

1.SCOPE

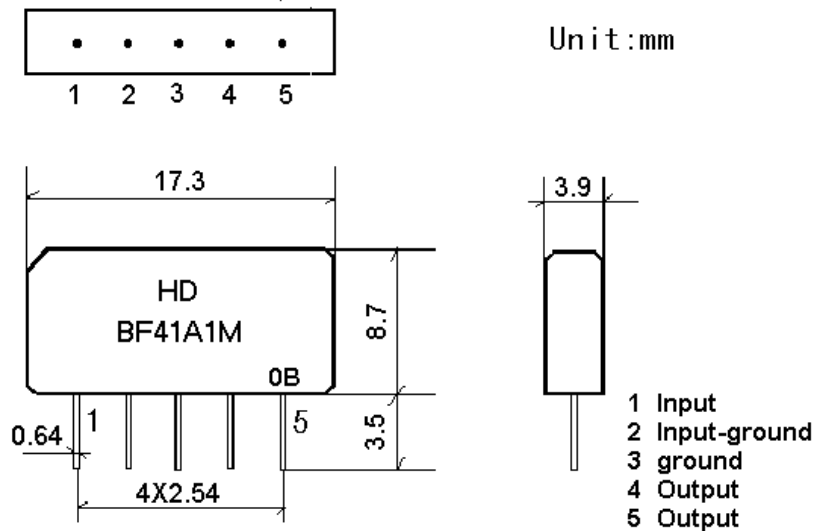
SHOULDER's SAW filter series have broad line up products meeting all broadcast standard including NTSC,PAL and SECAM systems. These filters are composed of two interdigital transducers on a single-crystal, piezoelectrical chip. they are used in electronic equipments such as TV and so on.

2.Construction

2.1 Dimension and materials

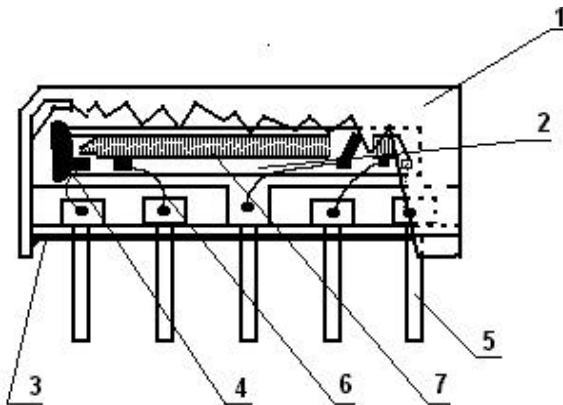
Manufacturer's name : SHOULDER ELECTRONICS Co. LTD(CHINA)

Type : BF41A1M



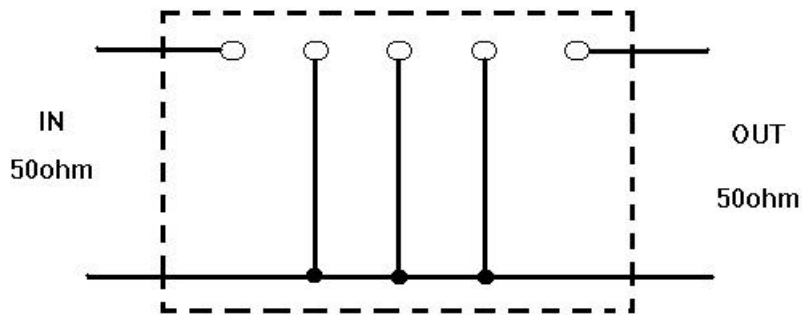
0: year(0,1,2,3,4,5,6,7,8,9)

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

$Z_s=50$

Load impedance

$Z_L=50$

$T_A=25$

| 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

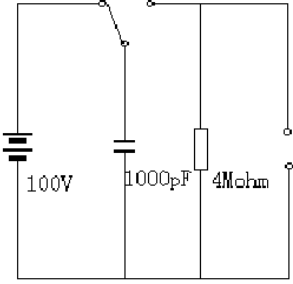
| Item Test condition | Allowable change of absolute Level at center frequency(dB) |
|--|---|
| High temperature test 70 1000H | < 1.0 |
| Low temperature test -40 1000H | < 1.0 |
| Humidity test 40 90-95% 1000H | < 1.0 |
| Thermal shock -20 ==25 ==80 20 cycle 30M 10M 30M | < 1.0 |
| Solder temperature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

