1.SCOPE

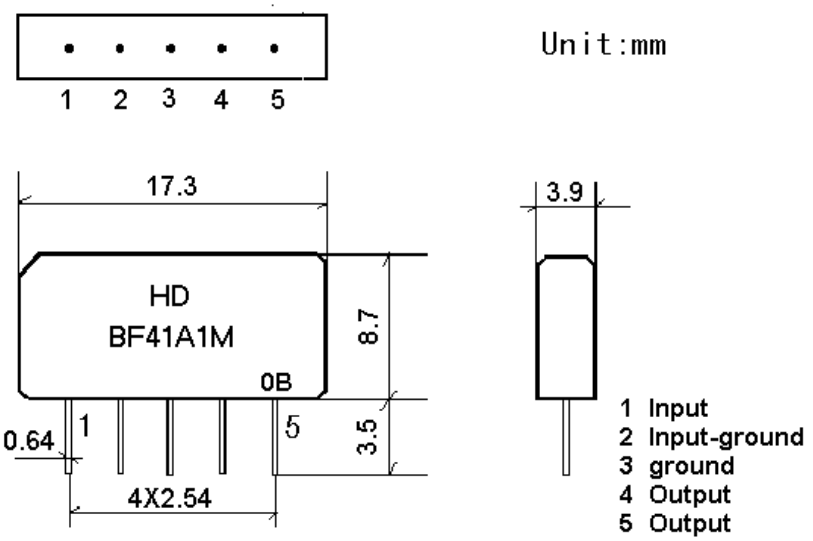
SHOULDER's SAW filter series have broad line up products meeting all broadcast standard including NTSC,PAL and SECAM systems. These filters are composed of two interdigital transducers on a single-crystal. piezoelectrical chip. they are used in electronic equipments such as TV and so on.

2.Construction

2.1 Dimension and materials

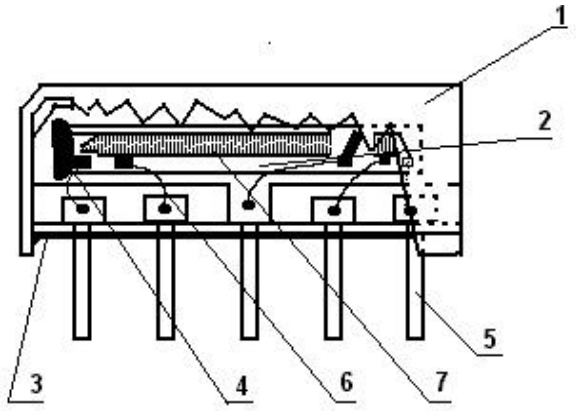
Manufacturer's name : SHOULDER ELECTRONICS Co. LTD(CHINA)

Type : BF41A1M



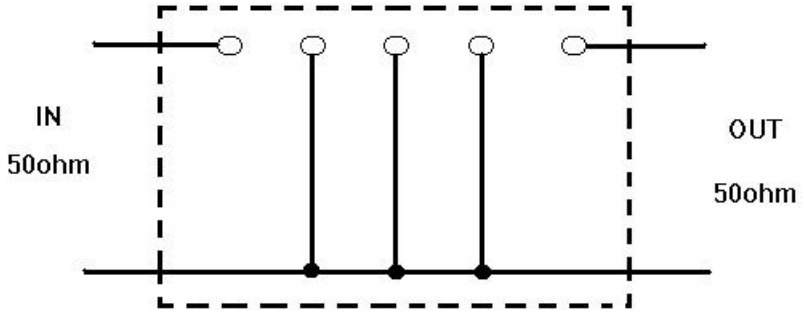
0: year(0,1,2,3,4,5,6,7,8,9)

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	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



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

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

3.2 Electrical Characteristics

Source impedance Zs=50Ω

Load impedance Z_L= 50Ω T_A=25℃

Item		Freq	min	typ	max	
Insertion attenuation Reference level		41.25MHz	14.3	16.3	18.3	dB
Relative attenuation		40.95MHz	0	1.5	3.0	dB
		41.55MHz	-0.8	0.7	2.2	dB
		39.17MHz	38.0	42.0	-	dB
		45.75MHz	40.0	50.0	-	dB
		42.17MHz	20.0	28.0	-	dB
		39.75MHz	38.0	45.0	-	dB
		47.25MHz	40.0	50.0	-	dB
Sidelobe	35.00~39.75MHz		35.0	41.0		dB
	45.75~55.00MHz		35.0	48.0		dB
Temperature coefficient			-72			ppm/k

3.3 Environmental Performance Characteristics

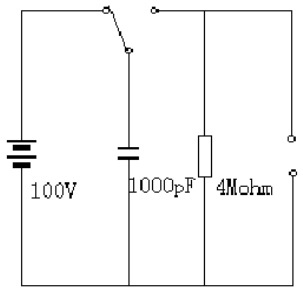
Item Test condition	Allowable change of absolute Level at center frequency(dB)
High temperature test 70℃ 1000H	< 1.0
Low temperature test -40℃ 1000H	< 1.0
Humidity test 40℃ 90-95% 1000H	< 1.0
Thermal shock -20℃==25℃==80℃ 20 cycle 30M 10M 30M	< 1.0
Solder temperature test Sold temp.260℃ for 10 sec.	< 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

