



SPECIFICATION

Surface Acoustic Wave Filter

USER

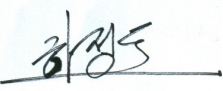
USER PART No.

WISOL PART No. **SFXG50UZ502**

DOC. No. SMS-51-L-SFT-D0-63

DATE OCT. 17. 2012

REVISION Preliminary

WISOL					
ISSUED BY	Ha, Jung-do 	CHECKED BY	Song, Jin-Baek J. B. SONG	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>

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深圳总部电话: 0755-28187877
网址: www.denovocn.com

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1. REVISION HISTORY

000	OCT. 17. 2012	All page	Make Specification
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2. DEFINITION

2-1. PART No.

S F X G 50 U Z 5 02
 ① ② ③ ④ ⑤ ⑥

No.	EXPLANATION	
(1)	SAW Filter	
(2)	Design Type: Duplexer	
(3)	Center Frequency:	Tx 1950MHz (1920~1980MHz) Rx 2140MHz (2110~2170MHz)
(4)	Input/output 50ohm/ 100ohm, mirror type	
(5)	Package size: 2.0×1.6mm	
(6)	Design Revision (02: Molding Type)	

2-2. APPLICATION: UMTS B1 DPX

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.

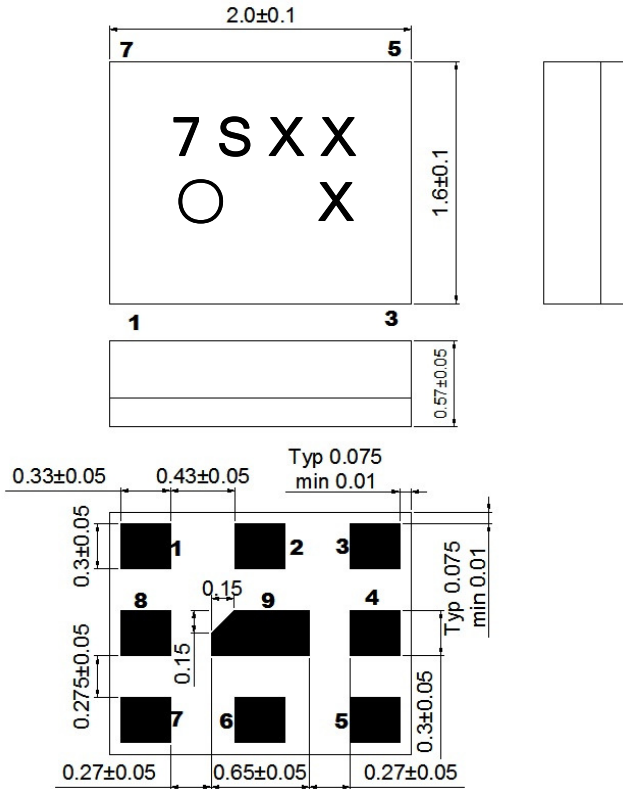
3-6. Sudden change of temperature shall be avoided, deterioration of the characteristics can occur.

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

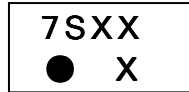
[UNIT : mm]



No.	Function
1, 8	Rx Output
3	Tx Input
6	Antenna
2, 4, 5, 7, 9	GND

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5. MARKING



5-1. 7 S X X X

- The 1st, 2nd character '7S' indicates the model name of SAW Filter "SFXG50UZ502" .
- 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
2010	P	Q	R	S	T	U	V	W	X	Y	Z	a
2011	1	2	3	4	5	6	7	8	9	A	B	C
2012	D	E	F	G	H	I	J	K	L	M	N	O
2013	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	0.8	W
Operating Temperature Range	- 30 ~ + 85	℃
Storage Temperature Range	- 40 ~ + 85	℃

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6-2. ELECTRICAL CHARACTERISTICS

6-2-1. Specification

TX → ANTENNA, ANTENNA → RX

Ta = -30 ~ +85℃

Item	CONDITION [MHz]	UNIT	RATING		
			Min.	Typ.(25℃)	Max.
TX → ANTENNA					
Insertion Loss	1920 ~ 1980	dB	-	1.3	1.8
Inband Ripple	1920 ~ 1980	dB	-	0.3	1.0
VSWR(Tx)	1920 ~ 1980	-	-	1.7	2.2
VSWR(Ant)	1920 ~ 1980	-	-	1.6	2.1
Absolute Attenuation	1 ~ 1000	dB	27	33	-
	1500 ~ 1600	dB	25	30	-
	1805 ~ 1880	dB	5	30	-
	2110 ~ 2170	dB	38	43	-
	2400 ~ 2500	dB	28	34	-
	3840 ~ 3960	dB	17	24	-
	4000 ~ 5000	dB	10	14	-
Termination Impedance : Tx / ANTENNA			50Ω(1[nH])/ 50Ω(// 2.3[nH])		
ANTENNA → RX					
Insertion Loss	2110 ~ 2170	dB	-	1.7	2.3
Inband Ripple	2110 ~ 2170	dB	-	0.3	1.0
VSWR(Rx)	2110 ~ 2170	-	-	1.5	2.0
VSWR(Ant)	2110 ~ 2170	-	-	1.5	2.0
Absolute Attenuation	1 ~ 1920	dB	45	51	-
	1920 ~ 1980	dB	48	56	-
	1980 ~ 2025	dB	30	35	-
	2255 ~ 2400	dB	23	35	-
	2400 ~ 2500	dB	35	40	-
	2500 ~ 3200	dB	30	36	-
	3200 ~ 6000	dB	43	50	-
Amplitude Imbalance	2110 ~ 2170	dB	-	1.0	1.5
Phase Imbalance	2110 ~ 2170	Degree	-	180°	15°
Termination Impedance : ANT / Rx			50Ω (// 2.3[nH])		

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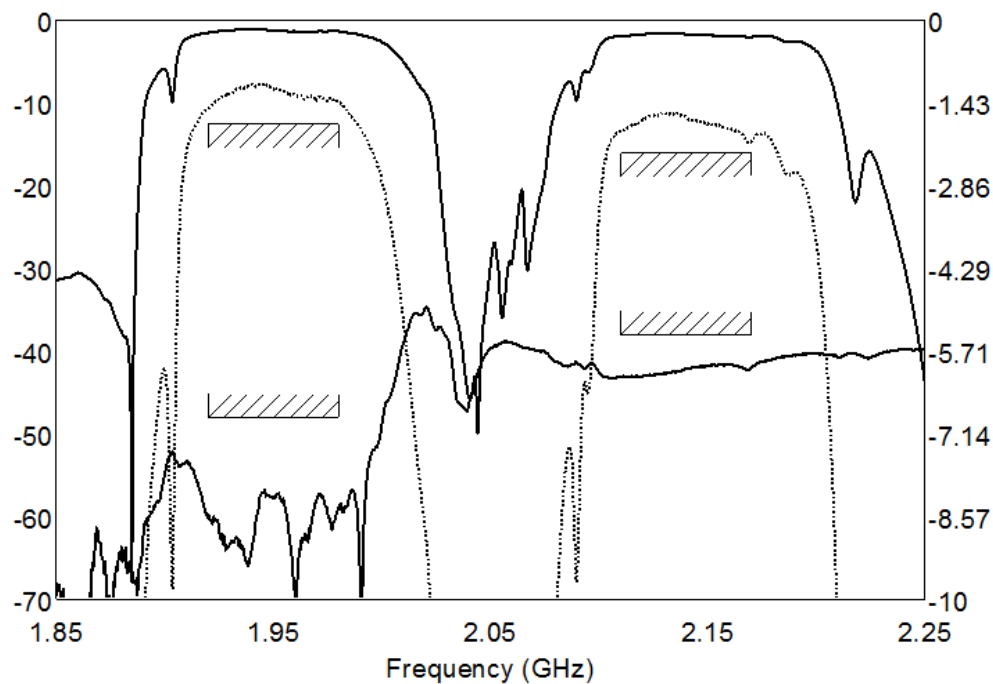
TX -> RX

