1.SCOPE

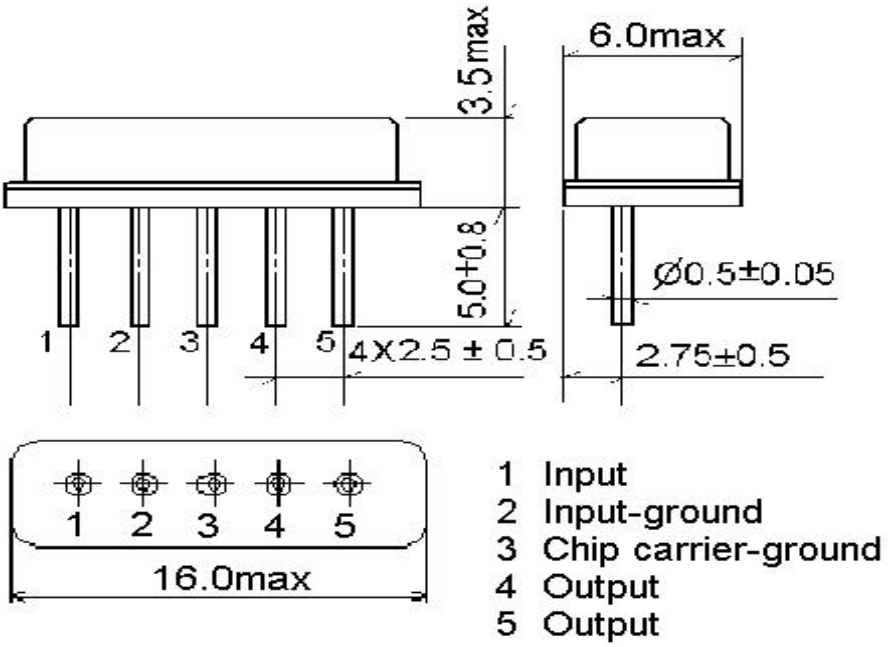
HAODA's SAW filter series have broad line up products meeting all broadcast standard including NTSC,PAL and SECAM systems. These filters are composed of two interdigital transducers on a single-crystal. piezoelectrical chip. they are used in electronic equipments such as TV and so on.

2.Construction

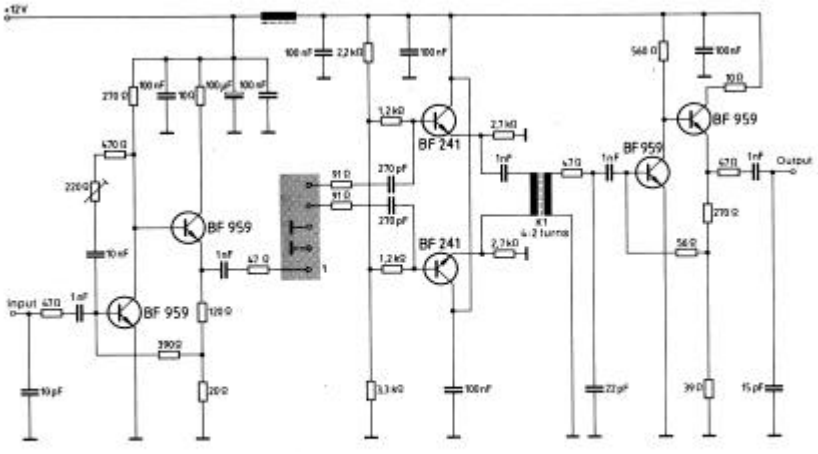
2.1 Dimension and materials

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

Type : VF389A1D



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

Characteristics :

