

# HC100

WR-10 hybrid circulator



**MicroHarmonics**

Superior mm-Wave Components

## Specifications

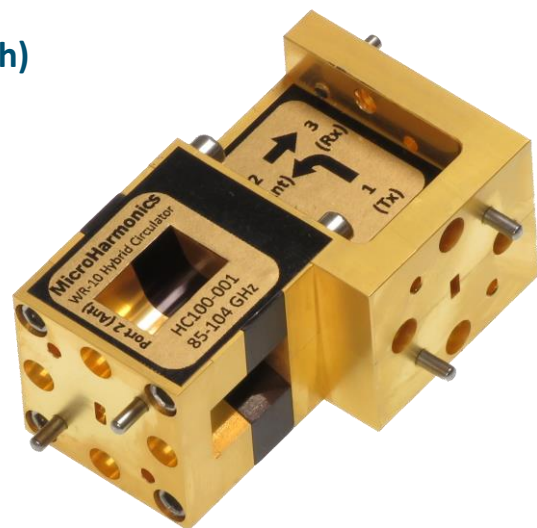
Flange	WR-10
Frequency (GHz)	85-104
Insertion Loss (dB, avg)	0.6
Insertion Loss (dB, max)	1.5
Isolation [ $S_{12}$ ] (dB, typ min)	24
Isolation [ $S_{23}$ ] (dB, typ min)	24
Isolation [ $S_{31}$ ] (dB, typ min)	18
Return Loss (dB, typ min)	18
VSWR (typ max)	1.3:1
Maximum Power (W)	5

## WR-10 Hybrid Circulator

The patent-pending hybrid circulator is designed for wideband millimeter wave applications. The hybrid circulator is an innovative technology, combining an orthomode transducer with a Faraday rotator to achieve more than triple the bandwidth of the traditional Y-junction. Every circulator is tested on a vector network analyzer to ensure conformity and the test data is provided to the customer.

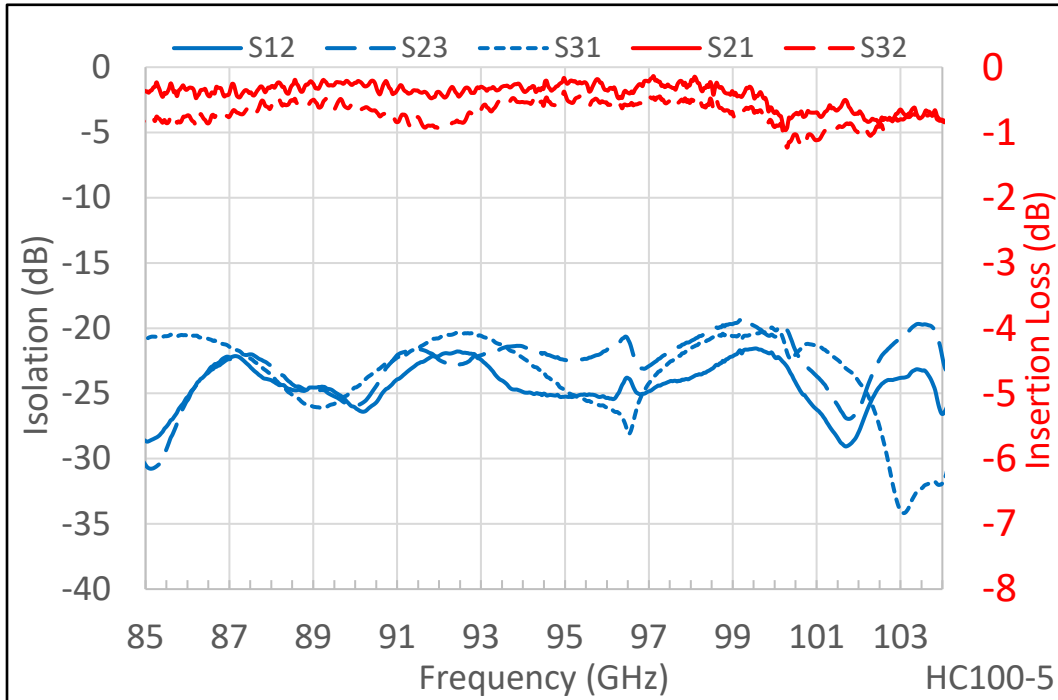
## 85-104 GHz Bandwidth

- ◆ Wideband (24% fractional bandwidth)
- ◆ Internal waveguide screw access
- ◆ Anti-cocking waveguide flanges
- ◆ Resists stray magnetic fields
- ◆ Comprehensive test data
- ◆ Low insertion loss
- ◆ Diamond heatsink
- ◆ Patent pending