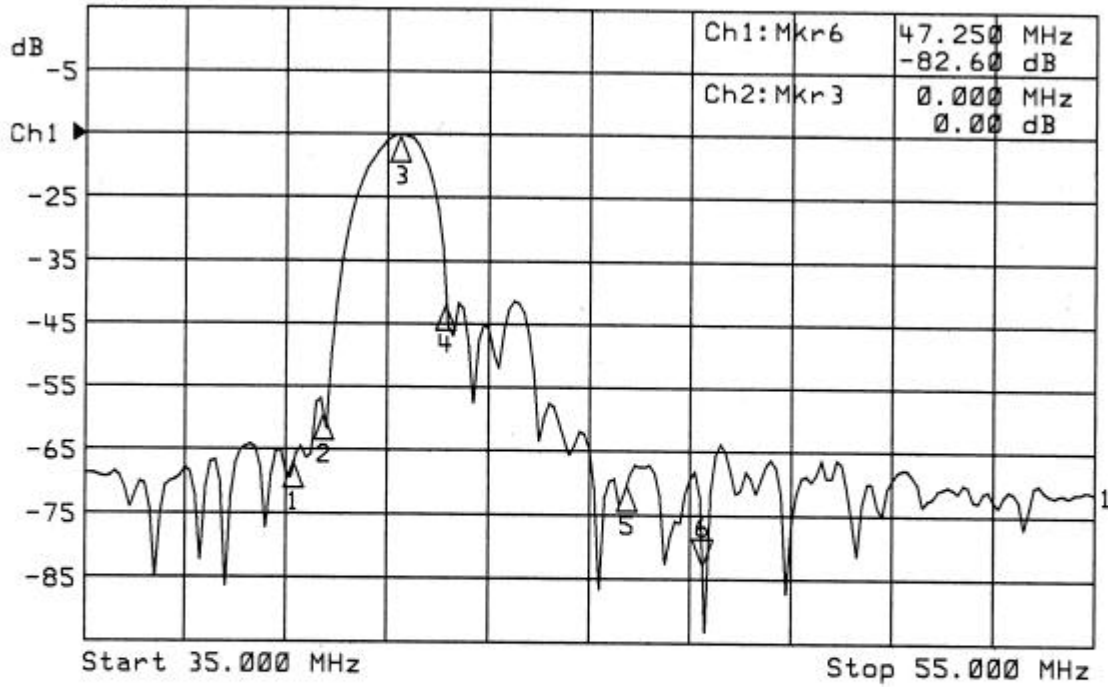
| | |
|---|------|
| Pull with 1 kg force for 30 seconds | |
| Lead bend test 90° bending with 500g weigh 2 times | <1.0 |

