



Approved by:
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SPECIFICATION

PRODUCT: SAW FILTER

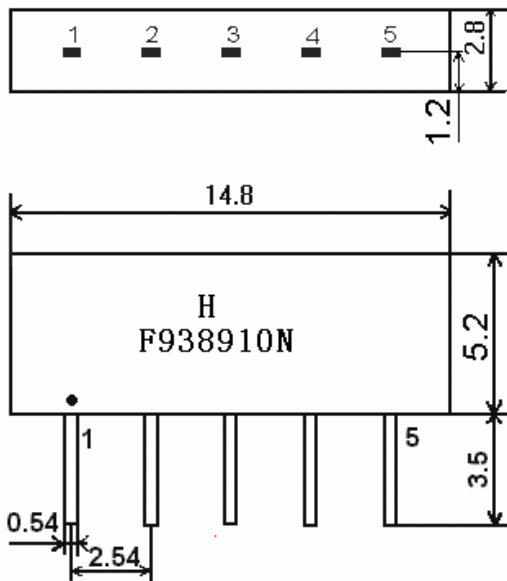
MODEL: HF938910N (K9653D) SIP5D

HOPE MICROELECTRONICS CO., LIMITED

1. Construction

1.1 Dimension and materials

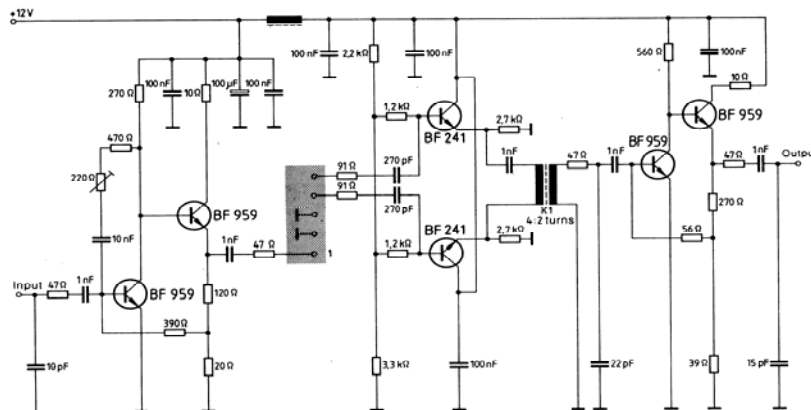
Type : F938910N



Unit : mm

- 1 Input
- 2 Switching Input
- 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 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

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

DC voltage	VDC	12	V	Between any terminals
AC voltage	Vpp	10	V	Between any terminals

2.2 Characteristics of channel 1 (switching input pin 2 connected to pin 3)

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	33.40MHz	14.4	16.4	18.4	dB
Relative attenuation	32.35MHz	-1.3	0.2	1.7	dB
	32.40MHz	-	0.1	-	dB
	32.90MHz	-1.8	-0.3	1.2	dB
	38.90MHz	32.0	40.0	-	dB
	34.47MHz	24.0	30.0	-	dB
	30.90MHz	37.0	42.0	-	dB
	40.40MHz	38.0	48.0	-	dB
	40.90MHz	36.0	42.0	-	dB
Sidelobe	25.00~30.90MHz	34.0	41.0	-	dB
	38.90~45.00MHz	34.0	40.0	-	dB
Temperature coefficient		-72		ppm/k	

Characteristics of channel 2 (switching input pin 2 connected to pin 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	34.40MHz	13.8	15.8	17.8	dB
Relative attenuation	38.90MHz	38.0	47.0	-	dB
	35.32MHz	27.0	34.0	-	dB
	32.90MHz	32.0	39.0	-	dB
	40.40MHz	40.0	52.0	-	dB
Sidelobe	25.00~32.90MHz	27.0	32.0	-	dB
	38.90~45.00MHz	35.0	42.0	-	dB
Temperature coefficient		-72		ppm/k	

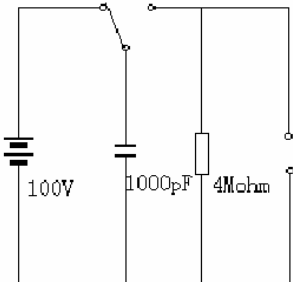
2.3 Environmental Performance Characteristics

