

## 1.SCOPE

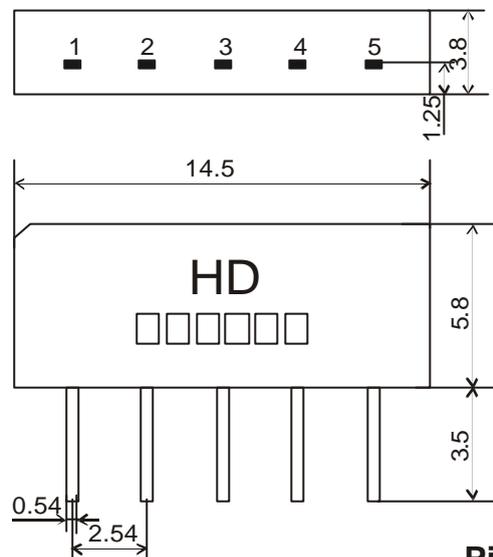
HAODA's SAW filter series have broad line up products meeting all broadcast standard including NTSC,PAL and SECAM systems. These filters are composed of two interdigital transducers on a single-crystal, piezoelectrical chip. they are used in electronic equipments such as TV and so on.

## 2.Construction

### 2.1 Dimension and materials

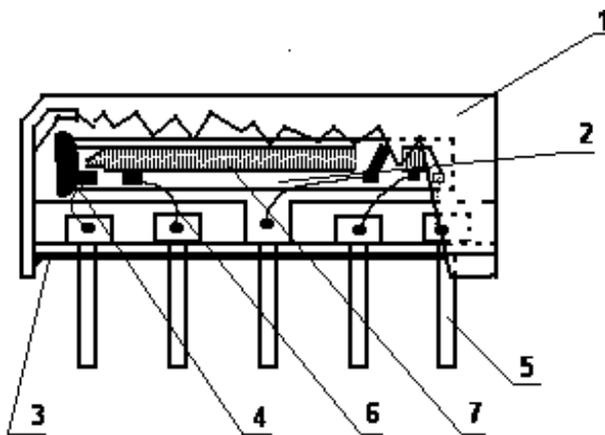
Manufacturer's name : HAODA ELECTRONICS Co. LTD(CHINA)

Type : IF389A1D



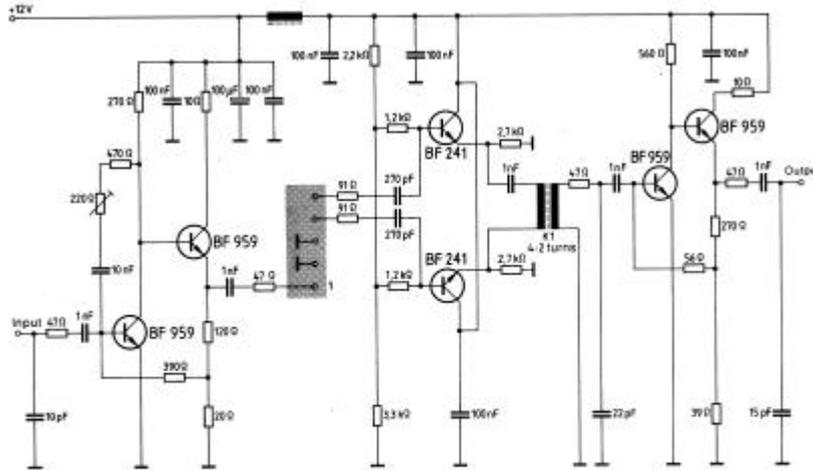
### Pin configuration

- 1 Input
- 2 Input-ground
- 3 Chip carrier-ground
- 4 Output
- 5 Output



Components	Materials
1.Outer casing	PPS
2.Substrate	Lithium niobate
3.Base	Epoxy resin
4.Absorber	Epoxy resin
5.Lead	Cu alloy+Au plate
6.Bonding wire	AlSi alloy
7.Electrode	Al

## 2.2. Circuit construction, measurement circuit



Test circuit for SIP-5 filter  
Input impedance of the symmetrical post-amplifier: 2 kΩ in parallel with 3 pF

## 3.Characteristics

### Standard atmospheric conditions

Unless otherwise specified , the standard rang of atmospheric conditions for making measurements and tests is as follows;

- Ambient temperature : 15 to 35
- Relative humidity : 25% to 85%
- Air pressure : 86kPa to 106kPa

### Operating temperature rang

Operating temperature rang is the rang of ambient temperatures in which the filter can be

operated continuously. -10 ~ +60

### Storage temperature rang

Storage temperature rang is the rang of ambient temperatures at which the filter can be stored

without damage.

