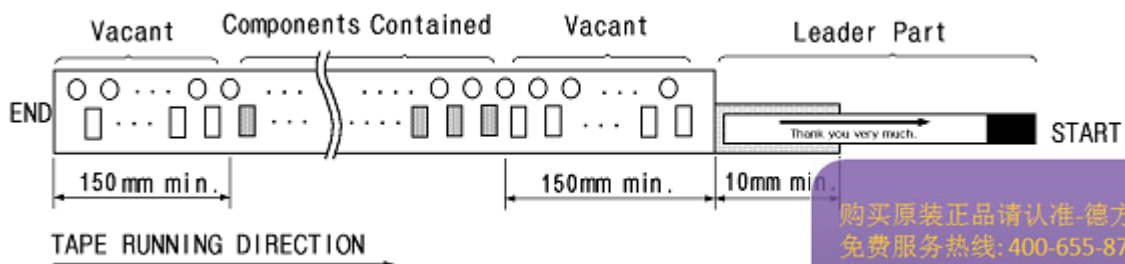
- The Information about Lot No.

Lot format:

S	A	R	D	9	0	2	3	0
①	②	③	④	⑤	⑥	⑦	⑧	⑨

①	SAW Filter												
②		Korea					China						
	Normal Fab Lot	S											
	E/L Lot	1					2						
	Packing Lot	A					B						
	Split Lot(3rd time)	F					I						
②	Split Lot(E/L)	SS → SG					SS → SJ						
		SF → SH					SI → SK						
③	the <b>Year</b> of manufacture												
	* repeat from A to Z												
	Year	07	08	09	10	2011	2012	2013	2014	2015	2016		
	Mark	R	S	T	U	V	W	X	Y	Z	A		
	Year	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026		
Mark	B	C	D	E	F	G	H	I	J	K			
④	the <b>Month</b> of manufacture												
	Month	1	2	3	4	5	6	7	8	9	10	11	12
	Mark	A	B	C	D	E	F	G	H	I	J	K	L
⑤	the <b>Day</b> of manufacture												
	Day	1	2	3	4	5	6	7	8	9	10		
	Mark	1	2	3	4	5	6	7	8	9	A		
	Day	11	12	13	14	15	16	17	18	19	20		
	Mark	B	C	D	E	F	G	H	I	J	K		
	Day	21	22	23	24	25	26	27	28	29	30	31	
	Mark	L	M	N	O	P	Q	R	S	T	U	V	
⑥⑦⑧	a Serial Number												
⑨	a Derivative Number												

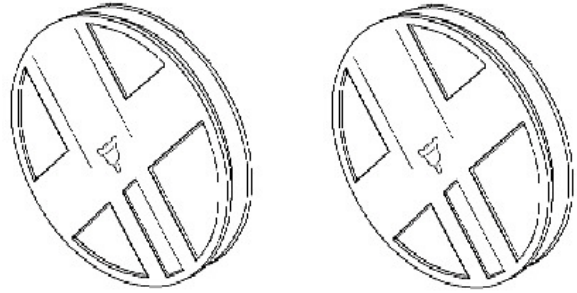
11-3-3. Leader part and vacant position specifications.



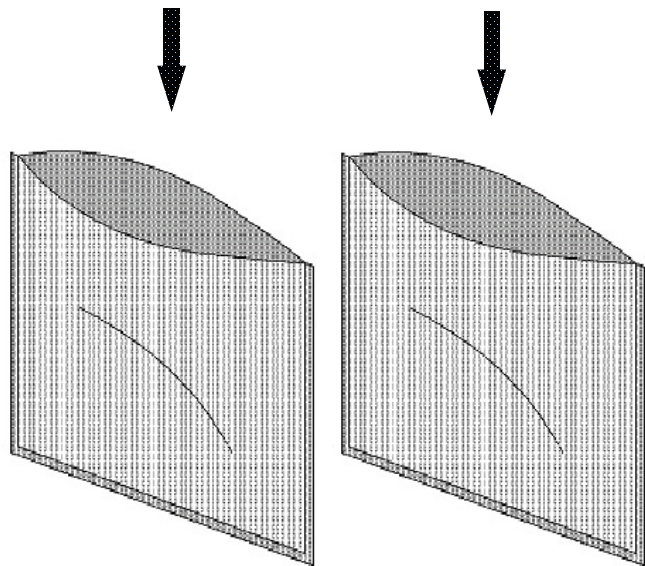
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11-4. INNER BOX(Reel Packing) STRUCTURE

