

# HC122

WR-12 hybrid circulator



**MicroHarmonics**

Superior mm-Wave Components

## Specifications

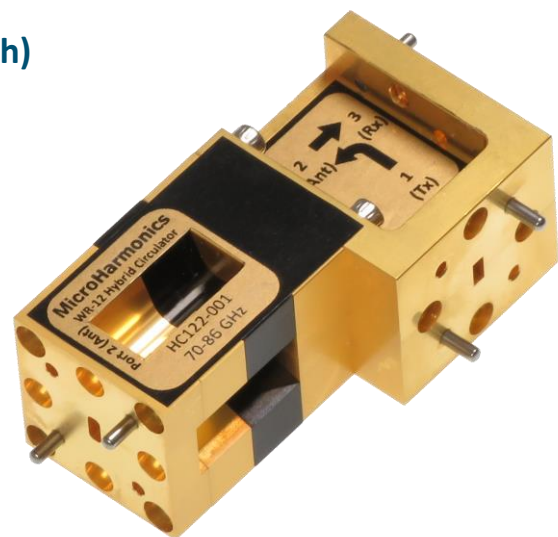
Flange	WR-12
Frequency (GHz)	70-86
Insertion Loss (dB, avg)	0.6
Insertion Loss (dB, max)	1.3
Isolation [ $S_{12}$ ] (dB, typ min)	21
Isolation [ $S_{23}$ ] (dB, typ min)	22
Isolation [ $S_{31}$ ] (dB, typ min)	20
Return Loss (dB, typ min)	17
VSWR (typ max)	1.35:1
Maximum Power (W)	5