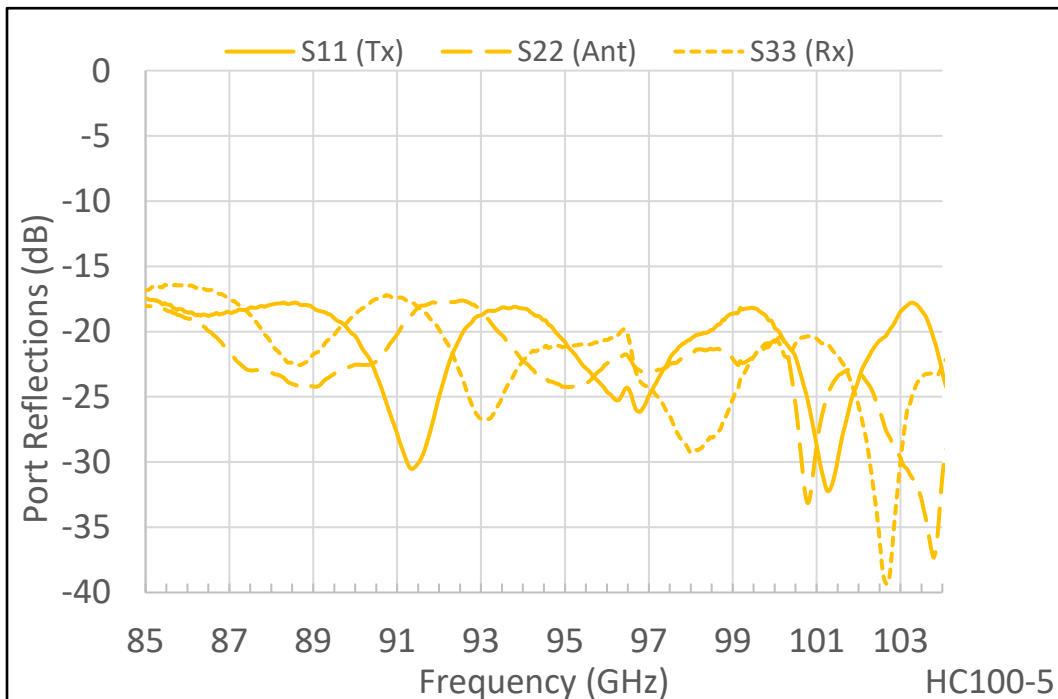




## Insertion Loss and Isolation



## Port Reflections

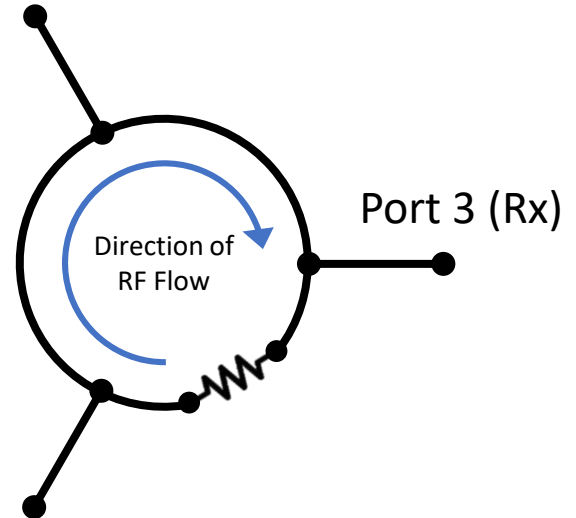




### Asymmetry

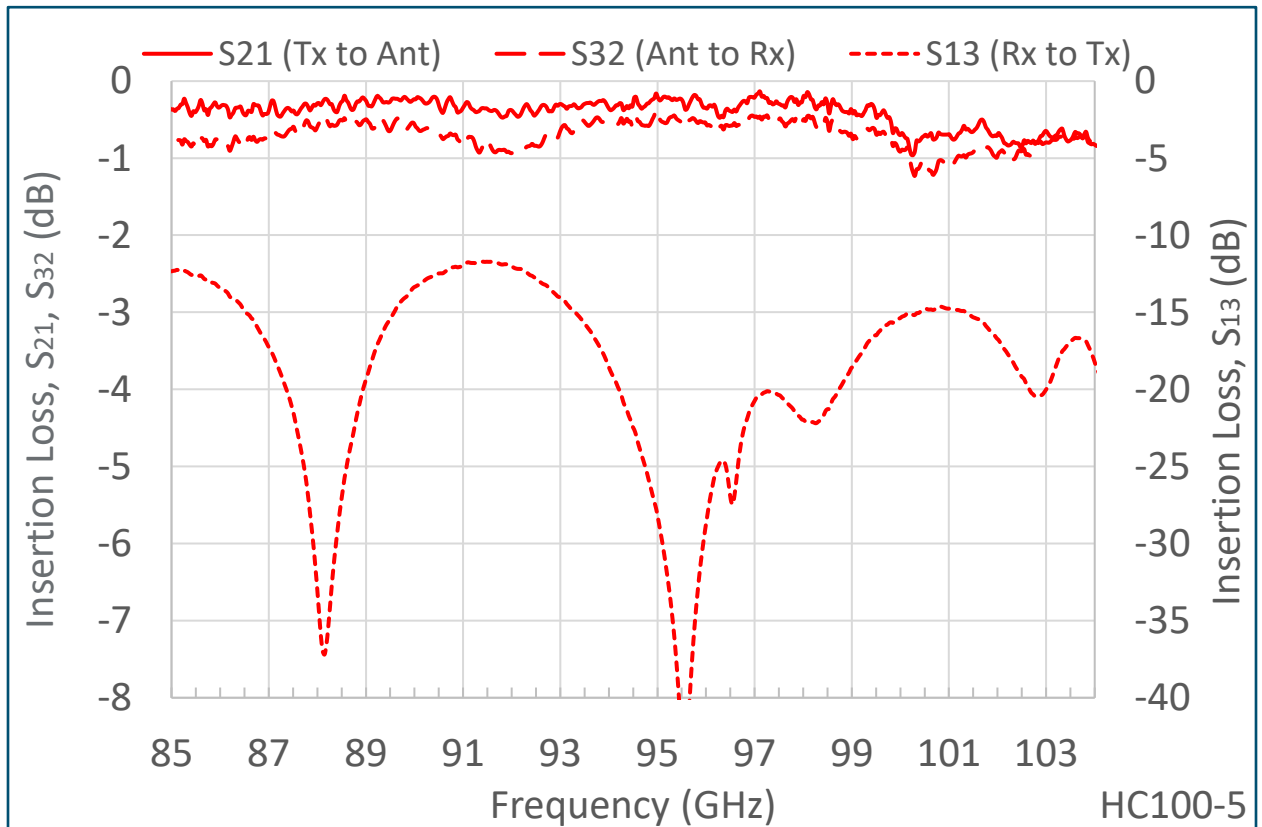
Unlike the Y-junction circulator, the hybrid circulator is asymmetric. The path from port 3 to port 1 is internally attenuated as shown in the schematic to the right and verified by the  $S_{13}$  trace in the measured data below. On request, the hybrid circulator can be assembled in a way that restores the symmetry if needed.

Port 2 (Ant)

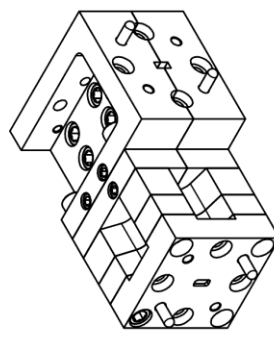
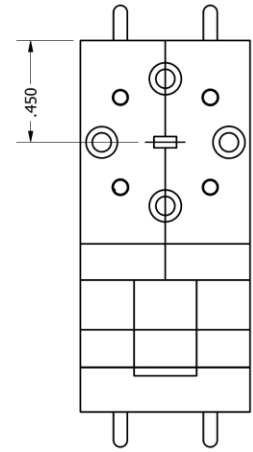