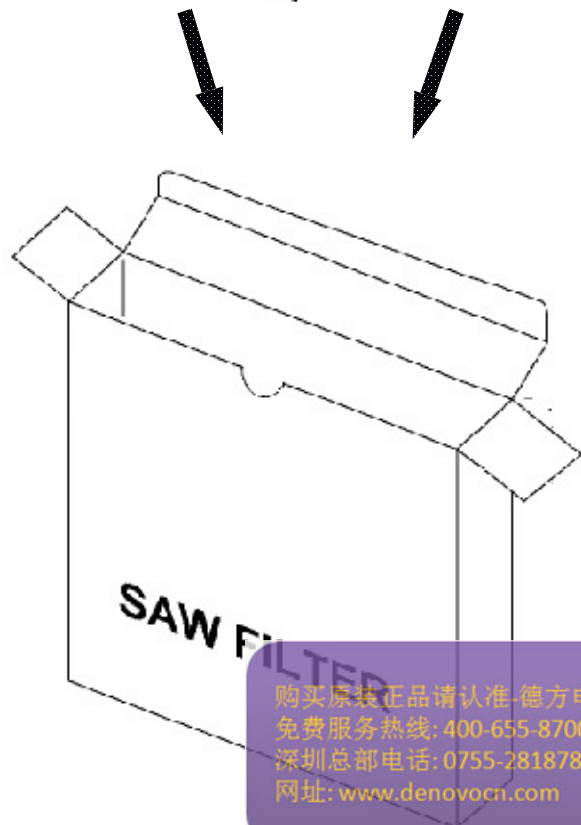
Material: Plastic Reel



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



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



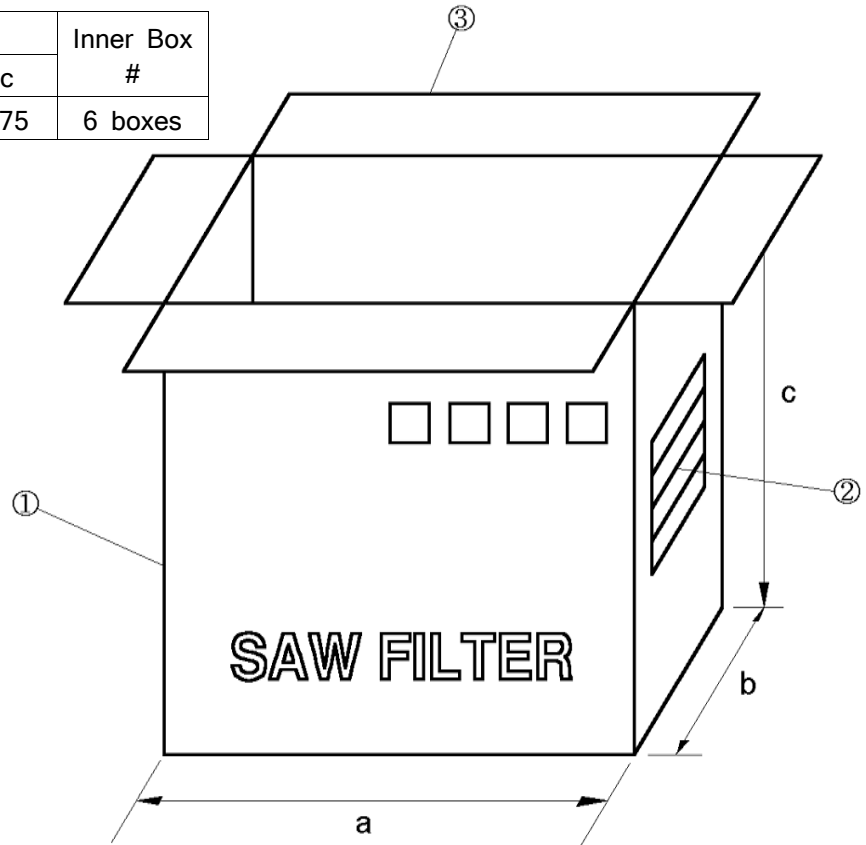
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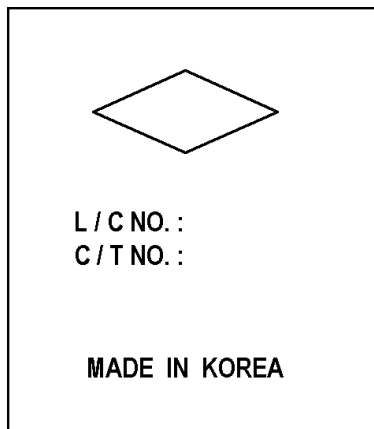
11-5. OUTER BOX STRUCTURE

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.

