NIHON DEMPA KOGYO CO., LTD.

APPROVAL SHEET

DATE: April 12, 2005

CUSTOMER:

PRODUCT NAME: **Saw Filter SMD**

NDK Part Number

ISF-433.920000MHz

PREPARED BY: NDK APR 12 2005 01

CONFIRMED BY: QC APR 12 2005 PASS

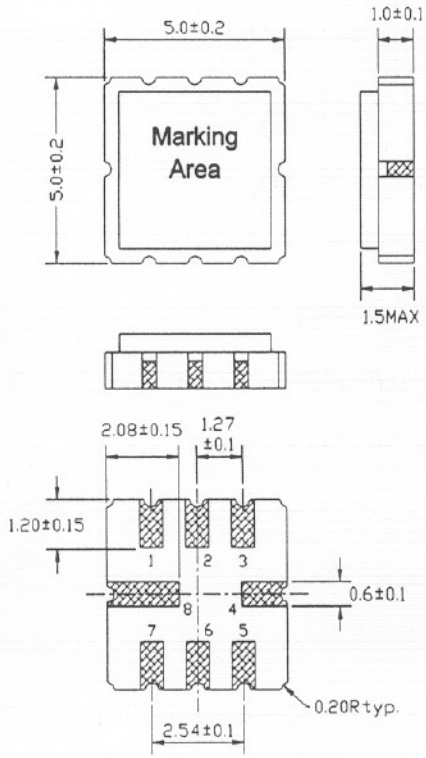
CUSTOMER APPROVAL:

CHECKED BY: _____

APPROVED BY: _____

NIHON DEMPA KOGYO CO., LTD.

1.Package Dimension



2. Performance

2.1 Application

RF Low-loss SAW Filter for Wireless Remote Controller Receivers.

Center frequency(fo): 433.92MHz

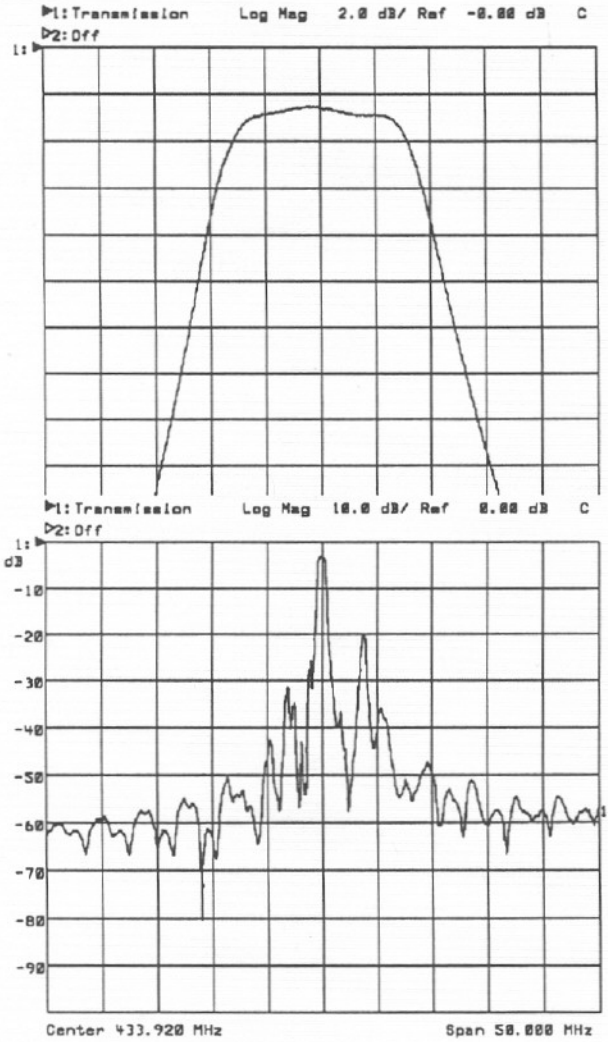
2.2 Maximum Rating

DC Voltage V_{DC} AC Voltage Vpp	10V 10V (50Hz / 60Hz)
Operation Temperature Range	-40℃ to +85℃
Storage Temperature Range	-45℃ to +85℃
Source Power	10dBm