Conditions are as specified elsewhere in these specifications. -40 ~ +70

### Reference temperature +25

### 3.1 Maximum Rating

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<b>DC voltage</b>	<b>VDC</b>	<b>12</b>	<b>V</b>	<b>Between any terminals</b>
<b>AC voltage</b>	<b>Vpp</b>	<b>10</b>	<b>V</b>	<b>Between any terminals</b>

### 3.2 Electrical Characteristics

Source impedance  $Z_s=50$

Load impedance  $Z_L=2K //3pF$   $T_A=25$

	Freq	Min	typ	max	
<b>Insertion attenuation</b> Reference level	37.40MHz	13.5	15.5	17.5	dB
Relative attenuation	38.90MHz	5.5	6.5	7.5	dB
	34.47MHz	1.2	2.7	4.2	dB
	33.40MHz	17.0	19.0	21.0	dB
	31.90MHz	42.0	50.0	-	dB
	40.40MHz	42.0	55.0		dB
	41.40MHz	40.0	50.0		dB
<b>Sideloobe</b>	25.00~31.90MHz	34.0	40.0		dB
	40.40~45.00MHz	33.0	38.0		dB
Temperature coefficient		-72			ppm/k

### 3.3 Environmental Performance Characteristics

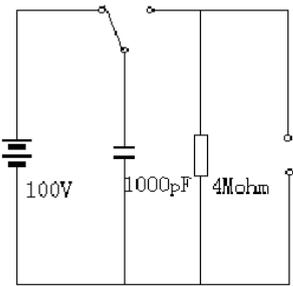
Item Test condition	Allowable change of absolute Level at center frequency(dB)
High temperature test 70 1000H	< 1.0
Low temperature test -40 1000H	< 1.0
Humidity test 40 90-95% 1000H	< 1.0
Thermal shock -20 ==25 ==80 20 cycle 30M 10M 30M	< 1.0
Solder temperature test Sold temp.260 for 10 sec.	< 1.0
Soldering Immerse the pins melt solder at 260 +5/-0 for 5 sec.	More then 95% of total area of the pins should be covered with solder

### 3.4 Mechanical Test

Item Test condition	Allowable change of absolute Level at center frequency(dB)
Vibration test 600-3300rpm amplitude 1.5mm 3 directions 2 H each	<1.0
Drop test On maple plate from 1 m high 3 times	<1.0
Lead pull test Pull with 1 kg force for 30 seconds	<1.0