Item	CONDITION [MHz]	UNIT	RATING		
			Min.	Typ.(25℃)	Max.
TX → RX					
Isolation between Rx and Tx	1920 ~ 1980	dB	54	60	-
	2110 ~ 2170	dB	48	55	-
	1574 ~ 1577	dB	55	65	
	3840 ~ 3960	dB	40	48	
	4220~ 4340	dB	40	48	

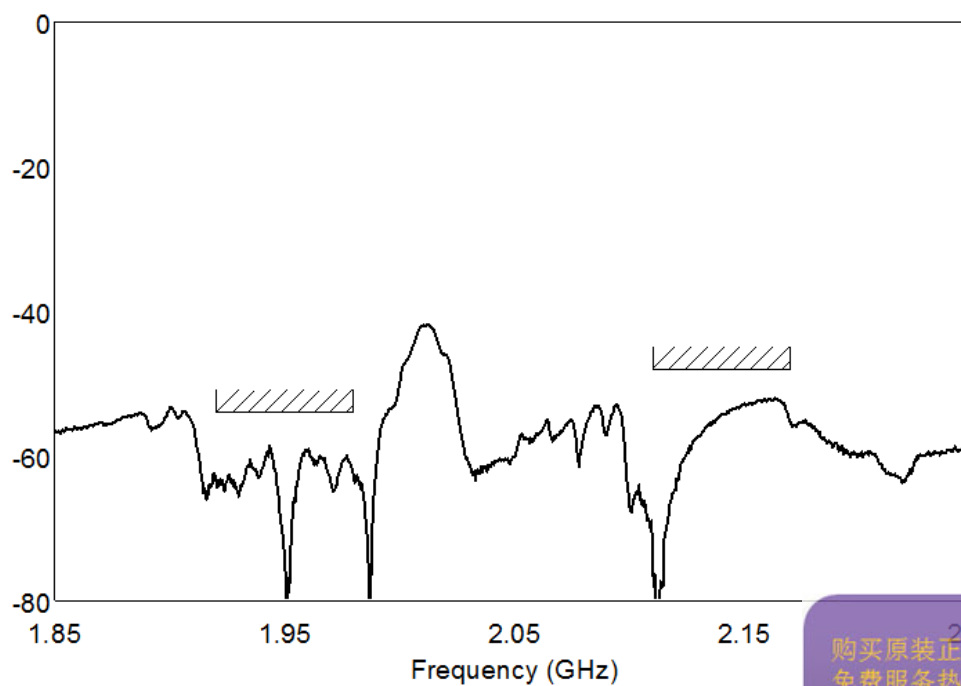
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6-2-2. GRAPH

