



Approved by:
Checked by:
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# SPECIFICATION

PRODUCT: SAW FILTER

MODEL: HF93801D (K9455D) SIP5D

**HOPE MICROELECTRONICS CO., LIMITED**

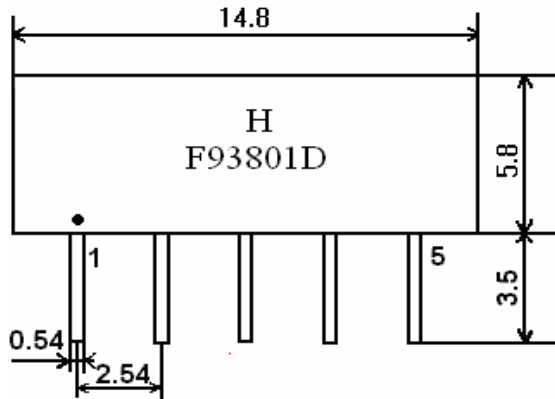
# 1. Construction

## 1.1 Dimension and materials

Type : F93801D

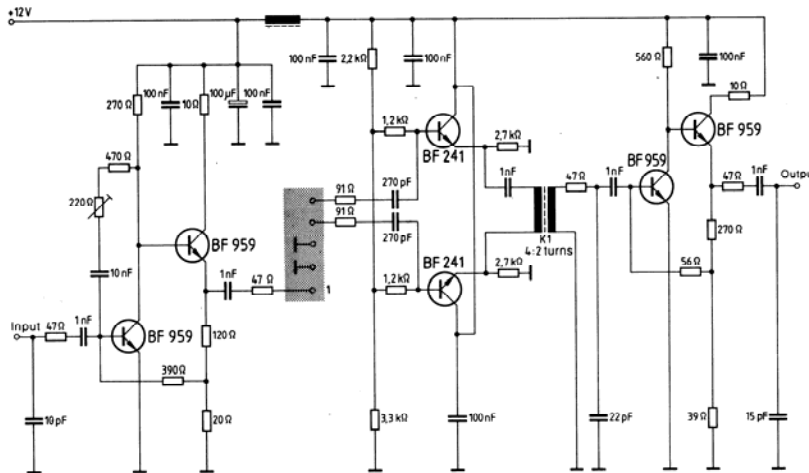


Unit : mm



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

## 1.2. Circuit construction, measurement circuit



Test circuit for SIP-5 filter

Input impedance of the symmetrical post-amplifier: 2 kΩ in parallel with 3 pF

## 2.Characteristics

### Standard atmospheric conditions

Unless otherwise specified , the standard range 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

### Operating temperature rang

Operating temperature rang is the rang of ambient temperatures in which the filter can be operated continuously.  $-10^{\circ}\text{C} \sim +60^{\circ}\text{C}$

### 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.  $-40^{\circ}\text{C} \sim +70^{\circ}\text{C}$

Reference temperature  $+25^{\circ}\text{C}$

## 2.1 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>

## 2.2 Electrical Characteristics

### Characteristics of channel 1

Source impedance  $Z_s=50\ \Omega$

Load impedance  $Z_L=2k\ \Omega //3pF$   $T_A=25^{\circ}\text{C}$

Item	Freq	min	typ	max	
Insertion attenuation Reference level	32.50MHz	12.6	14.6	16.6	dB
Relative attenuation	31.45MHz	-2.3	-0.8	0.7	dB
	31.50MHz	-2.3	-0.8	0.7	dB
	32.00MHz	-1.7	-0.2	1.3	dB
	38.00MHz	40.0	50.0	-	dB
	33.57MHz	28.0	42.0	-	dB
	30.00MHz	41.0	52.0	-	dB
	39.50MHz	41.0	50.0	-	dB
	40.00MHz	38.0	44.0	-	dB
Sidelobe	25.00~30.00MHz	35.0	40.0	-	dB
	38.00~45.00MHz	35.0	42.0	-	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	33.50MHz	12.6	14.6	16.6	dB
Relative attenuation	38.00MHz	40.0	52.0	-	dB
	34.42MHz	26.0	38.0	-	dB
	32.00MHz	32.0	50.0	1.4	dB
	39.50MHz	40.0	50.0	-	dB
Sidelobe	25.00~32.00MHz	25.0	28.0	-	dB
	38.00~45.00MHz	35.0	40.0	-	dB
Temperature coefficient		-72			ppm/k

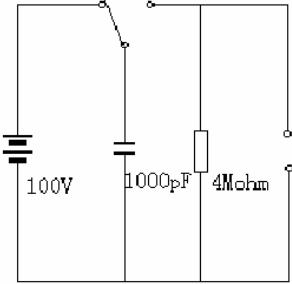
### 2.3 Environmental Performance Characteristics

Item Test condition	Allowable change of absolute Level at center frequency(dB)
High temperature test 70°C 1000H	< 1.0
Low temperature test -40°C 1000H	< 1.0
Humidity test 40°C 90-95% 1000H	< 1.0
Thermal shock -20°C==25°C==80°C 20 cycle 30M 10M 30M	< 1.0
Solder temperature test Sold temp.260°C for 10 sec.	< 1.0
Soldering 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