## WR-12 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 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.

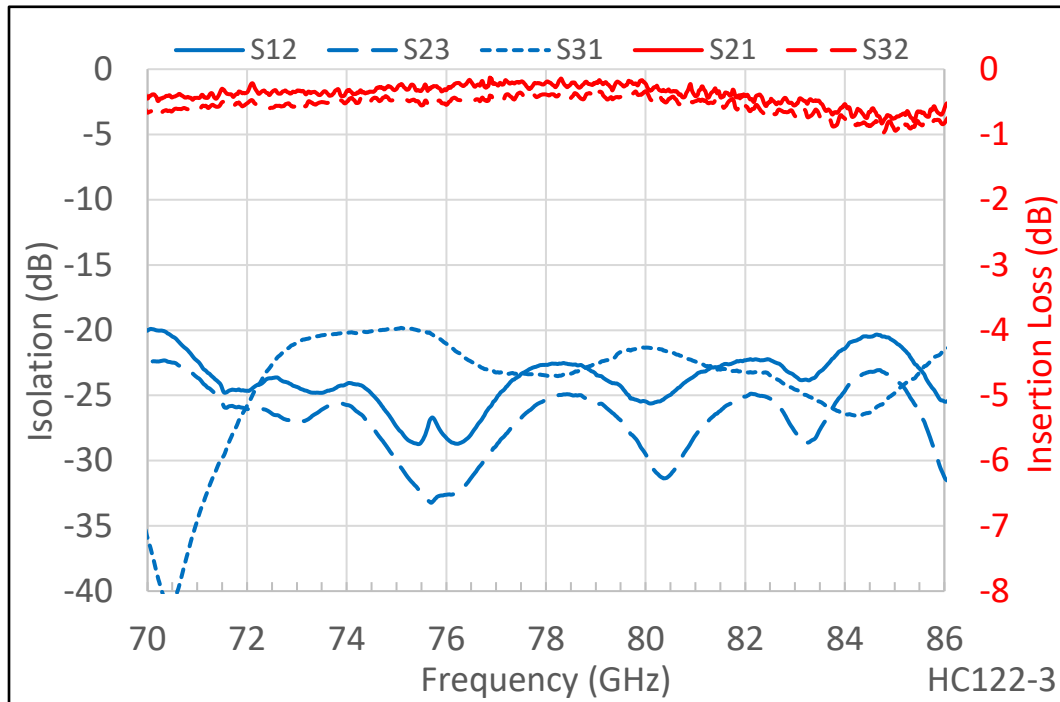
## 70-86 GHz Bandwidth

- ◆ 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

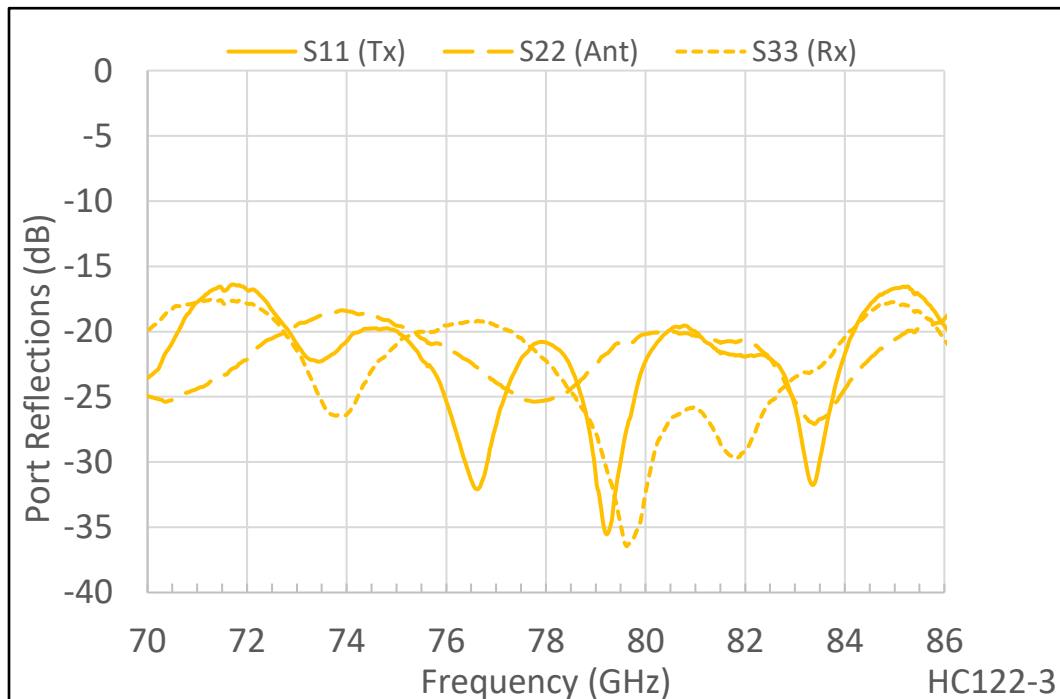




## Insertion Loss and Isolation



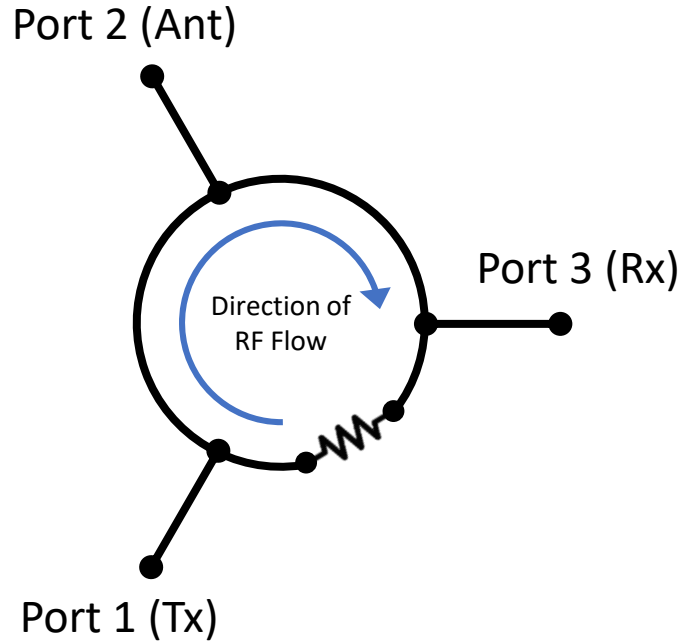