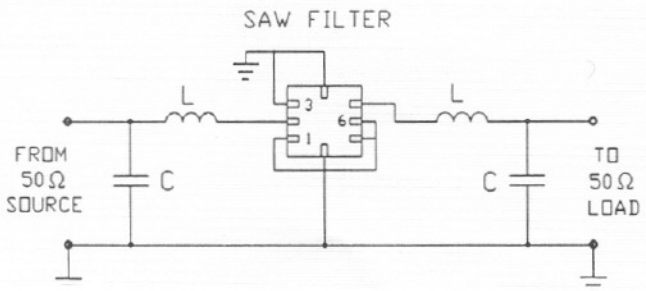
2.3 Electronic Characteristics

Item	Units	Minimum	Typical	Maximum
Center Frequency (fo)	MHz	——	433.92	——
Insertion Loss 433.80MHz ~ 434.120MHz	dB	——	2.0	3.5
Pass Band 433.76MHz ~ 434.16MHz	dB	——	1.0	2.0
Relative Attenuation				
10.00MHz ~ 414.00MHz	dB	45.0	50.0	——
414.00MHz ~ 428.00MHz	dB	40.0	45.0	——
428.00MHz ~ 432.92MHz	dB	15.0	20.0	——
434.92MHz ~ 442.00MHz	dB	10.0	15.0	——
442.00MHz ~ 550.00MHz	dB	35.0	40.0	——
550.00MHz ~ 1000.00MHz	dB	45.0	50.0	——
Temperature Coefficient of Frequency	ppm/K^2	——	-0.03	——
External Impedance Match				
Series Inductance L	nH	——	33	——
Shunt Capacitance C	pF	——	5.6	——

2.4 Frequency Characteristics



2.5 Test Circuit



3.Reliability

3.1 Mechanical Shock: The components shall remain within the electrical specifications after three one-half sine shock pulses(3000g's for 0.3ms) in each direction(for six total) along each of the three mutually perpendicular axes for a total of 18 shocks.

3.2 Vibration Fatigue: The components shall remain within the electrical specifications after loaded vibration at 20~55Hz, amplitude 1.5mm, X,Y,Z, direction, for 2 hours.

3.3 Leak Test

3.3.1 Gross Leak Test: Submerge samples into at +85℃ water for at least 1 minute. Carefully observe the samples. No bubbles should be seen.

3.3.2 Fine Leak Test: Expose samples for testing to 60 PSIG Helium gas for 2 hours. Then transfer the same samples to another chamber and draw a vacuum. Measure the leak rate. Failure is defined if the leak rate exceeds 5×10^{-8} atm cc/sec Helium.

3.4 High Temperature Storage: The components shall remain within the electrical specifications after being kept at the 85℃ ±2℃ for 960 hours, then kept at room temperature for 2 hours.

3.5 Low Temperature Storage: The components shall remain within the electrical specifications after being kept at the –40℃ ±2℃ for 960 hours, then kept at room temperature for 2 hours.

3.6 Temperature Cycle: The components shall remain within the electrical specification after 32 cycles of high and low temperature testing (one cycle: 80℃ for 30 minutes → 25℃ for 20 seconds → -40℃ for 30 minutes) than kept at room temperature for 2 hours.

3.7 Humidity Test: The components shall remain within the electrical specifications after being kept at the condition of ambient temperature 70℃, and 90~95% RH for 240 hours, then kept at room temperature and normal humidity for 4 hours.

3.8 Solder-heat Resistance: The components shall remain within the electrical specifications after dipped in the solder at 260℃ ±5℃ for 10 to 11 seconds, then kept at room temperature for 10 minutes.

3.9 Solderability: Solderability of terminal shall be kept at more than 80% after dipped in the solder flux at 230℃ ±5℃ for 5 ±1 seconds.