Tx→Ant, Ant→Rx Transmission Characteristics

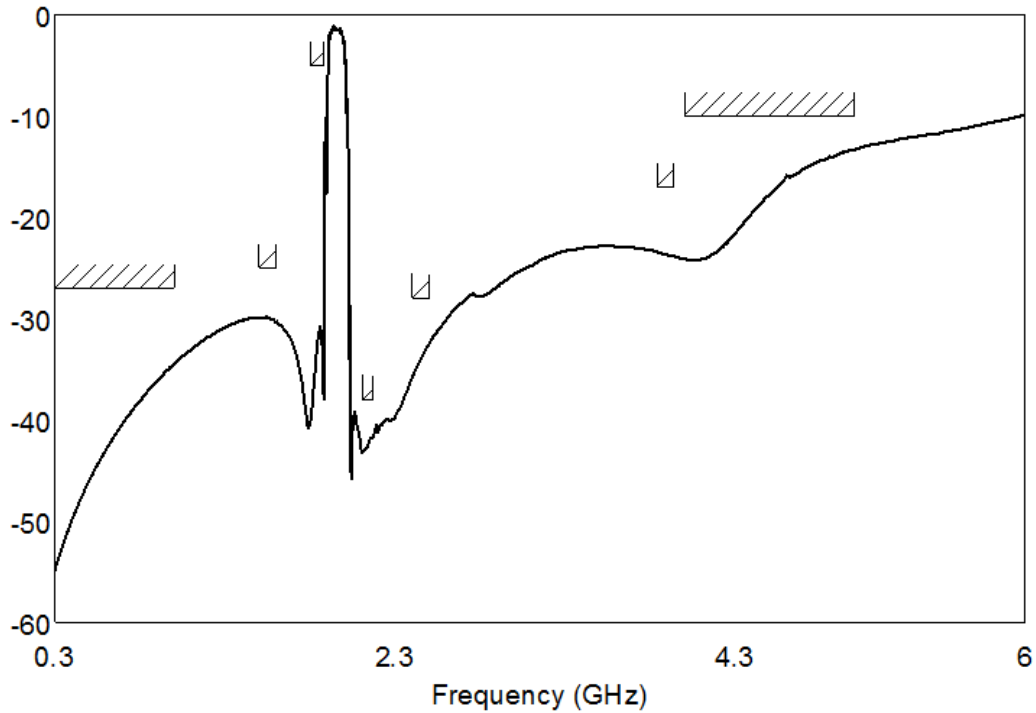


Tx→Rx Isolation Characteristics

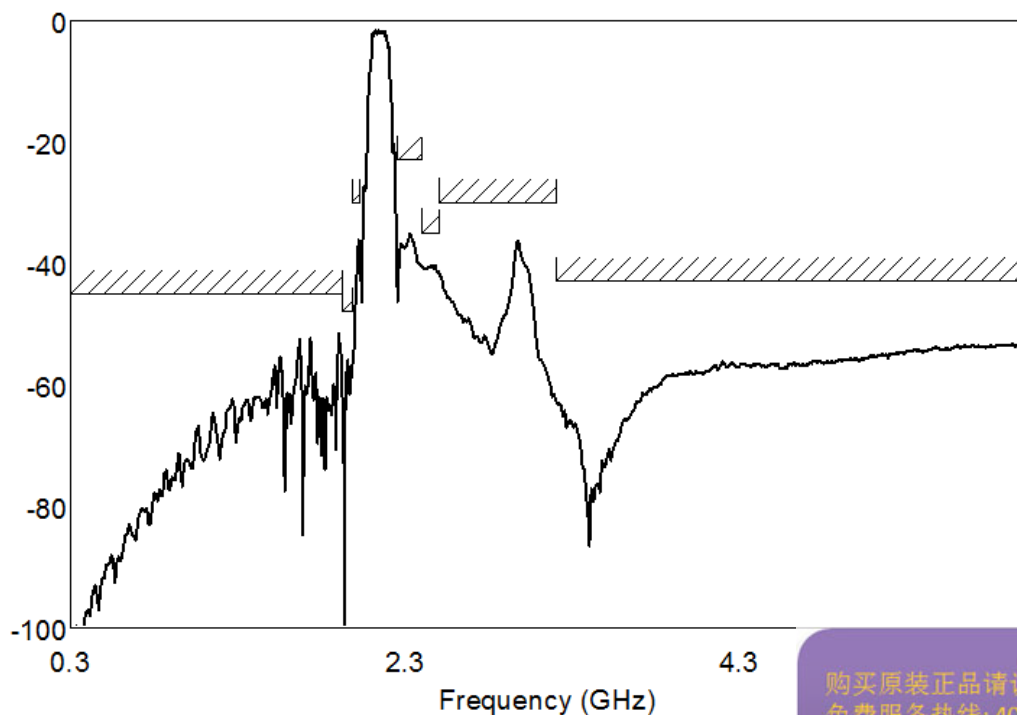


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, Tx→Ant Full band Transmission Characteristics

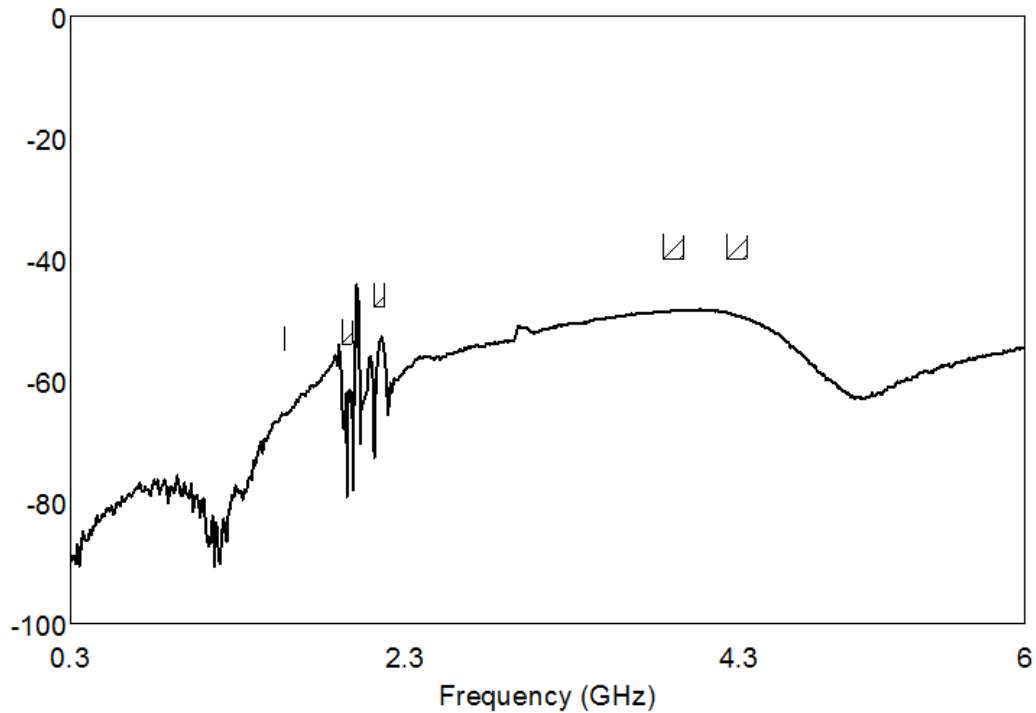


Ant→Rx Full band Transmission Characteristics



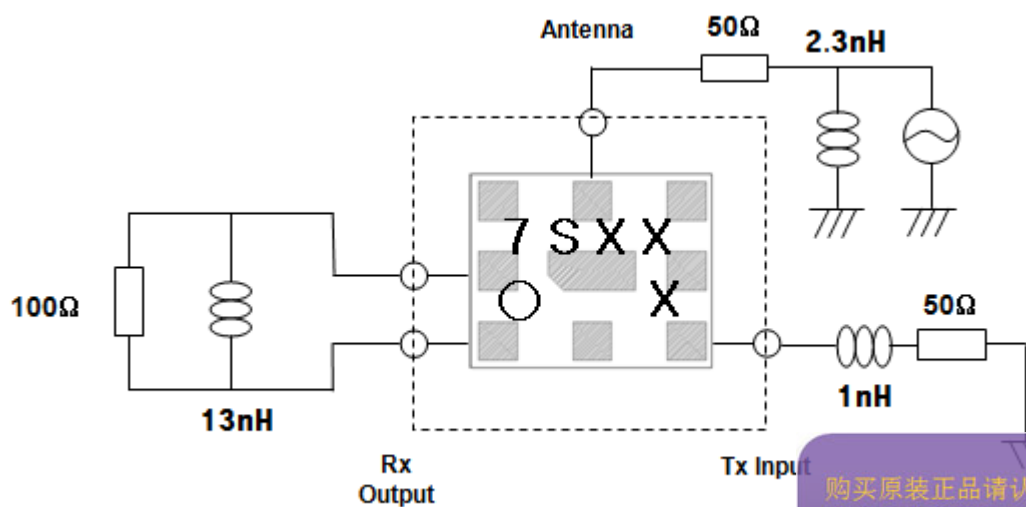
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, Tx→Rx Full band Isolation Characteristics



