

## 1.SCOPE

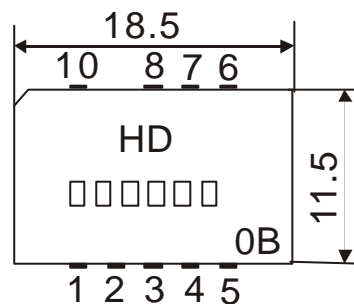
SHOULDER's SAW filter series have broad line up products meeting all broadcast standard including NTSC,PAL and SECAM systems. These filters are composed of two interdigital transducers on a single-crystal. piezoelectrical chip. they are used in electronic equipments such as TV and so on.

## 2.Construction

### 2.1 Dimension and materials

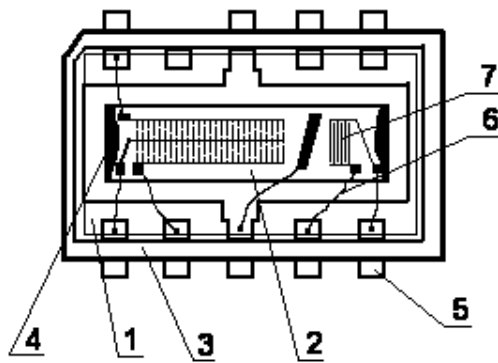
Manufacturer's name : SHOULDER ELECTRONICS Co. LTD(CHINA)

Type : MVF389A1T



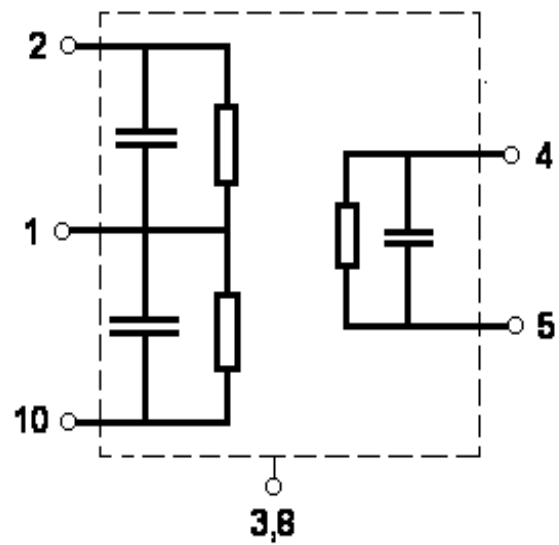
**0:** year(0,1,2,3,4,5,6,7,8,9)

**B:**product in this quarter(A:1~3,B:4~6,C:7~9,D:10~12)

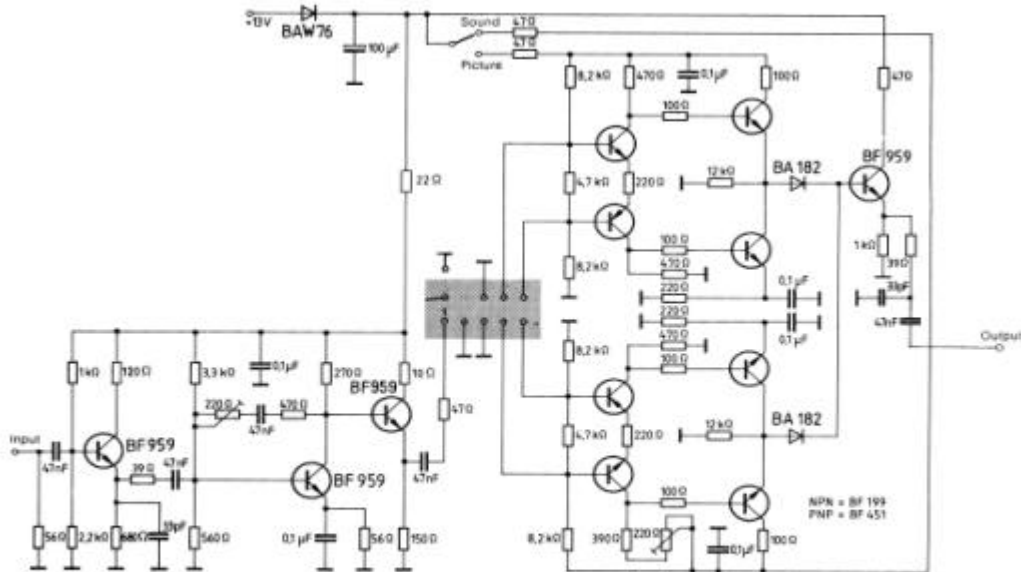


Components	Materials
1.Outer casing	PPS
2.Substrate	Lithium niobate
3.Base	PPS
4.Absorber	Epoxy resin
5.Lead	Cu alloy+Au plate
6.Bonding wire	AlSi alloy
7.Electrode	Al

