

规格书编号

SPEC NO :

产品规格书

SPECIFICATION

CUSTOMER 客户: _____

PRODUCT 产品: _____ SAW FILTER _____

MODEL NO 型号: _____ HDAF389A9Dc SIP5Dc _____

PREPARED 编制: _____ CHECKED 审核: _____

APPROVED 批准: _____ D A T E 日期: _____ 2008-6-25 _____

客户确认 CUSTOMER RECEIVED:		
审核 CHECKED	批准 APPROVED	日期 DATE

无锡市好达电子有限公司
Shoulder Electronics Limited

更改历史记录 History Record

更改日期 Date	规格书编号 Spec. No.	产品型号 Part No.	客户产品型号 Customer No.	更改内容描述 Modify Content	备注 Remark

1.SCOPE

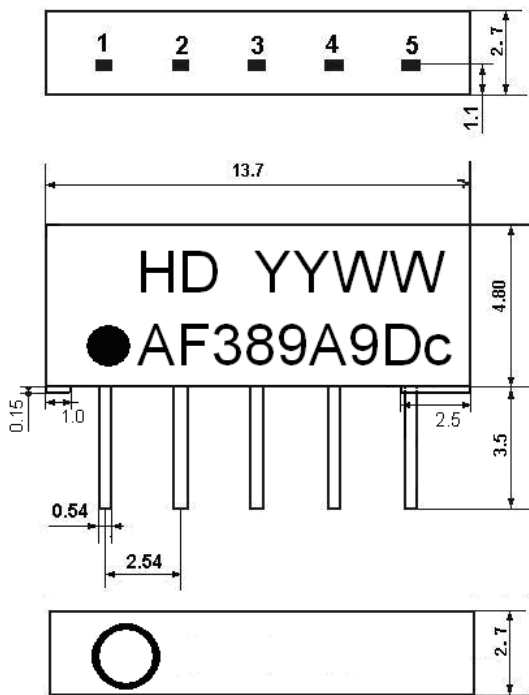
SHOULDER's SAW filter series have broad line up products meeting all broadcast standard including NTSC,PAL and SECAM systems. These filters are composed of two interdigital transducers on a single-crystal, piezoelectrical chip. they are used in electronic equipments such as TV and so on.

2.Construction

2.1 Dimension and materials

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

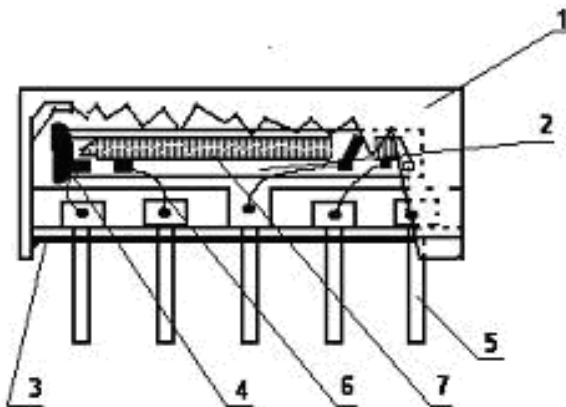
Type : AF389A9Dc



Unit : mm

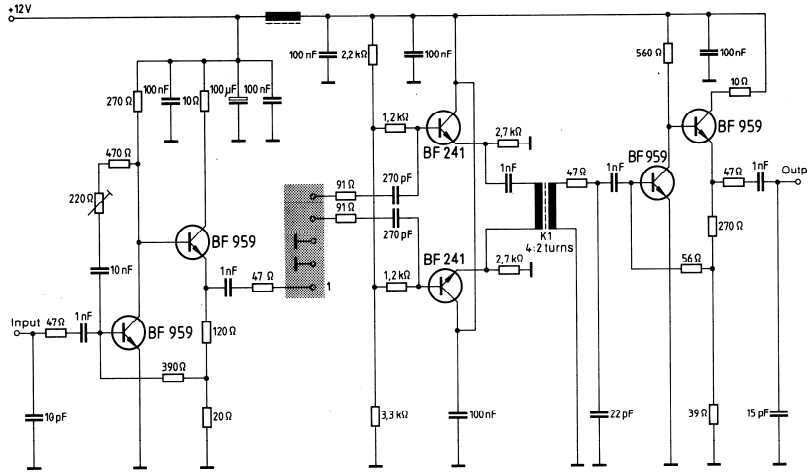
- 1 Input channel 1/ Input ground
- 2 Input ground / Input channel 2
- 3 Chip carrier - ground
- 4 Output
- 5 Output