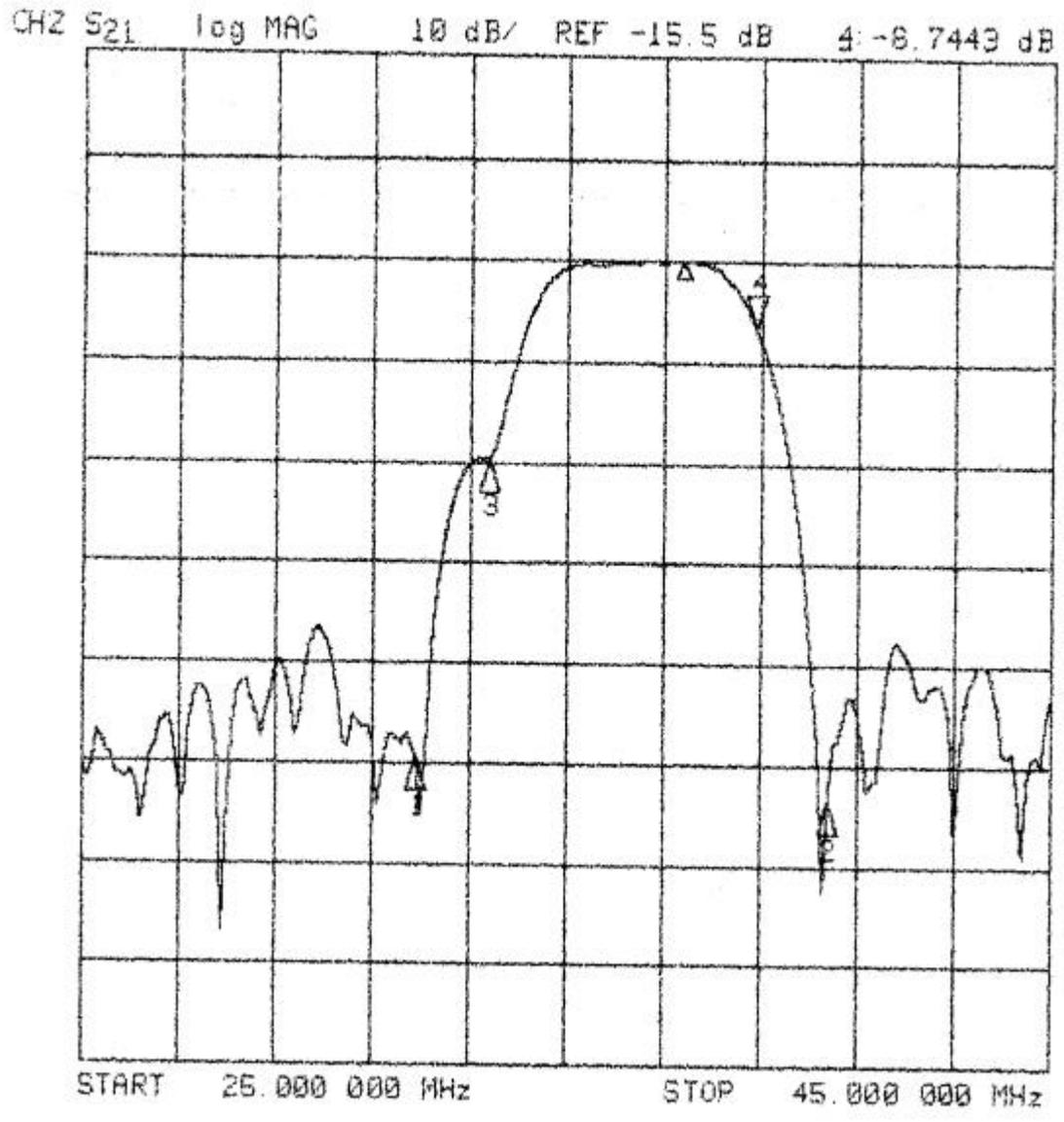
Lead bend test 90° bending with 500g weigh 2 times	<1.0
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**3.5 Voltage Discharge Test**

Item Test condition	Allowable change of absolute Level at center frequency(dB)
Surge test Between any two electrode  	<1.0