## Port Reflections



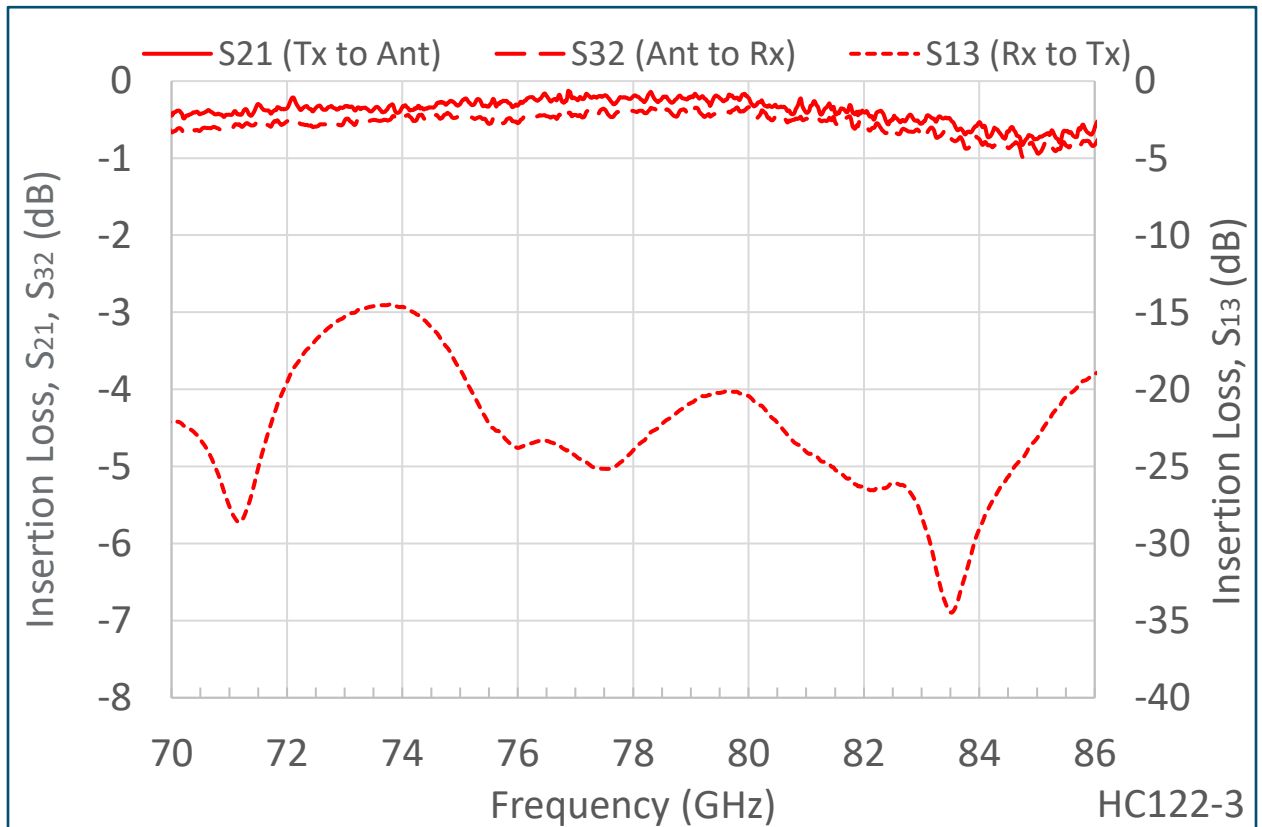


### Asymmetry

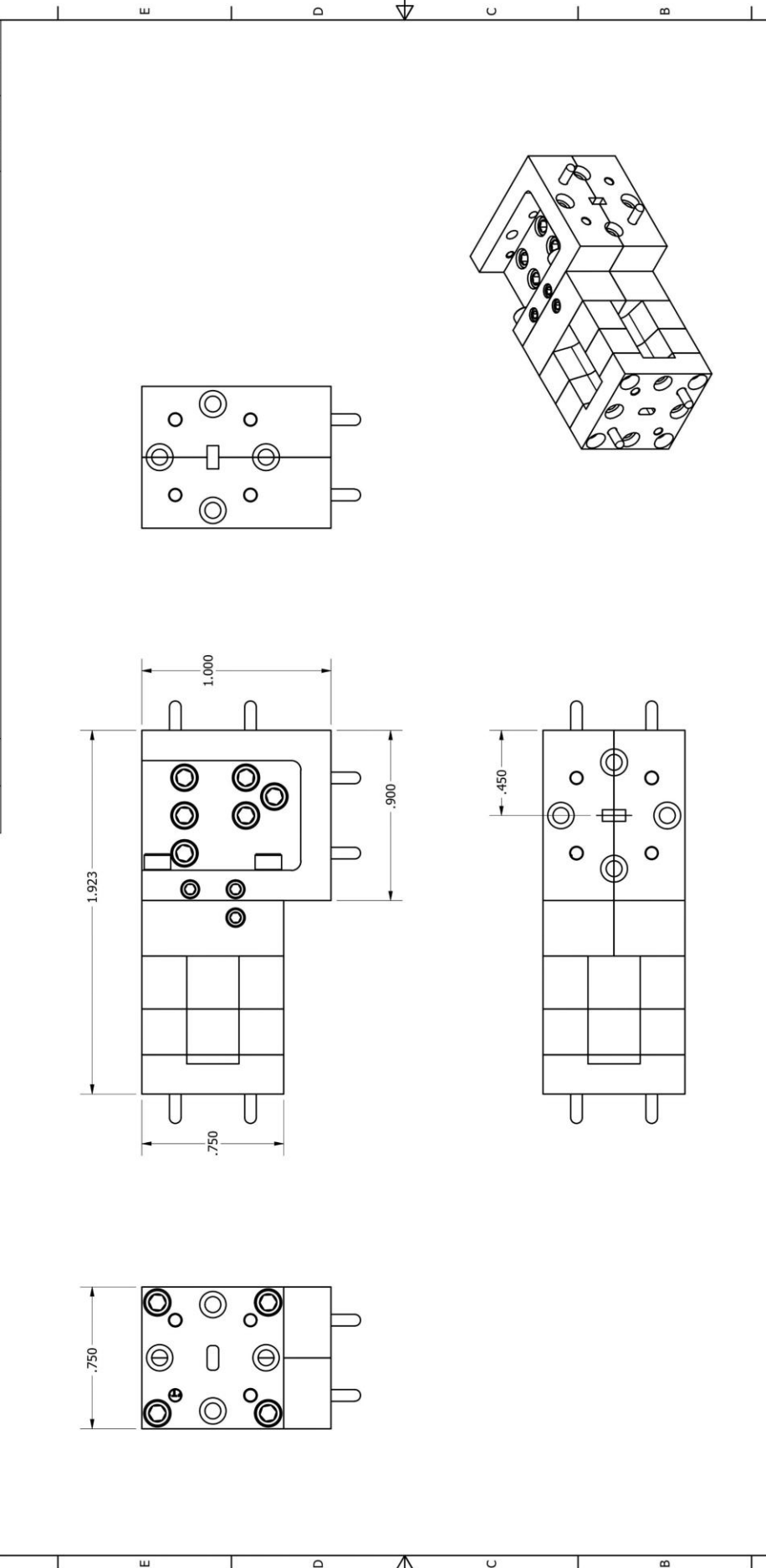
Unlike the Y-junction circulator, the hybrid circulator is asymmetric. The path from port 3 to port 1 is internally attenuated as shown in the schematic to the right and verified by the  $S_{13}$  trace in the measured data below. On request, the hybrid circulator can be assembled in a way that restores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



### Asymmetric Insertion Loss



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



PART NUMBER - DESCRIPTION		MATERIAL & FINISH:	
HC122 Dimension Drawing		HC122	
DWG. UNITS:	DRAWN BY:	SIZE:	PAGE NUMBER:
INCHES	SCS	B	1 of 1
FLANGES:	UG-383/U	APPROVAL:	JTK - 1/10/2023

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