YY:year
WW:week



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



Test circuit for SIP-5 filter
 Input impedance of the symmetrical post-amplifier: 2 kΩ in parallel with 3 pF

3.Characteristics

Items	Conditions	Specifications
Standard atmospheric conditions	Unless otherwise specified , the standard rang of atmospheric conditions for making measurements and tests is as follows; Ambient temperature : 15°C to 35°C Relative humidity : 25% to 85% Air pressure : 86kPa to 106kPa	There shall be no damage.
Operating temperature rang	Operating temperature rang is the rang of ambient temperatures in which the filter can be operated continuously. -20°C ~ +60°C	
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°C ~ +70°C	
Reference temperature	+25°C	

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 channel 1

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	40.40MHz	14.6	16.6	18.6	dB
	39.75MHz	-1.5	-0.3	0.9	dB
Relative attenuation	38.40MHz	27.0	40.0	-	dB
	33.90MHz	37.0	45.0	-	dB
	41.90MHz	28.0	38.0	-	dB
	32.40MHz	38.0	45.0	-	dB
	25.00~33.90MHz	34.0	41.0	-	dB
Sidelobe	41.90~45.00MHz	28.0	34.0	-	dB
	Temperature coefficient	-72			ppm/k

Characteristics of channel 2

Source impedance

$Z_s=50\ \Omega$

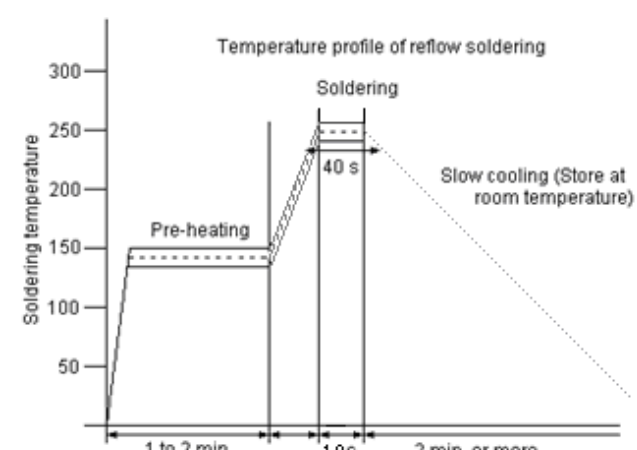
Load impedance

$Z_L=2k\ \Omega //3pF$

$T_A=25\ ^\circ C$

Item	Freq	min	typ	max	
Insertion attenuation Reference level	33.40MHz	14.0	16.0	18.0	dB
	33.05MHz	-1.6	-0.4	0.8	dB
Relative attenuation	32.90MHz	-1.6	-0.4	0.8	dB
	32.40MHz	-0.3	1.2	2.7	dB
	38.90MHz	37.0	49.0	-	dB
	34.47MHz	23.0	31.0	-	dB
	30.90MHz	37.0	45.0	-	dB
	31.90MHz	-	9.4	-	dB
	40.40MHz	35.0	40.0	-	dB
	40.90MHz	35.0	42.0	-	dB
	41.40MHz	40.0	52.0	-	dB
	Sidelobe	25.00~30.90MHz	36.0	42.0	-
38.90~45.00MHz		34.0	40.0	-	dB
Temperature coefficient	-72			ppm/k	

