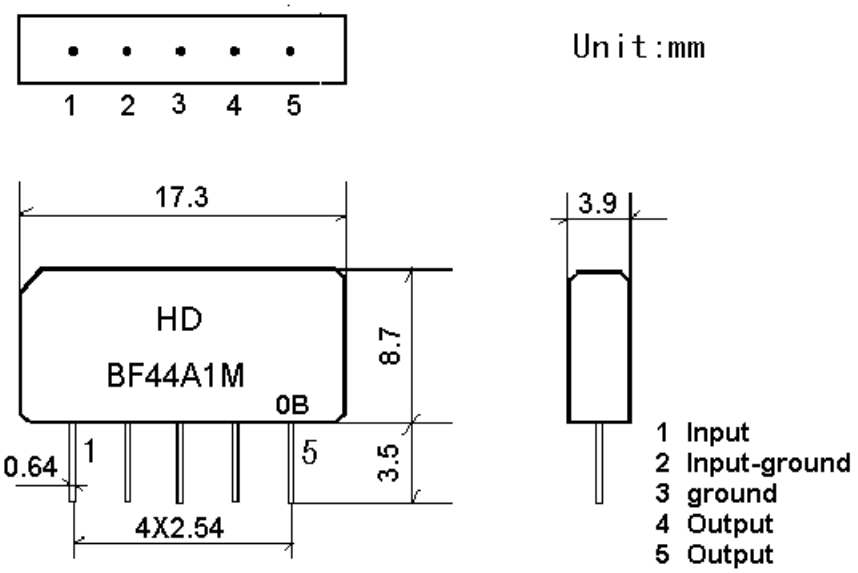
1. SCOPE

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

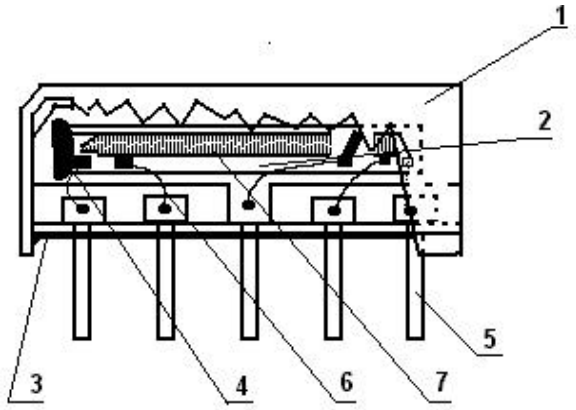
2.1 Dimension and materials

Type : BF44A1M



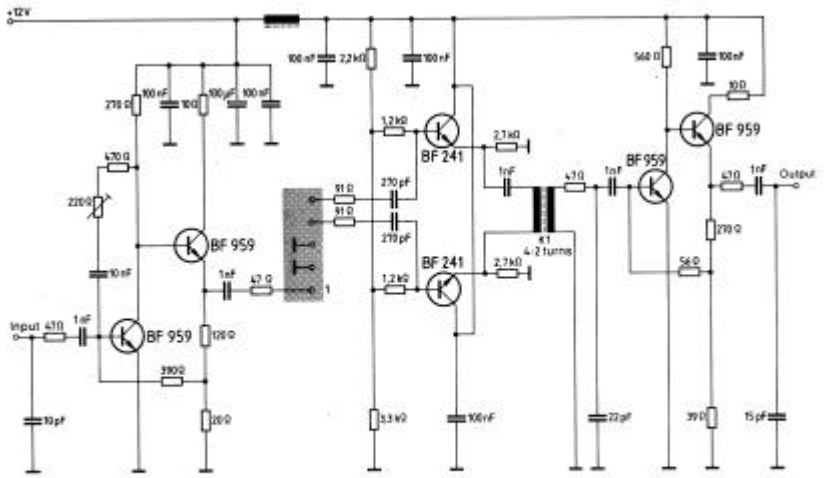
0: year(0,1,2,3,4,5,6,7,8,9)

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



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

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 ZL=2kΩ//3pF TA=25℃

		Freq	min	typ	max	
Insertion attenuation Reference level		44.00MHz	13.2	14.7	16.2	dB
Pass bandwith		B_{3dB}	-	6.0	-	MHz
		B_{30dB}	-	7.6	-	MHz
Relative attenuation		41.53MHz	-	0.4	-	**dB**
		46.59MHz	-	0.4		**dB**
		41.06MHz	1.8	3.0	4.2	dB
		47.06MHz	1.5	2.7	3.9	dB
		47.31MHz	-	6.2	-	dB
		39.81MHz	37.0	52.0	-	dB
Sidelobe	35.06~40.06MHz		35.0	40		dB
	48.06~55.06MHz		35.0	40		dB
Temperature coefficient			-72			ppm/K

