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Approved by:

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SPECIFICATION

PRODUCT: SAW FILTER

MODEL: HDMVF38A2D(F15)



SHOULDER ELECTRONICS LIMITED

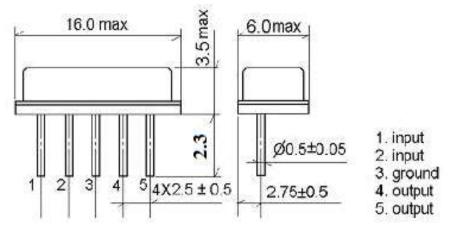
1.SCOPE

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.

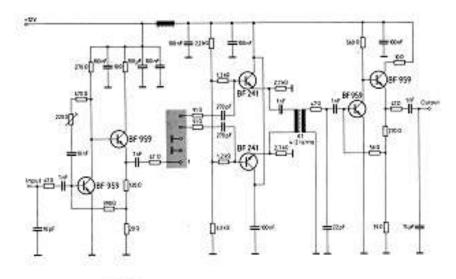
2.Construction

2.1 Dimension and materials

Manufacturer's name : SHOULDER ELECTRONICS LIMITED Type : MVF38A2D



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
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Standard atmospheric conditions	Unless otherwise specified , the standard rang of atmospheric conditions for making measurements and tests is as follows; Ambient temperature $:15^{\circ}$ to 35° C Relative humidity $:25\%$ to 85% Air 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° 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° 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

Source mp	eaunee	20 0	0			
Load impedance		$Z_L=2k \Omega //3pF$				$T_A=25^{\circ}C$
Iten	ı	Freq	min	typ	max	
Insertion attenuation Reference level		36.50MHz	13.9	15.9	17.9	dB
		38.00MHz	4.2	5.7	7.2	dB
		33.57MHz	0.3	1.8	3.3	dB
		31.50MHz	40.0	50.0	-	dB
		32.50MHz	32.0	45.0	-	dB
Relative att	enuation	32.00MHz	30.0	40.0	-	dB
		30.00MHz	42.0	52.0	-	dB
		31.00MHz	40.0	52.0	-	dB
		39.50MHz	41.0	51.0	-	dB
		40.00MHz	40.0	51.0	-	dB
Sidalaha	25.00~		38.0	45.0		dB
Sidelobe	39.50~45.00MHz		34.0	40.0		dB
Reflected wave signal suppression 1.3 us 6.0 us after main pulse (test pulse 250 ns ,carrier frequency 36.50 MHz)		40.0	50.0		dB	

Feedthrough signal suppression 1.2 us 6.0 us after main pulse (test pulse 250 ns ,carrier frequency 36.50 MHz)		40.0	52.0		dB	
Tempe	erature coeff	ficient		-72		ppm/k
Characteristic	s in M/N mo	de (switching in	put pin 2 co	onnected to	input pin	1)
Source imp	edance	Zs=5	0 Ω			
Load imped	lance	$Z_L=2$	k Ω //3pF			$T_A=25^{\circ}C$
Item	1	Freq	min	Тур	max	
	Insertion attenuation Reference level		14.0	16.0	18.0	dB
			4.3	5.8	7.3	dB
		34.42MHz	0.4	1.9	3.4	dB
Relative atte	enuation	33.50MHz	25.0	40.0	-	dB
		32.00MHz	42.0	58.0	-	dB
		39.50MHz	41.0	50.0	-	dB
Sidelobe	25.00~2	32.00MHz	36.0	45.0		dB
Sidelobe	39.50~	45.00MHz	35.0	40.0		dB
Reflected wave signal suppression 1.3 us 6.0 us after main pulse (test pulse 250 ns ,carrier frequency 36.50 MHz)		40.0	50.0		dB	
Feedthrough signal suppression 1.2 us 6.0 us after main pulse (test pulse 250 ns ,carrier frequency 36.50 MHz)		40.0	48.0		dB	
Tempe	erature coeff	ficient		-72		ppm/k