3.3 Environmental Performance Characteristics

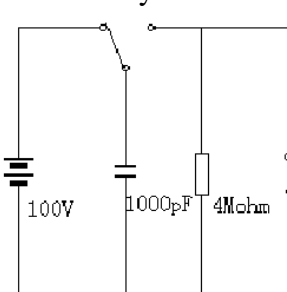
Item	Condition	Specifications																						
High temperature	The specimen shall be store at a temperature of 80±2℃ for 96±4h. Then it shall be subjected to standard atmospheric conditions for 1h, after which measurement shall be made within 1h.	Mechanical characteristics and specifications in 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±3℃ for 96±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±2℃ with relative humidity of 90% to 96% for 96±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.																							
			<table border="1"> <thead> <tr> <th></th> <th>Temperature</th> <th>Duration</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>+25℃=>-40℃</td> <td>0.5h</td> </tr> <tr> <td>2</td> <td>-40℃</td> <td>4h</td> </tr> <tr> <td>3</td> <td>-40℃=>+85℃</td> <td>2h</td> </tr> <tr> <td>4</td> <td>+85℃</td> <td>4h</td> </tr> <tr> <td>5</td> <td>+85℃=>+25℃</td> <td>0.5h</td> </tr> <tr> <td>6</td> <td>+25℃</td> <td>1h</td> </tr> </tbody> </table>		Temperature	Duration	1	+25℃=>-40℃	0.5h	2	-40℃	4h	3	-40℃=>+85℃	2h	4	+85℃	4h	5	+85℃=>+25℃	0.5h	6	+25℃	1h
				Temperature	Duration																			
		1	+25℃=>-40℃	0.5h																				
		2	-40℃	4h																				
		3	-40℃=>+85℃	2h																				
		4	+85℃	4h																				
5	+85℃=>+25℃	0.5h																						
6	+25℃	1h																						
Resistance to Soldering heat	Reflow soldering method Peak: 255 ±5 ℃, 220 ±5℃, 40s At electrode temperature of the specimen.																							
		 <p>The graph shows the temperature profile of reflow soldering. The y-axis is 'Soldering temperature' ranging from 0 to 300. The x-axis shows time intervals: '1 to 2 min.' for pre-heating, '10s' for the start of soldering, and '2 min. or more' for slow cooling. The temperature rises to 150°C during pre-heating, then to 250°C during soldering (with a 40s dwell at the peak), and finally cools down slowly 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	

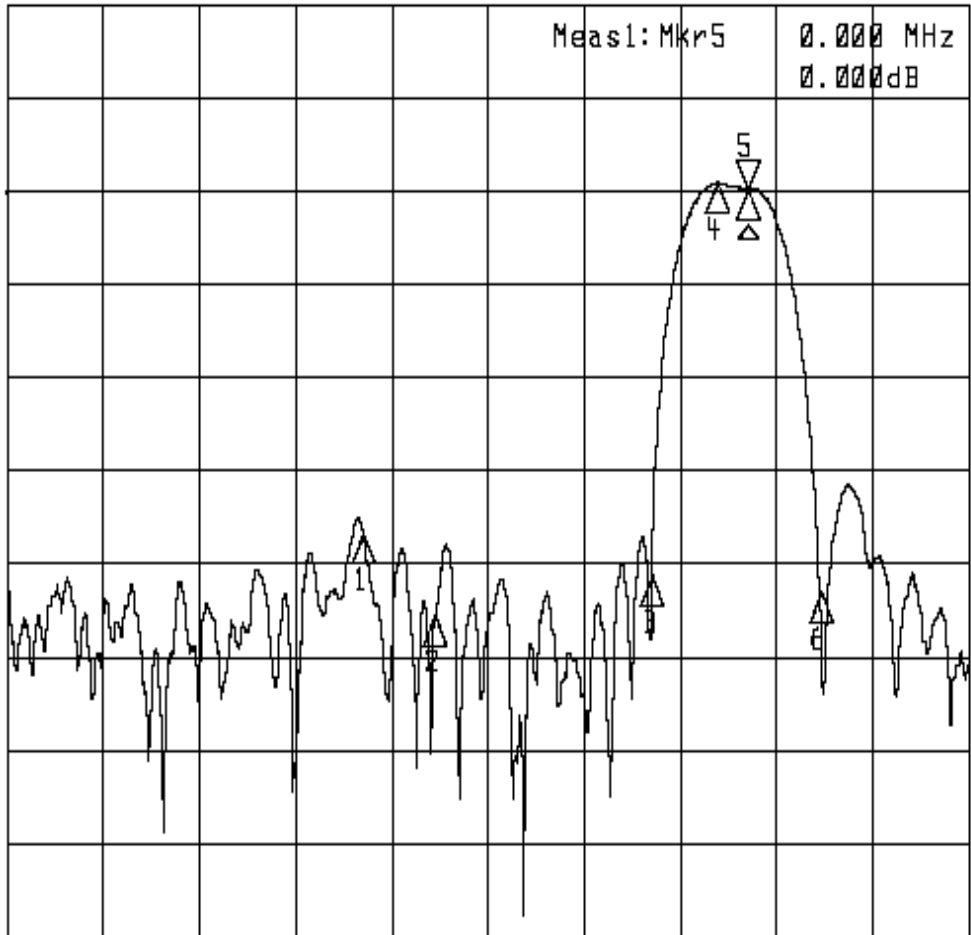
3.5 Voltage Discharge Test

Item	Condition	Specifications
Surge	<p>Between any two electrode</p> 	There shall be no damage