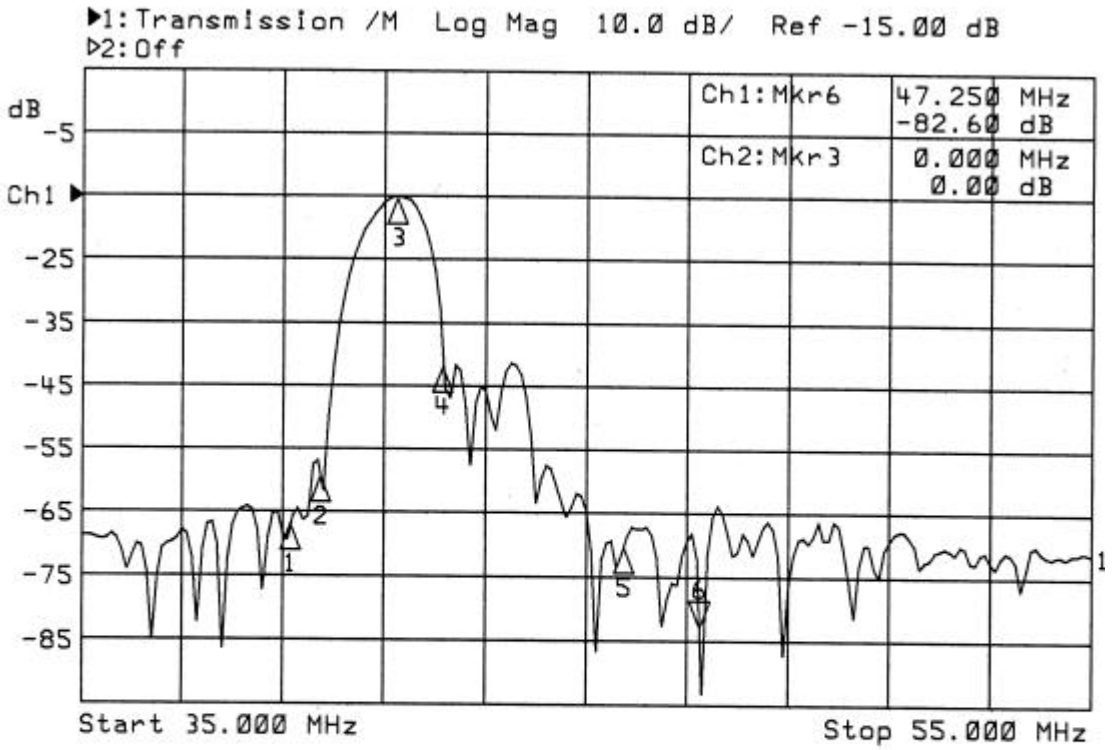
Item Test condition	Allowable change of absolute Level at center frequency(dB)
Vibration test 600-3300rpm amplitude 1.5mm 3 directions 2 H each	<1.0
Drop test On maple plate from 1 m high 3 times	<1.0
Lead pull test	<1.0

Pull with 1 kg force for 30 seconds	
Lead bend test 90^o bending with 500g weigh 2 times	<1.0

