AEROFLEX

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
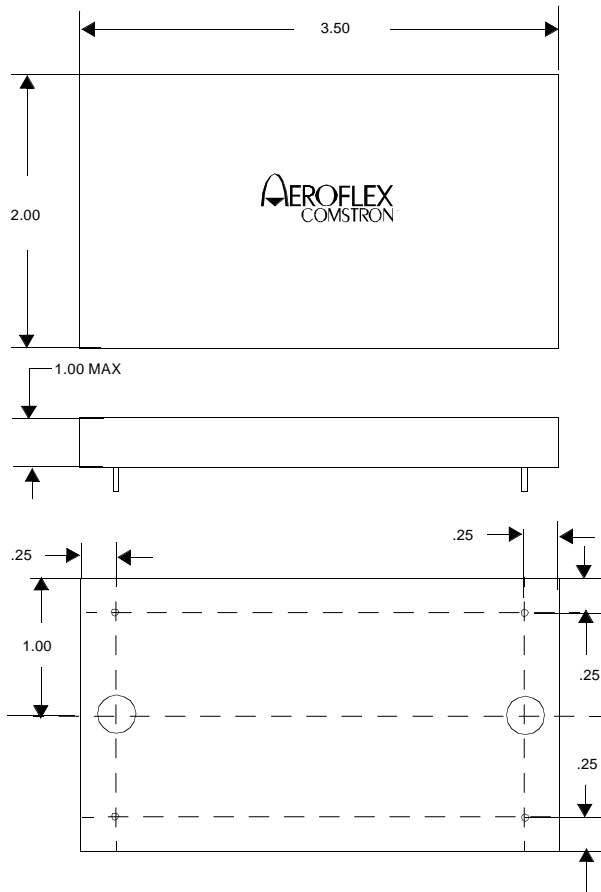- FREQUENCY RANGE; 1 MHZ - 3000 MHZ

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 $|(\text{Sin } x)/x|$ 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).

SPECIFICATIONS

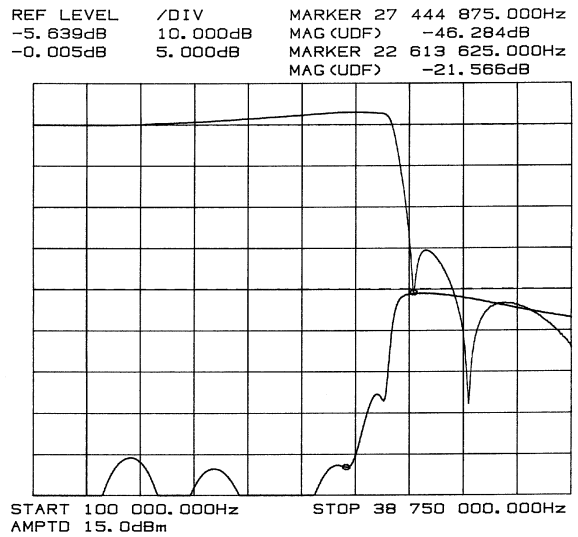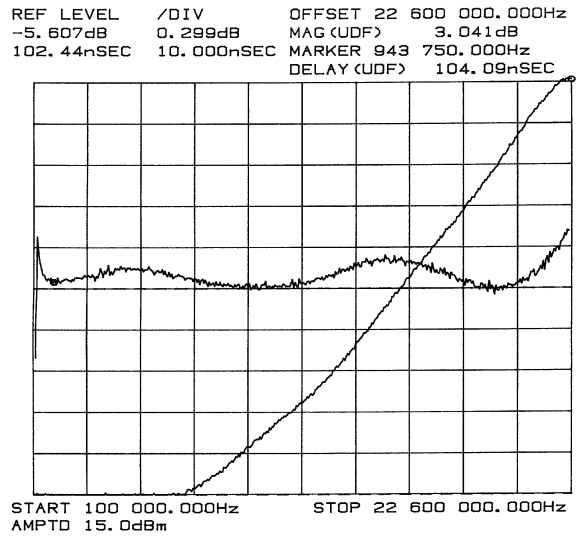| CHARACTERISTICS	TYPICAL	LIMITS
PASSBAND		
200 HZ TO 22.6 MHZ	-	
EQUALIZING SHAPE		
20LOG(X/SINX) DB	WITHIN ± .075 DB	<± .1 DB
VSWR	<1.15:1	<1.2:1
INSERTION LOSS		6.0 ± .5 DB AT 200 HZ
GROUP DELAY VARIATION OVER .6 TO 22.6 MHZ	15 NS	< 20 NS
STOPBAND REJECTION		
AT 3 HZ AND BELOW		>60 DB
AT 27.4 MHZ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