### 2.4 Mechanical Test

Item Test condition	Allowable change of absolute Level at center frequency(dB)
Vibration test 600-3300rpm amplitude 1.5mm 3 directions 2 H each	<1.0
Drop test On maple plate from 1 m high 3 times	<1.0
Lead pull test Pull with 1 kg force for 30 seconds	<1.0
Lead bend test 90° bending with 500g weigh 2 times	<1.0

## 2.5 Voltage Discharge Test

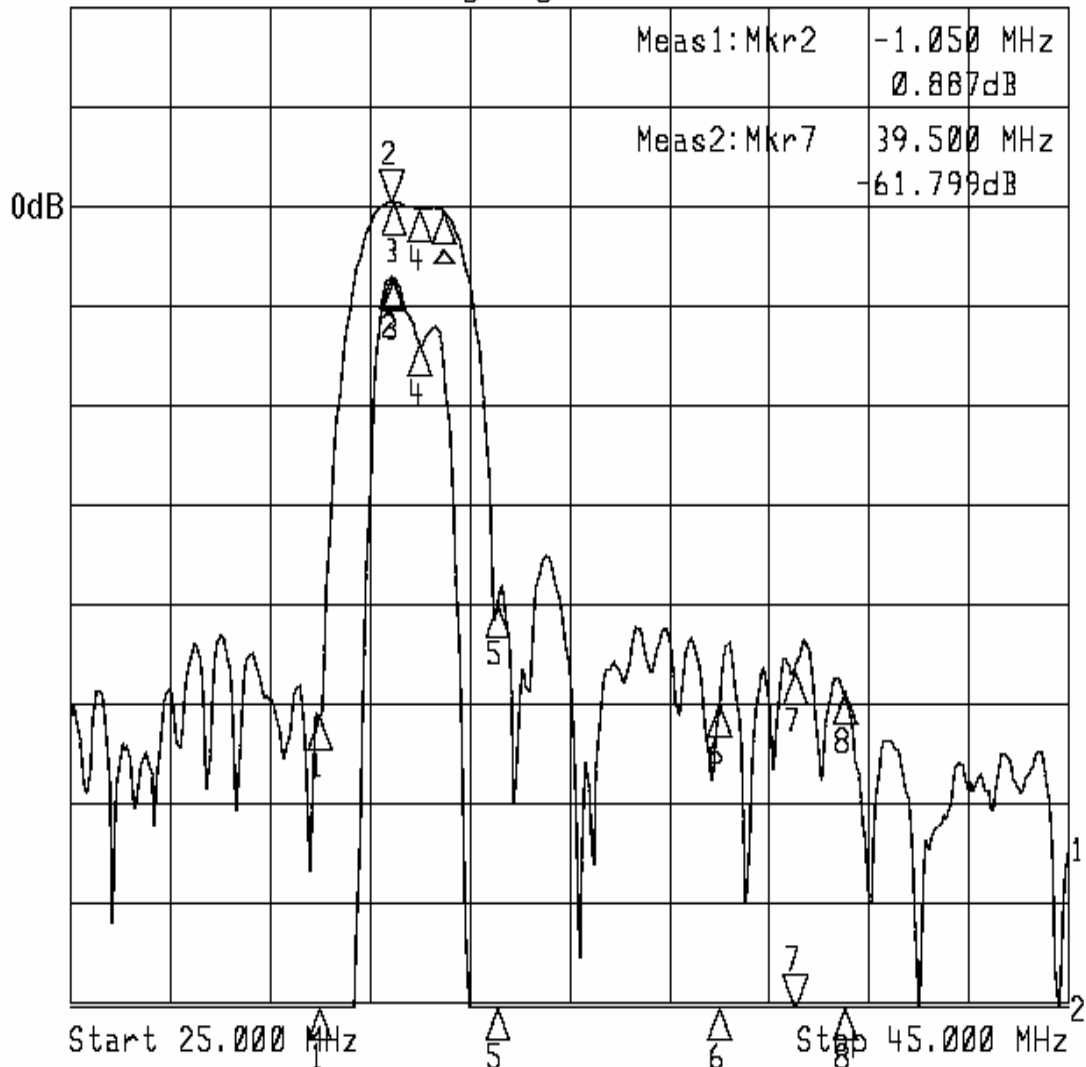
Item Test condition	Allowable change of absolute Level at center frequency(dB)
<p>Surge test Between any two electrode</p>  <p>100V 1000pF 4Mohm</p>	<p>&lt;1.0</p>

