

# HC34

WR-3.4 hybrid circulator



**MicroHarmonics**

Superior mm-Wave Components

## Specifications

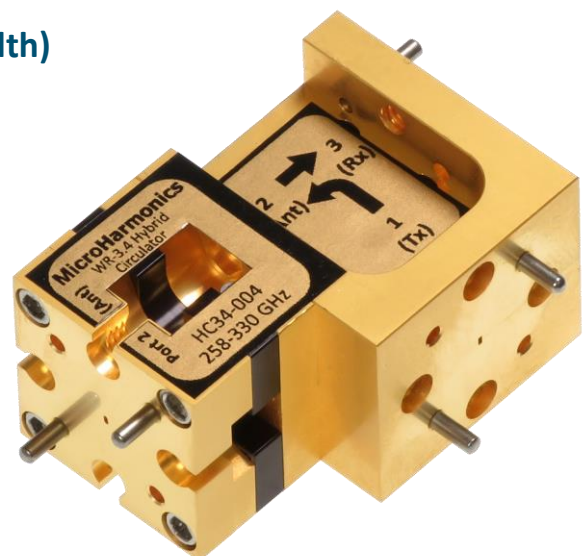
Flange	WR-3.4
Frequency (GHz)	258-330
Insertion Loss (dB, avg)	2.6
Insertion Loss (dB, max)	4.5
Isolation [ $S_{12}$ ] (dB, typ min)	20
Isolation [ $S_{23}$ ] (dB, typ min)	20
Isolation [ $S_{31}$ ] (dB, typ min)	17
Return Loss (dB, typ min)	14
VSWR (typ max)	1.55:1
Maximum Power (W)	0.75

## WR-3.4 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 an order of magnitude greater bandwidth than 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.