- 1 Input
- 2 Input - ground
- 3;8 Chip carrier - ground
- 4;5 Output
- 6;7 Not connected
- 9 Free
- 10 Switching input



2.2. Circuit construction, measurement circuit



Test circuit for DIP-10 filter  
Input impedance of the symmetrical post-amplifier:  $2\text{ k}\Omega$  in parallel with  $5\text{ pF}$

### 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.  $-10 \sim +60$

#### 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.  $-40 \sim +70$

#### Reference temperature +25

#### 3.1 Maximum Rating

DC voltage	VDC	12	V	Between any terminals
AC voltage	Vpp	10	V	Between any terminals

### 3.2 Electrical Characteristics

#### Characteristics in L/L' mode (switching input pin 10 connected to input 1)

Source impedance

 $Z_s=50$ 

Load impedance

 $Z_L=2k //3pF$  $T_A=25$ 

Item	Freq	min	typ	max	
Insertion attenuation Reference level	37.40MHz	13.7	15.7	17.7	dB
Relative attenuation	38.90MHz	3.9	5.4	6.9	dB
	33.90MHz	5.1	6.6	8.1	dB
	34.47MHz	-0.7	0.8	2.3	dB
	30.90MHz	42.0	55.0	-	dB
	32.40MHz	42.0	54.0	-	dB
	32.90MHz	40.0	50.0	-	dB
	40.40MHz	42.0	53.0	-	dB
	41.90MHz	40.0	48.0	-	dB
Sidelobe	25.00~32.90MHz	35.0	44.0		dB
	40.40~45.00MHz	35.0	43.0		dB
Temperature coefficient		-72			ppm/k

#### Characteristics in B/G mode (switching input pin 10 connected to ground input 2)

Source impedance

 $Z_s=50$ 

Load impedance

 $Z_L=2k //3pF$  $T_A=25$ 

Item	Freq	min	Typ	max	
Insertion attenuation Reference level	37.40MHz	13.5	15.5	17.5	dB
Relative attenuation	38.90MHz	4.2	5.7	7.2	dB
	34.47MHz	-0.2	1.3	2.8	dB
	33.40MHz	32.0	42.0	-	dB
	30.90MHz	42.0	55.0	-	dB
	31.90MHz	42.0	55.0	-	dB
	32.40MHz	44.0	50.0	-	dB
	40.15MHz	35.0	42.0	-	dB

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	40.40MHz	42.0	53.0	-	dB
	41.40MHz	40.0	48.0	-	dB
Sidelobe	25.00~31.90MHz	35.0	47.0		dB
	40.40~45.00MHz	35.0	44.0		dB
Temperature coefficient		-72			ppm/k

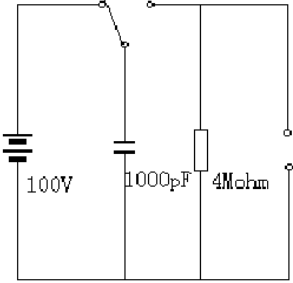
### 3.3 Environmental Performance Characteristics

