



Approved by:

Checked by:

Issued by:

# ***SPECIFICATION***

**PRODUCT: SAW FILTER**

**MODEL: HDMIF389A1T**



**SHOULDER ELECTRONICS LIMITED**



### 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. -10°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

<b>DC voltage</b>	<b>VDC</b>	<b>12</b>	<b>V</b>	<b>Between any terminals</b>
<b>AC voltage</b>	<b>Vpp</b>	<b>10</b>	<b>V</b>	<b>Between any terminals</b>

#### 3.2 Electrical Characteristics

Characteristics in M/N mode (switching input pin 2 connected to input 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	37.40MHz	14.3	16.3	18.3	dB
Relative attenuation	38.90MHz	4.2	5.7	7.2	dB
	35.32MHz	0.1	1.6	3.1	dB
	34.40MHz	15.6	17.6	19.6	dB
	32.90MHz	42.0	51.0	-	dB
	40.40MHz	40.0	47.0	-	dB
Sidelobe	25.00~32.90MHz	35.0	44.0		dB
	40.40~45.00MHz	35.0	43.0		dB
Temperature coefficient		-72			ppm/k

**Characteristics in B/G mode (switching input pin 2 connected to ground )**

Source impedance

$Z_S=50 \Omega$

Load impedance

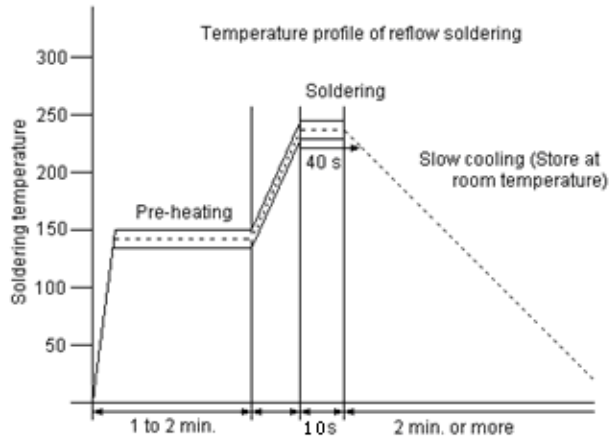
$Z_L=2k \Omega //3pF$

$T_A=25^\circ C$

Item	Freq	min	Typ	max	
Insertion attenuation Reference level	37.40MHz	14.5	16.5	18.5	dB
Relative attenuation	38.90MHz	4.1	5.6	7.1	dB
	34.47MHz	-1.3	0.2	1.7	dB
	32.40MHz	15.7	17.7	19.2	dB
	33.40MHz	14.5	16.5	18.5	dB
	30.90MHz	40.0	50.0	-	dB
	40.40MHz	40.0	48.0	-	dB
Sidelobe	25.00~30.90MHz	35.0	44.0		dB
	40.40~45.00MHz	32.0	39.0		dB
Temperature coefficient		-72			ppm/k

**3.3 Environmental Performance Characteristics**

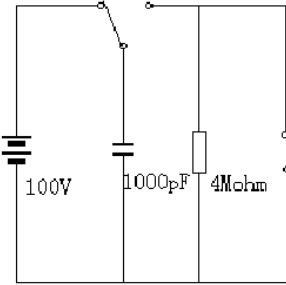
Item	Condition	Specifications																						
High temperature	The specimen shall be store at a temperature of $80\pm 2^\circ C$ for $96\pm 4h$ . Then it shall be subjected to standard atmospheric conditions for 1h, after which measurement shall be made within 1h.	Mechanical characteristics and 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.																							
			<table border="1"> <thead> <tr> <th></th> <th>Temperature</th> <th>Duration</th> </tr> </thead> <tbody> <tr> <td>1</td> <td><math>+25^\circ C \Rightarrow -40^\circ C</math></td> <td>0.5h</td> </tr> <tr> <td>2</td> <td><math>-40^\circ C</math></td> <td>4h</td> </tr> <tr> <td>3</td> <td><math>-40^\circ C \Rightarrow +85^\circ C</math></td> <td>2h</td> </tr> <tr> <td>4</td> <td><math>+85^\circ C</math></td> <td>4h</td> </tr> <tr> <td>5</td> <td><math>+85^\circ C \Rightarrow +25^\circ C</math></td> <td>0.5h</td> </tr> <tr> <td>6</td> <td><math>+25^\circ C</math></td> <td>1h</td> </tr> </tbody> </table>		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
			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																							

	<p>At electrode temperature of the specimen.</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 $260^{\circ}\text{C}+5/-0^{\circ}\text{C}$ 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 1 m high 3 times	
Lead pull	Pull with 1 kg force for 30 seconds	
Lead bend	$90^{\circ}$ bending with 500g weigh 2 times	

### 3.5 Voltage Discharge Test

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