3.3 Environmental Performance Characteristics

Item	Condition		Specifications
High temperature	The specimen shall be store at 80±2°C for 96±4h. Then it sha standard atmospheric conditio which measurement shall be made	5	
Low temperature	The specimen shall be store at -20 ± 3 °C for 96±4h. Then it sha standard atmospheric condition which measurement shall be made	all be subjected to ns for 1h, afte	o r
Humidity	The specimen shall be store at 40±2°C with relative humidity for 96±4h. Then it shall be sub atmospheric conditions for measurement shall be made with	characteristics and specifications in electrical	
Thermal shock	The specimen shall be subjectedcycles each as shown below.subjected to standard atmosphe1h, after which measurementwithin 1h.TemperatureDu1+25 °C=>-40 °C0.5	Then it shall b ric conditions fo t shall be mad uration	shall be no excessive change in r appearance.

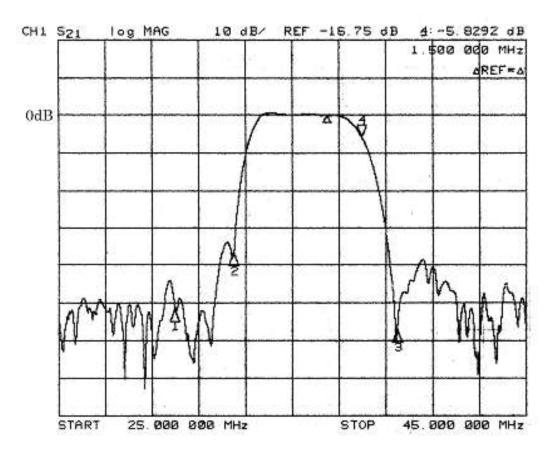
			1
	2 -40 ℃	4h	
	3 -40 °C=>+85 °C	2h	
	4 +85 °C	4h	
	5 +85 °C=>+25 °C	0.5h	
	6 +25 °C	1h	
Resistance to	Reflow soldering method		
Soldering	Peak: 255 ± 5 °C, 220 ± 5		
heat	At electrode temperature of	the specimen.	
	300 — Temperature pr	ofile of reflow soldering	
	250 1 1	dering	
		s Slow cooling (Store at	
	1 200	room temperature)	
	g 150 Pre-heating	1. A.	
	100 - /	and the second sec	
	00,000 /		
	50-	1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1	
	1 to 2 min. 10		
	The specimen shall be pass furnace with the condition	6	
	profile for 1 time.	shown in the above	
	The specimen shall be	stored at standard	
	atmospheric conditions for		
	measurement shall be mad		
	1.6 mm thick. Base materia	al shall be glass fabric	
	base epoxy resin.		
Solder ability	Immerse the pins melt so	lder at $260^{\circ}C + 5/-0^{\circ}C$	More then 95% of
	for 5 sec.		total area of the pins should be
			covered with solder
	1		covered with bolder

