

Approved by:

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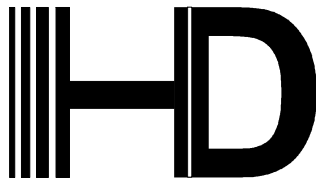
Issued by:

# ***SPECIFICATION***

**MODEL: HD F350M-1(S21)**

***CAUTION:*** ELECTROSTATIC SENSITIVE DEVICE (ESD)  
Observe precautions for handling

***PRIMARY***



**SHOULDER ELECTRONIC LIMITED**

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## 1. SCOPE

This specification shall cover the characteristics of SAW filter With350M used for IF applications.

## 2. ELECTRICAL SPECIFICATION

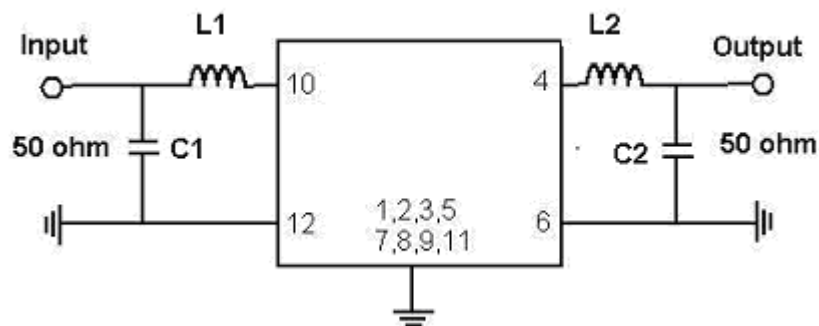
DC Voltage VDC	0V
AC Voltage Vpp	10V50Hz/60Hz
Operation temperature	-30°C to +60°C
Storage temperature	-45°C to +85°C
RF Power Dissipation	0dBm

Electronic Characteristics

### 2-1. Electrical characteristics

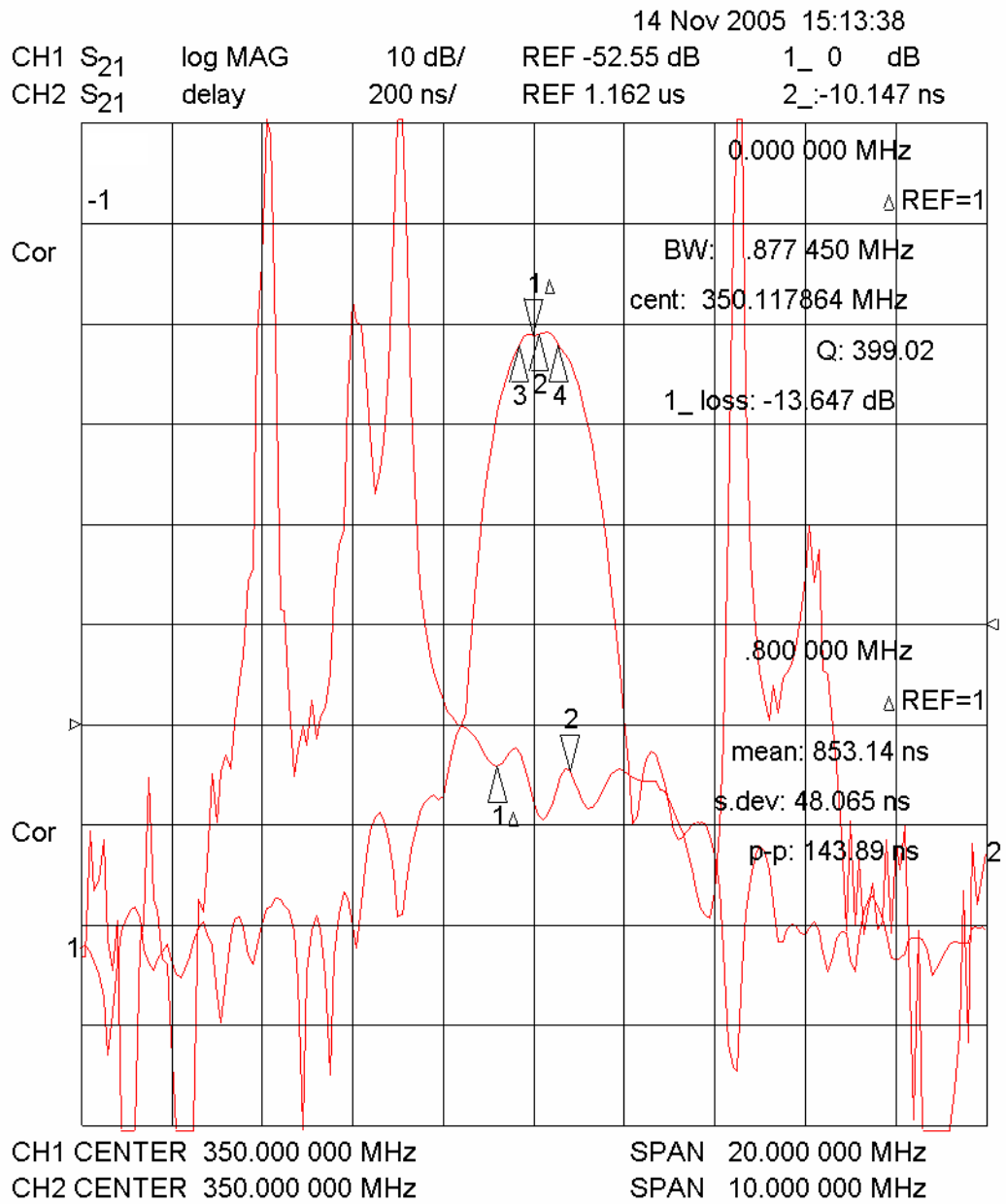
	Minimum	Typical	Maximum	Unit
Center Frequency $F_0$		350		MHz
Insertion loss		12.11	15	dB
Band width $B_{-1dB}$	0.8	1.14		MHz
Band width $B_{-20dB}$		2.8	2.9	MHz
Band width $B_{-40dB}$		3.58	4.4	MHz
Amplitude ripple		0.5	1	dB
Absolute Delay		1.39		usce
Ultimate Rejection	40	50		Db
Ambient Temperature		25		°C
Temperature coefficient of frequency $TCf$		-18		ppm/K

