

## Q-Band Waveguide Bi-Directional Coupler, 20 dB

### Description:

**Model SWD-2040H-22-BB** is a Q band, four-port waveguide bi-directional coupler that delivers a 20 dB nominal coupling level and 35 dB minimum directivity across the full waveguide band from 33 to 50 GHz. The four-port coupler uses a traditional multi-hole and split block design to achieve flat coupling level, high directivity, and low insertion loss. The interfaces of the coupler are WR-22 waveguides with UG-383/U flanges. Custom coupling levels are available under different model numbers.



### Features:

- Full Band Operation
- Low Insertion Loss
- High Directivity

### Applications:

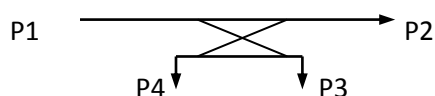
- Test Labs
- Instrumentation
- Sub-assemblies

### Electrical Specifications:

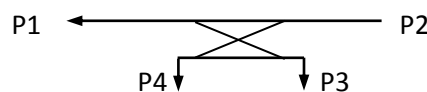
Parameter	Minimum	Typical	Maximum
Frequency	33 GHz		50 GHz
Insertion Loss*		0.6 dB	
Coupling*		20 dB	
Directivity*	35 dB		
VSWR			1.10:1
Specification Temperature		+25°C	
Operating Temperature	-40°C		+85°C

\* The definition of the insertion loss, coupling and directivity is show as following.

Insertion Loss =  $-10 \log_{10} [(P2+P3)/P1]$  when P4 is terminated.  
Coupling Value =  $-10 \log_{10} [P3/P1]$  when P4 is terminated.  
or  $-10 \log_{10} [P4/P2]$  when P3 is terminated.



Directivity =  $-10 \log_{10} [P3/P2]$  when P4 is terminated.  
Directivity =  $-10 \log_{10} [P4/P1]$  when P3 is terminated.

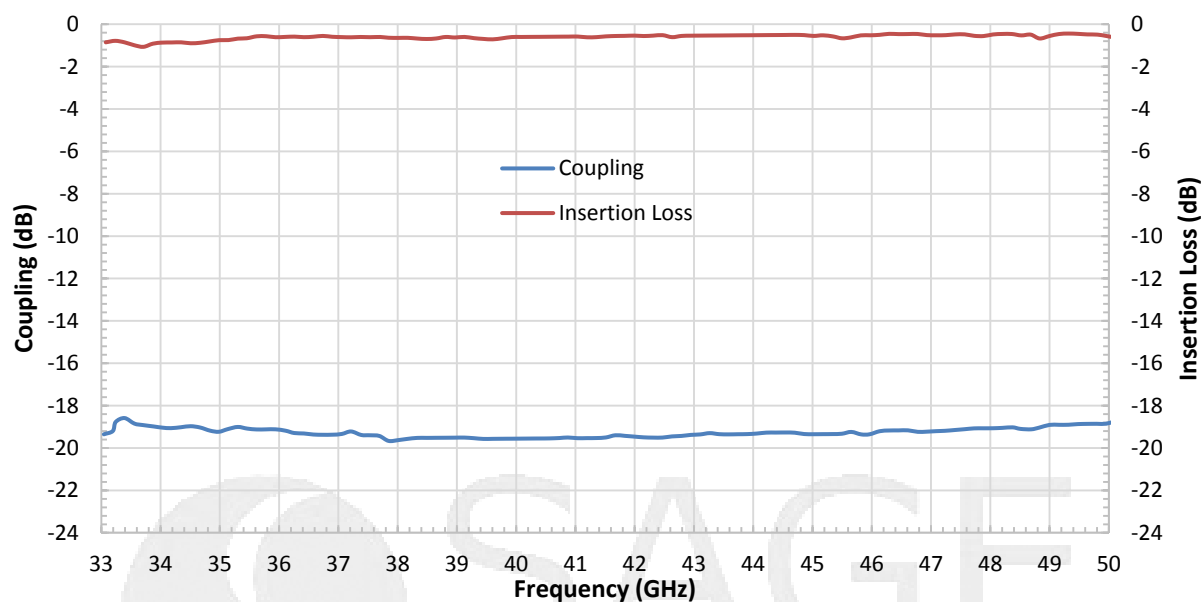


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### Mechanical Specifications:

Item	Specification
Through Ports	WR-22 Waveguide with UG-383/U Flange
Coupled Port	WR-22 Waveguide with UG-383/U Flange
Size	5.50" (L) X 1.30" (W) x 1.25" (H)
Material	Brass
Finish	Gold Plated
Weight	1.58 lb
Outline	WD-BB-Q

### Typical Coupling and Insertion Loss vs. Frequency

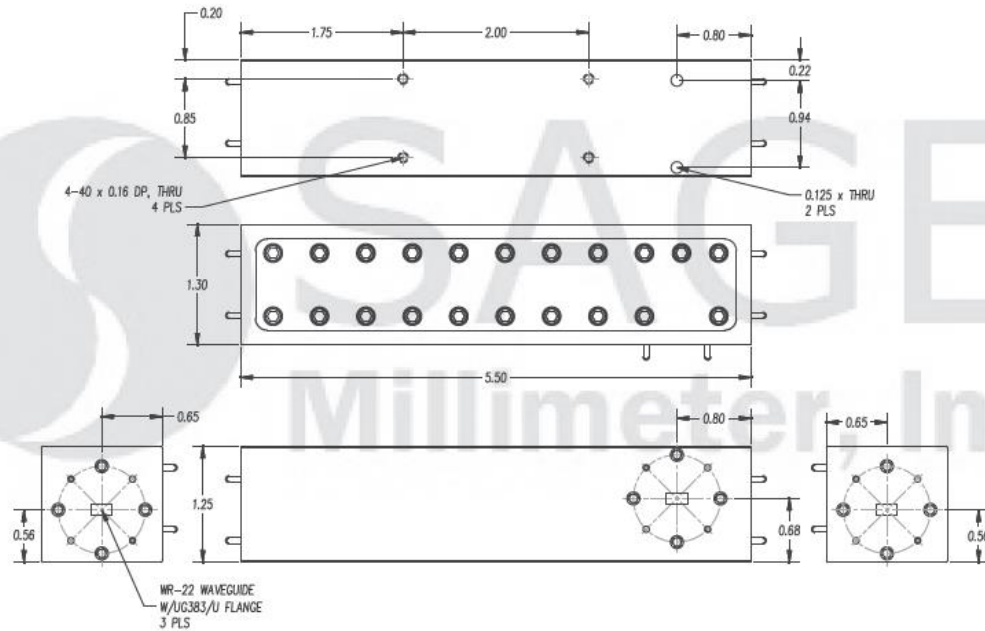


\*Insertion loss includes circuit loss



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**Mechanical Outline:** (Unless otherwise specified, all dimensions are in inches)



### Note:

- All data was presented using a limited sample lot. Actual data may vary unit to unit.
- The insertion loss shown includes the loss due to coupling.
- SAGE Millimeter, Inc. reserves the right to change the information presented without notice.

### Caution:

- Any foreign objects in the waveguide will degrade performance and/or damage the device.