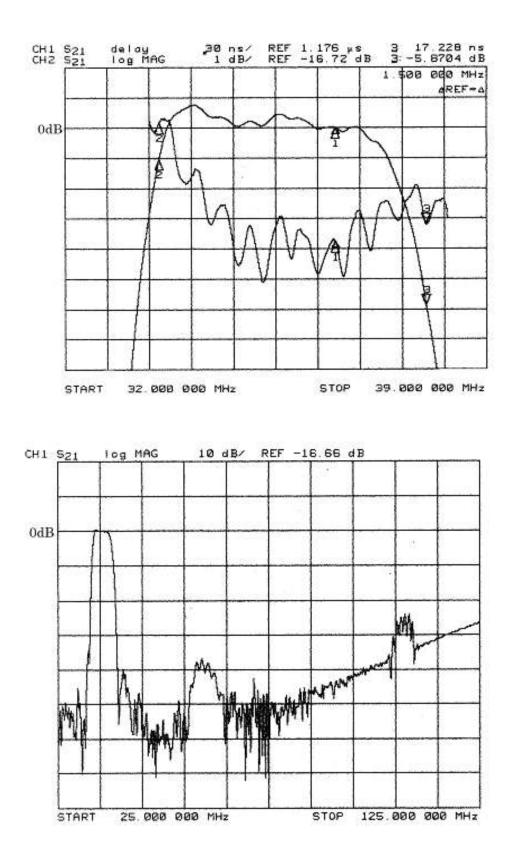
3.4 Mechanical Test

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	

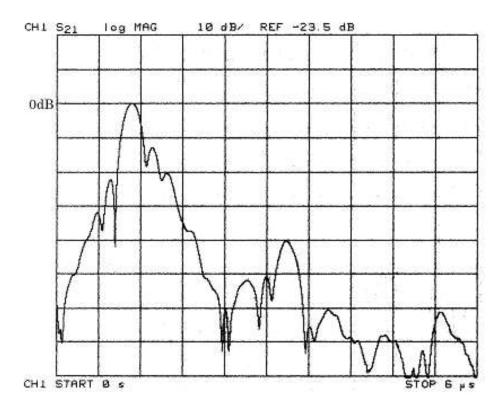
Surge	Between any two electrode	
	- 1007 1000pF 4Mohm	There shall be no damage

3.6 Frequency response Frequency response in B/G,D/K mode

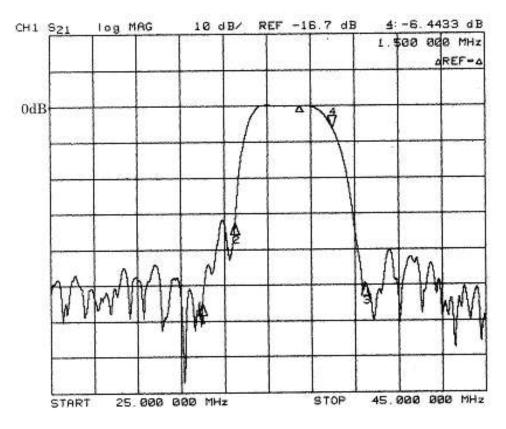


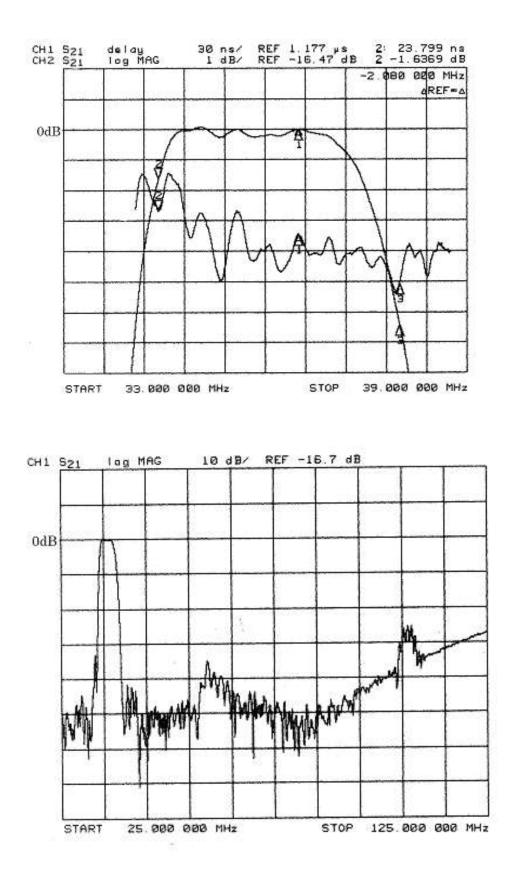


Time domain response B/G,D/K mode



Frequency response in M/N mode





Time domain response M/N mode