6-2-3. TEST FIXTURE

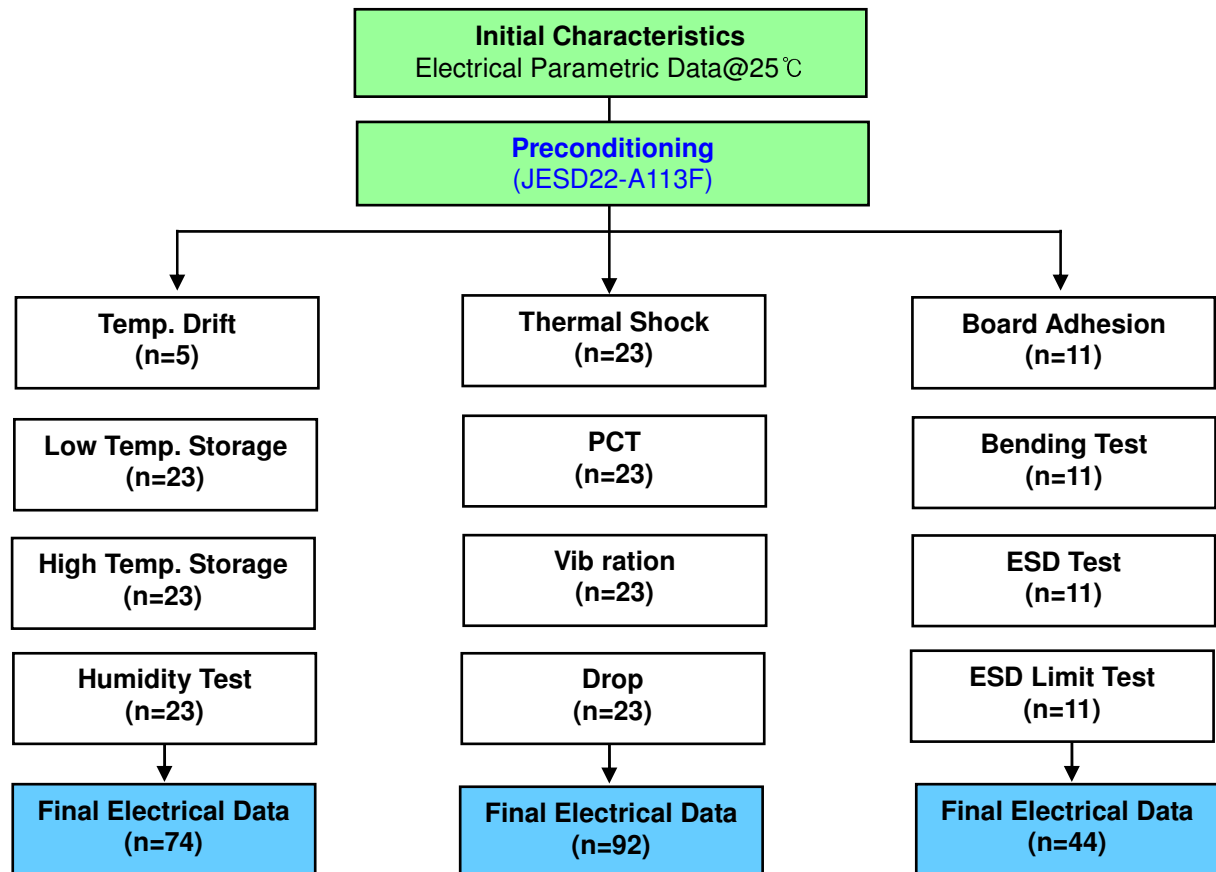
[Top View]



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7. RELIABILITY

7-1. ENGINEERING SAMPLE FLOW CHART

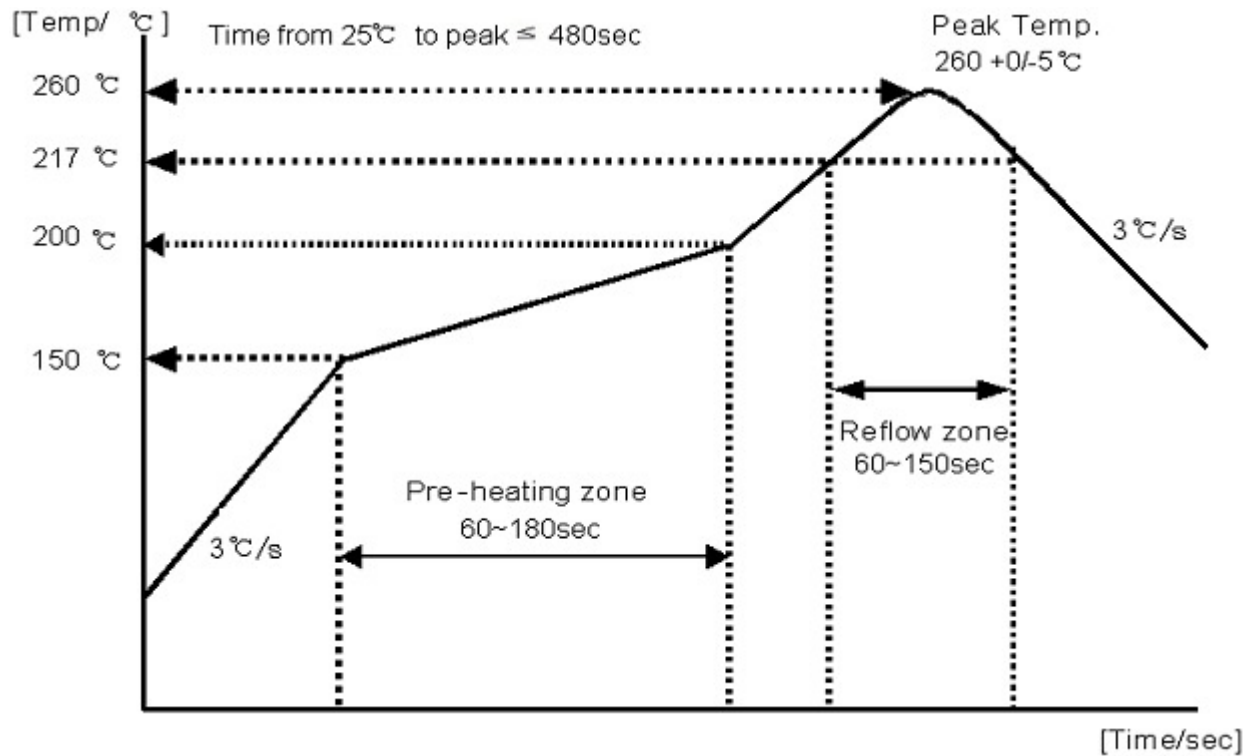


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7-2. TEST ITEM & CONDITION

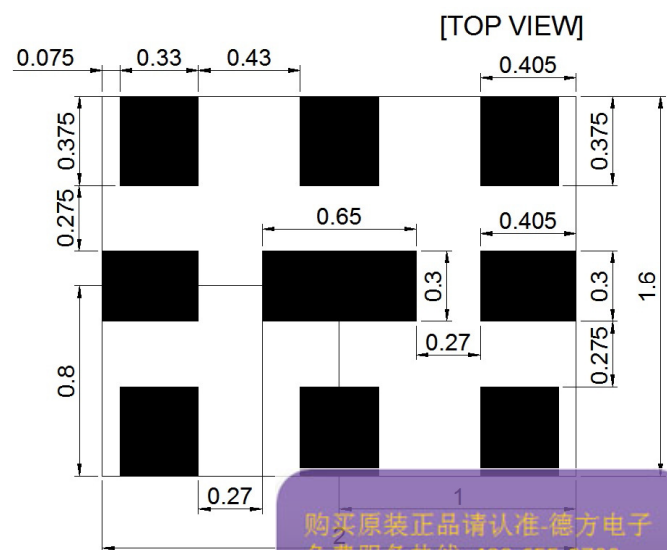
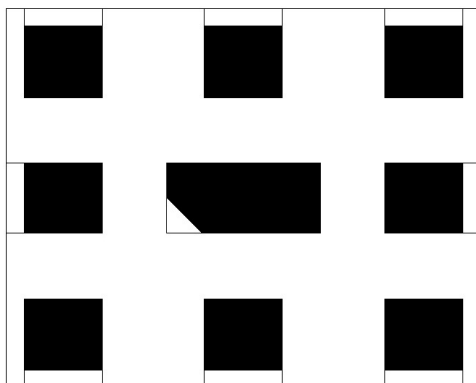
CATEGORY	TEST ITEM	TEST CONDITION	REMARK
Preconditioning		125℃ 24H Baking → 60℃ 60%RH 120H → Reflow 3 times	JESD22-A113C
			