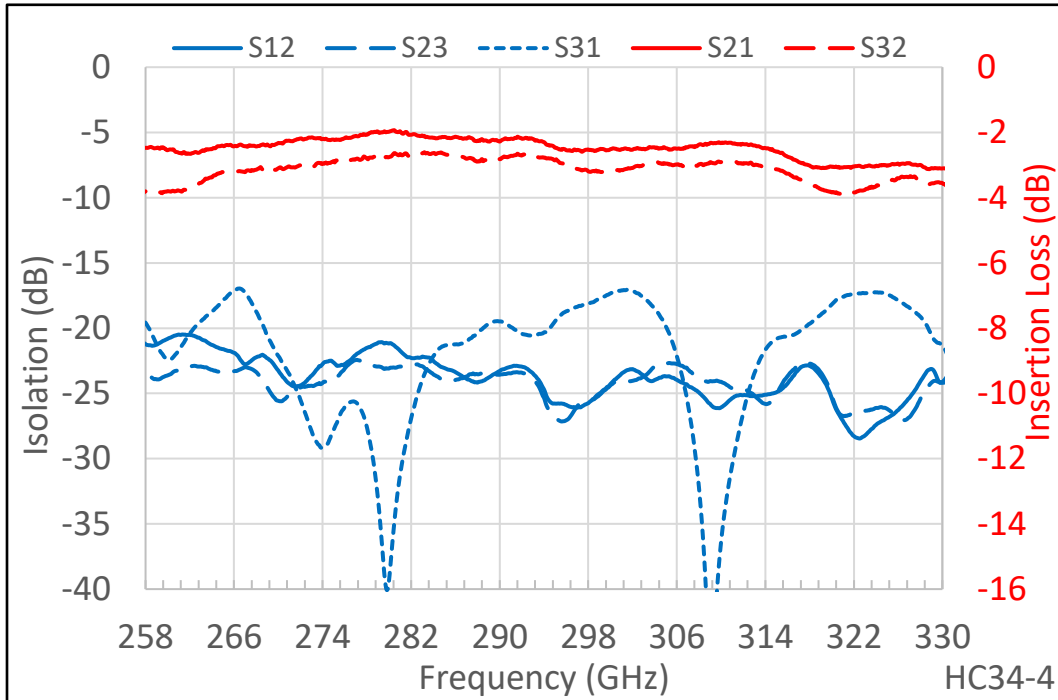
## 258-330 GHz Bandwidth

- ◆ 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

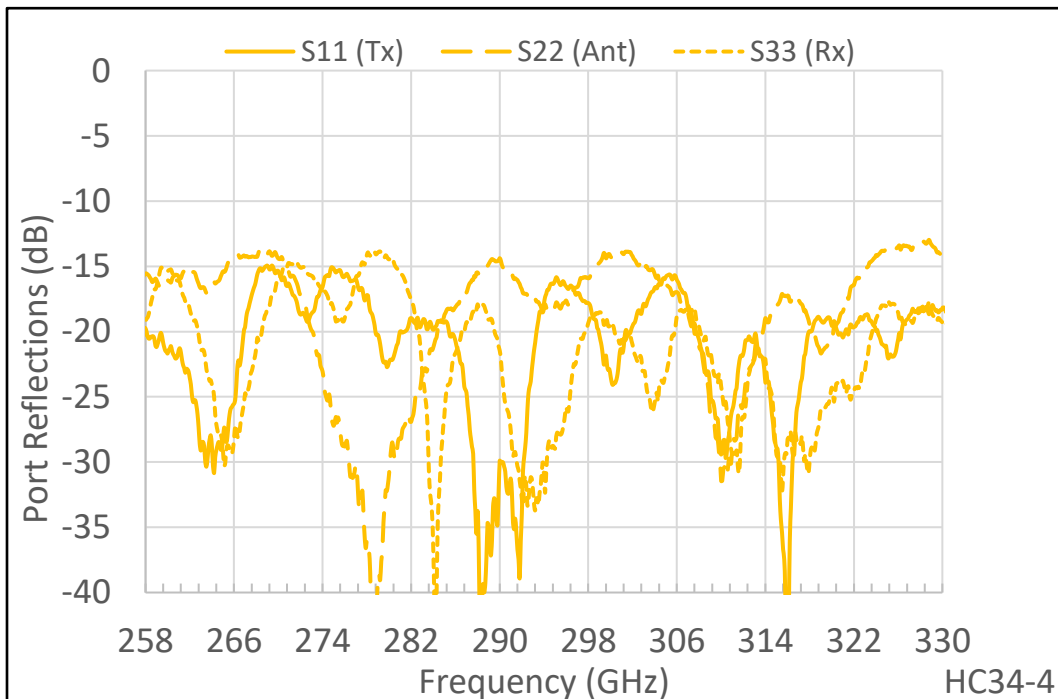




## Insertion Loss and Isolation



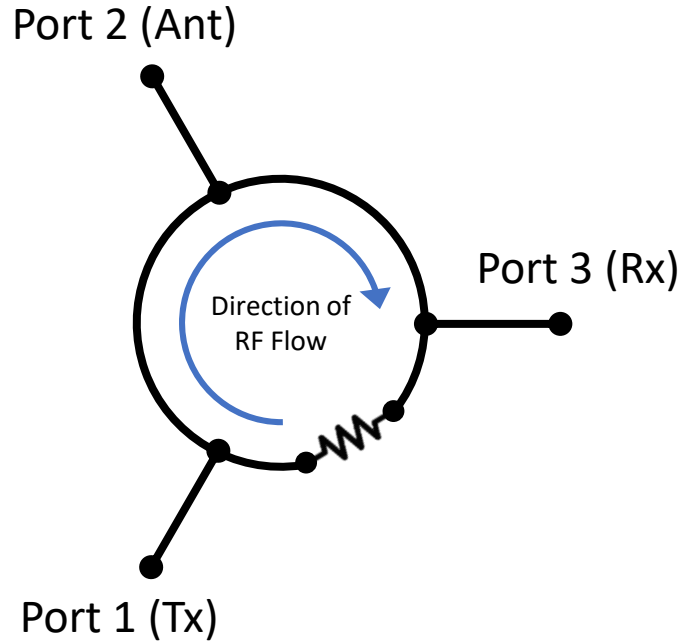
## Port Reflections



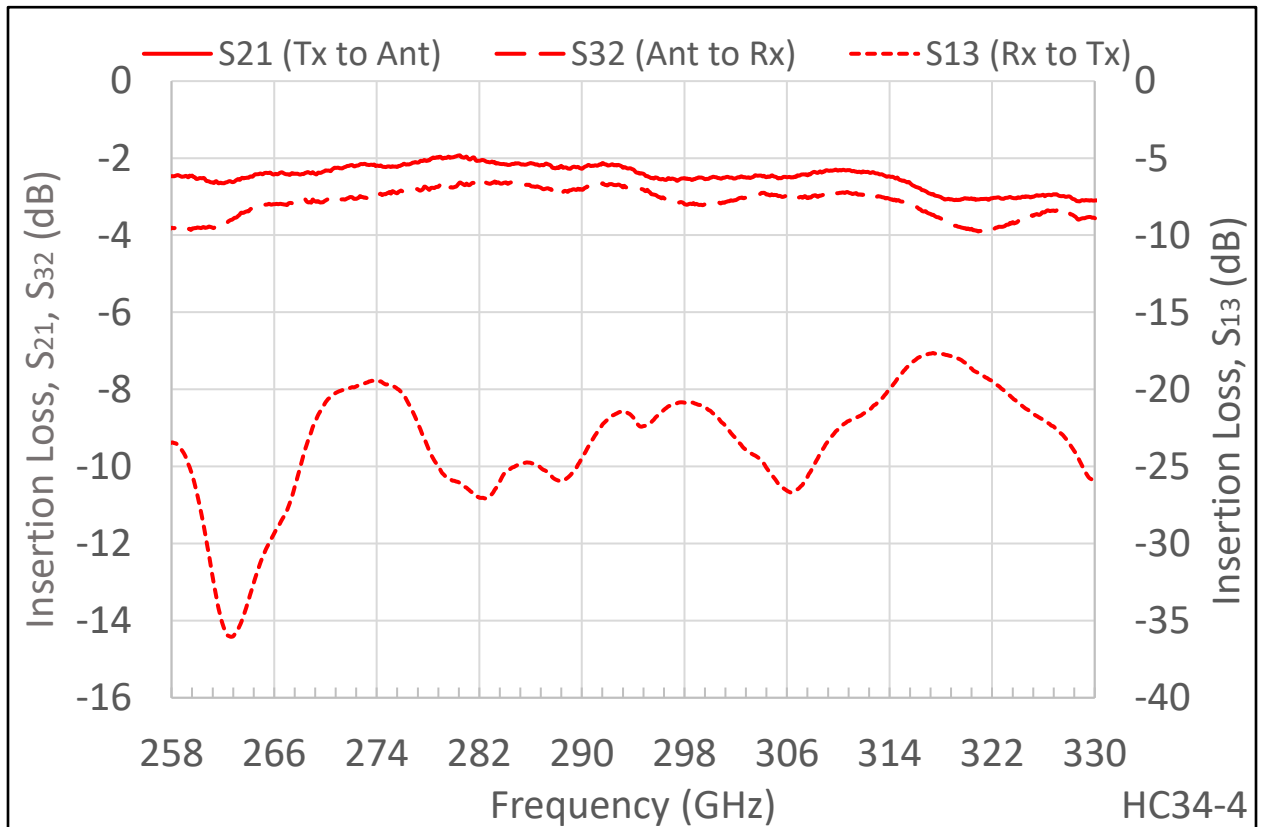


### Asymmetry

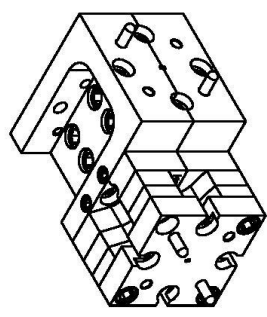
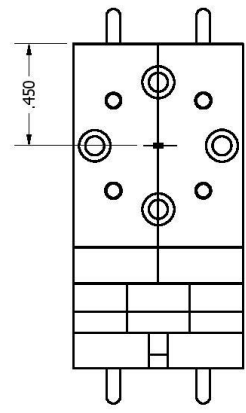
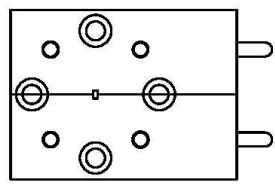
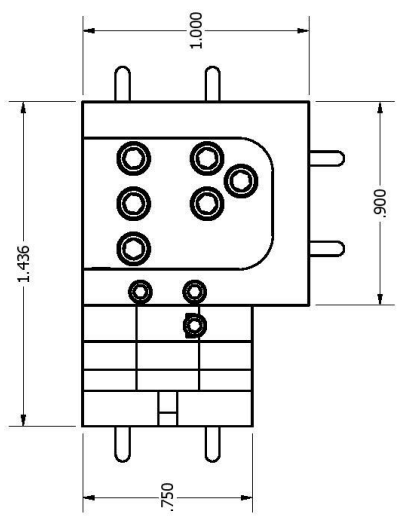
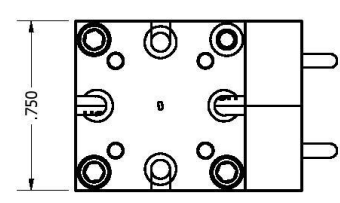
Unlike the Y-junction circulator, the hybrid circulator is asymmetric. The path from port 3 to port 1 is internally attenuated as shown in the schematic to the right and verified by the  $S_{13}$  trace in the measured data below. On request, the hybrid circulator can be assembled in a way that restores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



### Asymmetric Insertion Loss



Micro Harmonics	Proprietary - Micro Harmonics Corporation		REVISION HISTORY		1	
	Date	7/5/2023	ZONE	REV		DATE
					7/5/2023	SCS
			DESCRIPTION			
			RELEASE FOR CUSTOMER			



PART NUMBER - DESCRIPTION		DRAWING BY		DRAWING DATE		APPROVAL	
HC34 Dimension Drawing		JTK		7/5/2023		JTK - 7/5/2023	
DRAWING UNITS		DRAWING SIZE		PAGE NUMBER		MATERIAL & FINISH	
INCHES		SCS		B		1 of 1	
UG-383/U		HC34				HC34	
Micro Harmonics Corporation 20 S. Roanoke St. Ste 202 Fincastle, VA 24090 ph. 540-473-9983 fax 844-449-1561 REV: -							