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

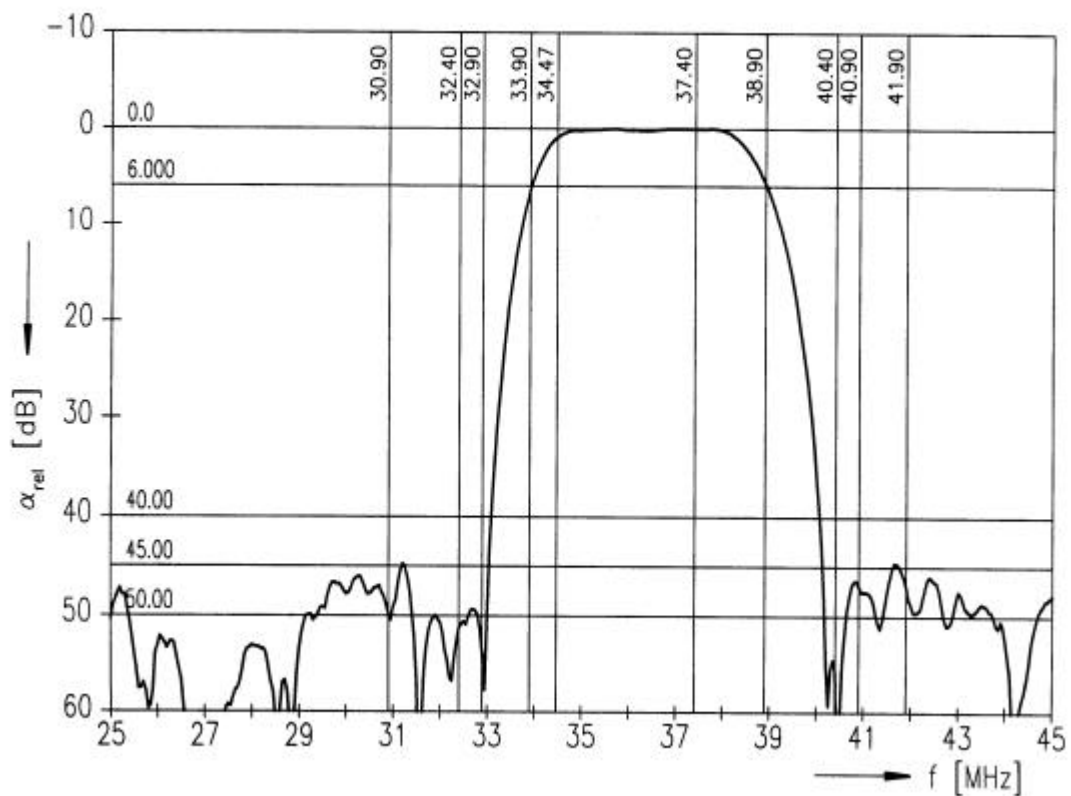
Item Test condition	Allowable change of absolute Level at center frequency(dB)
Vibration test 600-3300rpm amplitude 1.5mm 3 directions 2 H each	<1.0
Drop test On maple plate from 1 m high 3 times	<1.0
Lead pull test Pull with 1 kg force for 30 seconds	<1.0
Lead bend test 90° bending with 500g weigh 2 times	<1.0

