

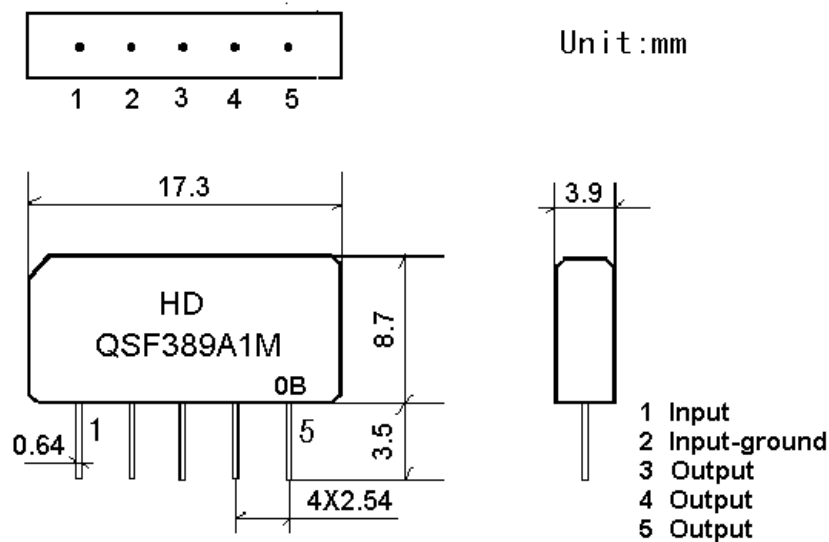
1.SCOPE

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

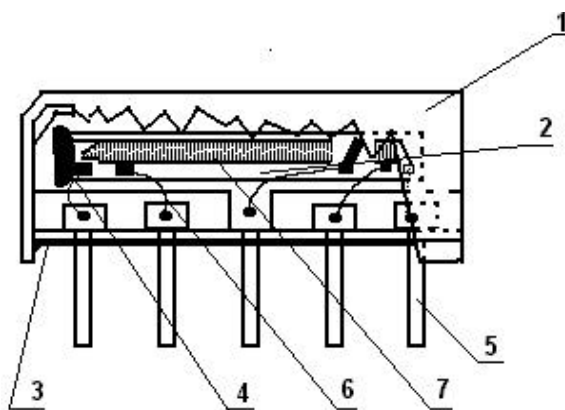
2.1 Dimension and materials

Type : QSF389A1M



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

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**Characteristics of picture channel**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	14.6	16.6	18.6	dB
Relative attenuation	38.90MHz	4.2	5.7	7.2	dB
	34.47MHz	0.1	1.6	3.1	dB
	32.40MHz	25.0	35.0	-	dB
	33.40MHz	28.0	35.0	-	dB
	30.90MHz	40.0	45.0	-	dB
	31.90MHz	40.0	50.0	-	dB
	40.40MHz	39.0	46.0	-	dB
Sidelobe	25.00~30.90MHz	32.0	38.0		dB
	41.40~45.00MHz	35.0	42.0		dB
Reflected wave signal suppression 1.2 us ...6.0 us after main pulse (test pulse 250 ns , carrier frequency 37.40 MHz)		40.0	52.0		dB
Feedthrough signal suppression 1.2 us ...6.0 us after main pulse (test pulse 250 ns , carrier frequency 37.40 MHz)		45.0	55.0		dB
Group delay predistortion (reference frequency 37.4 MHz)					ns
	35.90 MHz	-	-40	-	ns
	34.47 MHz	-	50	-	ns
Impedance at 37.40 MHz:					
	Input: $Z_{in} = R_{in} // C_{in}$	-	1.9//20.1	-	k //pF
	Output $Z_{out}=R_{out} // C_{out}$	-	2.8 //3.2	-	k //pF
Temperature coefficient				-72	ppm/k

Characteristics of sound channelSource impedance $Z_s=50$ Load impedance $Z_L=2k //3pF$ $T_A=25$

	Freq	min	typ	max	
Insertion attenuation Reference level	33.40MHz	-	16.6	-	dB
Relative attenuation	32.40MHz	-1.8	-0.3	1.2	dB
	38.90MHz	29.0	39.0	-	dB
	34.47MHz	17.0	32.0	-	dB
	30.90MHz	26.0	37.0	-	dB
	31.90MHz	-	10.0	-	dB
	40.40MHz	29.0	40.0	-	dB
	41.40MHz	29.0	42.0	-	dB

