

Approved by:

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SPECIFICATION

PRODUCT: SAW FILTER

MODEL: HDAF389A8M



SHOULDER ELECTRONICS LIMITED

1.SCOPE

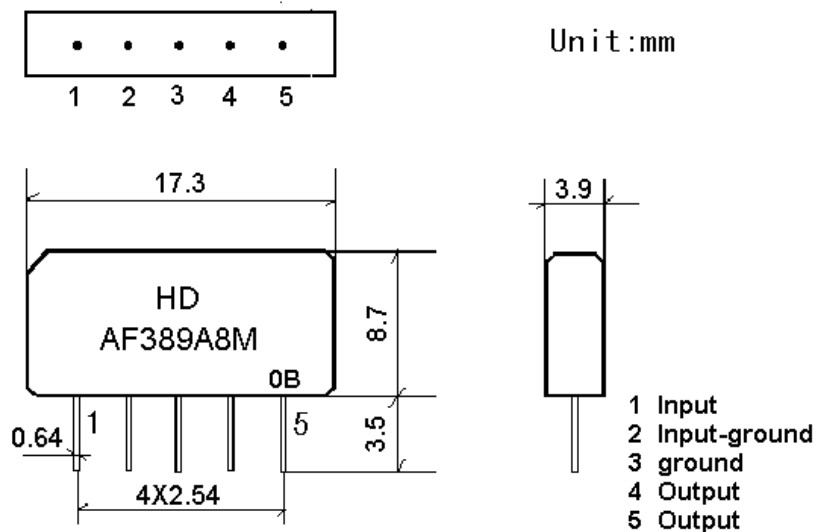
SHOULDER's SAW filter series have broad line up products meeting all broadcast standard including NTSC,PAL and SECAM systems. These filters are composed of two interdigital transducers on a single-crystal, piezoelectrical chip. they are used in electronic equipments such as TV and so on.

2.Construction

2.1 Dimension and materials

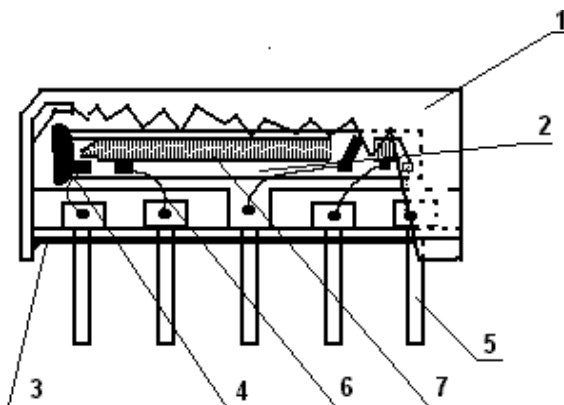
Manufacturer's name : SHOULDER ELECTRONICS Co. LTD(CHINA)

Type : AF389A8M



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

Source impedance

 $Z_s=50\ \Omega$

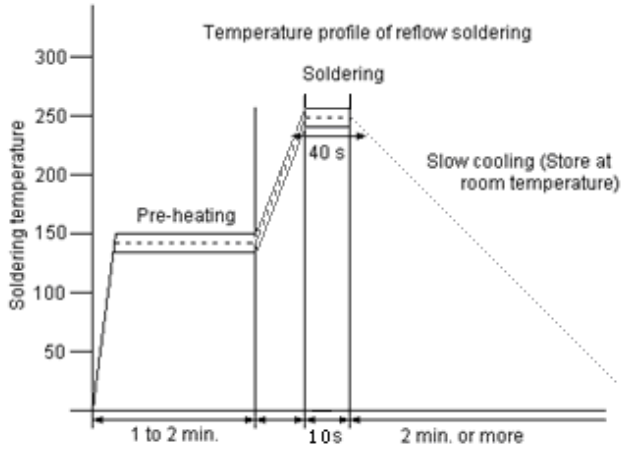
Load impedance

 $Z_L=2k\ \Omega //3pF$ $T_A=25^\circ C$

Item	Freq	min	typ	max	
Insertion attenuation Reference level	38.90MHz	16.2	18.2	20.2	dB
Relative attenuation	33.40MHz	-0.1	1.1	2.3	dB
	33.05MHz	-1.6	-0.4	0.8	dB
	32.90MHz	-0.9	0.3	1.5	dB
	34.47MHz	26.0	35.0	-	dB
	30.90MHz	38.0	50.0	-	dB
	31.90MHz	38.0	48.0	-	dB
	40.40MHz	32.0	41.0	-	dB
Sidelobe	25.00~31.90MHz	34.0	40.0	-	dB
	40.40~45.00MHz	30.0	39.0	-	dB
Temperature coefficient		-72			ppm/k