Environment Test	Temp. Drift	- 30℃ → 25℃ → 85℃	description
	High Temp. Storage	125℃ 240H	IEC 1178-1.4.8.11
	Low Temp. Storage	- 40℃ 240H	IEC 1178-1.4.8.13
	High Temp. High Humidity Storage	85℃ 85%RH 240H	IEC 1178-1.4.8.15
	Thermal Shock	- 40℃/30min ⇔ + 85℃/30min, 100cycle	JESD22-A106A
	High Temp. Operating	85℃, 13 dB m, Center Frequency, 72H	option
	Low Temp. Operating	- 30℃, 13 dB m, Center Frequency, 72H	
	High Temp. High Humidity Operating	85℃, 85%RH, 13 dB m, Center Frequency, 72H	
Mechanical Test	Vibration Test (Random)	20 Hz~2000 Hz, 0.053G ² /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, harf SINE wave pulse, 3 impacts per axis	JIS C7021 (option)
	Drop Test	120 ㎝(12times), 152 ㎝(19times) total(31times) Steel floor JIG(110g~150g)	IEC 68-2-27Ea
	Board Adhesion	0.5 ㎜/sec 1point push	IEC 68-2-21 Ue3
	Bending Test	0.5 ㎜/sec 3times -PCB: FR4 , PCB SIZE: 100*40 ㎜	IEC 68-2-21 Ue3
Physical Test	Solder Heat Resistance	260±5℃, 10±1sec(Solder Pot)	JIS C 5201 4.17 购买原装正品请认准-德方电子 免费服务热线: 400-655-8700 深圳总部电话: 0755-20187877 网址: www.denovocn.com
	Solderability	235±5℃, 3±0.5sec(Solder Pot)	

8. REFLOW CONDITION



9. RECOMMENDED PCB DIMENSIONS

[unit:mm]



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10. CAUTION

Moisture Sensitivity Device Caution (MSL LEVEL=2a)

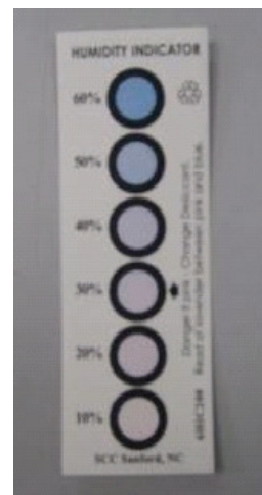
1. Calculated shelf life in sealed bag : 12 month at <40℃ and <90% relative Humidith(RH)
2. Peak package body temperature : **260℃**
3. After bag is opened, devices that will be subjected to reflow solder or other high temperature process must be
 - (a) Mounted within : 672 hours of factory conditions ≤ 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 requied, refer to IPC/JEDEC J-STD-033 for bake proceddure

Note : Level and body temperature defined by IPC/JEDEC J-STD-020

Aluminum Pack & Lavel (310mm X 370mm)



HIC(Humidity Indication Card)

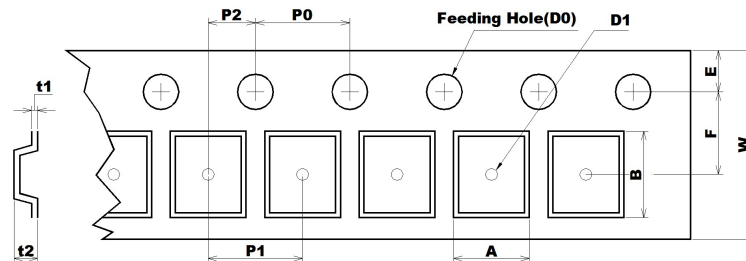


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11. PACKING

11-1. DIMENSIONS

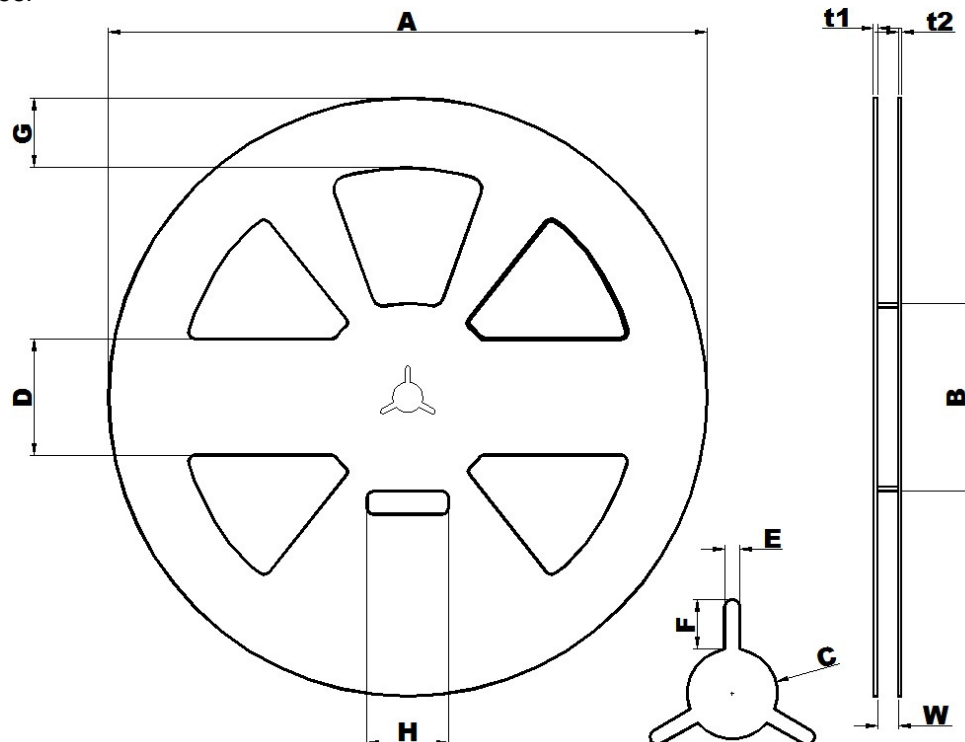
- Carrier Tape



[Unit: mm]

A	B	D0	D1	E	F	P0	P1	P2	t1	t2	W
1.95	2.30	Ø1.50	Ø1.00	1.75	3.50	4.00	4.00	2.00	0.254	1.04	8.00
+0.05	+0.05	+0.10	+0.25	+0.15	+0.10	+0.10	+0.10	+0.05	+0.02	+0.05	+0.30
-0.05	-0.05	-0.00	-0.00	-0.15	-0.10	-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
Ø 258.0	Ø 81.0	Ø 13.0	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