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

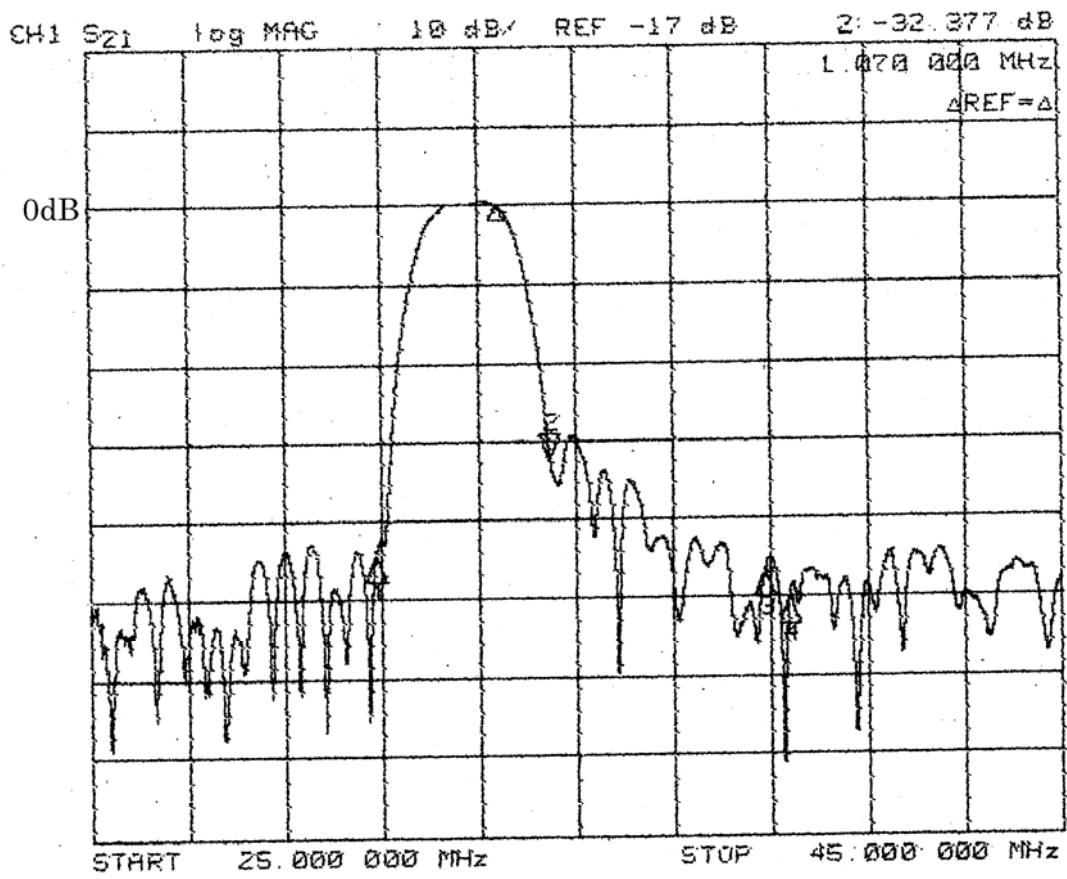
Item Test condition	Allowable change of absolute Level at center frequency(dB)
Vibration test 600-3300rpm amplitude 1.5mm 3 directions 2 H each	<1.0
Drop test On maple plate from 1 m high 3 times	<1.0
Lead pull test Pull with 1 kg force for 30 seconds	<1.0
Lead bend test 90° bending with 500g weigh 2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

