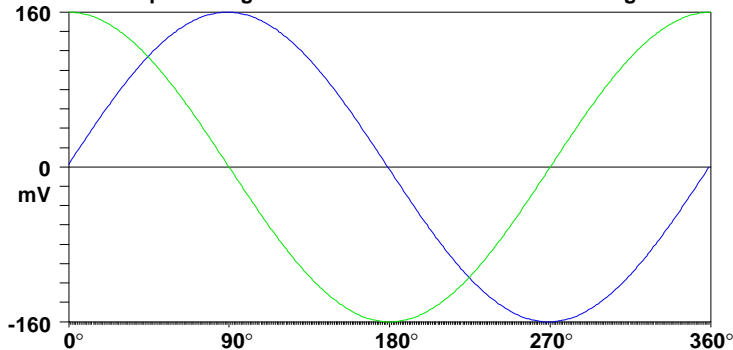
**PRINCIPAL SPECIFICATIONS**

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

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

Output Voltage as a Function of Relative Phase Angle

**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:

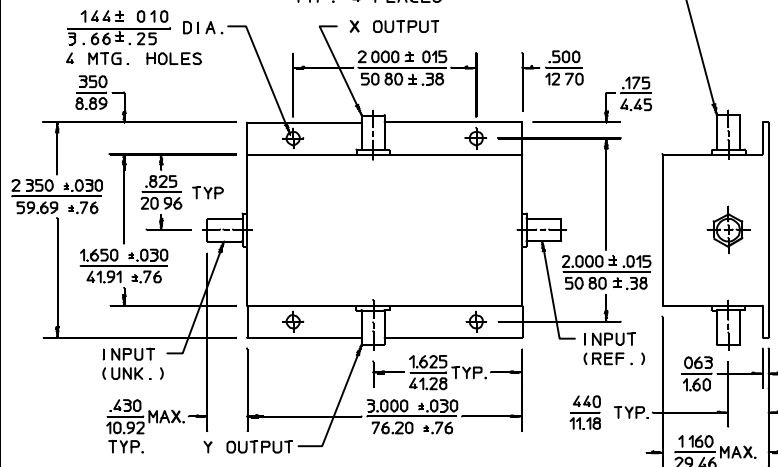
"X" Output:  $K \cos \theta$   
 "Y" Output:  $K \sin \theta$   
 Peak Amplitude (RF=0 dBm): 150 mV min.  
 (into 150  $\Omega$ )  
 Bandwidth: DC-10% of RF  
 Impedance (X and Y): 150  $\Omega$  nom.  
 Signal Leakage (Isolation): 30 dB typ.

## Output Accuracy:

Amplitude Balance:  $\pm 5$  mV max.  
 Zero Crossing (In-Phase Inputs):  $\pm 1^\circ$  @  $f_0$   
 Phase Error, Arc tan  $\theta$ :  $\pm 5^\circ$  @  $f_0$   
 Weight, nominal: 0.32 oz (9 g)  
 Operating Temperature: -55 to +85°C

**Package Outline**

CONNECTOR, RECEPTACLE, FEMALE, SMA TYPE, MATES WITH CONNECTOR, PLUG, MALE, PER MIL-C-39012 TYP. 4 PLACES



NOTES: 1. Tolerance on 3 place decimals  $\pm 0.020$  (.51) except as noted.  
 2. Dimensions in inches over millimeters.

**General Notes:**

- Merrimac Phase Comparators provide two output signals each of which is proportional to the phase relation of the two inputs.
- 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.
- 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 ( $2f_0$ ) at the outputs.
- Custom designs are available that provide higher precision and better accuracy. Inquiries concerning your special applications are welcomed.

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