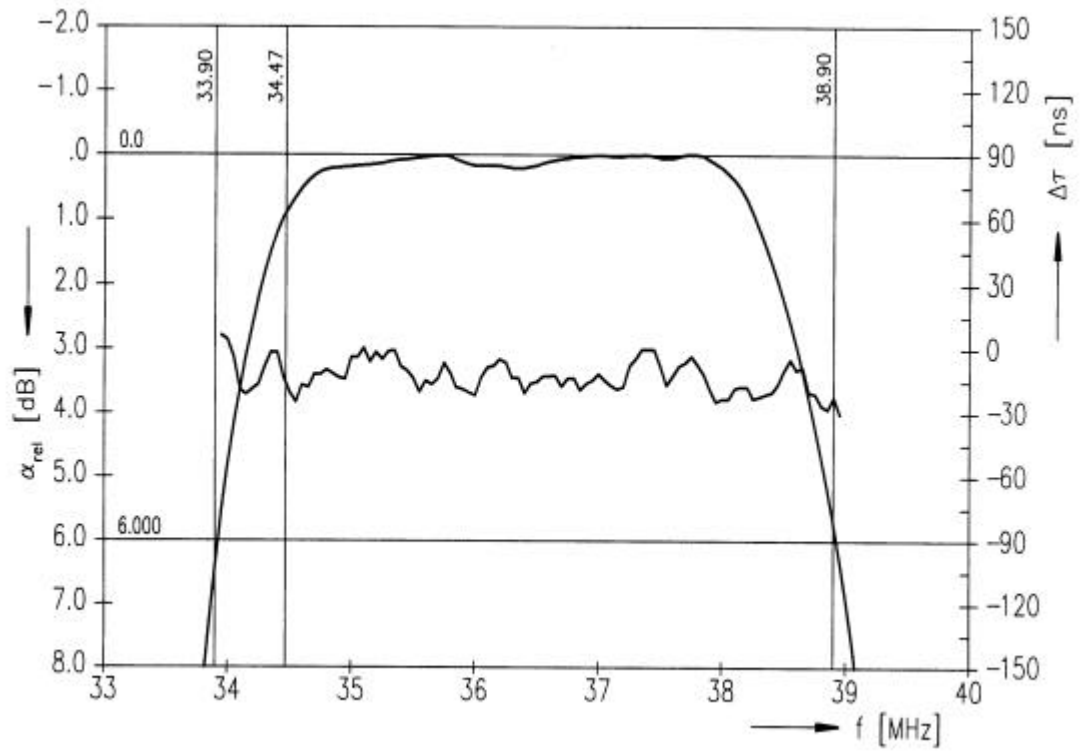
**3.5 Voltage Discharge Test**

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

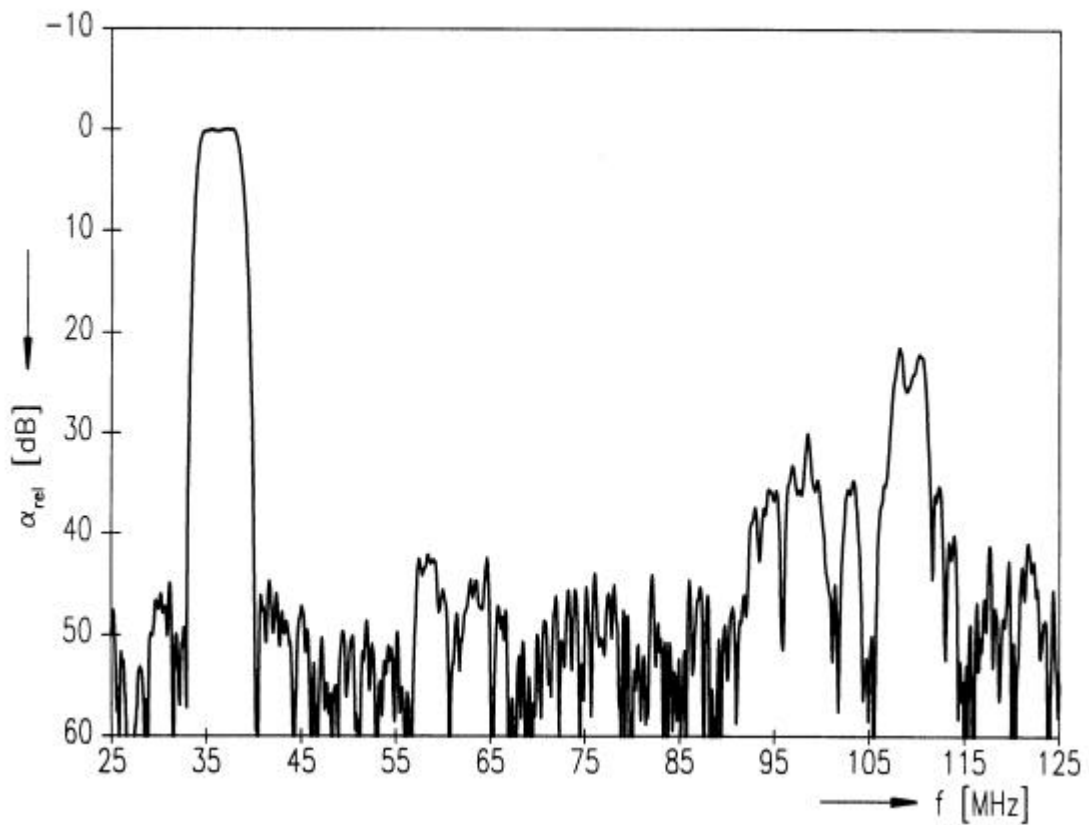
**3.6 Frequency response**

Frequency response L/L' mode (switching input pin 10 connected to input pin 1)

