1.SCOPE

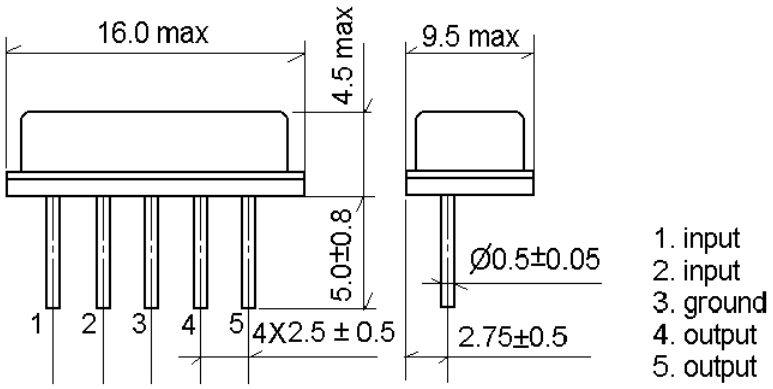
SHOULDER's SAW filter series have broad line up products meeting all broadcast standard including NTSC,PAL and SECAM systems. These filters are composed of two interdigital transducers on a single-crystal. piezoelectrical chip. they are used in electronic equipments such as TV and so on.

2.Construction

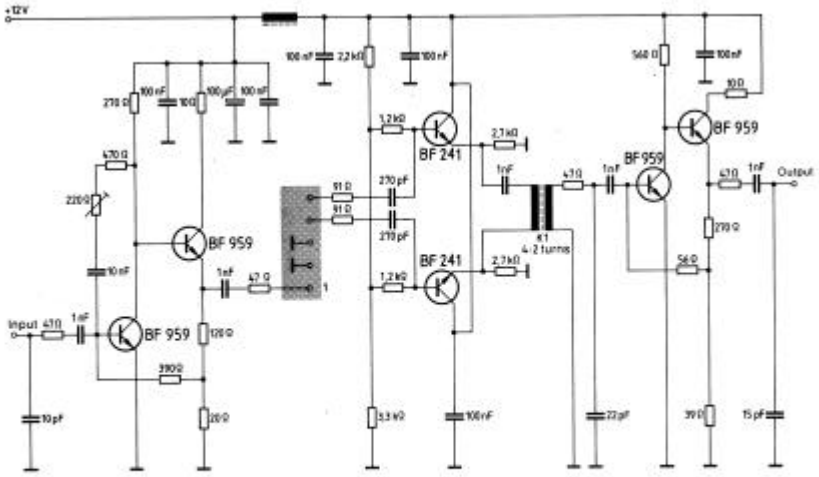
2.1 Dimension and materials

Manufacturer's name : SHOULDER ELECTRONICS LTD

Type : IF38B1M



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 T_A=25℃

Items		Freq	Min	typ	max	
Insertion attenuation Reference level		36.50MHz	14.5	16.5	18.5	dB
Relative attenuation		38.00MHz	3.6	5.1	6.6	dB
		33.57MHz	-0.5	1.0	2.5	dB
		32.50MHz	14.5	16.5	18.5	dB
		31.50MHz	17.5	19.5	-	dB
		31.00MHz	37.0	47.0		dB
		30.00MHz	42.0	52.0		dB
		39.50MHz	42.0	50.0		dB
		40.50MHz	38.0	45.0		dB
Sidelobe	25.00~30.00MHz		35.0	47.0		dB
	39.50~45.00MHz		35.0	43.0		dB
Temperature coefficient			-72			Ppm/k

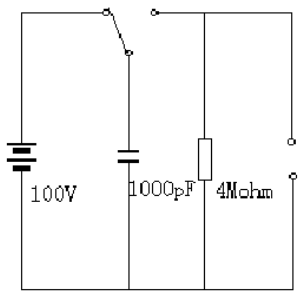
3.3 Environmental Performance Characteristics

