AEROFLEX

Precision Supercomponents For Critical Applications

COMSTRON

PSC-4490

22.6 MHZ NYQUIST BANDPASS FILTER FOR DIGITAL TO ANALOG CONVERTER

FEATURES

- INVERSE SINC, SQUARE ROOT NYQUIST (ARBITRARY SHAPING AVAILABLE)
- FLAT GROUP DELAY
- SHARP ATTENUATION
- COMPACT SIZE
- FREQUENCY RANGE; 1 MHZ - 3000 MHZ

DESCRIPTION

The Comstron Model PSC-4490 is a Nyquist bandpass filter used in a DAC(digital to analog converter). The purpose of the filter is to normalize the amplitude response of an input $|(Sin\ x)/x|$ signal spectrum, and to reject unwanted frequencies while maintaining low group delay variation in the passband. The equalizing shape over the passband is $|x/\sin x|^2$ where $x = \frac{(\pi f)}{fs}$ and fs=50.0 MSPS (sampling rate).
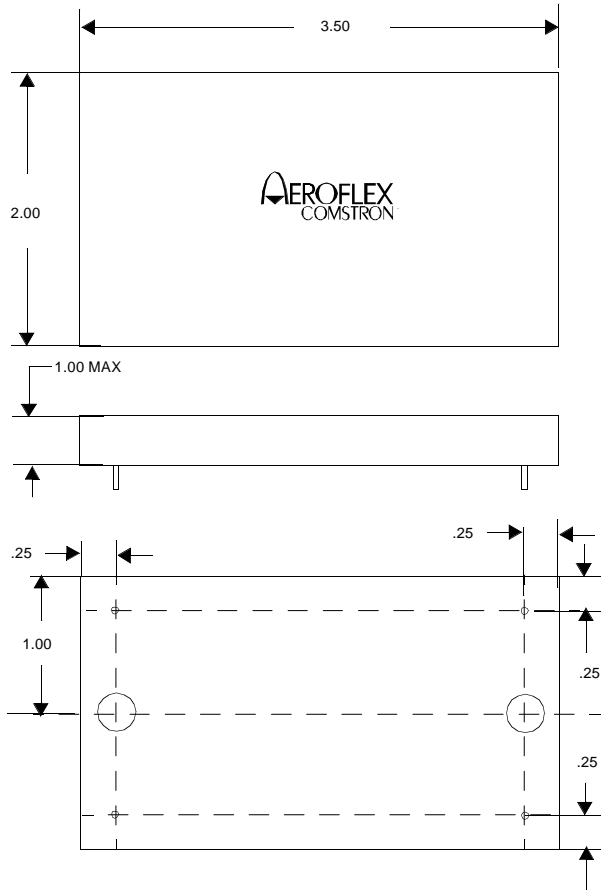
PSC-4490

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SPECIFICATIONS

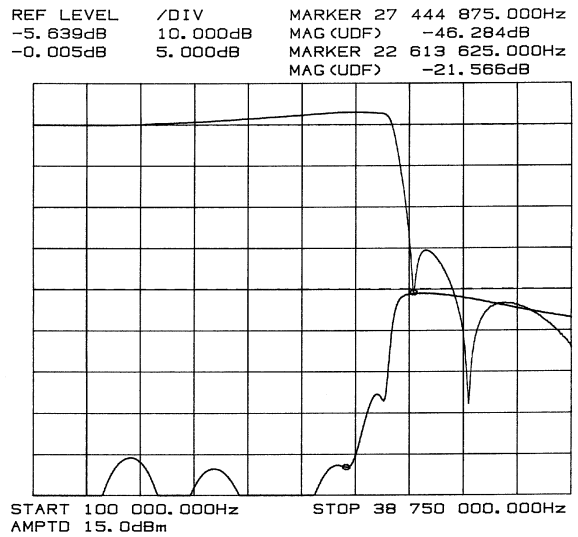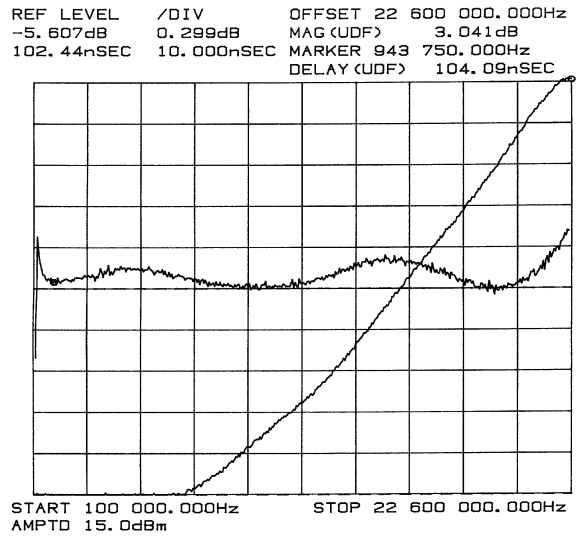| CHARACTERISTICS	TYPICAL	LIMITS
PASSBAND		
200 HZ TO 22.6 MHZ	-	
EQUALIZING SHAPE		
20LOG(X/SINX) DB	WITHIN ± .075 DB	<± .1 DB
VSWR	<1.15:1	<1.2:1
INSERTION LOSS		6.0 ± .5 DB AT 200 HZ
GROUP DELAY VARIATION OVER .6 TO 22.6 MHZ	15 NS	< 20 NS
STOPBAND REJECTION		
AT 3 HZ AND BELOW		>60 DB
AT 27.4 MHZ AND ABOVE		> 30 DB
AT 38.75 MHZ AND ABOVE		> 50 DB

OUTLINE DRAWING

RESPONSE CURVES


```
REF LEVEL     /DIV        MARKER 27 444 875.000Hz
-5.639dB      10.000dB    MAG(UDF)     -46.284dB
-0.005dB      5.000dB     MARKER 22 613 625.000Hz
                          MAG(UDF)     -21.566dB
```

```
START  100 000.000Hz           STOP  38 750 000.000Hz
AMPTD  15.0dBm
```

Figure 1: Overall Response


```
REF LEVEL     /DIV        OFFSET 22 600 000.000Hz
-5.607dB      0.299dB     MAG(UDF)      3.041dB
102.44nSEC    10.000nSEC  MARKER 943 750.000Hz
                          DELAY(UDF)    104.09nSEC
```

```
START  100 000.000Hz           STOP  22 600 000.000Hz
AMPTD  15.0dBm
```

Figure 2: Passband Response

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