3.10 Storage: The components shall meet the electrical and mechanical specifications after 5 years storage, if stored within the temperature range of -40℃~+85℃ and in the humidity of 20 to 60% r.h.

4.Remarks

4.1 Static voltage

Static voltage between signal load & ground may cause deterioration & destruction of the component. Please avoid static voltage.

4.2 Ultrasonic cleaning

Ultrasonic vibration may cause deterioration & destruction of the component. Please avoid ultrasonic cleaning.

4.3 Soldering

Only leads of component may be soldered. Please avoid soldering another part of component.

5.Packing

5.1 Dimensions

(1) Carrier Tape: Figure 1

(2) Reel: Figure 2

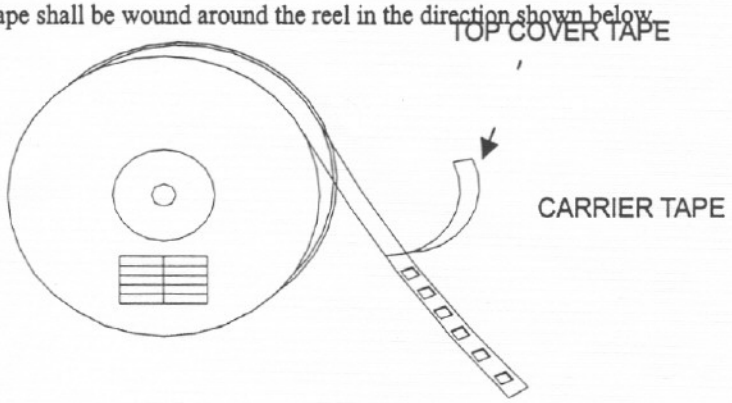
(3) The product shall be packed properly not to be damaged during transportation and storage.

5.2 Reeling Quantity

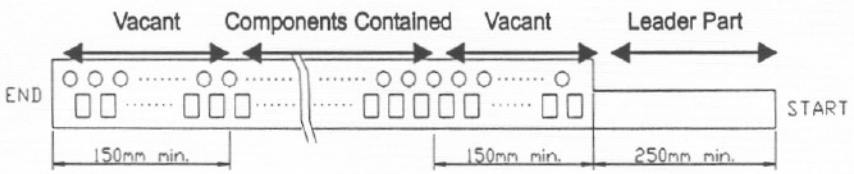
1,000 pcs/reel

5.3 Taping Structure

(1) The tape shall be wound around the reel in the direction shown below.



(2) Leader part and vacant position specifications.



TAPE RUNNING DIRECTION

6. Tape Specifications

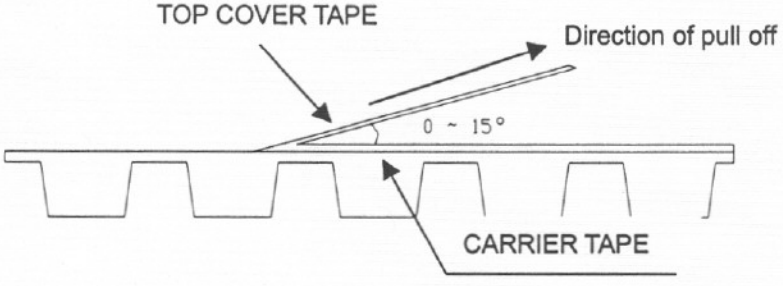
6.1 Tensile Strength of Carrier Tape: 4.4N/mm width

6.2 Top Cover Tape Adhesion (See the below figure)

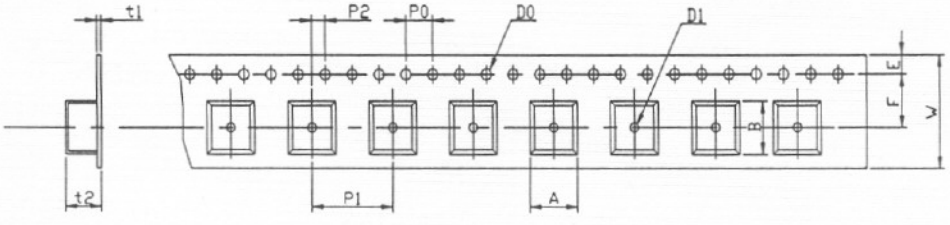
(1) pull off angle: 0~15°

(2) speed: 300mm/min.