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

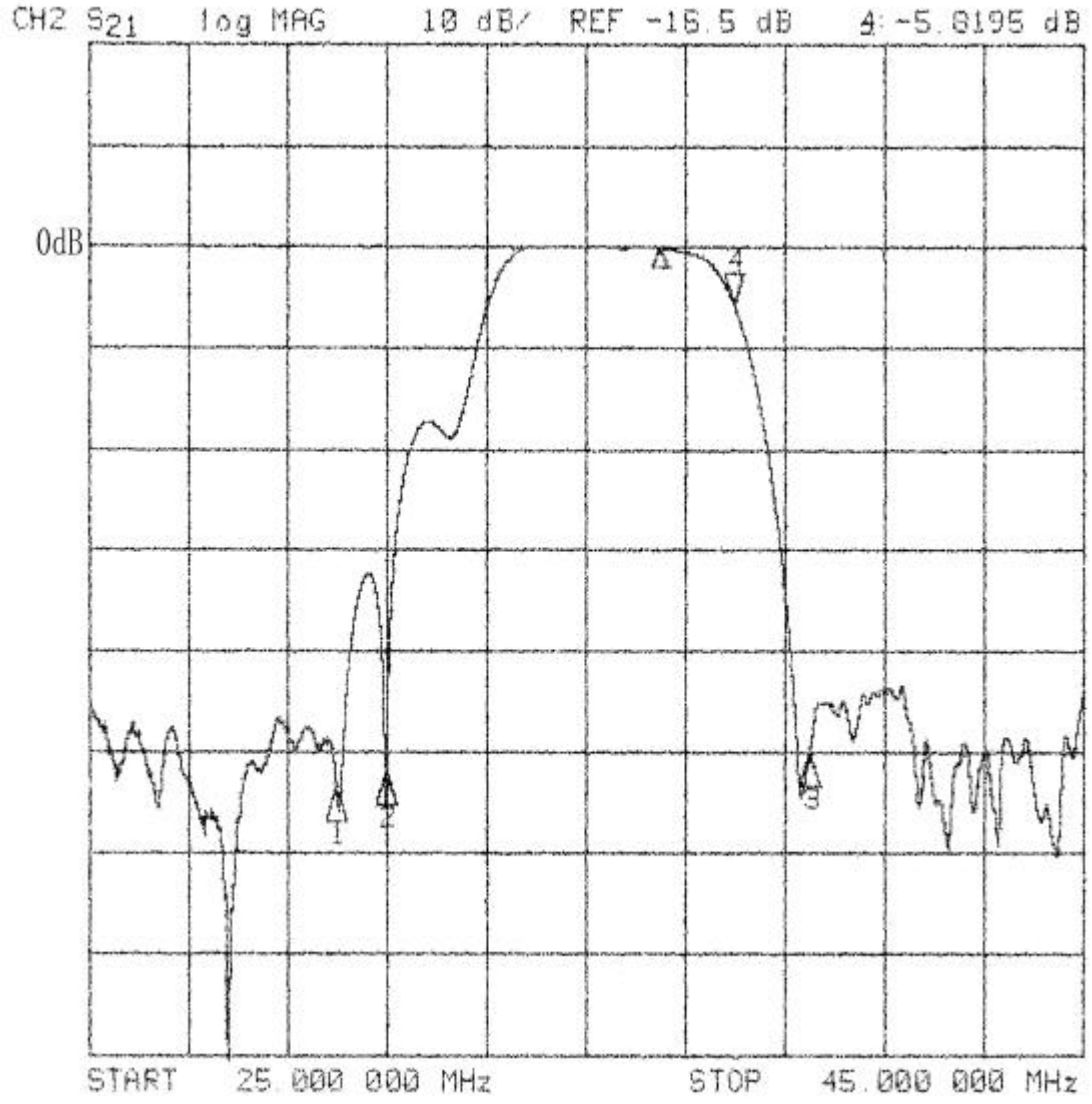
3.4 Mechanical Test

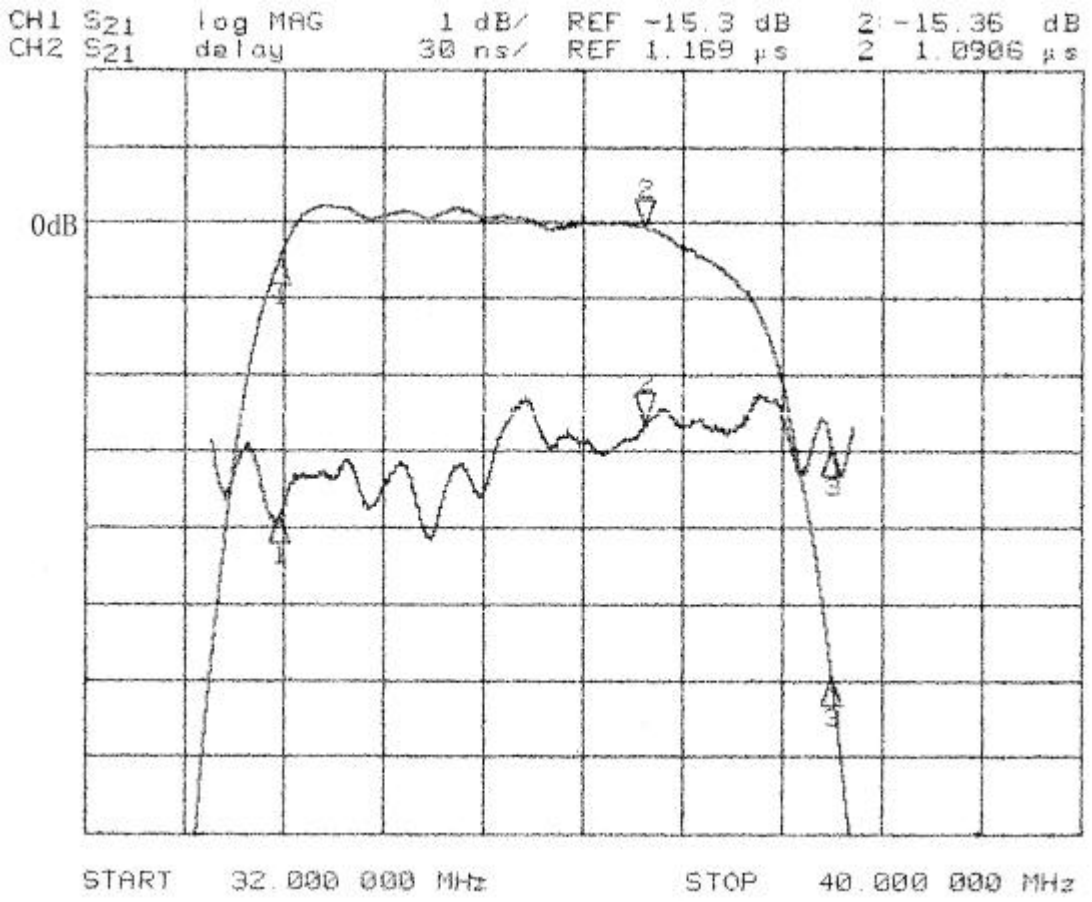
Item Test condition	Allowable change of absolute Level at center frequency(dB)
Vibration test 600-3300rpm amplitude 1.5mm 3 directions 2 H each	<1.0
Drop test On maple plate from 1 m high 3 times	<1.0
Lead pull test Pull with 1 kg force for 30 seconds	<1.0
Lead bend test 90° bending with 500g weigh 2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