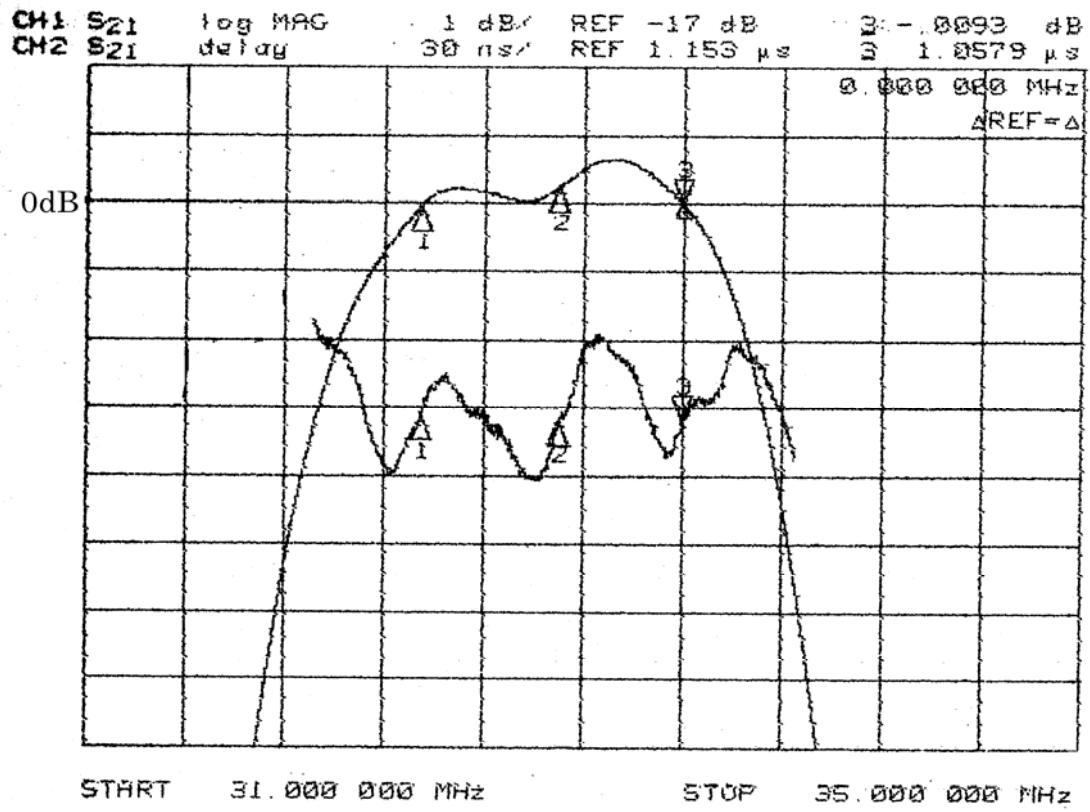
2.5 Voltage Discharge Test

Item Test condition	Allowable change of absolute Level at center frequency(dB)
Surge test Between any two electrode 	<1.0

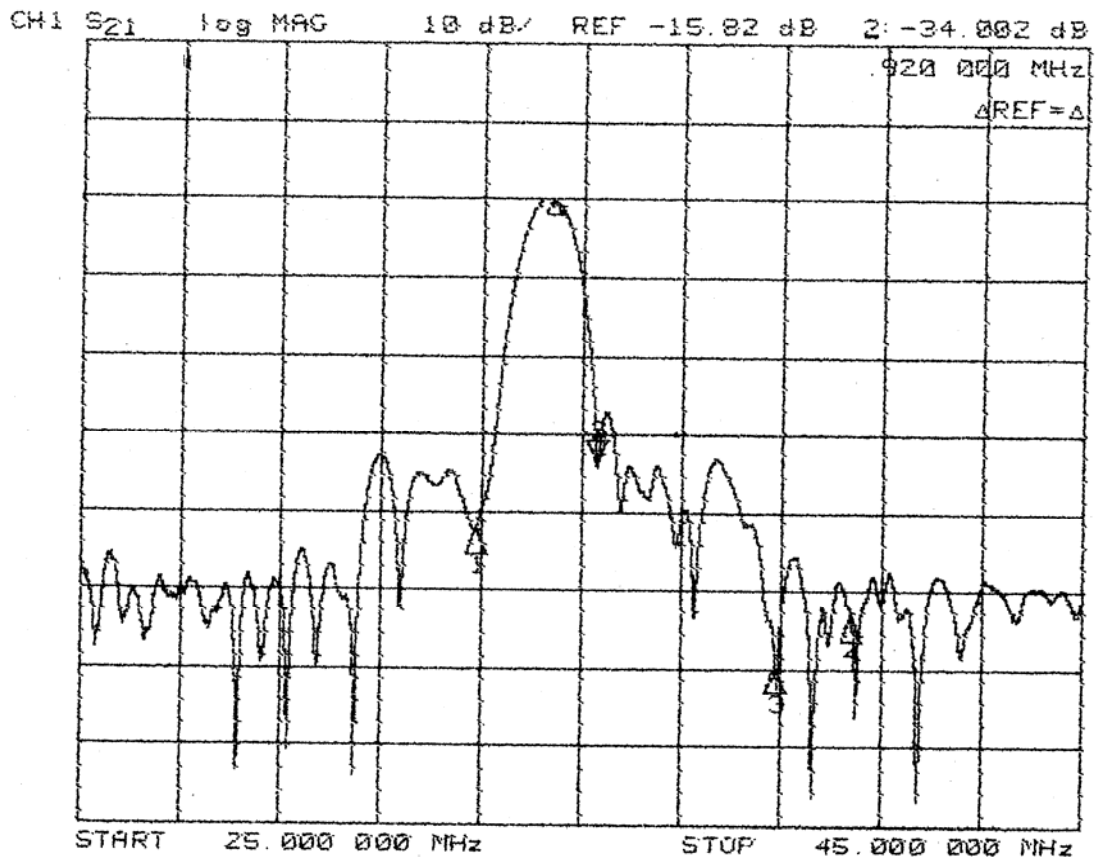
2.6 Frequency response:

