



Approved by:

Checked by:

Issued by:

# ***SPECIFICATION***

**PRODUCT: SAW Duplexer**

**MODEL: HDD30/40W1**



**SHOULDER ELECTRONICS LIMITED**

## 1.SCOPE

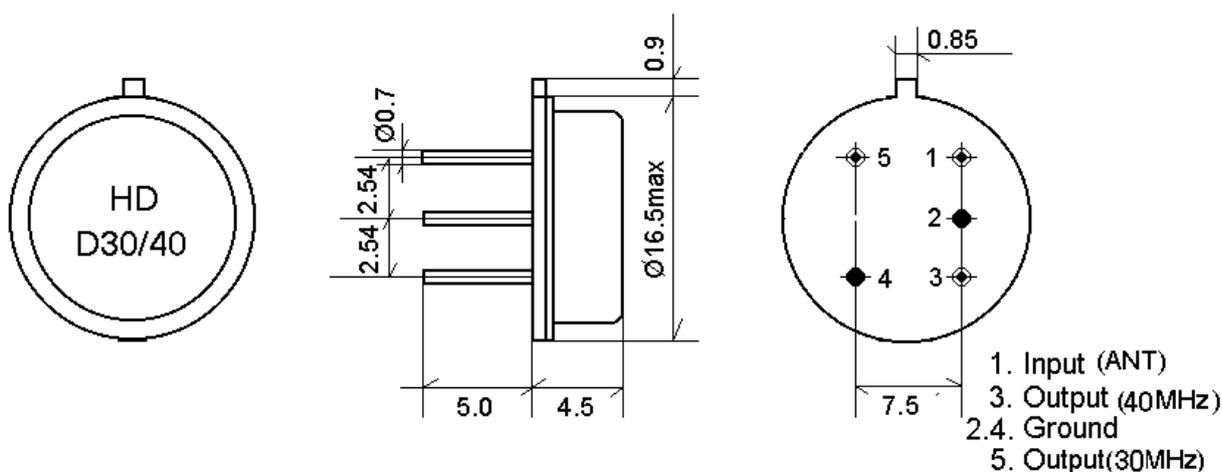
This specification shall cover the characteristics of SAW Duplexer used for the cordless phone.

## 2.Construction

### 2.1 Dimension and materials

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

Type : D30/40



## 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>V<sub>DC</sub></b>	<b>0</b>	<b>V</b>	
<b>Source power</b>	<b>P<sub>s</sub></b>	<b>15</b>	<b>dBm</b>	

### 3.2 Electrical Characteristics

#### Characteristics of channel 30:

Source impedance  $Z_S=50\ \Omega$

Load impedance  $Z_L=50\ \Omega$   $T_A=25^\circ\text{C}$

Item	Freq	min	typ	max	
Nominal frequency	$f_N$	-	30.1875	-	MHz
Insertion attenuation 30.075~30.300MHz			5.0	6.5	dB
attenuation	20.00~27.50MHz	30.0	35.0		dB
	39.7750~40.00MHz	40.0	47.0		dB
	45.00~80.00MHz	30.0	35.0		dB
Temperature coefficient			-72		ppm/k

#### Characteristics of channel 40:

Source impedance  $Z_S=50\ \Omega$

Load impedance  $Z_L=50\ \Omega$   $T_A=25^\circ\text{C}$

Item	Freq	min	typ	max	
Nominal frequency	$f_N$	-	39.8875	-	MHz
Insertion attenuation 39.7750~40.00MHz			3.0	5.0	dB
attenuation	20.00~27.50MHz	30.0	35.0		dB
	30.075~30.300MHz	40.0	47.0		dB
	45.00~80.00MHz	30.0	35.0		dB
Temperature coefficient			-72		ppm/k