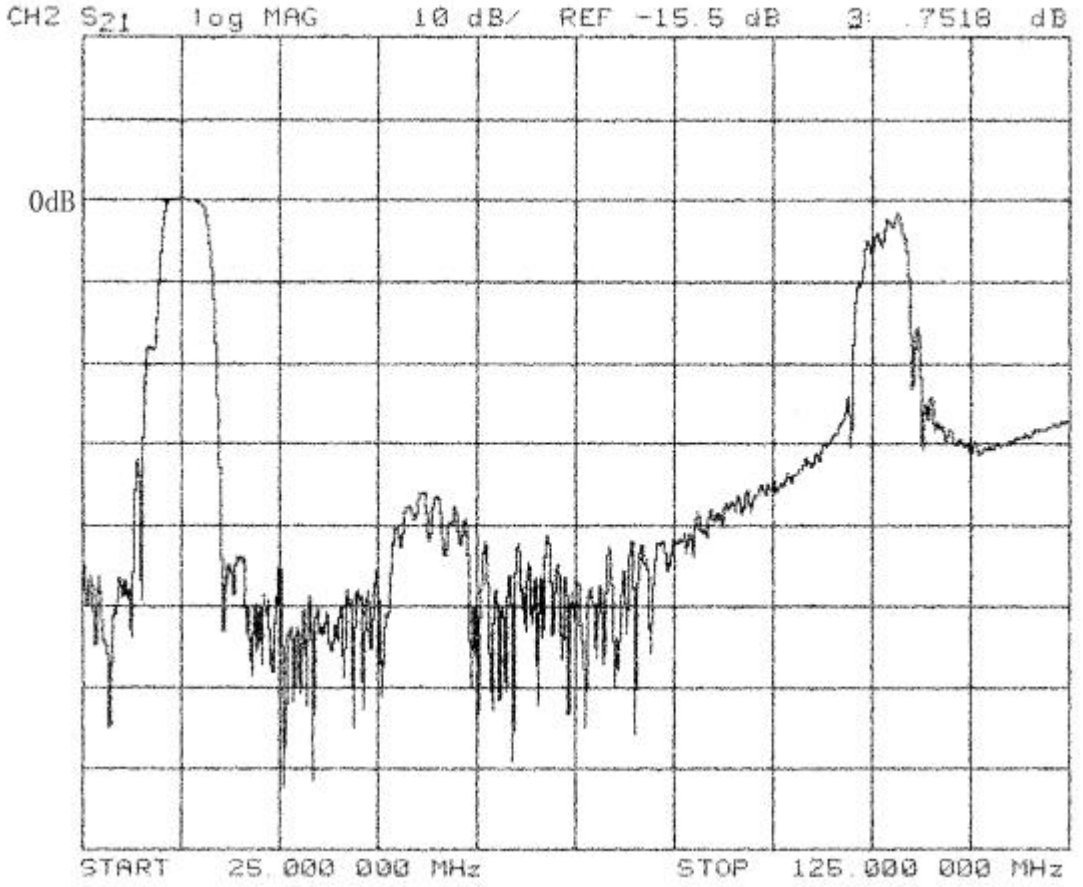
3.5 Voltage Discharge Test

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

3.6 Frequency response




CH1 S21 log MAG 1 dB/ REF -15.3 dB 2: -15.36 dB
CH2 S21 delay 30 ns/ REF 1.169 µs 2 1.0906 µs
0dB
START 32.000 000 MHz
STOP 40.000 000 MHz


CH2 S21 log MAG 10 dB/ REF -15.5 dB 3: .7518 dB
0dB
START 25.000 000 MHz
STOP 125.000 000 MHz