



Approved by:
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# SPECIFICATION

PRODUCT: SAW FILTER

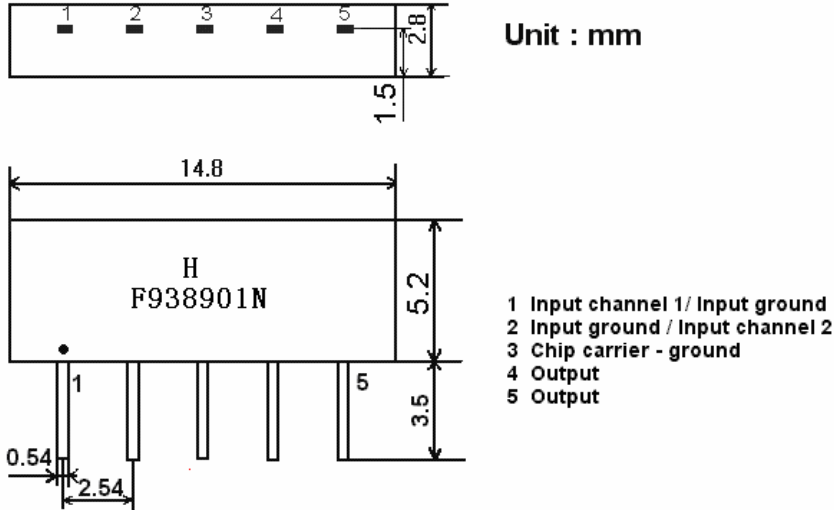
MODEL: HF938901N (K9453D) SIP5D

**HOPE MICROELECTRONICS CO., LIMITED**

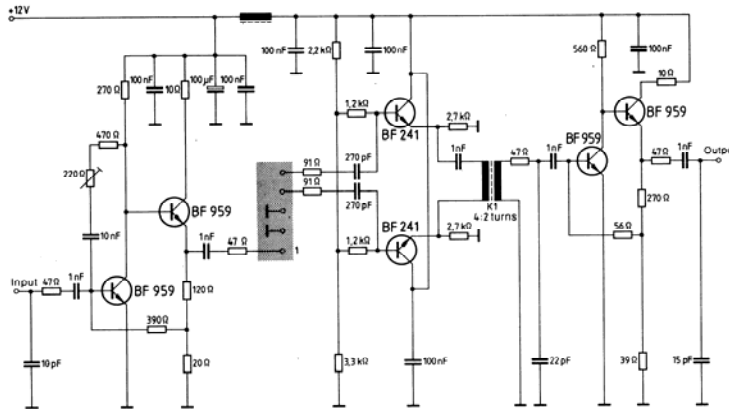
# 1. Construction

## 1.1 Dimension and materials

Type : F938901N



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

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 Electrical Characteristics

#### Characteristics of channel 1

Source impedance  $Z_S=50\ \Omega$

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

Item	Freq	min	typ	max	
Insertion attenuation Reference level	40.40MHz	12.2	14.2	16.2	dB
Relative attenuation	33.90MHz	38.0	47.0	-	dB
	38.40MHz	38.0	50.0	-	dB
	41.90MHz	34.0	42.0	-	dB
	32.40MHz	38.0	47.0	-	dB
Sidelobe	25.00~38.40MHz	35.0	42.0	-	dB
	41.90~45.00MHz	30.0	36.0	-	dB
Temperature coefficient		-72			ppm/k

#### Characteristics of channel 2

Source impedance  $Z_S=50\ \Omega$

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

Item	Freq	min	typ	max	
Insertion attenuation Reference level	33.40MHz	13.0	15.0	17.0	dB
Relative attenuation	33.05MHz	-1.8	-0.3	1.2	dB
	32.90MHz	-1.4	0.1	1.6	dB
	32.40MHz	-1.7	-0.2	1.3	dB
	38.90MHz	35.0	45.0	-	dB
	34.47MHz	22.0	30.0	-	dB
	30.90MHz	30.0	36.0	-	dB
	40.40MHz	32.0	40.0	-	dB
	40.90MHz	32.0	42.0	-	dB
Sidelobe	25.00~30.50MHz	35.0	42.0	-	dB
	40.40~45.00MHz	30.0	38.0	-	dB
Temperature coefficient		-72			ppm/k

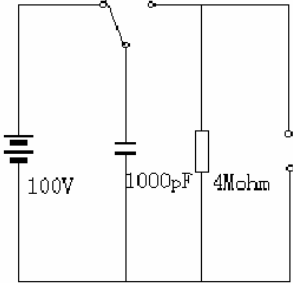
### 2.3 Environmental Performance Characteristics