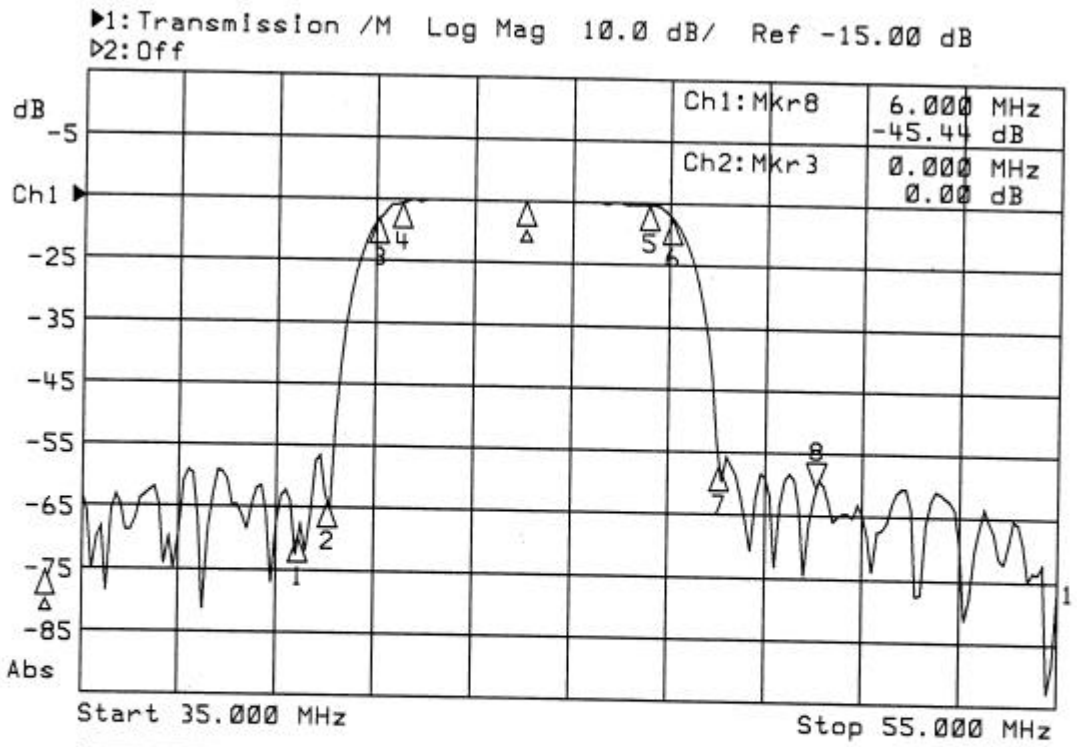
3.3 Environmental Performance Characteristics

Item Test condition	Allowable change of absolute Level at center frequency(dB)
High temperature test 70℃ 500H	< 1.0
Low temperature test -40℃ 500H	< 1.0
Humidity test 40℃ 90-95% 500H	< 1.0
Thermal shock -20℃==25℃==80℃ 5 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