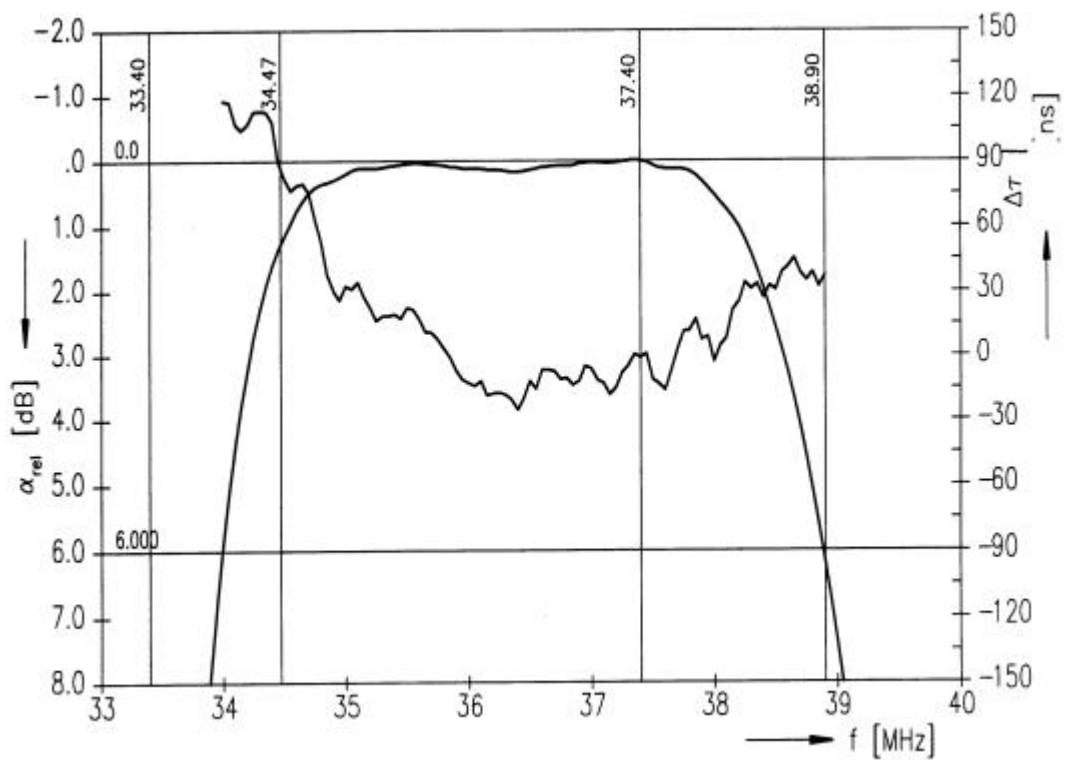
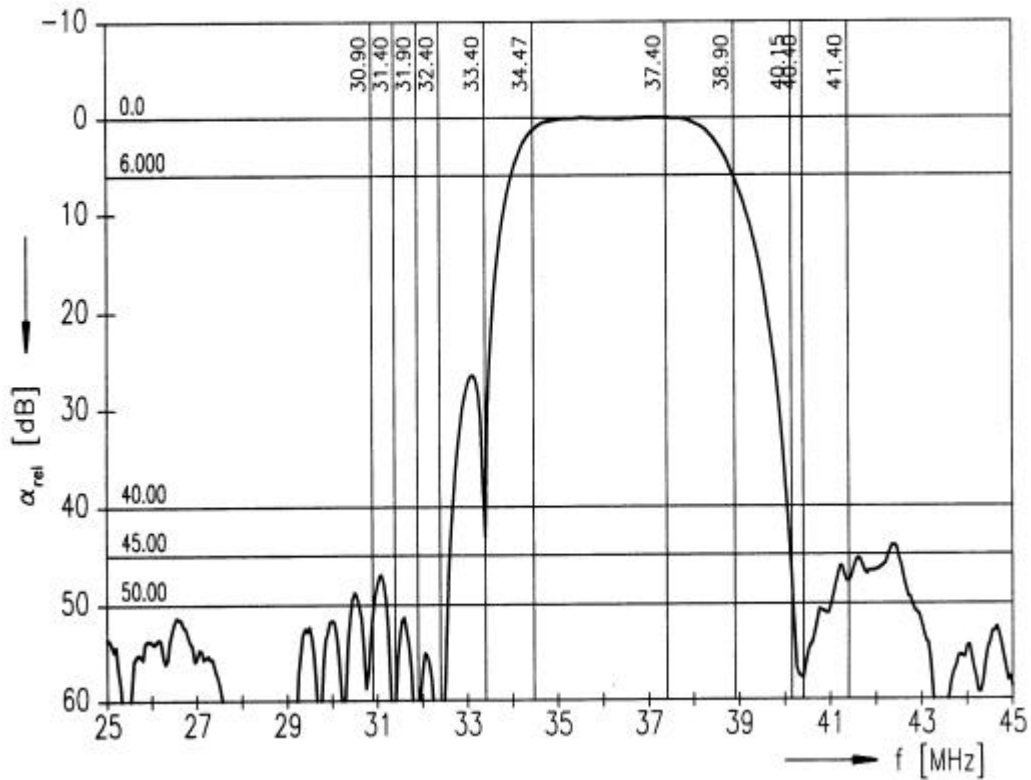




Frequency response L/L' mode (switching input pin 10 connected to input pin 1)



Frequency response B/G mode (switching input pin 10 connected to ground input pin 2)





Frequency response B/G mode (switching input pin 10 connected to ground input pin 2)