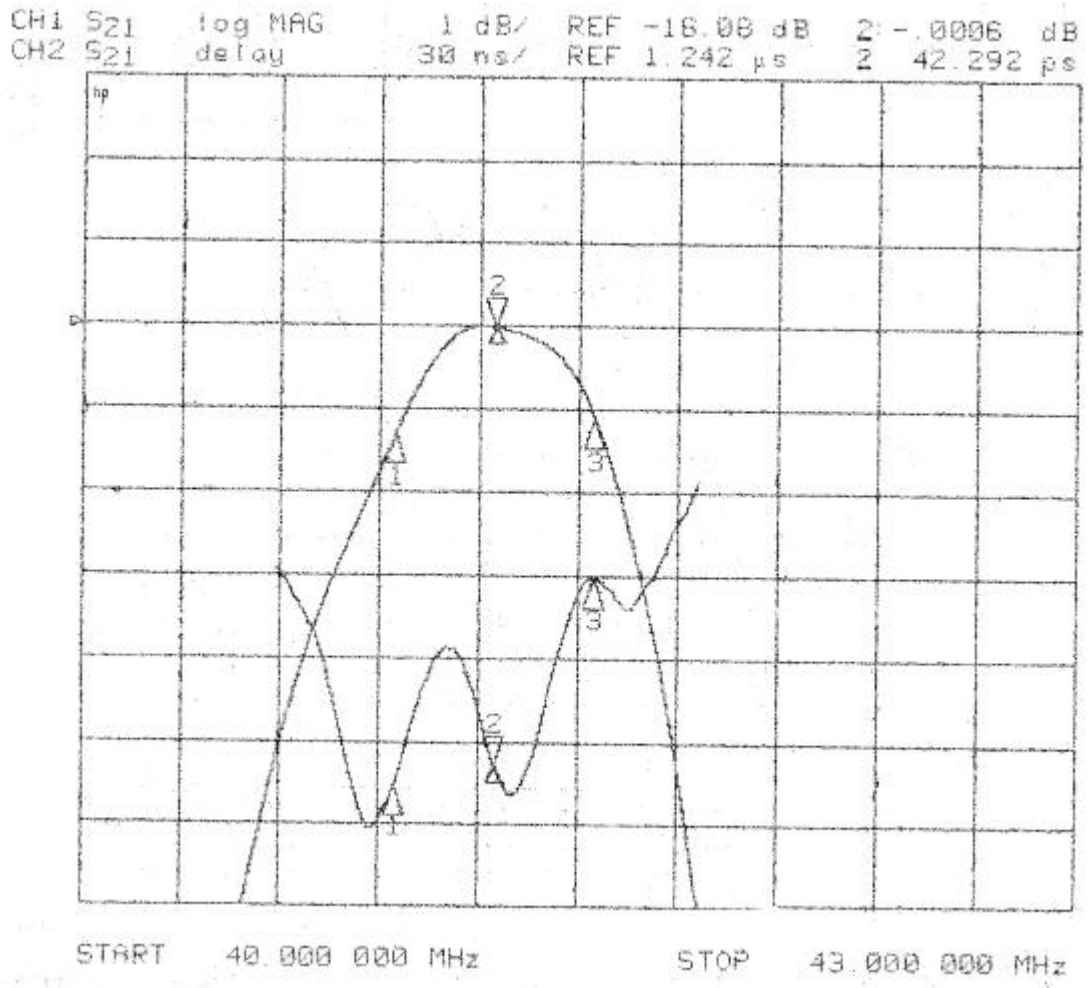
3.5 Voltage Discharge Test

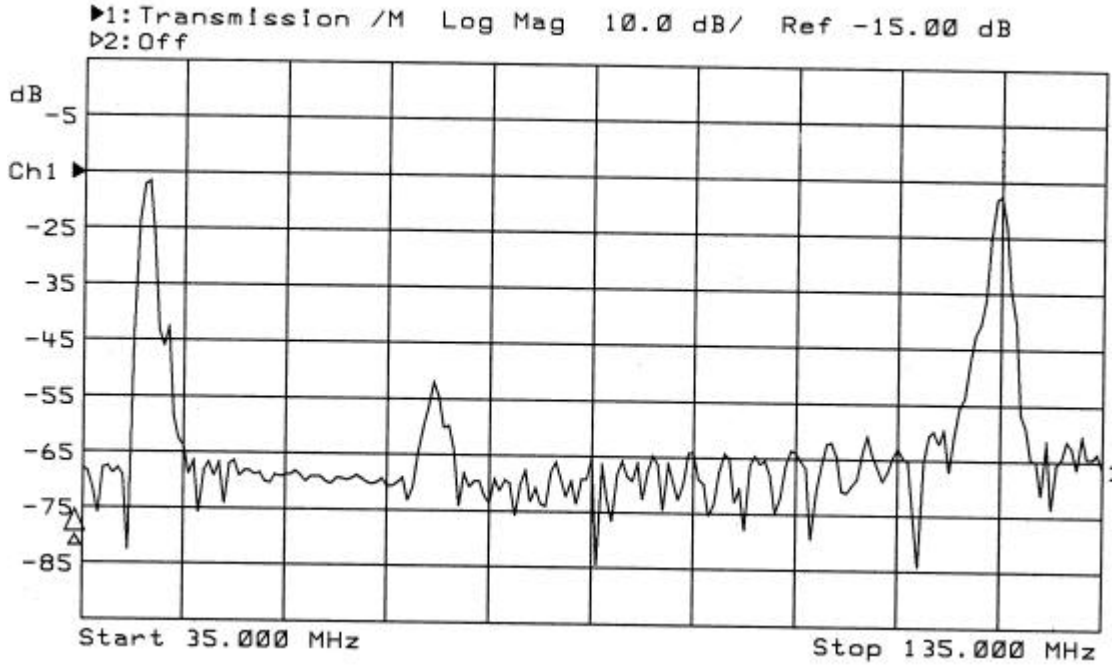
Item Test condition	Allowable change of absolute Level at center frequency(dB)
Surge test Between any two electrode 	<1.0

3.6 Frequency response



Mkr	Freq (MHz)	Ch 1 (dB)	Freq (MHz)	Ch 2 (dB)
1	39.170	-66.83		
2	39.750	-59.13		
3	41.250	-15.08		
4	42.170	-41.68		
5	45.750	-70.04		
6	47.250	-82.60		
7				
8				


CH1 S21 log MAG 1 dB/ REF -16.00 dB 2: -.0006 dB
CH2 S21 delay 30 ns/ REF 1.242 µs 2 42.292 ps
START 40.000 000 MHz
STOP 43.000 000 MHz


▶1: Transmission /M Log Mag 10.0 dB/ Ref -15.00 dB
▷2: Off
dB
-5
Ch1 ▶
-25
-35
-45
-55
-65
-75
-85
Start 35.000 MHz
Stop 135.000 MHz