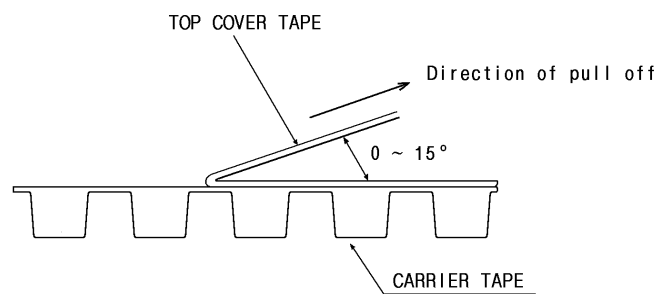
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## 12. TAPE SPECIFICATIONS

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. F690501/LF-CTSAYAA08-24091

Issued Date: August 27, 2008

Page 1 of 3

To: WISOL CO.,LTD  
314, Maetan-3dong  
Yeongtong-gu  
Suwon-city  
Gyeonggi-do  
Korea

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

Product Name : SAW Filter (Molding)

SGS File No. : AYAA08-24091

Received Date : August 21, 2008

Test Performing Date : August 22, 2008

Test Performed : SGS Testing Korea tested the sample(s) selected by applicant with following results

Test Results : For further details, please refer to following page(s)

Comments : By the applicant's specific request, the sampling and testing was performed only for the part indicated in the photo without disassembly.

Pluto Kim  
Monet Jeong  
Billy Oh / Testing Person

SGS Testing Korea Co. Ltd.

Jeff Jang / Chemical Lab Mgr

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**Test Report No.** F690501/LF-CTSAYAA08-24091

**Issued Date:** August 27, 2008

**Page** 2 of 3

**Sample No.** : AYAA08-24091.001

**Sample Description** : SAW Filter (Molding)

**Item No./Part No.** : N/A

**Heavy Metals**

Test Items	Unit	Test Method	MDL	Results
Cadmium (Cd)	mg/kg	US EPA 3052(1996), US EPA 6010B(1996), ICP	0.5	N.D.
Lead (Pb)	mg/kg	US EPA 3052(1996), US EPA 6010B(1996), ICP	5	N.D.
Mercury (Hg)	mg/kg	US EPA 3052(1996), US EPA 6010B(1996), ICP	2	N.D.
Hexavalent Chromium (Cr VI)	mg/kg	US EPA 3060A(1996), US EPA 7196A(1992), UV	1	N.D.

**Flame Retardants-PBBs/PBDEs**

Test Items	Unit	Test Method	MDL	Results
Monobromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Dibromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tribromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tetrabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Pentabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Hexabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Heptabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Octabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Nonabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Decabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Monobromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Dibromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tribromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tetrabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Pentabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Hexabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Heptabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Octabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Nonabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Decabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.

- 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) Negative = Undetectable / Positive = Detectable

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Test Report No. F690501/LF-CTSAYAA08-24091

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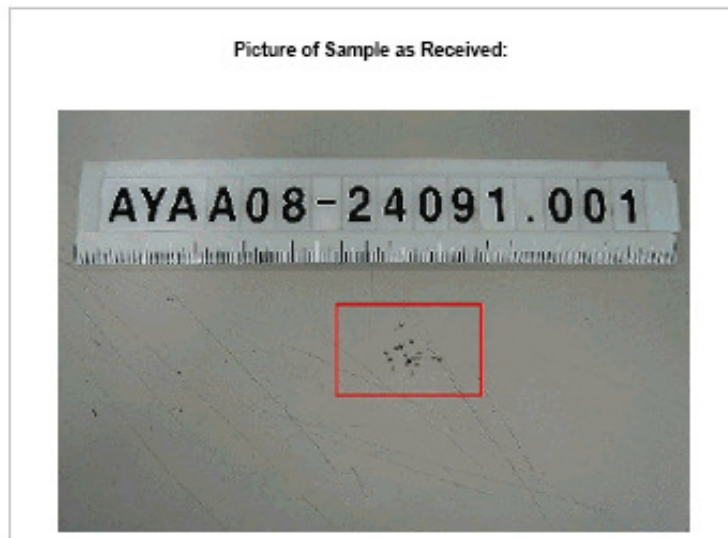
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Sample No. : AYAA08-24091.001  
 Sample Description : SAW Filter (Molding)  
 Item No./Part No. : N/A

**Halogen Contents**

Test Items	Unit	Test Method	MDL	Results
Bromine(Br)	mg/kg	EN 14582:2007 , IC	30	N.D.
Chlorine(Cl)	mg/kg	EN 14582:2007 , IC	30	N.D.

Picture of Sample as Received:



\*\*\* End \*\*\*

- NOTE: (1) N.D. = Not detected.(<MDL)  
 (2) mg/kg = ppm  
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