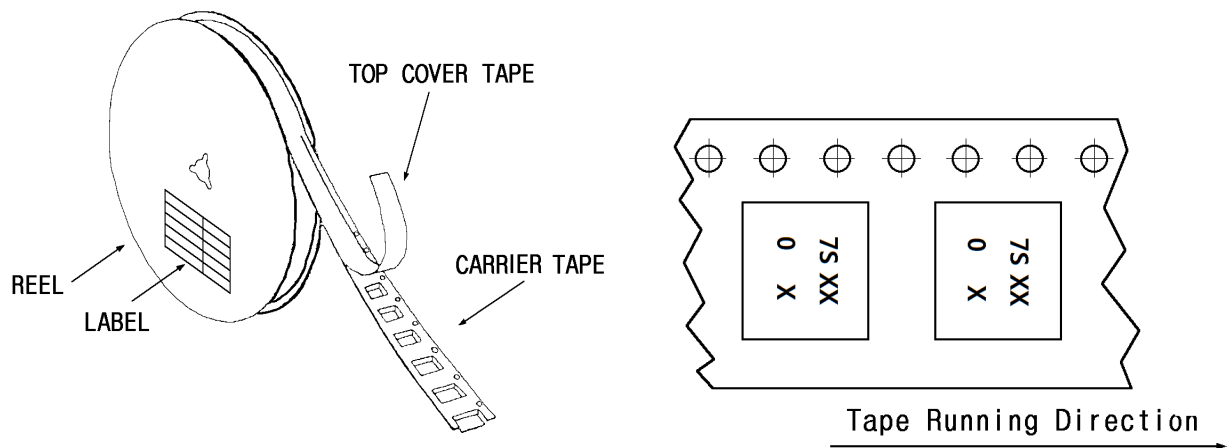
- The product shall be packed properly not to damaged during transportation and storage.

11-2. REELING QUANTITY

10 inch reel: 8,000 pcs/reel

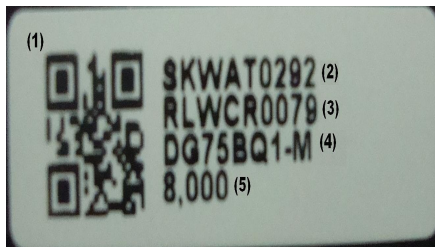
11-3. TAPING STRUCTURE

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



11-3-2. BAR CODE LABEL

- Label Size: 58×30mm²



- | | | |
|-----|---|-----------------------------|
| (1) |  | The Bar Code of the Model |
| (2) | SKWAT0292 | Packing No. |
| (3) | RLWCR0079 | Reel No. |
| (4) | DG75BQ1-M | The Model Name |
| (5) | 8000 | The Quantity of the Product |

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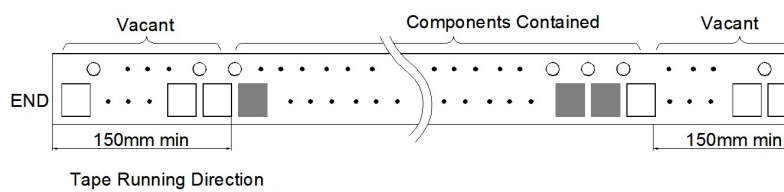
- The Information about Lot No.

Lot format:

S	K	W	A	T	0	2	9	2
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							
	Split Lot(E/L)	SS → SG SF → SH				SS → SJ SI → SK							
③	the Year 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 Month 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 Day 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												

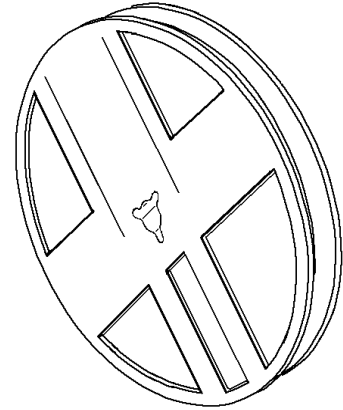
11-3-3. Leader part and vacant position specifications.



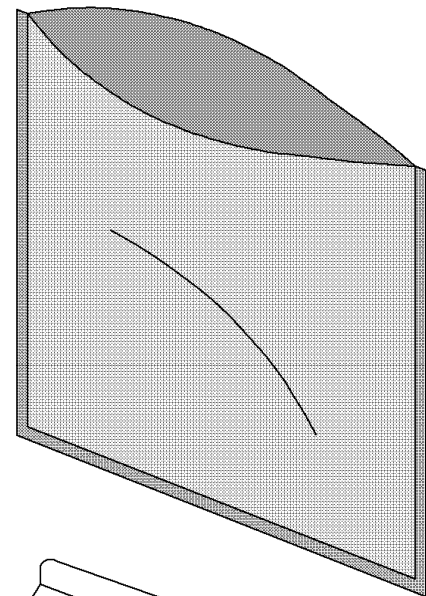
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11-4. INNER BOX(Reel Packing) STRUCTURE