3.6 Frequency response

Frequency response of channel 1:

►1: Transmission /M Log Mag 10.0 dB/



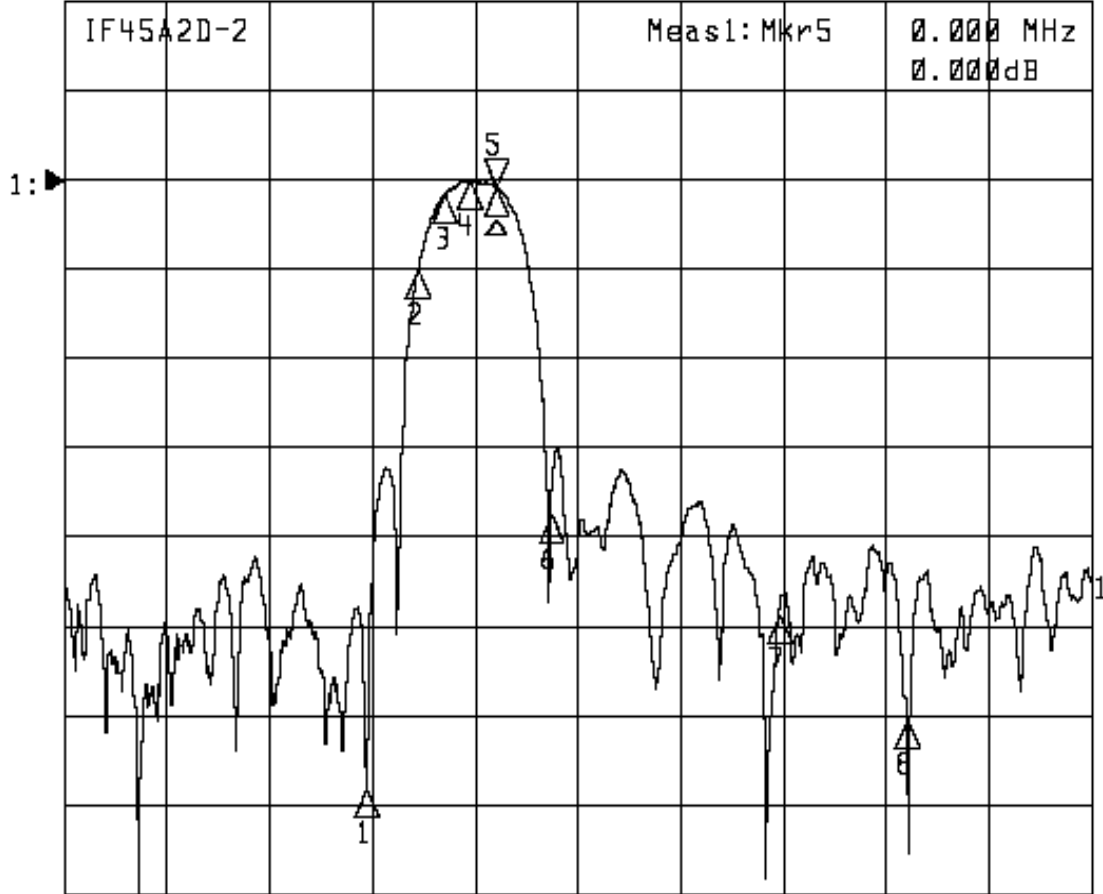
Start 25.000 MHz

Stop 45.000 MHz

1: Mkr Δ (MHz)	dB	2: Mkr (MHz)	dB
1:	-8.0000	-37.026	
2:	-6.5000	-45.894	
3:	-2.0000	-41.663	
4:	-0.6500	0.592	
5>	0.0000	0.000	
6:	1.5000	-43.338	

Frequency response of channel 2:

▶1: Transmission /M Log Mag 10.0 dB/ Ref -16.96 dB
 ▶2: Off



Start 25.000 MHz

Stop 45.000 MHz

1: Mkr Δ (MHz)	dB	2: Mkr (MHz)	dB
1:	-2.5000	-67.721	
2:	-1.5000	-9.352	
3:	-1.0000	-0.916	
4:	-0.5000	0.570	
5>	0.0000	0.000	
6:	1.0700	-36.836	
7:	5.5000	-48.090	
8:	8.0000	-59.973	