(3) force: 20~70g



[F:

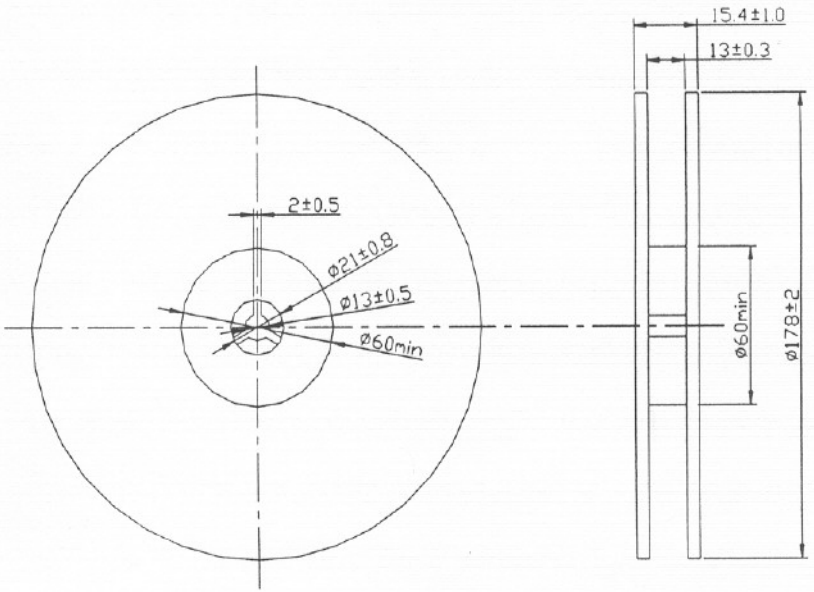


Tape Running Direction

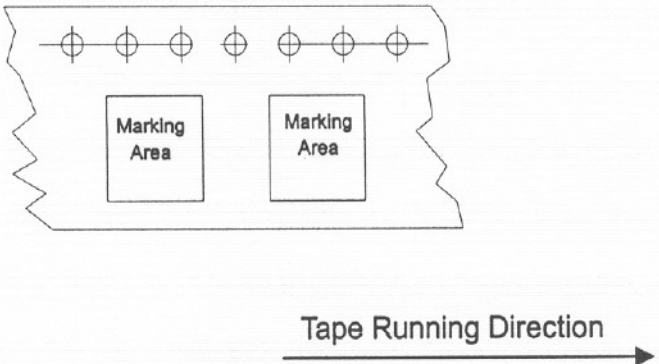
[Unit: mm]

12.0 W ±0.3	5.5 F ±0.1	1.75 E ±0.1	4.0 P0 ±0.2	8.0 P1 ±0.1	2.0 P2 ±0.2	0.1.5 D0 ±0.1	0.1.5 D1 ±0.25	0.31 t1 max.	1.95 t2 max.	5.5 A max.	5.5 B max.

[Figure 2] Reel Dimensions



[Figure 3] Part Direction



Customer:

TEST DATA

Date : April 12, 2005

Order No. : NDC-310413 Spec No. : Type of Crystal Unit : ISF-433.920000MHz Room Temp. : Humidity :

	Frequency in kHz,MHz,,Hz	Lot No.	Passband Ripple 2.0dB					Insertion Loss 3.5dB								
1	433.920000	1	0.390					3.38								
2		2	0.520					3.39								
3		3	0.580					3.43								
4		4	0.420					3.40								
5		5	0.480					3.44								
6		6	0.510					3.45								
7		7	0.510					3.26								
8		8	0.520					3.31								
9		9	0.390					3.41								
10		10	0.480					3.42								
11																
12																
13																
14																
15																
	Remarks															

Inspector:

NIHON DEMPA KOGYO CO.,LTD.

QN 5453

NDK Spec NO.