#### Isolation between 30 and 40:

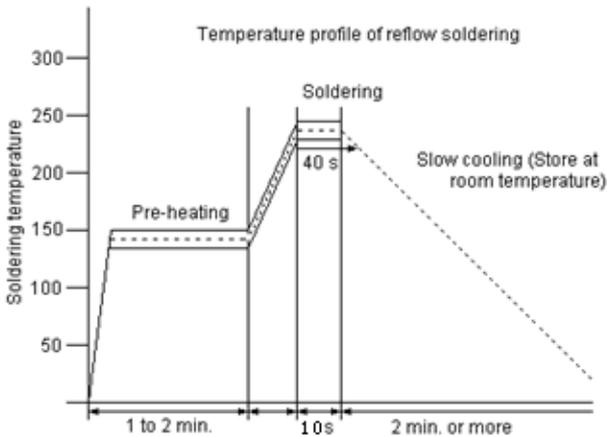
Source impedance  $Z_S=50\ \Omega$

Load impedance  $Z_L=50\ \Omega$   $T_A=25^\circ\text{C}$

Item	Freq	min	typ	max	
attenuation	30.075~30.30MHz	40.0	48.0		dB
	39.775~40.00MHz	38.0	44.0		dB

### 3.3 Environmental Performance Characteristics

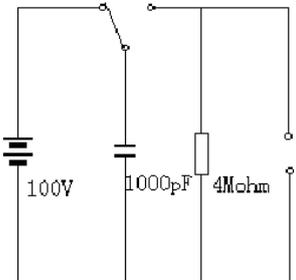
Item	Condition	Specifications
High temperature	The specimen shall be store at a temperature of $80\pm 2^\circ\text{C}$ for $96\pm 4\text{h}$ . Then it shall be subjected to standard atmospheric conditions for 1h, after which measurement shall be made within 1h.	

Low temperature	The specimen shall be store at a temperature of $-20\pm 3^{\circ}\text{C}$ for $96\pm 4\text{h}$ . 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.																				
Humidity	The specimen shall be store at a temperature of $40\pm 2^{\circ}\text{C}$ with relative humidity of 90% to 96% for $96\pm 4\text{h}$ . Then it shall be subjected to standard atmospheric conditions for 1h, after which measurement shall be made within 1h.																					
Thermal shock	<p>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.</p> <table border="1" data-bbox="448 723 1018 1021"> <thead> <tr> <th></th> <th>Temperature</th> <th>Duration</th> </tr> </thead> <tbody> <tr> <td>1</td> <td><math>+25^{\circ}\text{C} \Rightarrow -40^{\circ}\text{C}</math></td> <td>0.5h</td> </tr> <tr> <td>2</td> <td><math>-40^{\circ}\text{C}</math></td> <td>4h</td> </tr> <tr> <td>3</td> <td><math>-40^{\circ}\text{C} \Rightarrow +85^{\circ}\text{C}</math></td> <td>2h</td> </tr> <tr> <td>4</td> <td><math>+85^{\circ}\text{C}</math></td> <td>4h</td> </tr> <tr> <td>5</td> <td><math>+85^{\circ}\text{C} \Rightarrow +25^{\circ}\text{C}</math></td> <td>0.5h</td> </tr> <tr> <td>6</td> <td><math>+25^{\circ}\text{C}</math></td> <td>1h</td> </tr> </tbody> </table>			Temperature	Duration	1	$+25^{\circ}\text{C} \Rightarrow -40^{\circ}\text{C}$	0.5h	2	$-40^{\circ}\text{C}$	4h	3	$-40^{\circ}\text{C} \Rightarrow +85^{\circ}\text{C}$	2h	4	$+85^{\circ}\text{C}$	4h	5	$+85^{\circ}\text{C} \Rightarrow +25^{\circ}\text{C}$	0.5h	6	$+25^{\circ}\text{C}$
	Temperature	Duration																				
1	$+25^{\circ}\text{C} \Rightarrow -40^{\circ}\text{C}$	0.5h																				
2	$-40^{\circ}\text{C}$	4h																				
3	$-40^{\circ}\text{C} \Rightarrow +85^{\circ}\text{C}$	2h																				
4	$+85^{\circ}\text{C}$	4h																				
5	$+85^{\circ}\text{C} \Rightarrow +25^{\circ}\text{C}$	0.5h																				
6	$+25^{\circ}\text{C}$	1h																				
Resistance to Soldering heat	<p>Reflow soldering method  Peak: <math>255 \pm 5^{\circ}\text{C}</math>, <math>220 \pm 5^{\circ}\text{C}</math>, 40s  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.  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° bending with 500g weigh 2 times	

### 3.5 Voltage Discharge Test

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