SHOULDER ELECTRONICS LIMITED

Sidelobe	25.00~30.90MHz	26.0	32.0		dB
	38.90~45.00MHz	29.0	38.0		dB
Impedance at 33.40 MHz:					
Output	Zout=Rout // Cout	-	4.5 //2.6	-	k //pF
Temperature coefficient		-72			ppm/K

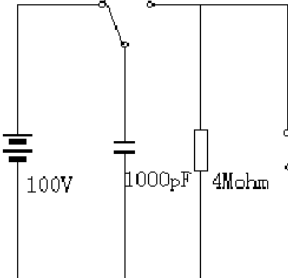
3.3 Environmental Performance Characteristics

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

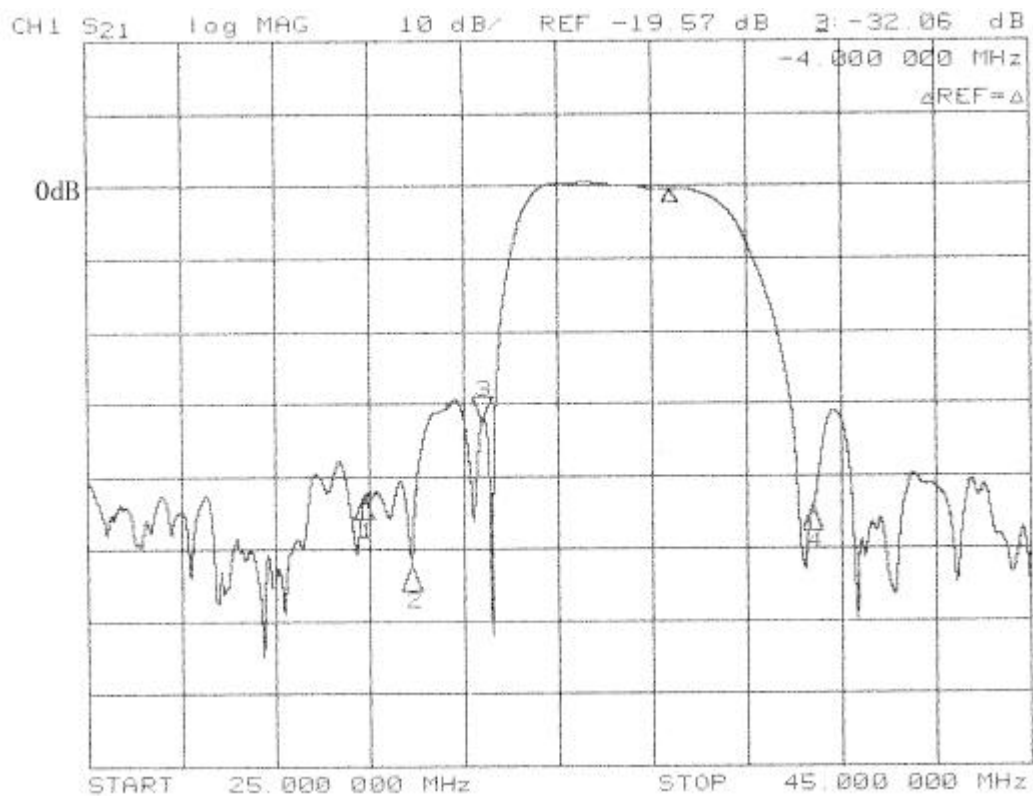
Item Test condition	Allowable change of absolute Level at center frequency(dB)
Vibration test 600-3300rpm amplitude 1.5mm 3 directions 2 H each	<1.0
Drop test On maple plate from 1 m high 3 times	<1.0
Lead pull test Pull with 1 kg force for 30 seconds	<1.0
Lead bend test 90° bending with 500g weigh 2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