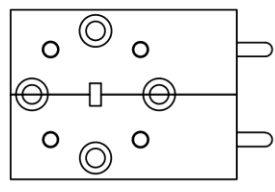
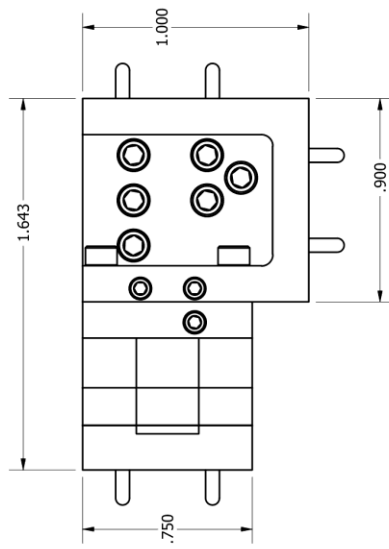
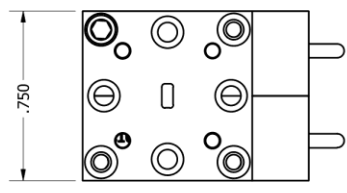


Port 1 (Tx)

### Asymmetric Insertion Loss



Micro Harmonics	Proprietary - Micro Harmonics Corporation		REVISION HISTORY		1	
	Date	2/10/2023	ZONE	REV		DATE
					2/10/2023	SCS
			DESCRIPTION			
			RELEASE FOR CUSTOMER			



PART NUMBER - DESCRIPTION		MATERIAL & FINISH:		1
HC100 Dimension Drawing		HC100		
FLANGES:	UG-383/U	DWG. UNITS:	INCHES	2
		DRAWN BY:	SCS	3
		SIZE:	B	4
		PAGE NUMBER:	1 of 1	5
APPROVAL:			JTK - 2/10/2023	6
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