3.3 Environmental Performance Characteristics

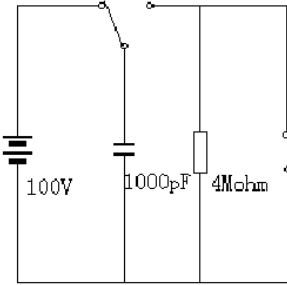
Item	Condition	Specifications		
High temperature	The specimen shall be store at a temperature of $80\pm 2^\circ C$ for $96\pm 4h$. Then it shall be subjected to standard atmospheric conditions for 1h, after which measurement shall be made within 1h.	Mechanical characteristics and specifications in electrical characteristics shall be satisfied. There shall be no excessive change in appearance.		
Low temperature	The specimen shall be store at a temperature of $-20\pm 3^\circ C$ for $96\pm 4h$. Then it shall be subjected to standard atmospheric conditions for 1h, after which measurement shall be made within 1h.			
Humidity	The specimen shall be store at a temperature of $40\pm 2^\circ C$ with relative humidity of 90% to 96% for $96\pm 4h$. Then it shall be subjected to standard atmospheric conditions for 1h, after which measurement shall be made within 1h.			
Thermal shock	The specimen shall be subjected to 8 continuous cycles each as shown below. Then it shall be subjected to standard atmospheric conditions for 1h, after which measurement shall be made within 1h.			
			Temperature	Duration
	1		$+25^\circ C \Rightarrow -40^\circ C$	0.5h
	2	$-40^\circ C$	4h	
	3	$-40^\circ C \Rightarrow +85^\circ C$	2h	
	4	$+85^\circ C$	4h	
5	$+85^\circ C \Rightarrow +25^\circ C$	0.5h		
6	$+25^\circ C$	1h		
Resistance to Soldering heat	Reflow soldering method Peak: $255 \pm 5^\circ C$, $220 \pm 5^\circ C$, 40s At electrode temperature of the specimen.			

	 <p>The graph shows the temperature profile of reflow soldering. The y-axis is 'Soldering temperature' from 0 to 300. The x-axis shows time intervals: '1 to 2 min.' for pre-heating, '10s' for soldering, and '2 min. or more' for slow cooling. The temperature rises to 150°C during pre-heating, then to 250°C during soldering, and finally cools down to room temperature.</p> <p>The specimen shall be passed through the reflow furnace with the condition shown in the above profile for 1 time.</p> <p>The specimen shall be stored at standard atmospheric conditions for 1h, after which the measurement shall be made. Test board shall be 1.6 mm thick. Base material shall be glass fabric base epoxy resin.</p>	
Solder ability	Immerse the pins melt solder at 260°C+5/-0°C for 5 sec.	More then 95% of total area of the pins should be covered with solder