## 3. TEST CIRCUIT



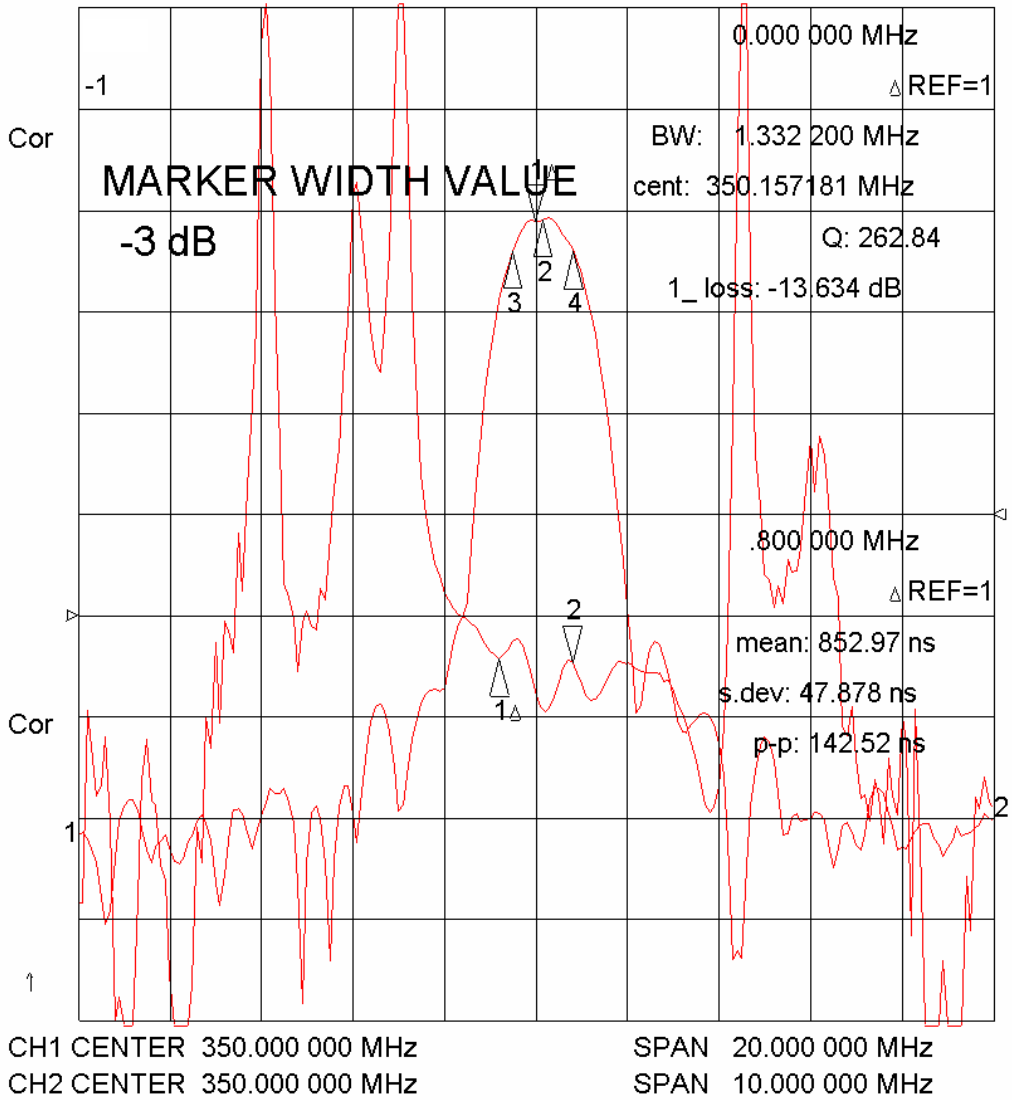
$$C1=C2=15pF ; L1= 15nH; L2=12nH$$

### 3.1. Typical frequency response



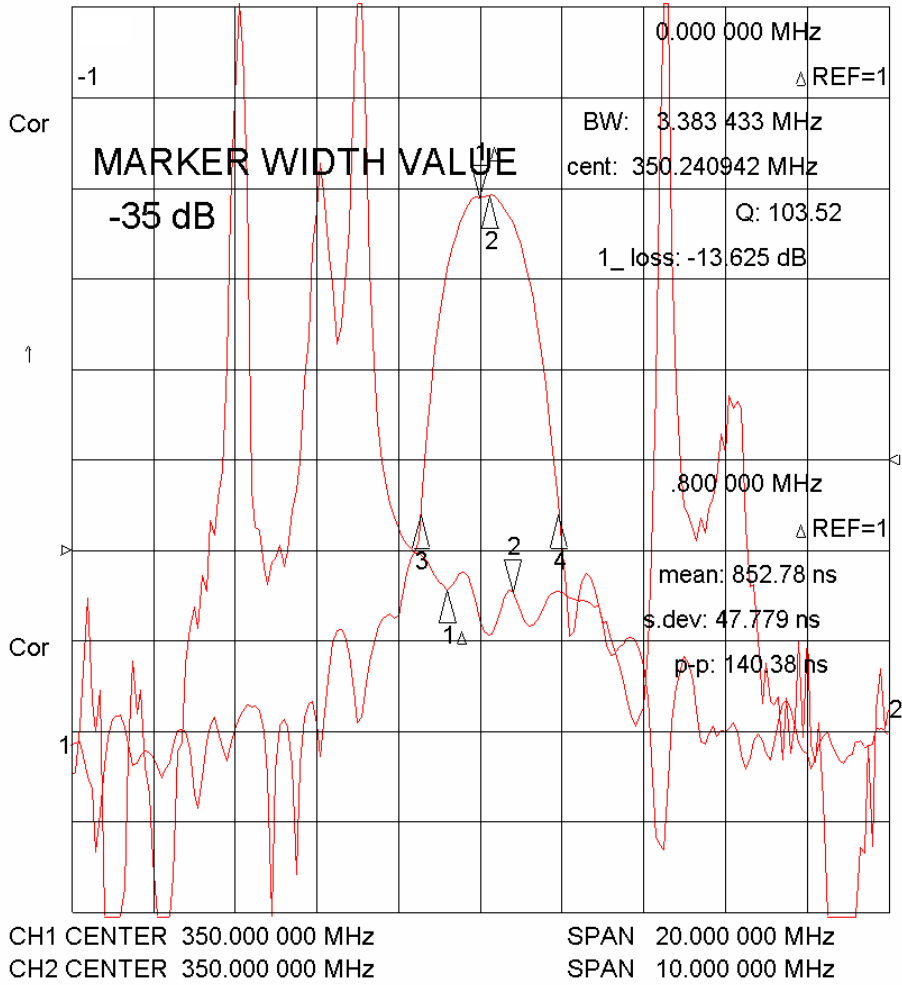
14 Nov 2005 15:13:59

CH1 S<sub>21</sub> log MAG 10 dB/ REF -52.55 dB 1\_ 0 dB  
CH2 S<sub>21</sub> delay 200 ns/ REF 1.162 us 2\_ -7.248 ns

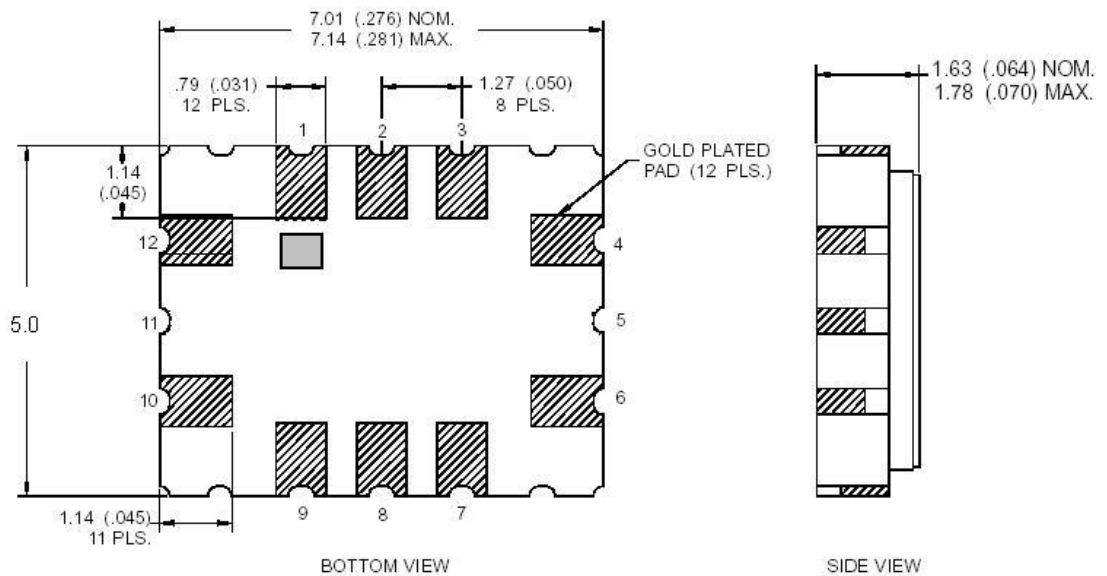


14 Nov 2005 15:14:08

CH1 S<sub>21</sub> log MAG 10 dB/ REF -52.55 dB 1\_ 0 dB  
 CH2 S<sub>21</sub> delay 200 ns/ REF 1.162 us 2\_ -7.3243 ns



#### 4. DIMENSION



## **5. ENVIRONMENTAL CHARACTERISTICS**

### 5-1 Temperature cycling

Subject the device to a low temperature of  $-45^{\circ}\text{C}$  for 30 minutes. Following by a high temperature of  $+25^{\circ}\text{C}$  for 5 Minutes and a higher temperature of  $+85^{\circ}\text{C}$  for 30 Minutes. Then release the device into the room conditions for 1 to 2 hours prior to the measurement. It shall meet the specifications in table 1.

### 5-2 Resistance to solder heat

Submerge the device terminals into the solder bath at  $260^{\circ}\text{C} \pm 5^{\circ}\text{C}$  for  $10 \pm 1$  sec. Then release the device into the room conditions for 4 hours. It shall meet the specifications in table 1.

### 5-3 Solderability

Submerge the device terminals into the solder bath at  $245^{\circ}\text{C} \pm 5^{\circ}\text{C}$  for 5s, More than 95% area of the soldering pad must be covered with new solder. It shall meet the specifications in table 1.