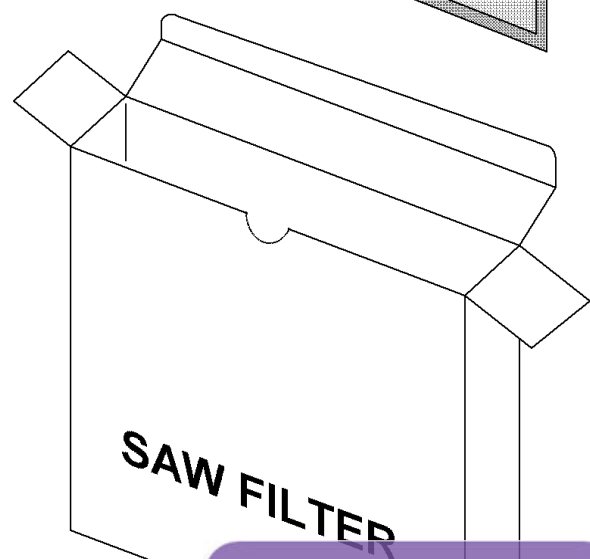
Material: Plastic Reel



Material: Antistatic Vinyl Bag
Size: 310×340mm²



Material: Paper(SW1D(E))
Size: 260×37×265mm³

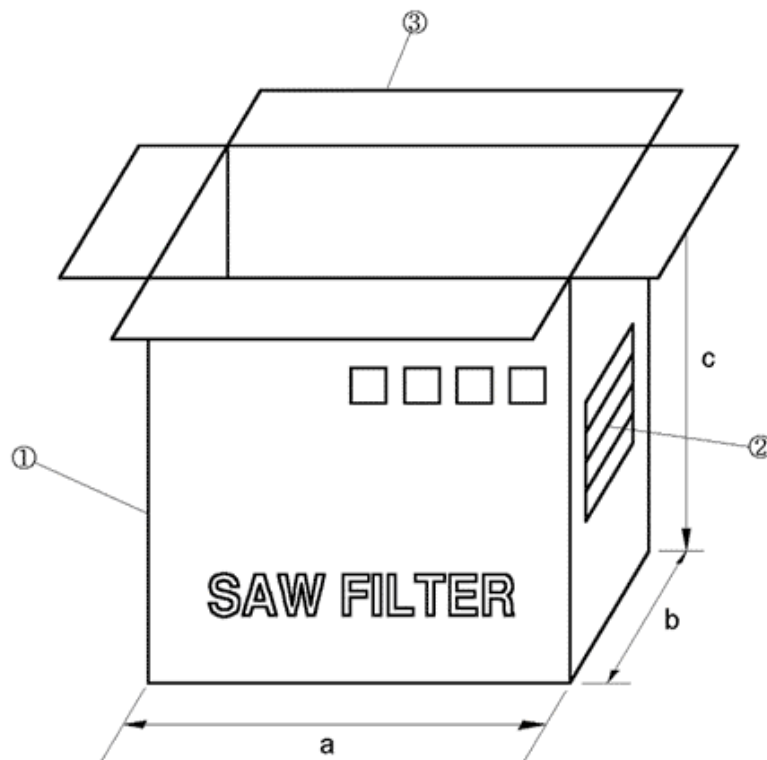


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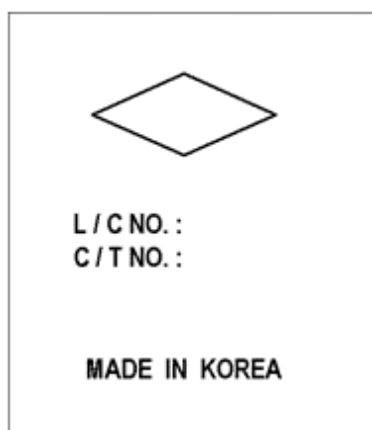
11-5. OUTER BOX STRUCTURE

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.

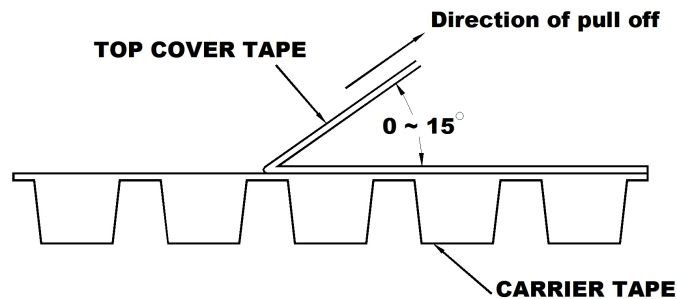
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12. TAPE SPECIFICATIONS

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-CTSAYAA11-18864

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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. : AYAA11-18864
Product Name : 2016 DPX
Item No./Part No. : N/A
Received Date : 2011. 06. 09
Test Period : 2011. 06. 10 to 2011. 06. 14
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.

Timothy Jeon
Jinhee Kim
Cindy Park
Jerry Jung/ Testing Person

SGS Korea Co. Ltd.

Jeff Jang / Chemical Lab Mgr

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Test Report No. F690501/LF-CTSAYAA11-18864

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Sample No. : AYAA11-18864.001

Sample Description : 2016 DPX

Item No./Part No. : N/A

Heavy Metals

Test Items	Unit	Test Method	MDL	Results
Cadmium (Cd)	mg/kg	With reference to IEC 62321:2008, ICP	0.5	N.D.
Lead (Pb)	mg/kg	With reference to IEC 62321:2008, ICP	5	N.D.
Mercury (Hg)	mg/kg	With reference to IEC 62321:2008, ICP	2	N.D.
Hexavalent Chromium (Cr VI)	mg/kg	With reference to IEC 62321:2008, UV-VIS	1	N.D.

Flame Retardants-PBBs/PBDEs

Test Items	Unit	Test Method	MDL	Results
Monobromobiphenyl	mg/kg	With reference to IEC 62321:2008, GC-MS	5	N.D.
Dibromobiphenyl	mg/kg	With reference to IEC 62321:2008, GC-MS	5	N.D.
Tribromobiphenyl	mg/kg	With reference to IEC 62321:2008, GC-MS	5	N.D.
Tetrabromobiphenyl	mg/kg	With reference to IEC 62321:2008, GC-MS	5	N.D.
Pentabromobiphenyl	mg/kg	With reference to IEC 62321:2008, GC-MS	5	N.D.
Hexabromobiphenyl	mg/kg	With reference to IEC 62321:2008, GC-MS	5	N.D.
Heptabromobiphenyl	mg/kg	With reference to IEC 62321:2008, GC-MS	5	N.D.
Octabromobiphenyl	mg/kg	With reference to IEC 62321:2008, GC-MS	5	N.D.
Nonabromobiphenyl	mg/kg	With reference to IEC 62321:2008, GC-MS	5	N.D.
Decabromobiphenyl	mg/kg	With reference to IEC 62321:2008, GC-MS	5	N.D.
Monobromodiphenyl ether	mg/kg	With reference to IEC 62321:2008, GC-MS	5	N.D.
Dibromodiphenyl ether	mg/kg	With reference to IEC 62321:2008, GC-MS	5	N.D.
Tribromodiphenyl ether	mg/kg	With reference to IEC 62321:2008, GC-MS	5	N.D.
Tetrabromodiphenyl ether	mg/kg	With reference to IEC 62321:2008, GC-MS	5	N.D.
Pentabromodiphenyl ether	mg/kg	With reference to IEC 62321:2008, GC-MS	5	N.D.
Hexabromodiphenyl ether	mg/kg	With reference to IEC 62321:2008, GC-MS	5	N.D.
Heptabromodiphenyl ether	mg/kg	With reference to IEC 62321:2008, GC-MS	5	N.D.
Octabromodiphenyl ether	mg/kg	With reference to IEC 62321:2008, GC-MS	5	N.D.
Nonabromodiphenyl ether	mg/kg	With reference to IEC 62321:2008, GC-MS	5	N.D.
Decabromodiphenyl ether	mg/kg	With reference to IEC 62321:2008, 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) * = 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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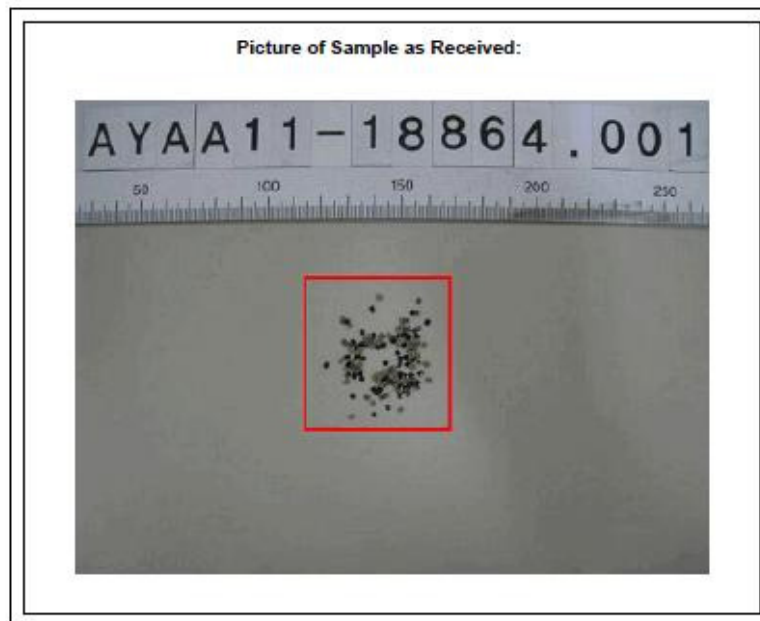
Test Report No. F690501/LF-CTSAYAA11-18864