3.5 Voltage Discharge Test

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

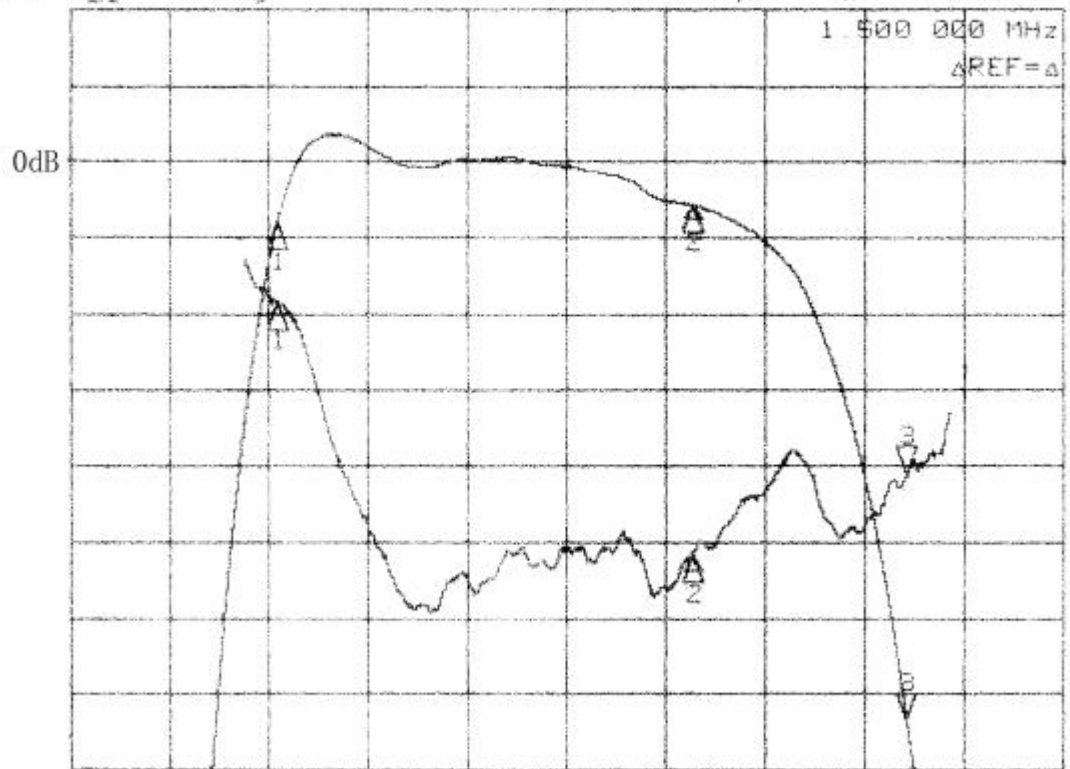
3.6 Frequency response

Frequency response of picture channel



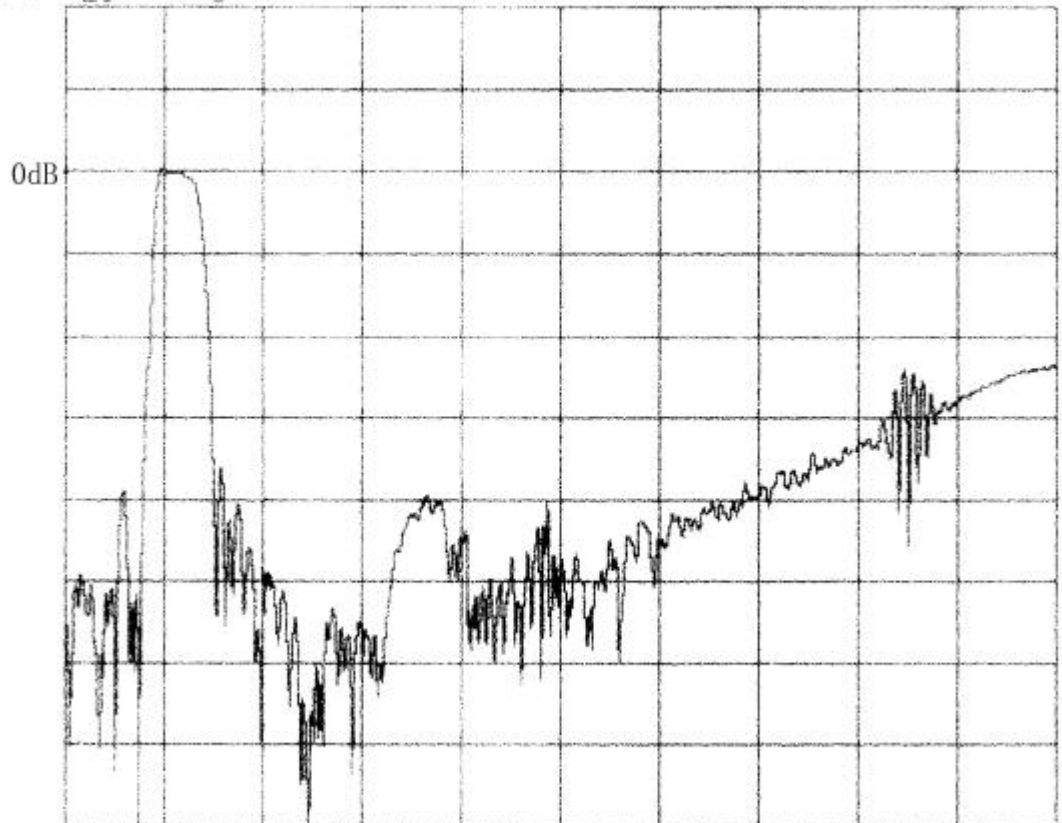
SHOULDER ELECTRONICS LIMITED

