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# **SPECIFICATION**

## PRODUCT: SAW FILTER

MODEL: HDBF36A9Dd



# SHOULDER ELECTRONICS LIMITED

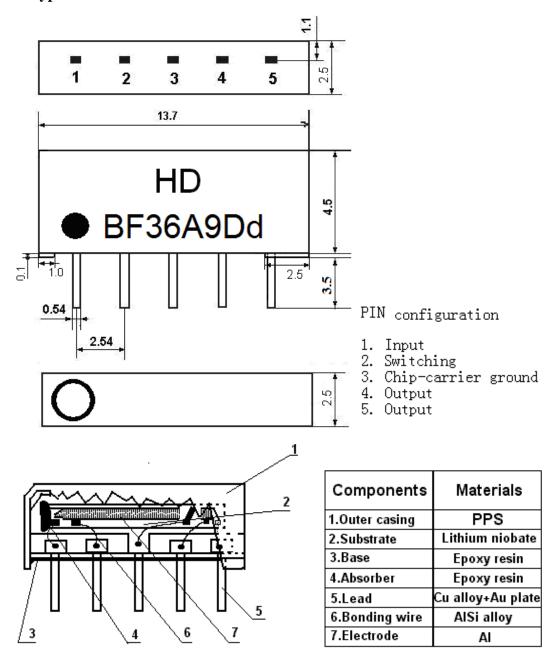
#### **1.SCOPE**

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.

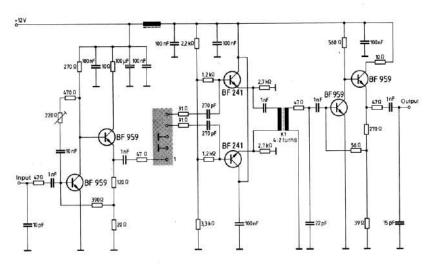
#### 2.Construction

**2.1 Dimension and materials** 

Manufacturer's name : SHOULDER ELECTRONICS Co. LTD(CHINA) Type: BF36A9Dd



#### 2.2. Circuit construction, measurement circuit



Test circuit for SIP-5 filter Input impedance of the symmetrical post-amplifier: 2 k $\Omega$  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 $: 15^{\circ}$ C to $35^{\circ}$ C Relative humidityRelative humidity $: 25\%$ to $85\%$ Air pressureAir pressure $: 86$ kPa to $106$ kPa	
Operating temperature rang	Operating temperature rang is the rang of ambient temperatures in which the filter can be operated continuously. $-10^{\circ}$ C $\sim +60^{\circ}$ C	There shall be no damage.
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. $-40^{\circ}$ C ~ $+70^{\circ}$ 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 (switching input pin 2 connected to pin 3)

Source imp	edance	Zs=5				
Load imped	lance	$Z_L=2$	k Ω //3pF			$T_A=25^{\circ}C$
Iten	1	Freq	min	typ	max	
Center fre	quency	Fo	-	36.17	-	MHz
Insertion at Reference		36.00MHz	19.5	21.0	23.0	dB
		B3dB		7.7		MHz
		B15dB		8.3		MHz
		30.75MHz	38.0	48.0	-	dB
		40.25MHz	18.0	28.0	-	dB
		40.75MHz	25.0	39.0	-	dB
		41.25MHz	32.0	41.0	-	dB
		31.80MHz	11.0	17.0	-	dB
Sidelobe	25.00~.	30.75MHz	34.0	39.0	-	dB
Sidelobe	41.5~4	45.0MHz	34.0	40.0	-	dB
1.2 us (tes	<b>ave signal s</b> 5.0 us after r at pulse 250 r equency 36.	ns,	40.0	50.0		dB
-	<b>delay rippl</b> 2 0~39.80 M		-	60	-	ns
Tempe	erature coef	ficient		-72		ppm/k

#### Characteristics of channel 2 (switching input pin 2 connected to pin 1)

Source imp	edance	Zs=50				
Load imped	lance	$Z_L=2$	k Ω //3pF		$T_A=25^{\circ}C$	
Iten	n	Freq	min	typ	max	
Center fre	equency	Fo	-	36.17	-	MHz
Insertion at Reference		36.00MHz	19.0	20.5	22.0	dB
		B3dB		6.8		MHz
		B15dB		7.3		MHz
		31.25MHz	34.0	41.0	-	dB
		39.75MHz	17.0	25.0	-	dB
		32.33MHz	9.0	13.0	-	dB
Sidalaha	25.00~2	31.25MHz	34.0	37.0	-	dB
Sidelobe	41.25~4	45.00MHz	30.0	36.0	-	dB
Reflected w	vave signal s	suppression				
1.2 us (tes carrier fr	40.0	50.0		dB		
-	<b>delay rippl</b> 2.70~39.3MH	· · ·	-	60	-	ns
Tempe	erature coef	ficient		-72	•	ppm/k

