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| Approved by: |
| Checked by: |
| Issued by: |

SPECIFICATION

PRODUCT: SAW FILTER

MODEL: HF938901N (K9453D) SIP5D

HOPE MICROELECTRONICS CO., LIMITED

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 | |

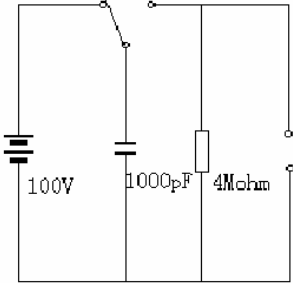
2.3 Environmental Performance Characteristics

| 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

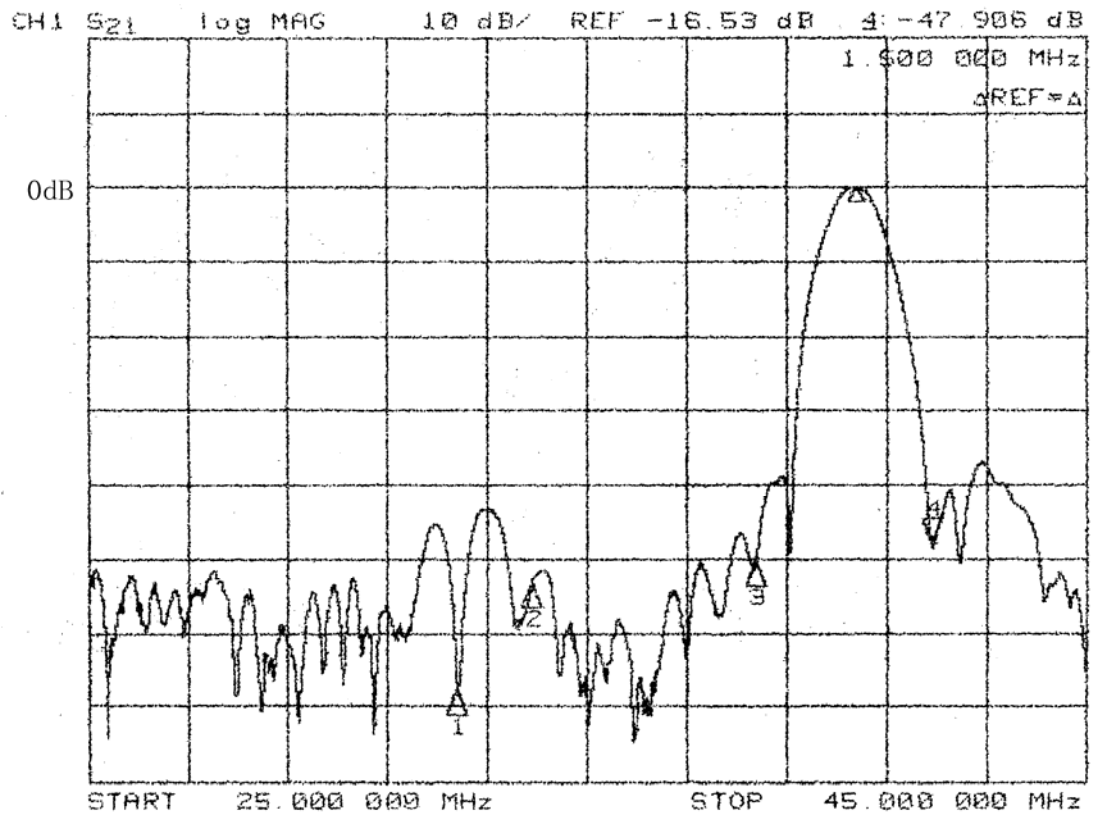
| Item Test condition | Allowable change of absolute Level at center frequency(dB) |
|--|--|
| Vibration test 600-3300rpm amplitude 1.5mm 3 directions 2 H each | <1.0 |
| Drop test On maple plate from 1 m high 3 times | <1.0 |
| Lead pull test Pull with 1 kg force for 30 seconds | <1.0 |
| Lead bend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