Issued Date: 2011. 06. 14 Page 3 of 5

Sample No. : AYAA11-18864.001
Sample Description : 2016 DPX
Item No./Part No. : N/A

Halogen Contents

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



NOTE:

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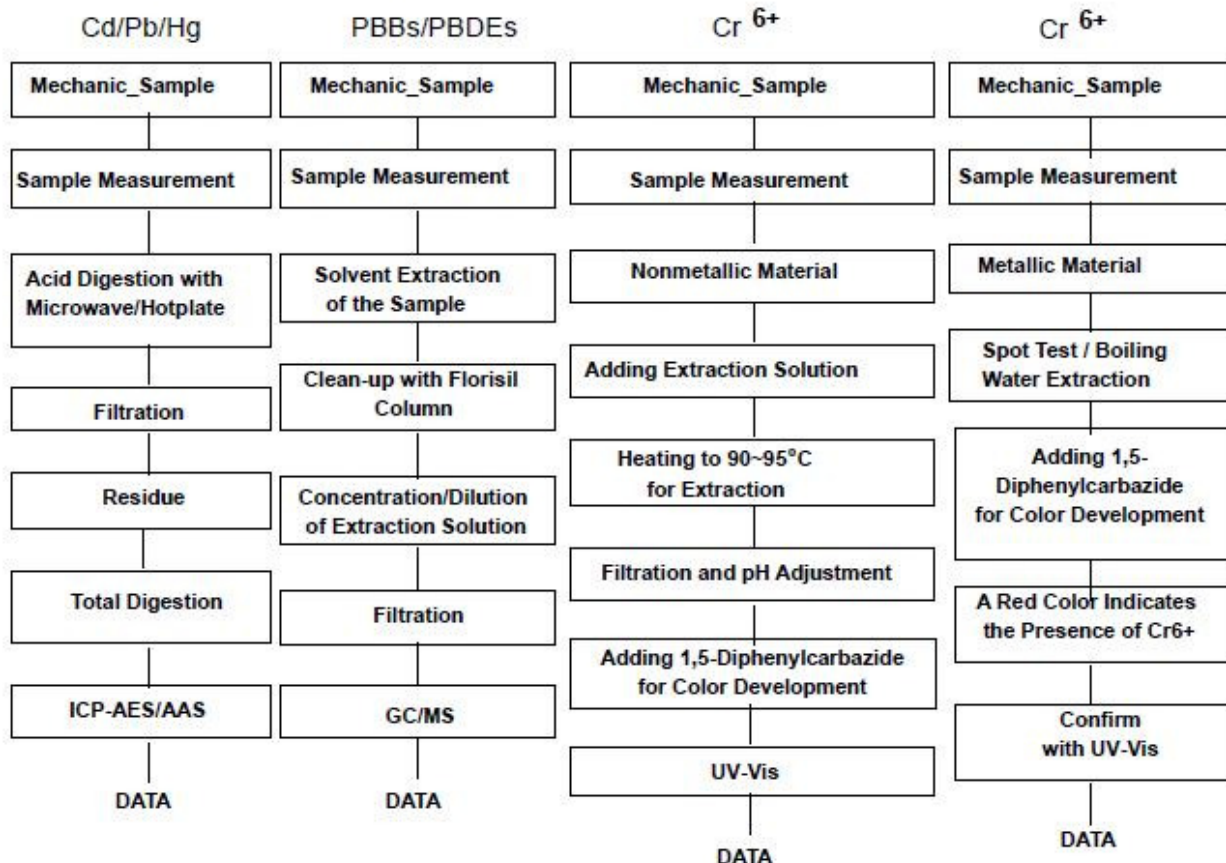
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Test Report No. F690501/LF-CTSAYAA11-18864

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Flow Chart for RoHS: Cd/Pb/Hg/Cr⁶⁺/PBBs&PBDEs Testing



The samples were dissolved totally by pre-conditioning method according to above flow chart for Cd,Pb,Hg.

Section Chief : Gilsae Yi

NOTE:

- (1) N.D. = Not detected.(<MDL)
- (2) mg/kg = ppm
- (3) MDL = Method Detection Limit
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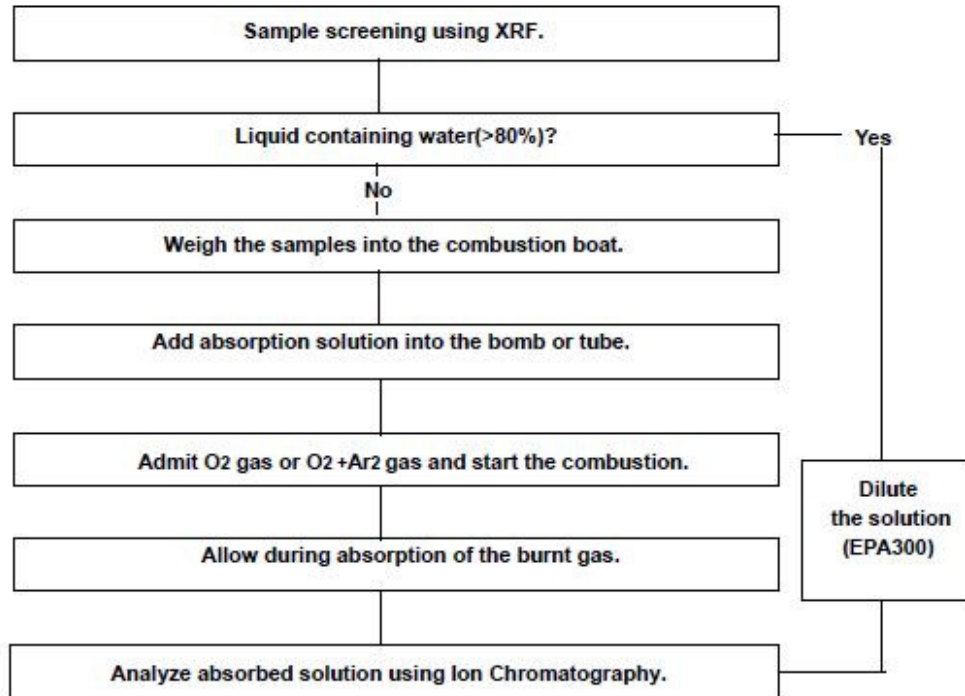
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Flow Chart for Halogen Test



*** End ***

NOTE:

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