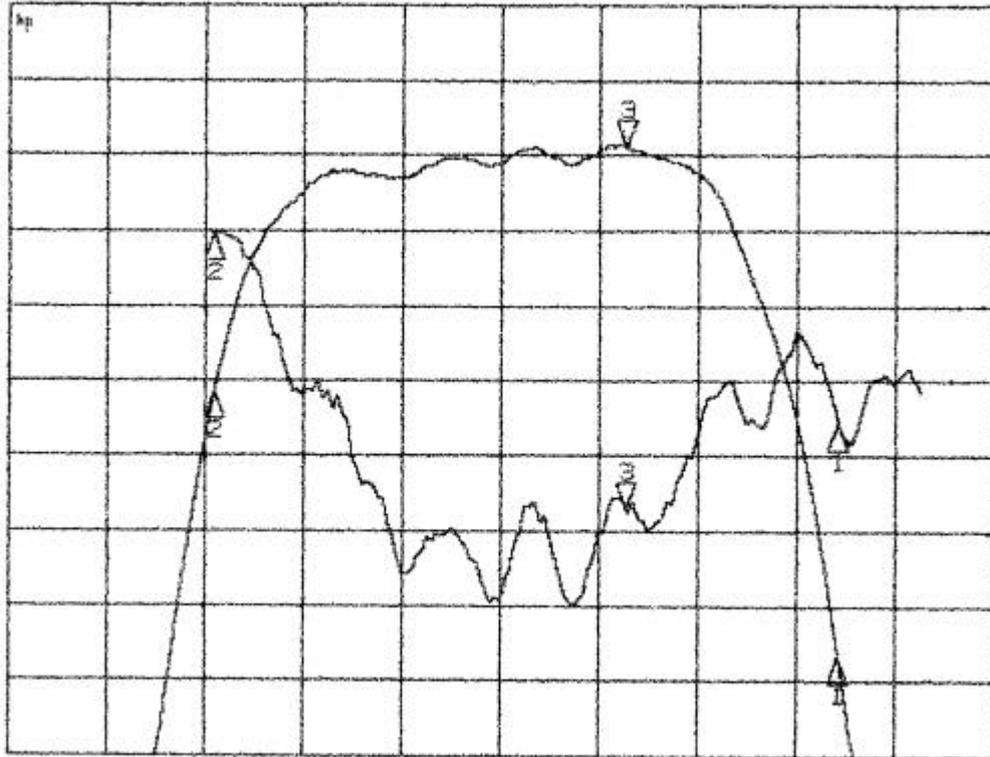
**3.6 Frequency response**

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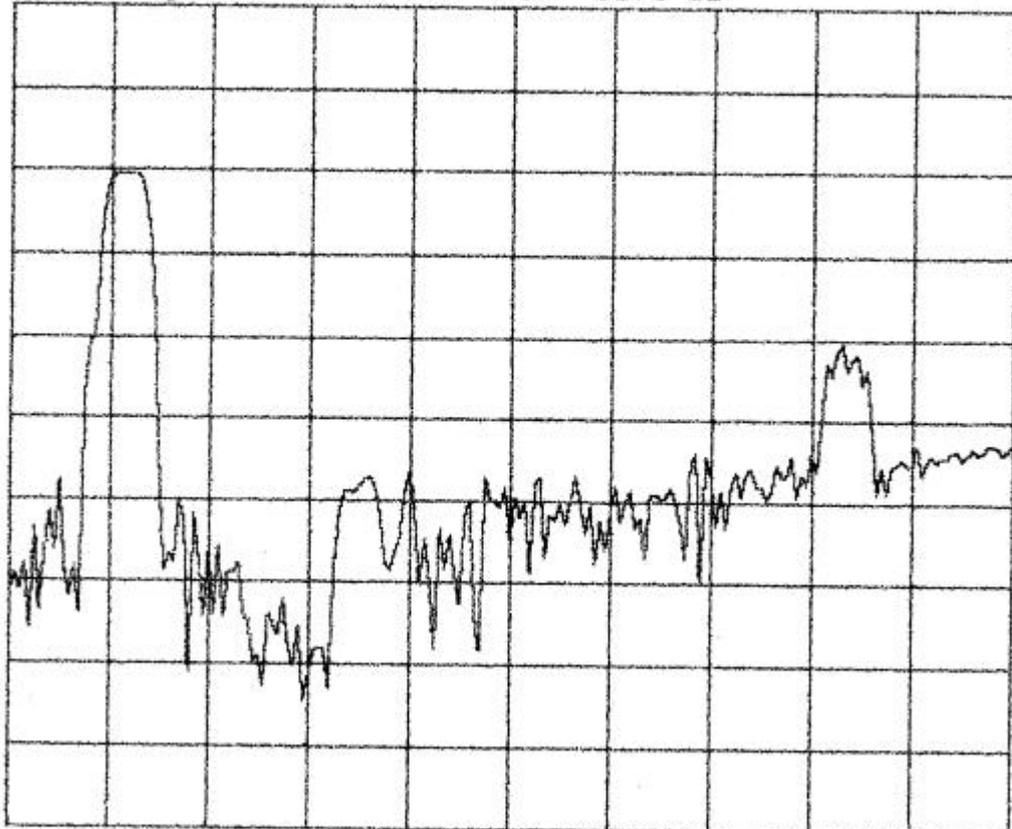
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CH1 S21 log MAG 1 dB/ REF -15.5 dB 2: -15.386 dB  
CH2 S21 delay 30 ns/ REF 825.9 ns 2: 684.67 ns



CENTER 36.500 000 MHz SPAN 7.000 000 MHz

CH2 S21 log MAG 10 dB/ REF -15.5 dB



START 25.000 000 MHz STOP 125.000 000 MHz