

Approved by:

Checked by:

Issued by:

# ***SPECIFICATION***

**PRODUCT:** SAW Filter

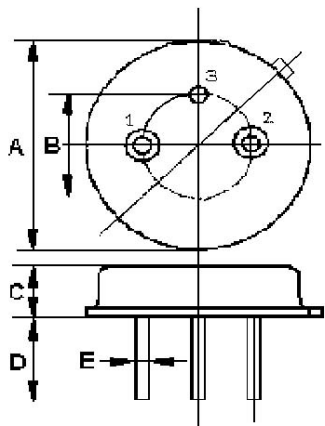
**M O D E L:** HPF480-1



**WUXI HOPE MICROELECTRONICS CO.,LTD**

The NMF480-1 is a IF filter for DSB receivers with constant group delay.

## 1. Package Dimension (TO-39A)



Pin	Connection
1	Input / Output
2	Output / Input
3	Case Ground

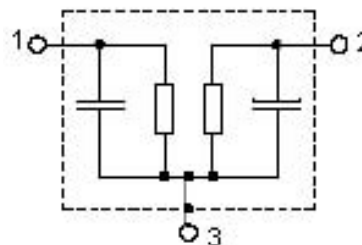
Dimensions	Data (Unit: mm)
A	9.35±0.10
B	5.08±0.10
C	3.40±0.10
D	3.00±0.20
E	Φ0.45±0.20

## 2. Marking

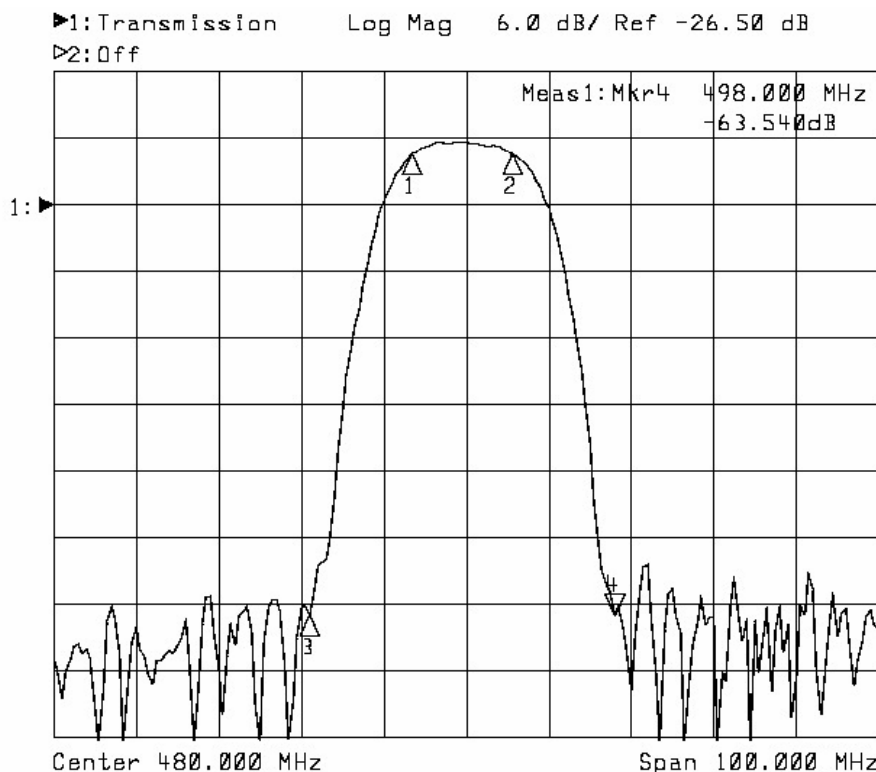
**HP**  
**F480-1**

Color: Black or Blue

## 3. Test Circuit



## 4. Typical Frequency Response



**5. Performance****5-1. Maximum Ratings**

Rating		Value	Units
AC Voltage Between Any Two Pins	$V_{PP}$	5	V
DC Voltage Between Any Two Pins	$V_{DC}$	0	V
Storage temperature range	$T_{stg}$	-40 to +85	°C
Operable temperature range	$T_A$	-25 to +85	°C

**5-2. Electronic Characteristics**Reference temperature:  $T_A = 25\text{ }^{\circ}\text{C}$ Terminating source impedance:  $Z_S = 50\text{ }\Omega$ Terminating load impedance:  $Z_S = 50\text{ }\Omega$ 

Characteristic		Min.	Typ.	Max.	Units
<b>Center Frequency</b>	$f_c$	479.00	480.00	481.00	MHz
<b>Insertion attenuation</b>	480.00 MHz (Reference level for the following data)	--	21.0	21.5	dB
<b>Pass bandwidth</b>	$\alpha_{rel} \leq 3\text{dB}$	16.60	18.00	18.80	MHz
<b>Relative attenuation</b>	$\alpha_{rel}$	--	3.4	5.4	dB
	471.00 MHz	--	3.0	5.4	dB
	489.00 MHz	--	3.0	5.4	dB
Lower side lobe	430.00 ... 461.00 MHz	35.0	45.0	--	dB
Upper side lobe	599.00 ... 530.00 MHz	35.0	45.0	--	dB
<b>Reflected wave signal suppression</b>	0.13μs ... 2.0μs after main pulse	40.0	46.0	--	dB
<b>Amplitude ripple (p-p)</b>	476.00 ... 484.00 MHz	--	0.6	1.0	dB
<b>Group delay (aperture 0.25MHz)</b>	480.00 MHz	--	281.0	--	ns
<b>Group delay ripple (p-p)</b>	471.50 ... 488.50 MHz	--	11.5	18.0	ns
<b>Temperature coefficient of frequency</b>	$TC_f$	--	-94	--	ppm/K

☺ **CAUTION: Electrostatic Sensitive Device. Observe precautions for handling!****NOTES:**

1. Typical test circuit is shown for TO-39 RF filters.
2. Pass band and reject bands are specified in reference to  $f_c$ .
3. All characteristics are specified over the operating temperature range and typical aging for 10 years.
4. Unless noted otherwise, all measurements are made with the filter installed in the specified test fixture. Note that insertion loss, bandwidth, and pass band shape are dependent on the impedance matching component values and quality. Demonstration circuits are available for confirmation of device performance.
5. One or more of the following U.S. Patents apply: 4,454,488; 4,616,197; and other pending.
6. All equipment designs utilizing this product must be approved by the appropriate government agency prior to manufacture or sale.
7. The design, manufacturing process, and specifications of this device are subject to change without notice.
8. The turnover temperature,  $T_O$ , is the temperature of maximum (or turnover) frequency,  $f_o$ . The nominal frequency at any case temperature,  $T_C$ , outside the operating temperature range may be calculated from:  

$$f = f_o [1 - FTC (T_O - T_C)^2].$$