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

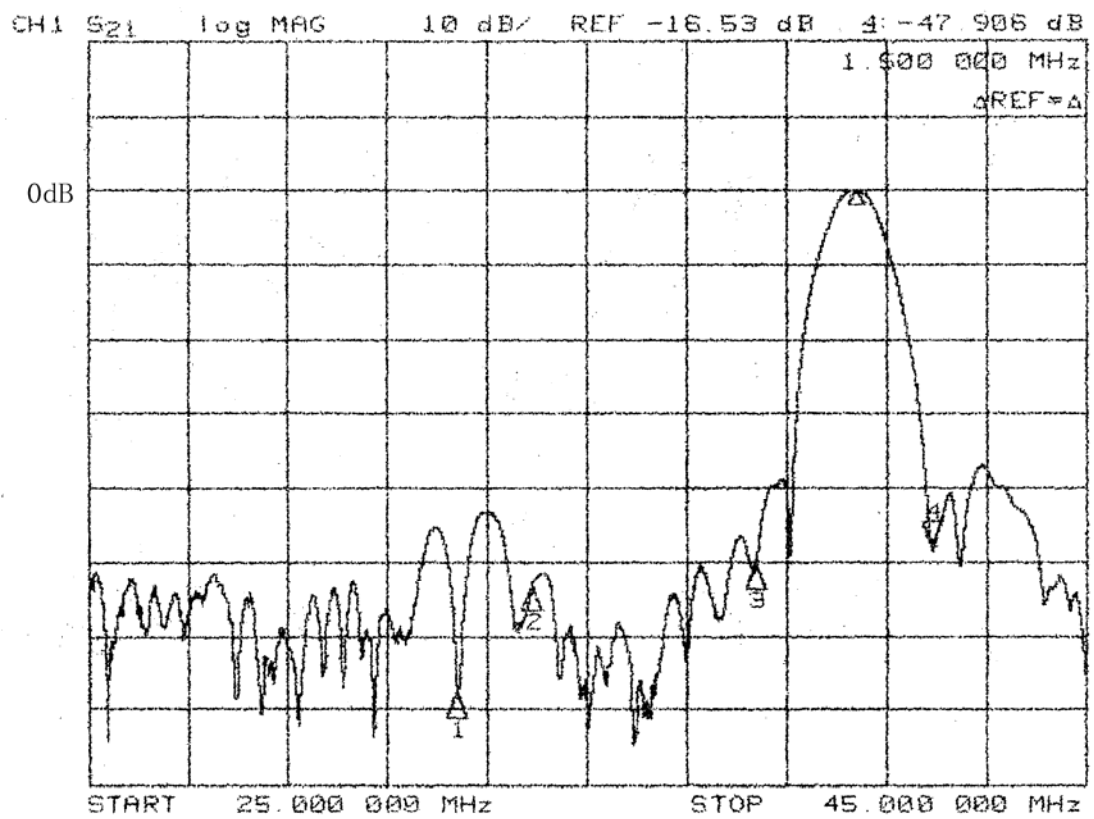
Item Test condition	Allowable change of absolute Level at center frequency(dB)
Vibration test 600-3300rpm amplitude 1.5mm 3 directions 2 H each	<1.0
Drop test On maple plate from 1 m high 3 times	<1.0
Lead pull test Pull with 1 kg force for 30 seconds	<1.0
Lead bend test 90° bending with 500g weigh 2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