Source impedance Zs=50Ω
Load impedance Z_L=2kΩ//3pF T_A=25℃

Item	Freq	min	typ	max	
Insertion attenuation Reference level	37.40MHz	11.5	13.5	15.5	dB
Relative attenuation	38.90MHz	4.5	6.0	7.5	dB
	33.90MHz	6.0	7.5	9.0	dB
	34.47MHz	-	1.3	-	dB
	33.40MHz	20.0	24.0	-	dB
	32.90MHz	-	50.0	-	dB
	32.40MHz	-	55.0	-	dB
	30.90MHz	45.0	58.0	-	dB
	31.90MHz	45.0	52.0	-	dB
	40.15MHz	35.0	40.0	-	dB
	40.40MHz	44.0	52.0	-	dB
	41.40MHz	42.0	55.0	-	dB
	40.90MHz	42.0	53.0	-	dB

Sidelobe	25.00~31.90MHz	40.0	47.0	-	dB
	40.40~45.00MHz	36.0	40.0	-	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	50.0		dB
Feedthrough signal suppression 1.2 us …6.0 us after main pulse (test pulse 250 ns , carrier frequency 37.40 MHz)		45.0	52.0		dB
Group delay ripple (p-p)		-	50	-	ns
Temperature coefficient of frequency		-72			Ppm/k

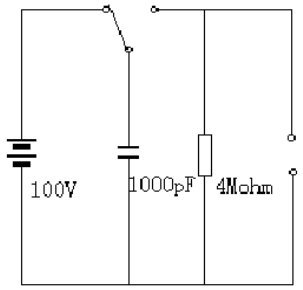
3.3 Environmental Performance Characteristics