## 2.6 Frequency response:

### Frequency response of channel 1:

►1: Transmission /M Log Mag 10.0 dB/

▷2: Transmission /M Log Mag 1.0 dB/

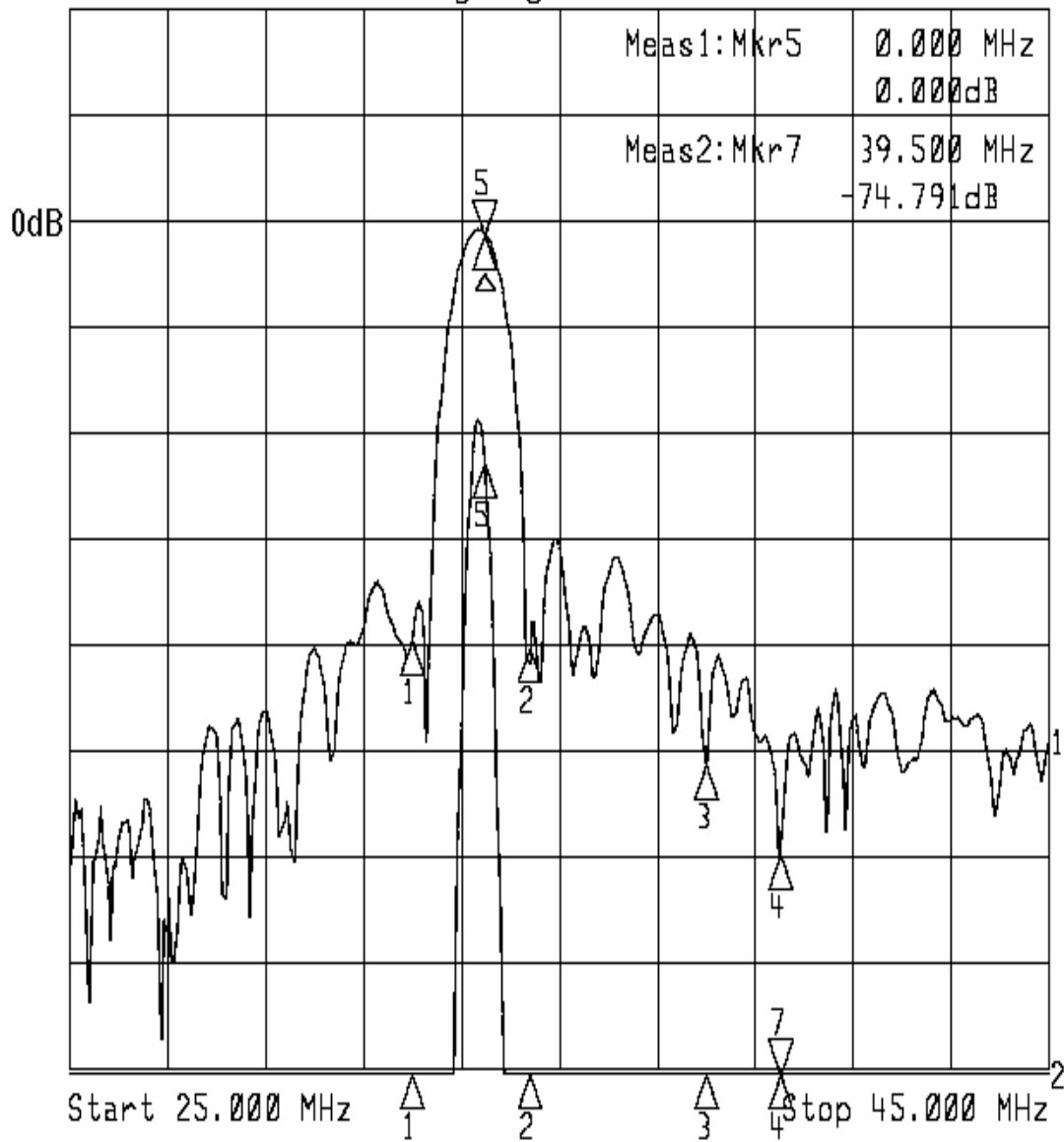


1: Mkr Δ(MHz)	dB	2: Mkr (MHz)	dB		
1:	-2.5000	-50.849	1:	30.0000	-66.303
2>	-1.0500	0.887	2:	31.4500	-14.576
3:	-1.0000	0.850	3:	31.5000	-14.587
4:	-0.5000	0.204	4:	32.0000	-15.243
5:	1.0700	-39.509	5:	33.5700	-54.936
6:	5.5000	-49.552	6:	38.0000	-64.972
7:	7.0000	-46.355	7>	39.5000	-61.799
8:	8.0000	-48.227	8:	40.5000	-63.688

**Frequency response of channel 2:**

►1: Transmission /M Log Mag 10.0 dB/

►2: Transmission /M Log Mag 1.0 dB/



1: Mkr Δ(MHz)	dB	2: Mkr (MHz)	dB		
1:	-1.5000	-38.294	1:	32.0000	-54.435
2:	0.9200	-39.076	2:	34.4200	-55.216
3:	4.5000	-50.114	3:	38.0000	-66.230
4:	6.0000	-58.673	4:	39.5000	-74.791
5:	0.0000	0.000	5:	33.5000	-16.136
			7:	39.5000	-74.791