CH1 S21 log MAG 1 dB REF -18.37 dB 3 -6.7833 dB
CH2 S21 delay 30 ns REF 1.239 μ s 3 31.753 ns

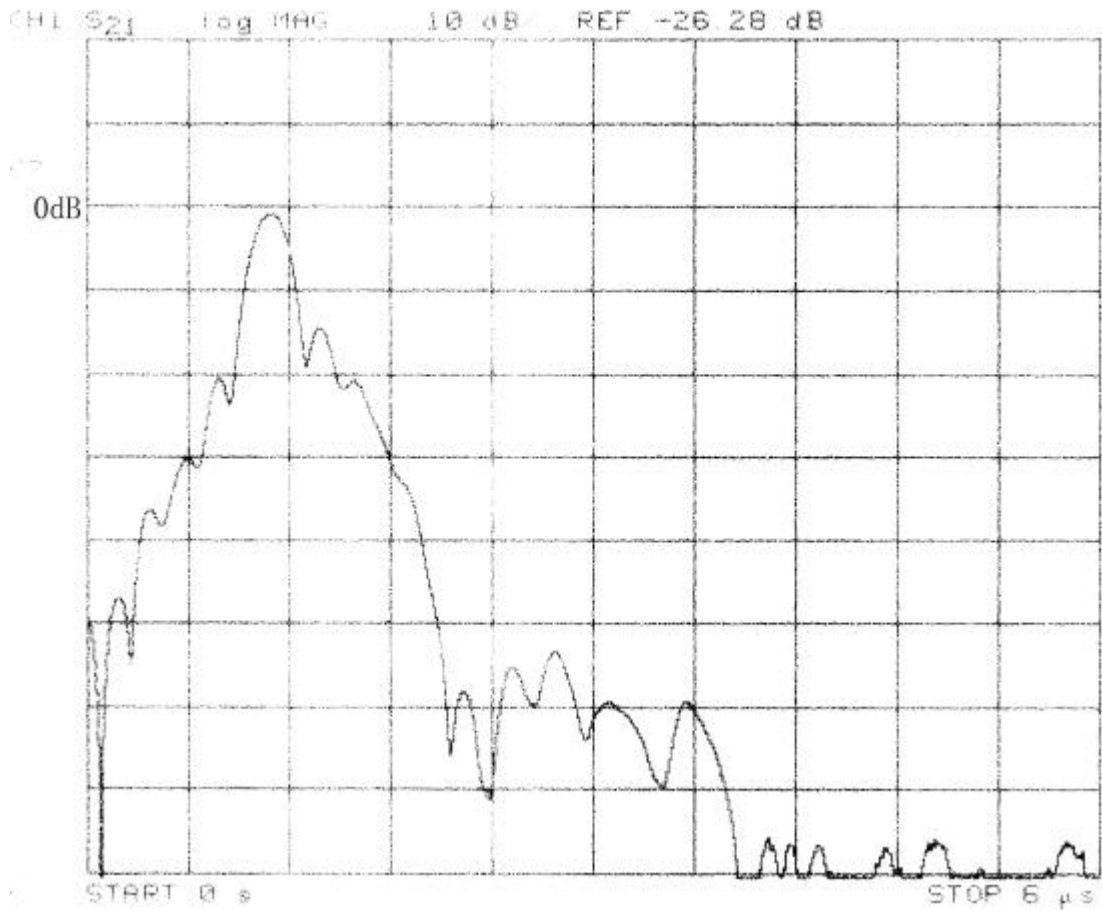


START 33.000 000 MHz STOP 40.000 000 MHz

CH1 S21 log MAG 10 dB REF -18.37 dB



START 25.000 000 MHz STOP 125.000 000 MHz



Frequency response of sound channel