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 |

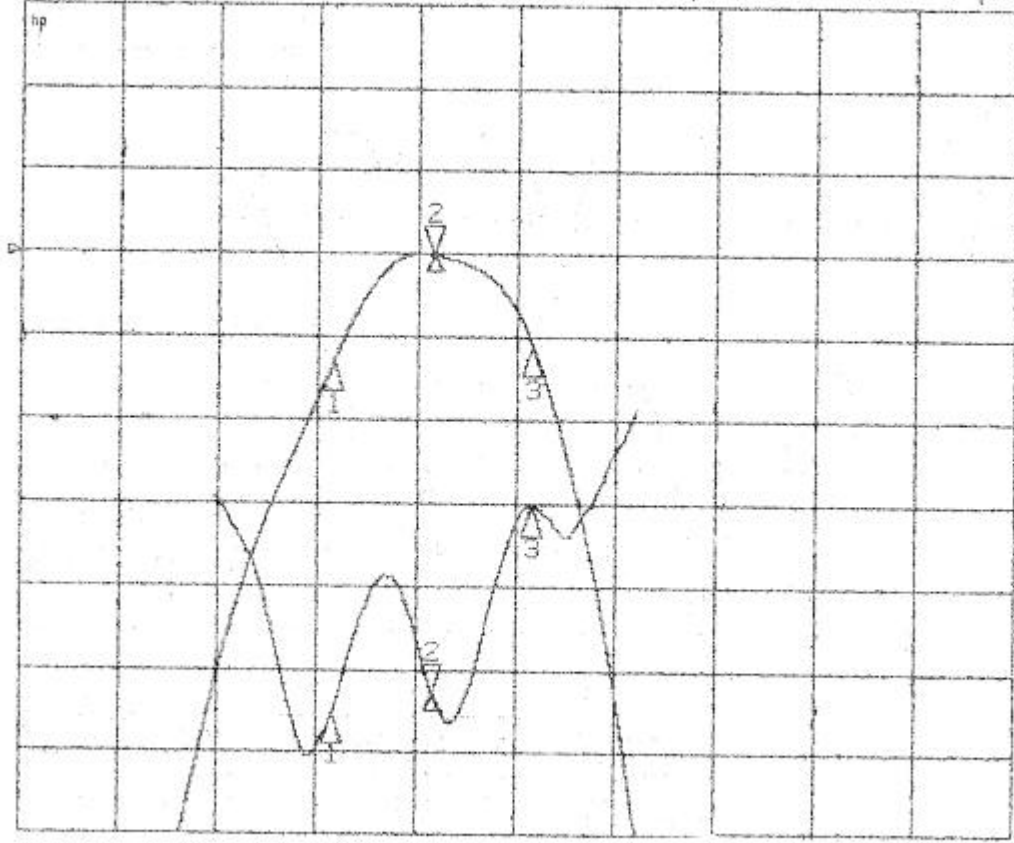
3.6 Frequency response

►1: Transmission /M Log Mag 10.0 dB/ Ref -15.00 dB
 ►2: Off



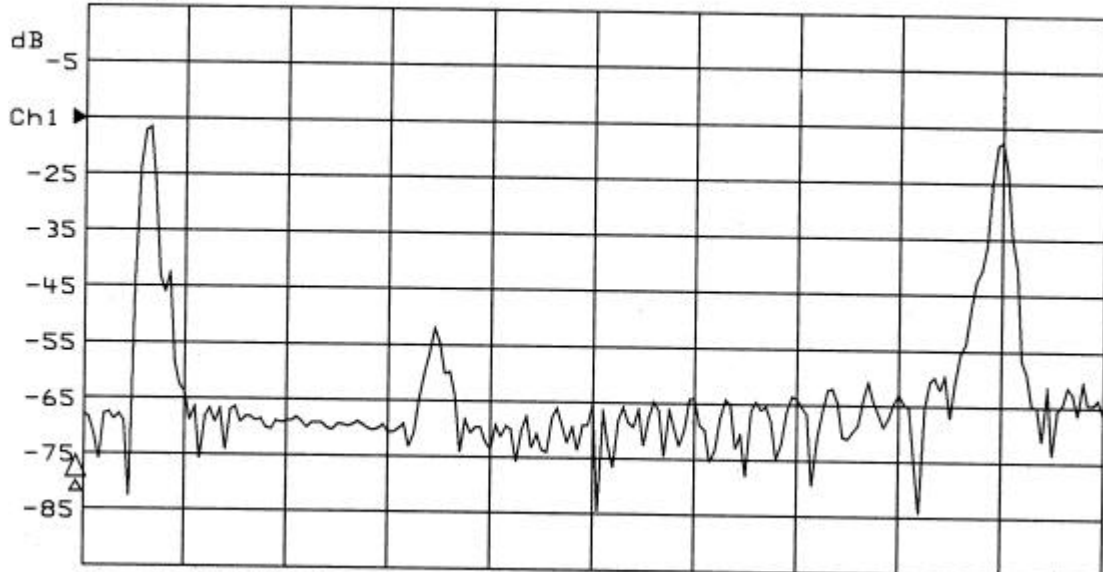
| Mkr | Freq (MHz) | Ch 1 (dB) | Freq (MHz) | Ch 2 (dB) |
|-----|------------|-----------|------------|-----------|
| 1 | 39.170 | -66.83 | | |
| 2 | 39.750 | -59.13 | | |
| 3 | 41.250 | -15.08 | | |
| 4 | 42.170 | -41.68 | | |
| 5 | 45.750 | -70.04 | | |
| 6 | 47.250 | -82.60 | | |
| 7 | | | | |
| 8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

CH1 S21 log MAG 1 dB/ REF -16.00 dB 2: -.0006 dB
 CH2 S21 delay 30 ns/ REF 1.242 ps 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



Start 35.000 MHz

Stop 135.000 MHz