### 5-4 Mechanical shock

Drop the device randomly onto the concrete floor from the height of 1 m 3 times. the filter shall fulfill the specifications in table 1.

### 5-5 Vibration

Subject the device to the vibration for 2 hour each in x,y and z axes with the amplitude of 1.5 mm at 10 to 55 hz. The filter shall fulfill the specifications in table 1.

## **6. REMARK**

### 6.1 Static voltage

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

### 6.2 Ultrasonic cleaning

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

### 6.3 Soldering

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

## **7. Packing**

### 7.1 Dimensions

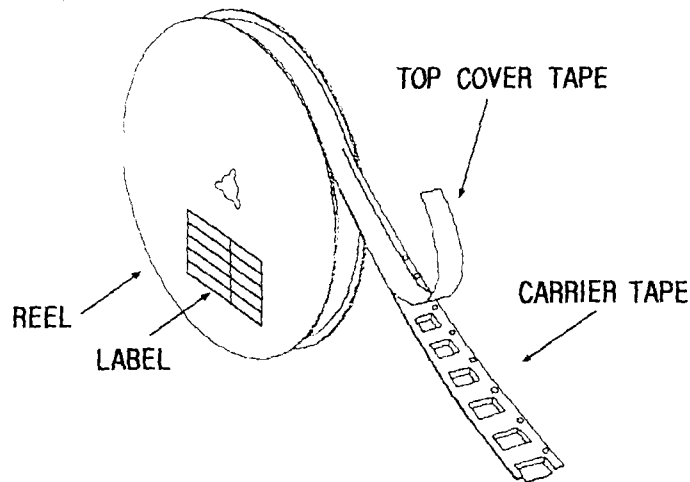
- (1) Carrier Tape: Figure 1
- (2) Reel: Figure 2
- (3) The product shall be packed properly not to be damaged during transportation and storage.

### 7.2 Reeling Quantity

1000 pcs/reel 7"  
 3000 pcs/reel 13"

### 7.3 Taping Structure

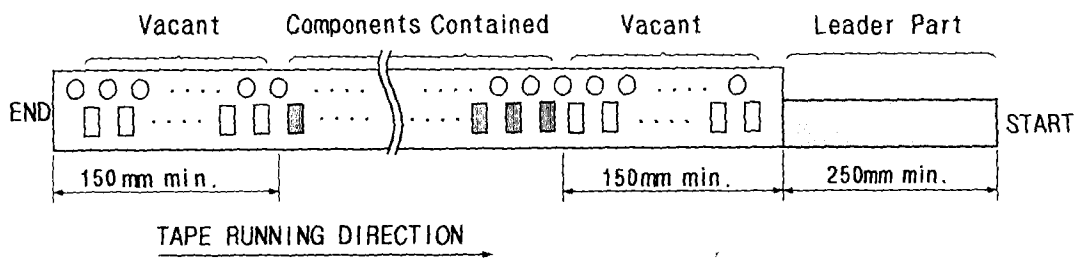
(1) The tape shall be wound around the reel in the direction shown below.



(2) Label

Device Name	
User Product Name	
Quantity	
Lot No.	

(3) Leader part and vacant position specifications.