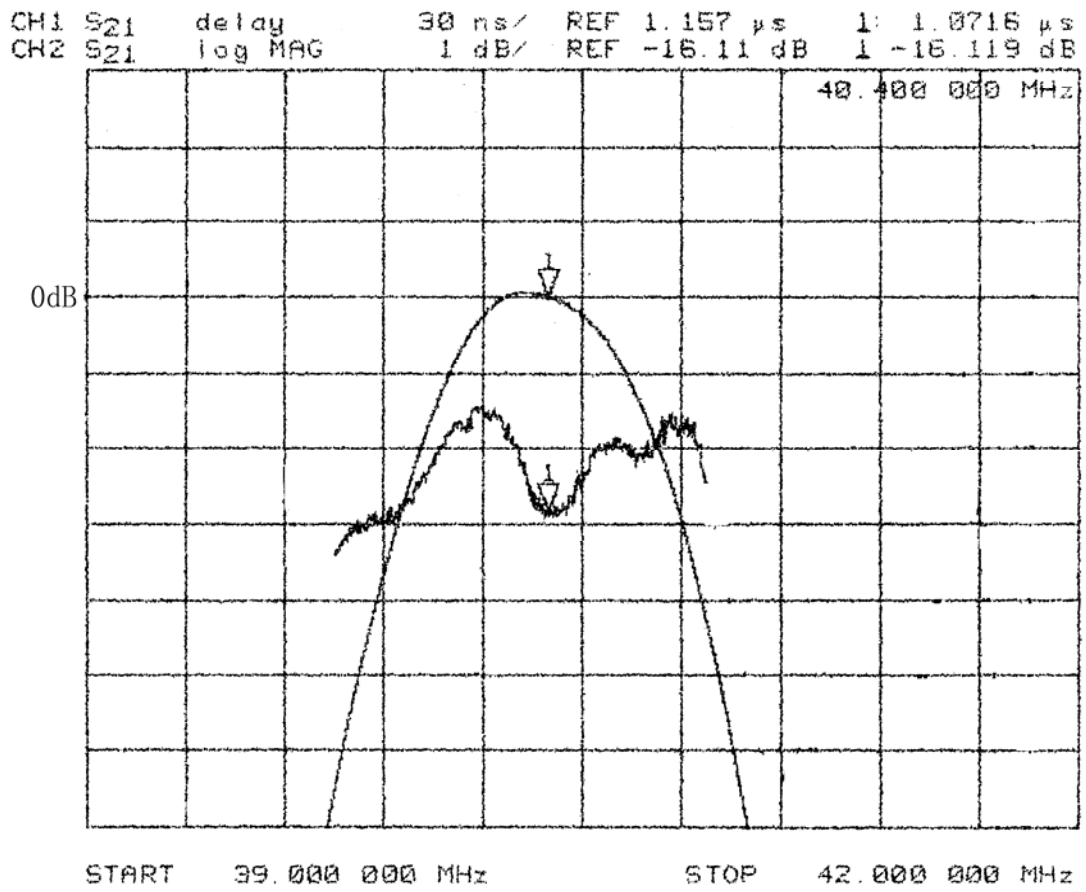
### 2.5 Voltage Discharge Test

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

### 3.6 Frequency response

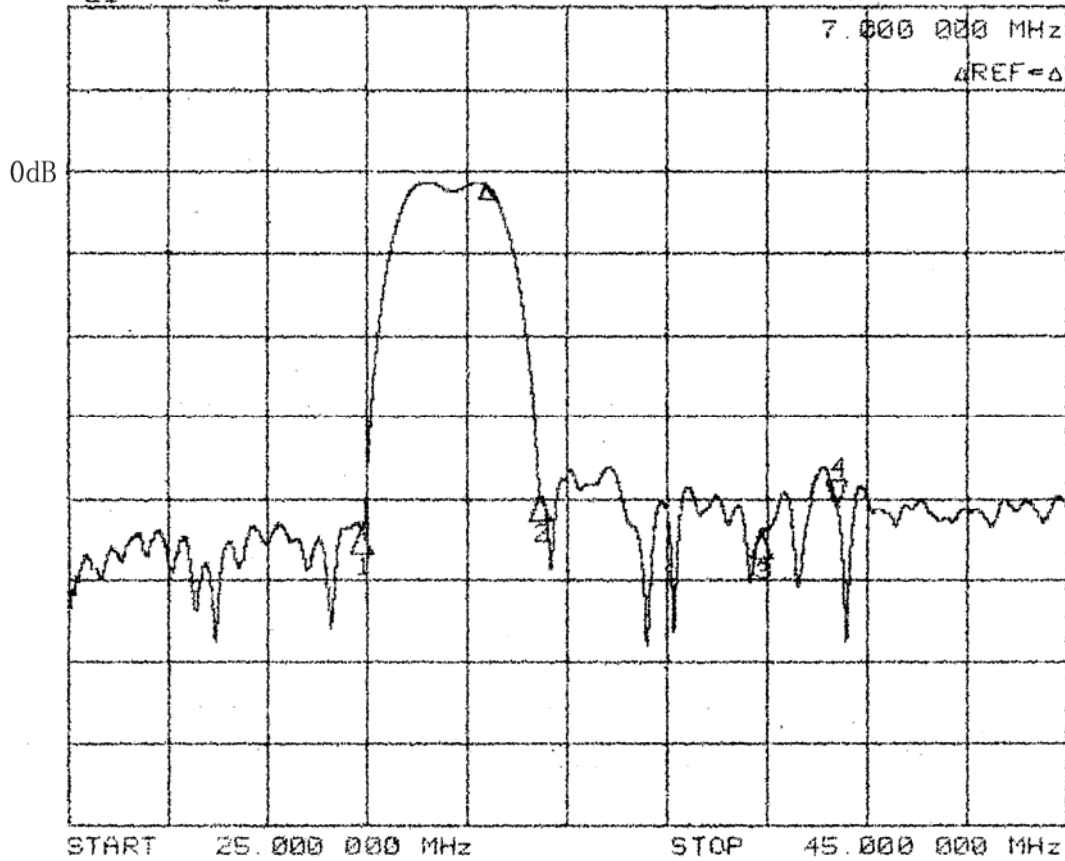
#### Frequency response of channel 1:





**Frequency response of channel 2:**

CH1 S21 log MAG 10 dB/ REF -16.53 dB 4: -39.435 dB



CH1 S21 delay 30 ns/ REF 1.22 ps 4: 373.8 ps  
CH2 S21 log MAG 1 dB/ REF -17.62 dB 4: .0032 dB