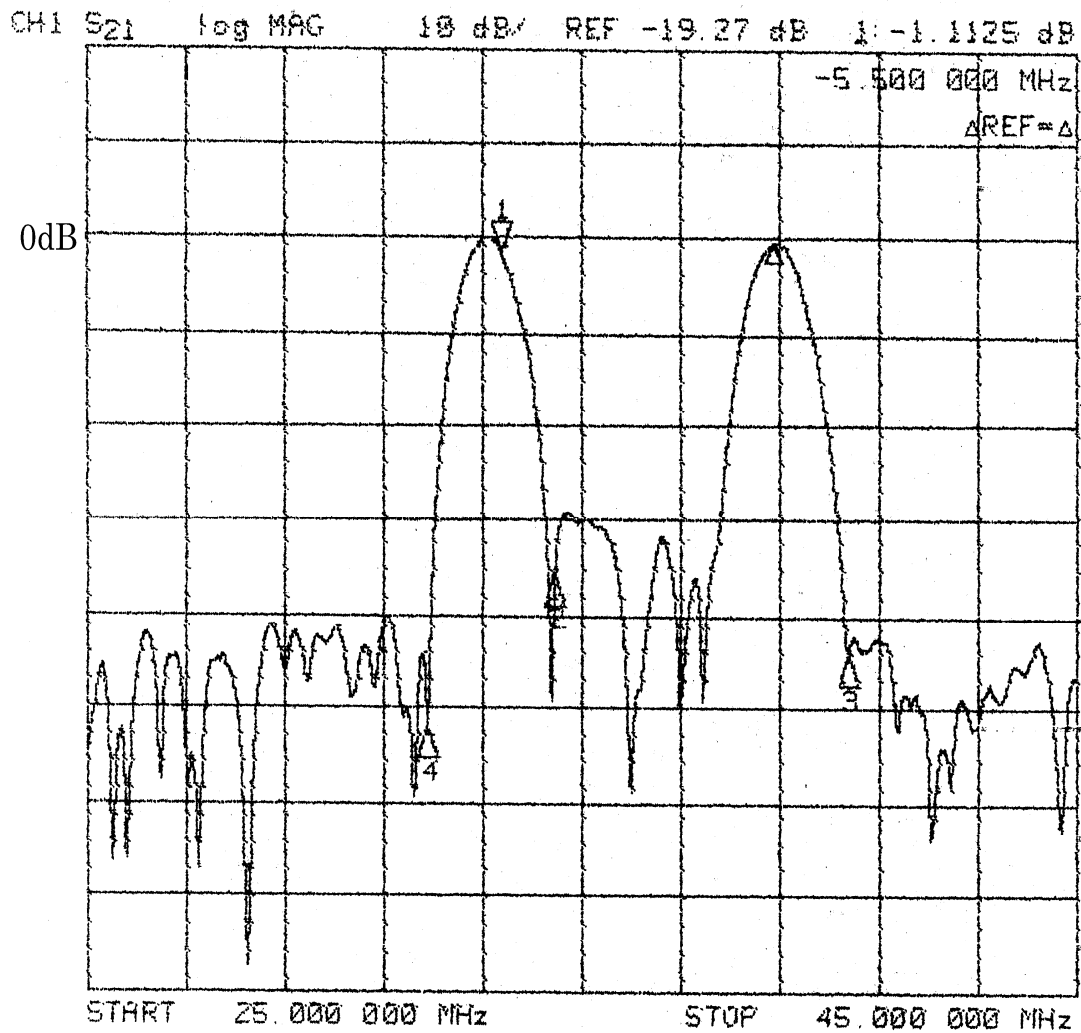
3.4 Mechanical Test

Items	Conditions	Specifications
Vibration	600-3300rpm amplitude 1.5mm 3 directions 2 H each	There shall be no damage.
Drop	On maple plate from 1m high 3 times	
Lead pull	Pull with 1kg force for 30 seconds	
Lead bend	90° bending with 500g weigh 2 times	

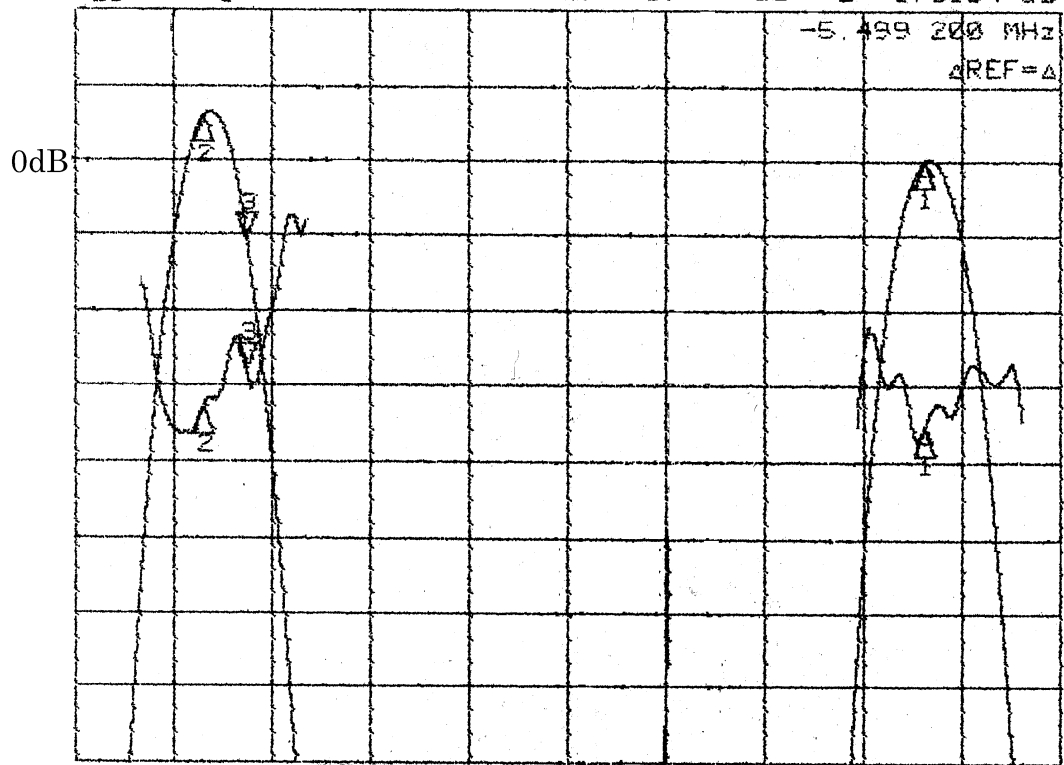
3.5 Voltage Discharge Test

Item	Condition	Specifications
Surge	Between any two electrode 	There shall be no damage

3.6 Frequency response:



CH1 S21 delay 30 ns/ REF 1.262 ps 3: 22.612 ns
CH2 S21 log MAG 1 dB/ REF -19.57 dB 3: -1.0854 dB



START 32.000 000 MHz

STOP 40.000 000 MHz