Frequency response of channel 1:

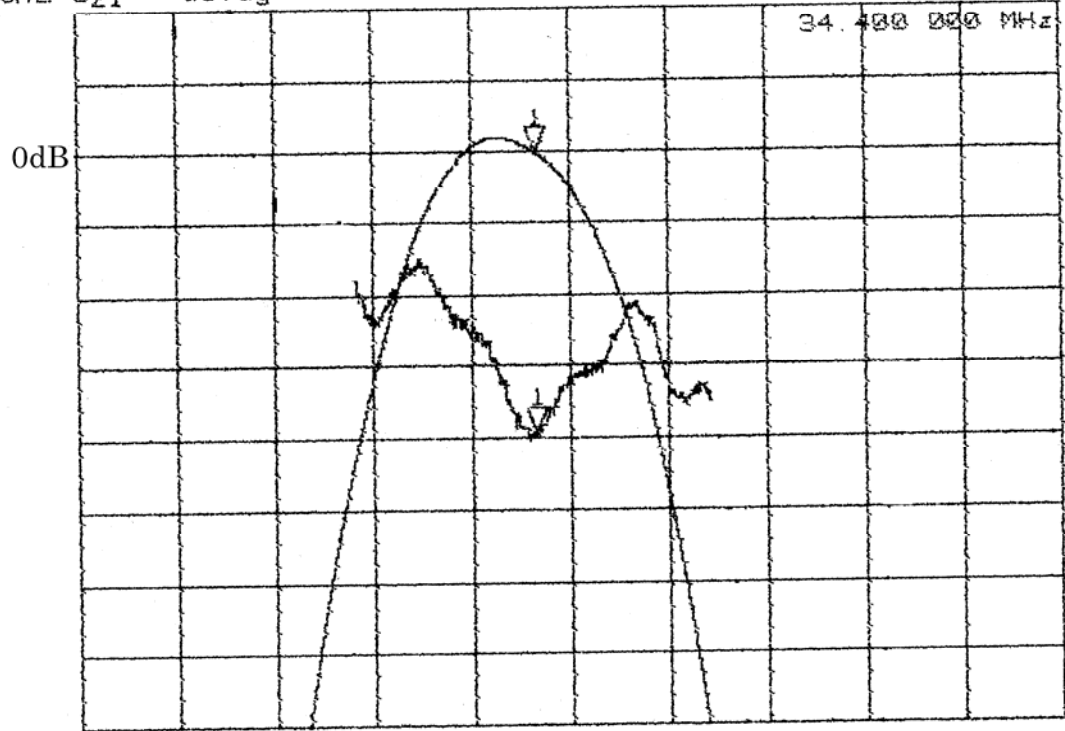




Frequency response of channel 2:



CH1 S21 log MAG 1 dB/ REF -16.38 dB 1: -16.403 dB
CH2 S21 delay 30 ns/ REF 1.127 μ s 1 1.0083 μ s



START 33.000 000 MHz STOP 36.000 000 MHz