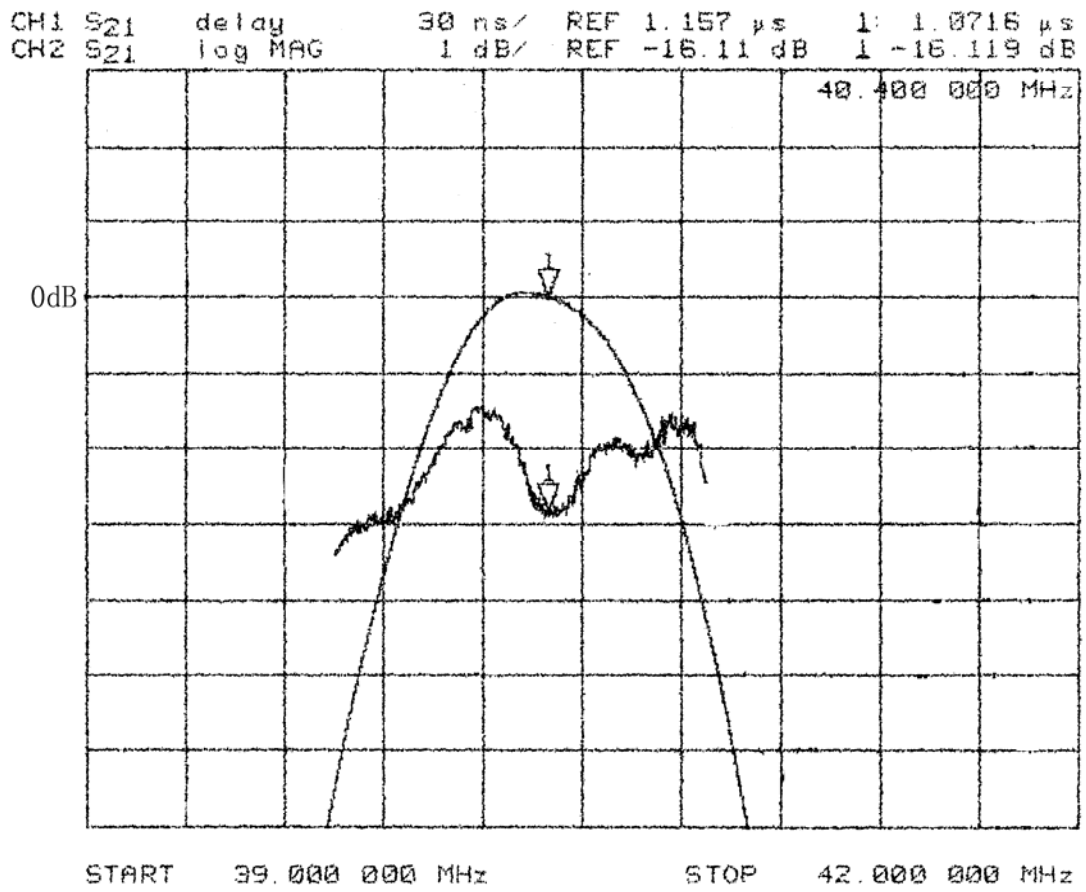
2.5 Voltage Discharge Test

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

3.6 Frequency response

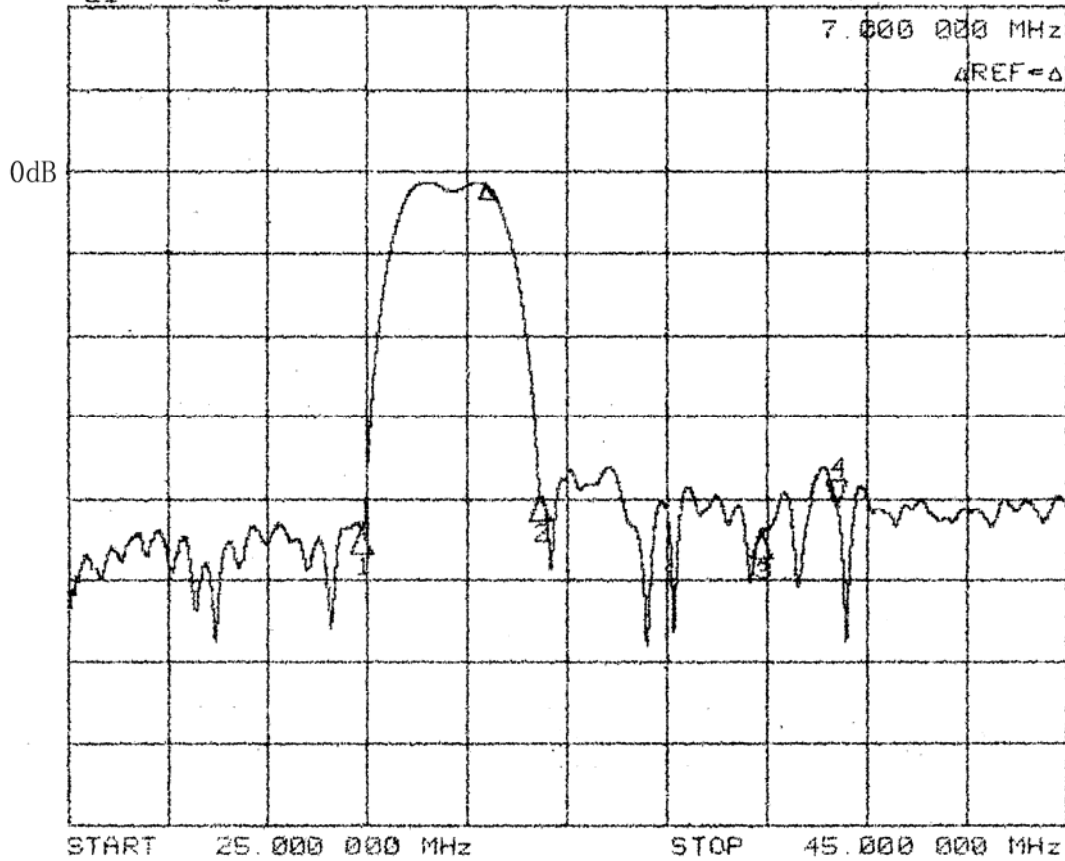
Frequency response of channel 1:





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