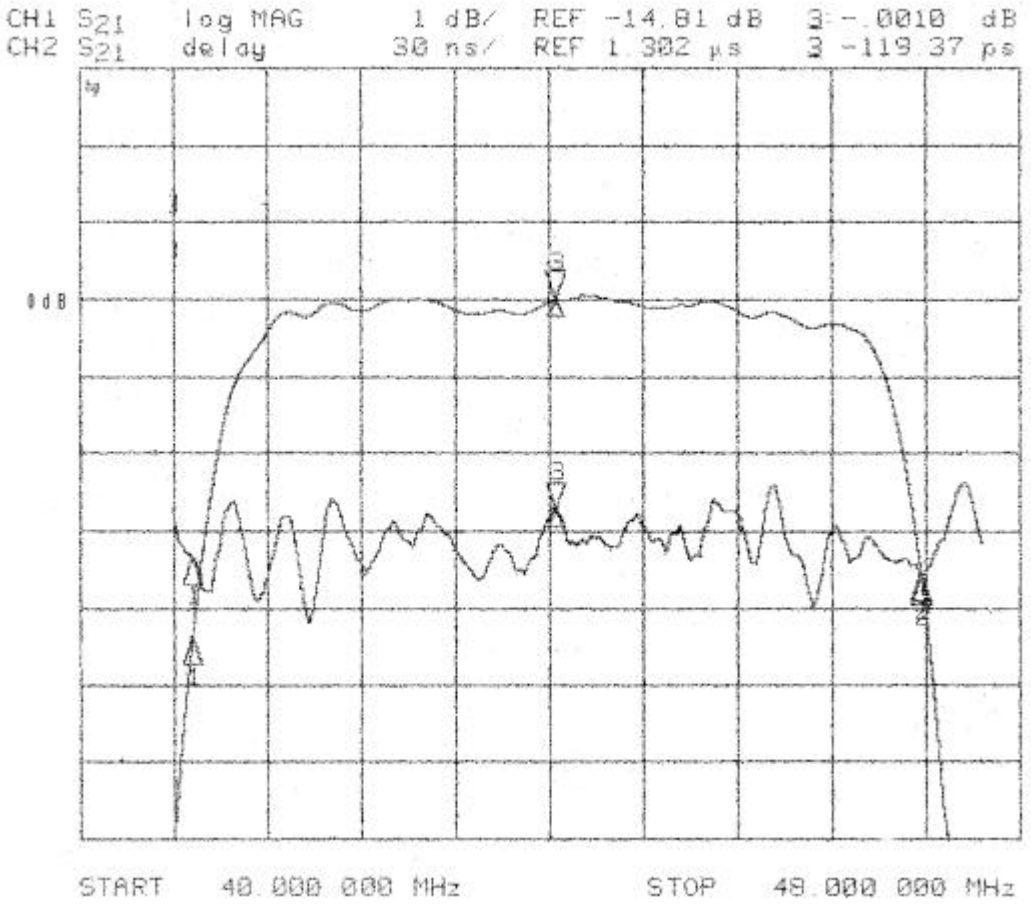
3.4 Mechanical Test

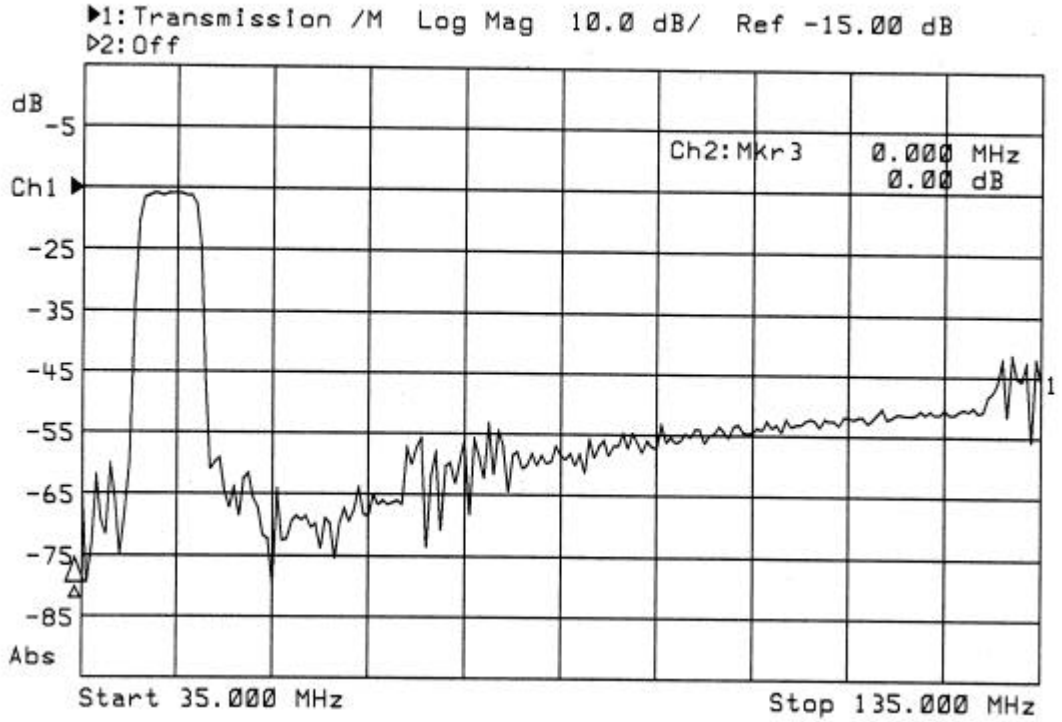
Item Test condition	Allowable change of absolute Level at center frequency(dB)
Vibration test 600-3300rpm amplitude 1.5mm 3 directions 2 H each	<1.0
Drop test On maple plate from 1 m high 3 times	<1.0
Lead pull test Pull with 1 kg force for 30 seconds	<1.0
Lead bend test 90^o bending with 500g weigh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

3.5 Frequency response



Mkr	ΔFreq (MHz)	Ch 1 (dB)	Freq (MHz)	Ch 2 (dB)
1	-4.600	-54.47		
2	-4.000	-49.11		
3	-3.000	-3.15		
4	-2.530	-0.57		
5	2.530	-0.36		
6	3.000	-2.44		
7	4.000	-42.19		
8	6.000	-45.44		


CH1 S21 log MAG 1 dB/ REF -14.81 dB 3: -.0010 dB
CH2 S21 delay 30 ns/ REF 1.302 µs 3 -119.37 ps
0dB
START 40.000 000 MHz
STOP 48.000 000 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
Abs
Ch2:Mkr3 0.000 MHz
0.00 dB
Start 35.000 MHz
Stop 135.000 MHz