	mental Performance Charac			
Item	Conditio	n		Specifications
High	The specimen shall be store	e at a temperatu	re of	
temperature	80±2℃ for 96±4h. Then it	shall be subject	ted to	
	standard atmospheric cond	itions for 1h,	after	
	which measurement shall be	made within 1h.	•	
Low	The specimen shall be store	e at a temperatu	re of	
temperature	-20±3°C for 96±4h. Then it	t shall be subject	ted to	
	standard atmospheric cond	itions for 1h,	after	
	which measurement shall be	made within 1h.	•	
Humidity	The specimen shall be store	e at a temperatu	re of	
	$40\pm2^{\circ}C$ with relative humic	dity of 90% to	96%	
	for 96±4h. Then it shall be	subjected to star	ndard	
	atmospheric conditions fo	or 1h, after w	which	
	measurement shall be made v			
Thermal	The specimen shall be subje			
shock	cycles each as shown belo			
	subjected to standard atmos	-		
	1h, after which measurem			
	within 1h.			
	Temperature	Duration		
	$1 + 25 \degree C = > -40 \degree C$	0.5h		
	2 -40 ℃	4h		Mechanical
	3 -40 °C=>+85 °C	2h		characteristics and
	4 +85 °C	4h		specifications in
	5 +85 °C=>+25 °C	0.5h		electrical
	6 +25 ℃	1h		characteristics shall
Resistance to	Reflow soldering method			be satisfied. There
Soldering	Peak: $255 \pm 5$ °C, $220 \pm 5$ °C	shall be no		
heat	At electrode temperature of t	excessive change in		
	1	appearance.		
	Temperature prof	ile of reflow soldering		
	2235 AMERICA AMERICA	ering		
	250 1 1 1			
	200 - 40 s	tore at		
	Pre-heating	room tempe	erature)	
	g 150			
	8 100 -	· · · · ·		
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	1 to 2 min. 10s	2 min. or more		
	The specimen shall be passe			
	furnace with the condition	shown in the a	above	
	profile for 1 time.	. <b>1</b> .		
	The specimen shall be			
	atmospheric conditions for	In, after which	n the	

	measurement shall be made. Test board shall be 1.6 mm thick. Base material shall be glass fabric base epoxy resin.	
Solder ability	Immerse the pins melt solder at $260^{\circ}C+5/-0^{\circ}C$	
	for 5 sec.	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	
Drop	On maple plate from 1 m high 3 times	
		There shall be no
Lead pull	Pull with 1 kg force for 30 seconds	damage.
Lead bend	90° bending with 500g weigh 2 times	-

### **3.5 Voltage Discharge Test**

Item	Condition	Specifications
Surge	Between any two electrode	
	Toov TooopF 4Mohm	There shall be no damage

#### **3.6 Frequency response of channel 1:**

4.7500 -29.844

5.2500 -38.691

5.5000 -37.602

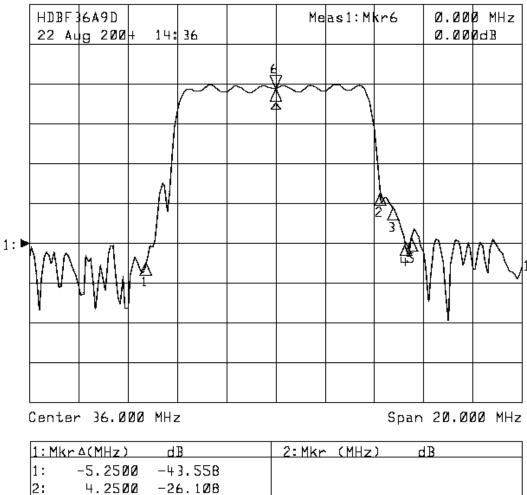
0.0000 0.000

3: 4:

5:

6>

▶1:Transmission /M Log Mag 10.0 dB/ Ref -60.28 dB ▷2:Off



⊳1:Off

	▶2: Tr	~a	ns	mis	s î	on	/M	Loį	g Mag	1.0	dB/	Ref	-22	2.92 d	В
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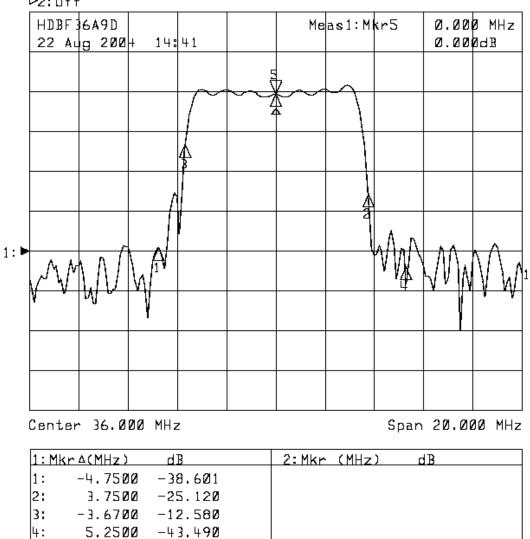
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#### **Frequency response of channel 2:**

5>

0.0000

0.000



▶1:Transmission /M Log Mag 10.0 dB/ Ref -60.28 dB ▷2:Off

l	▶2:Tra	nsmis	si	on	/M	Log	g Mag	1.0	dB/	R	ef -22	2.92 d	B	
	HDBFE	1												
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						V	$\mathbb{V}$	VV						
2: ►														
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ļ	Center	· 36.6	100		Ă					$\frac{1}{2}$	Star	20.00	20 MHz	
	1:Mkr (MHz) dB							2:Mkr (MHz) dB						
								1: 31.2500 -59.477						
								2:	39.7500 -46.548					
									32.3300 -33.170					
												65.704		
								5>	36.1	00	20 -2	20.871		

#### ▶1:Off ▶2:Transmission /M | ... . .