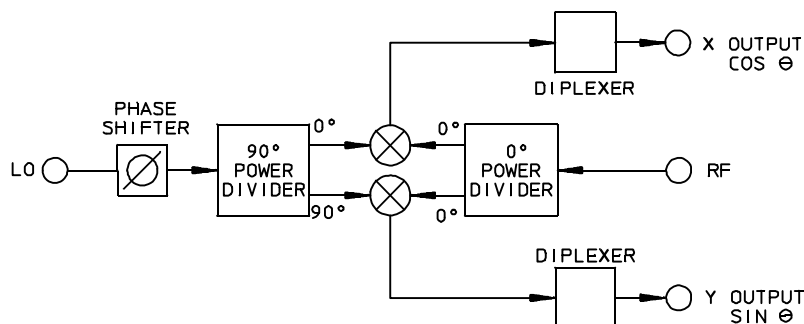


# PCF-3F Series

# PHASE COMPARATORS

10 to 500 MHz / High Signal Isolation / High Accuracy / Hi-Rel Flatpack



## PRINCIPAL SPECIFICATIONS

Model Number	Center Frequency, $f_0$ , MHz	Usable Bandwidth, MHz
PCF-3F-***B	10 - 500	$f_0 \pm 5\%$

For complete Model Number replace \*\*\* with desired Center Frequency,  $f_0$  in MHz.

## GENERAL SPECIFICATIONS

### RF Characteristics

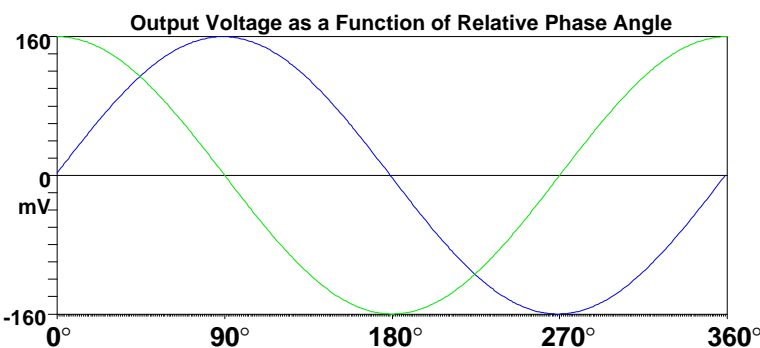
Phase Difference Range: 0 - 360°  
 VSWR (RF/LO): 2.0:1 max.  
 LO Input Power (Ref.): +10  $\pm$ 1 dBm  
 RF Input Power (Unknown): +2 dBm max.  
 Rise Time/Fall Time: 100 ns typ.  
 Impedance (Unknown & Ref.): 50  $\Omega$  nom.

### Video Output Characteristics

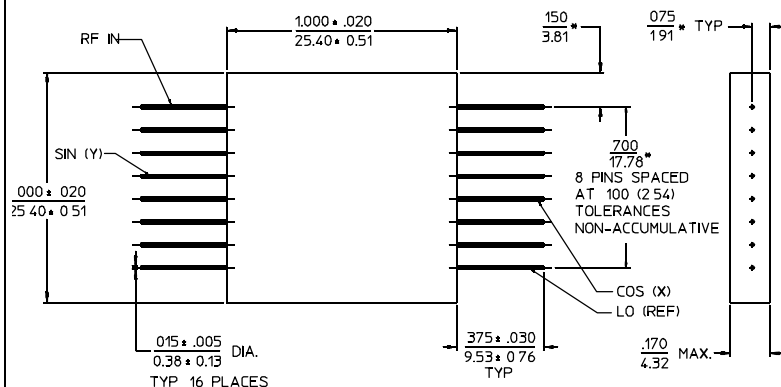
"X" Output: K Cos  $\theta$   
 "Y" Output: K Sin  $\theta$   
 Peak Amplitude (RF=0 dBm): 150 mV min.  
 (into 150  $\Omega$ )  
 Bandwidth: DC-10% of RF  
 Impedance (X and Y): 150  $\Omega$  nom.  
 Signal Leakage (Isolation): 30 dB typ.

### Output Accuracy

Amplitude Balance:  $\pm$  5 mV max.  
 Zero Crossing (In-Phase In):  $\pm$  2° @  $f_0$   
 Phase Error, Arc tan  $\theta$ :  $\pm$  5° @  $f_0$   
 Weight, nominal: 0.32 oz (9 g)  
 Operating Temperature: -55 to +85°C



## F-Package Outline



- NOTES:
1. Tolerance on 3 place decimals  $\pm$ .010(.25) except as noted.
  2. Dimensions in inches over millimeters.
  3. Dimensions marked with \* apply only at body.
  4. All unmarked pins are case ground.

## General Notes:

1. Merrimac Phase Comparators provide two output signals each of which is proportional to the phase relation of the two inputs.
2. One output is proportional to the sine of the relative phase angle between the RF and LO inputs while the other output represents the cosine of the relative phase angle between the inputs. Using the sine and cosine outputs together resolves the inherent  $\pi$ -period ambiguity across four quadrants for both outputs.
3. The phase comparator is an integrated assembly consisting of a power divider, two balanced mixers and a 90° quadrature hybrid. Two diplexers attenuate the second harmonic (2  $f_0$ ) at the outputs.
4. Custom designs are available that provide higher precision and better accuracy. Inquiries concerning your special applications are welcomed.

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