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

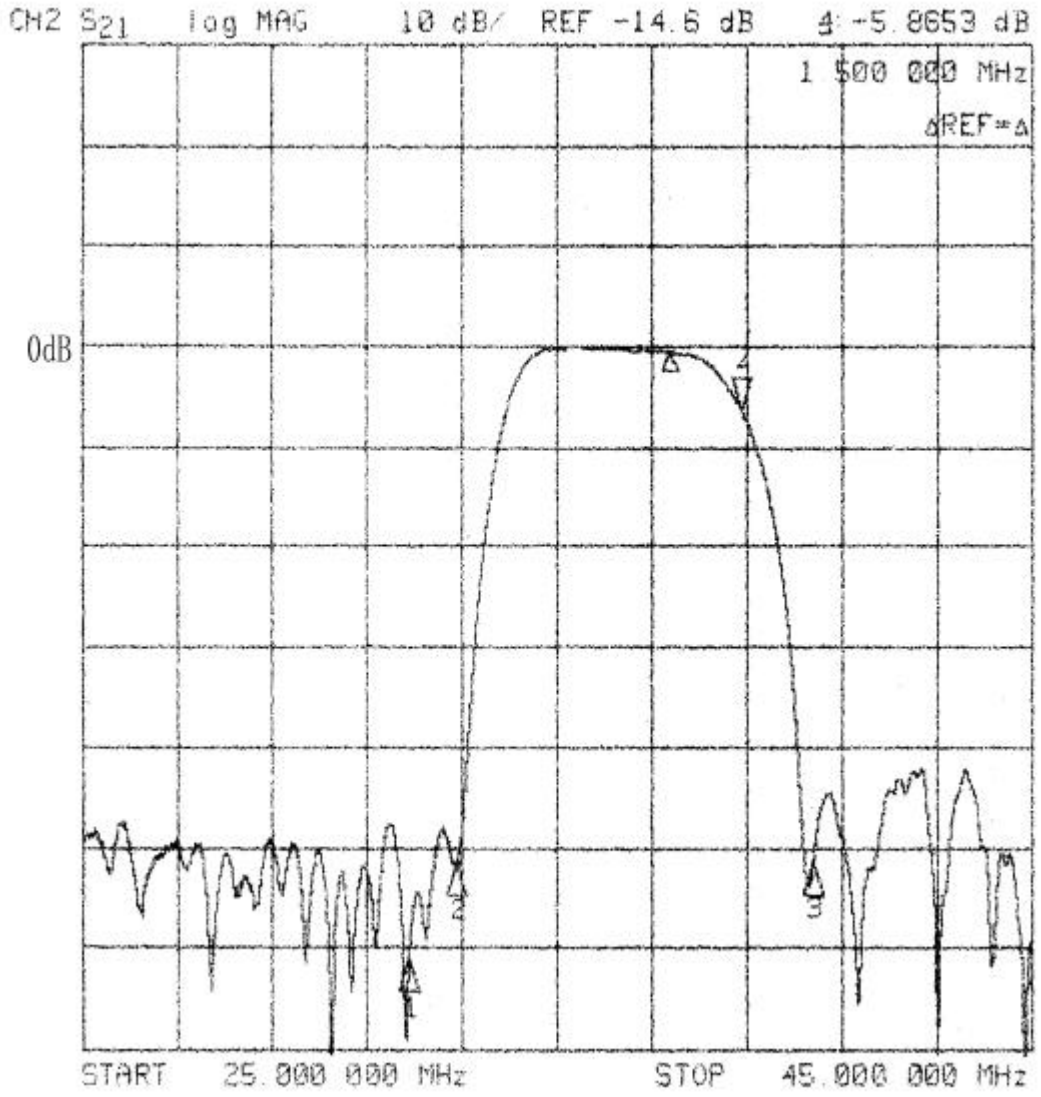
3.4 Mechanical Test

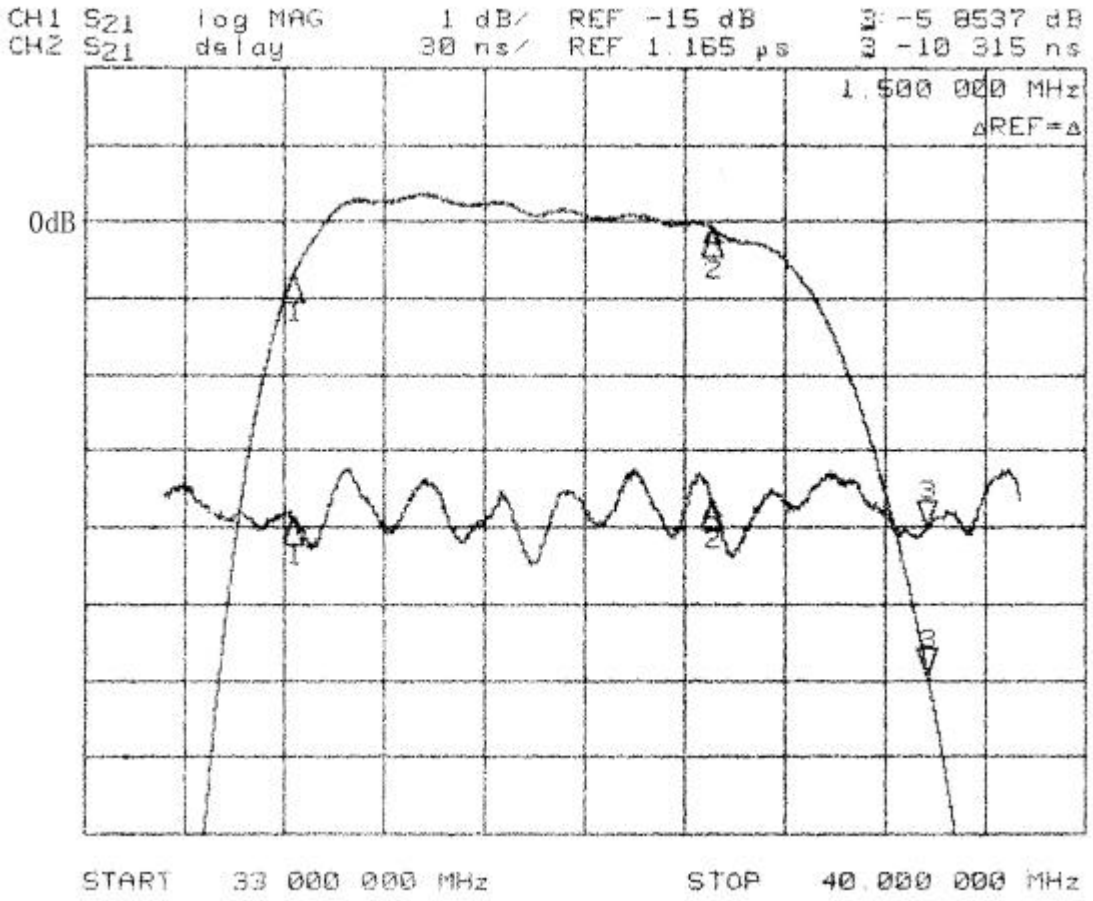
Item Test condition	Allowable change of absolute Level at center frequency(dB)
Vibration test 600-3300rpm amplitude 1.5mm 3 directions 2 H each	<1.0
Drop test On maple plate from 1 m high 3 times	<1.0
Lead pull test Pull with 1 kg force for 30 seconds	<1.0
Lead bend test 90^{o} bending with 500g weigh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