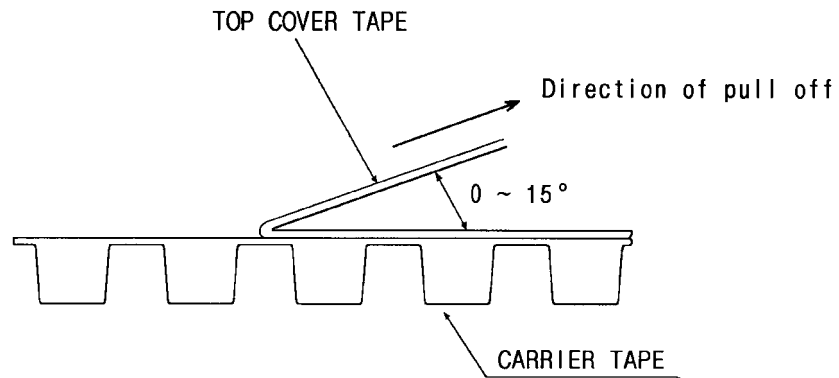


## 8. TAPE SPECIFICATIONS

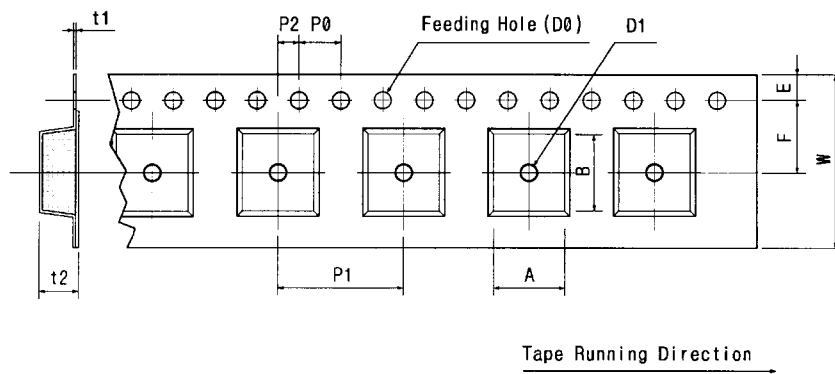
8.1 Tensile Strength of Carrier Tape: 4.4N/mm width

8.2 Top Cover Tape Adhesion (See the below figure)

- (1) pull off angle: 0~15°
- (2) speed: 300mm/min.
- (3) force: 20~70g



[Figure 1] Carrier Tape Dimensions



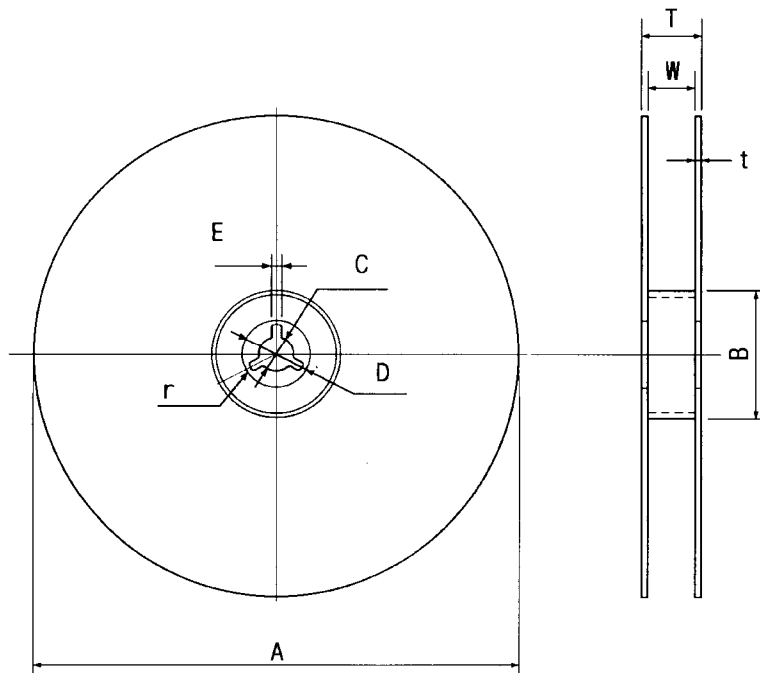
[Unit:mm]

W	F	E	P0	P1	P2	D0	D1	t1	t2	A	B
12.00	7.50	1.75	4.00	8.00	2.00	Ø1.50	Ø1.5	0.25	2.20	5.30	7.30
±0.30	±0.10	±0.10	±0.10	±0.10	±0.10		±0.25	±0.05	±0.10	±0.10	±0.10

[Figure 2]



[Unit:mm]



A	B	C	D	E	W	t	r
Ø330	Ø100	Ø13	Ø21	2	16.8	3	1.0
±1.0	±0.5	±0.5	±0.8	±0.5	±0.3	max.	max.

## 9. CAUTION

- 9-1. This is an electrostatic sensitive device. Please avoid static voltage during operation and storage.
- 9-2. Sudden change of temperature shall be avoided ,deterioration if the characteristics can occur.
- 9-3. Ultrasonic vibration may cause deterioration and destruction of the components Please avoid ultrasonic cleaning.