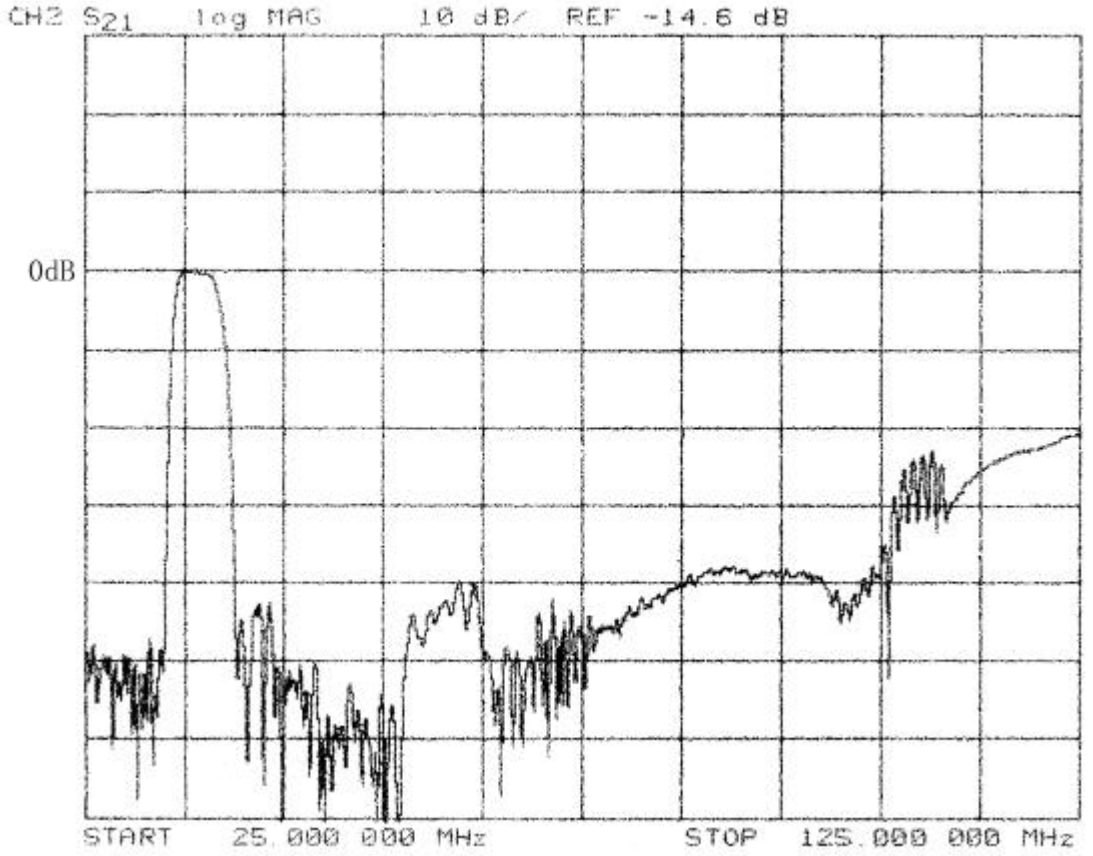
3.5 Voltage Discharge Test

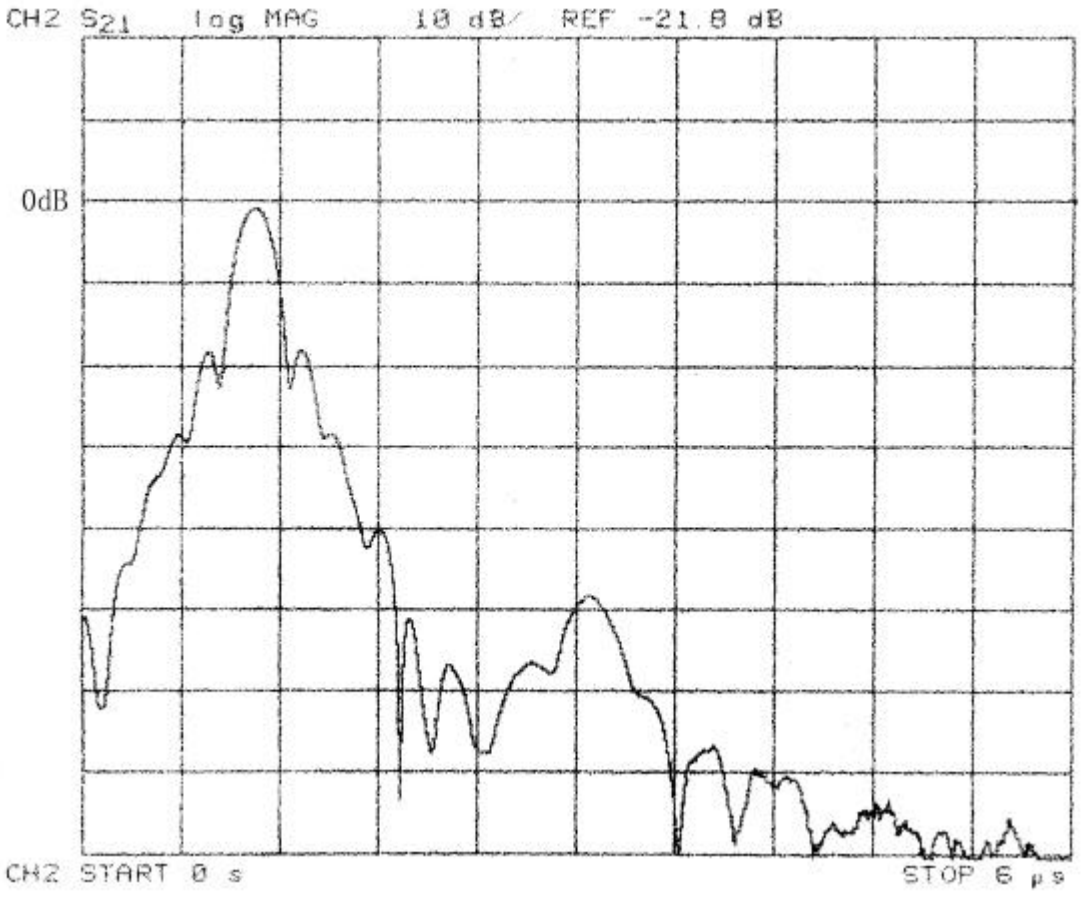
Item Test condition	Allowable change of absolute Level at center frequency(dB)
Surge test Between any two electrode 	<1.0

3.6 Frequency response




CH1 S21 log MAG 1 dB/ REF -15 dB 3: -5.8537 dB
CH2 S21 delay 30 ns/ REF 1.165 µs 3 -10.315 ns
1.500 000 000 MHz
ΔREF=Δ
0dB
START 33 000 000 MHz
STOP 40.000 000 MHz


CH2 S21 log MAG 10 dB/ REF -14.6 dB
0dB
START 25.000 000 MHz
STOP 125.000 000 MHz


CH2 S21 log MAG 10 dB/ REF -21.8 dB
0dB
CH2 START 0 s
STOP 6 µs