



E-Band Waveguide Directional Coupler, 3 dB

Description:

Model SWD-0340H-12-SB is an E band, three-port waveguide directional coupler that delivers a 3 dB nominal coupling level and 30 dB minimum directivity across the full waveguide band from 60 to 90 GHz. The three-port coupler uses a traditional multi-hole and split block design to achieve a flat coupling level, high directivity, and low insertion loss. The interfaces of the coupler are WR-12 waveguides with UG-387/U anti-cocking flanges. Custom coupling levels are available under different model numbers.



Features:

- Full Band Operation
- Low Insertion Loss
- High Directivity

Applications:

- Test Labs
- Instrumentations
- Sub-assemblies

Electrical Specifications:

| Parameter | Minimum | Typical | Maximum |
|---------------------------|---------|---------|---------|
| Frequency | 60 GHz | | 90 GHz |
| Insertion Loss* | | 0.8 dB | |
| Coupling* | | 3 dB | |
| Directivity* | 30 dB | 40 dB | |
| VSWR | | 1.08:1 | 1.1:1 |
| Specification Temperature | | +25°C | |
| Operating Temperature | -40°C | | +85°C |

*The definition of the insertion loss, coupling and directivity is show as following. The required termination on the waveguide port is 30 dB or better for accurate measurement.

Insertion Loss = $-10 \log_{10} [(P2+P3)/P1]$

Coupling Value = $-10 \log_{10} [P3/P1]$

The diagram shows a rectangular waveguide with two main ports, P1 on the left and P2 on the right. A third port, P3, is located on the bottom surface. Arrows indicate power entering at P1, passing through the waveguide, and exiting at P2. A smaller arrow points downwards from the bottom surface, indicating power coupled to port P3.

Isolation = $-10 \log_{10} [P3/P2]$

Directivity = Isolation – Coupling Value

The diagram shows a rectangular waveguide with two main ports, P2 on the right and P1 on the left. A third port, P3, is located on the bottom surface. Arrows indicate power entering at P2, passing through the waveguide, and exiting at P1. A smaller arrow points downwards from the bottom surface, indicating power coupled to port P3.



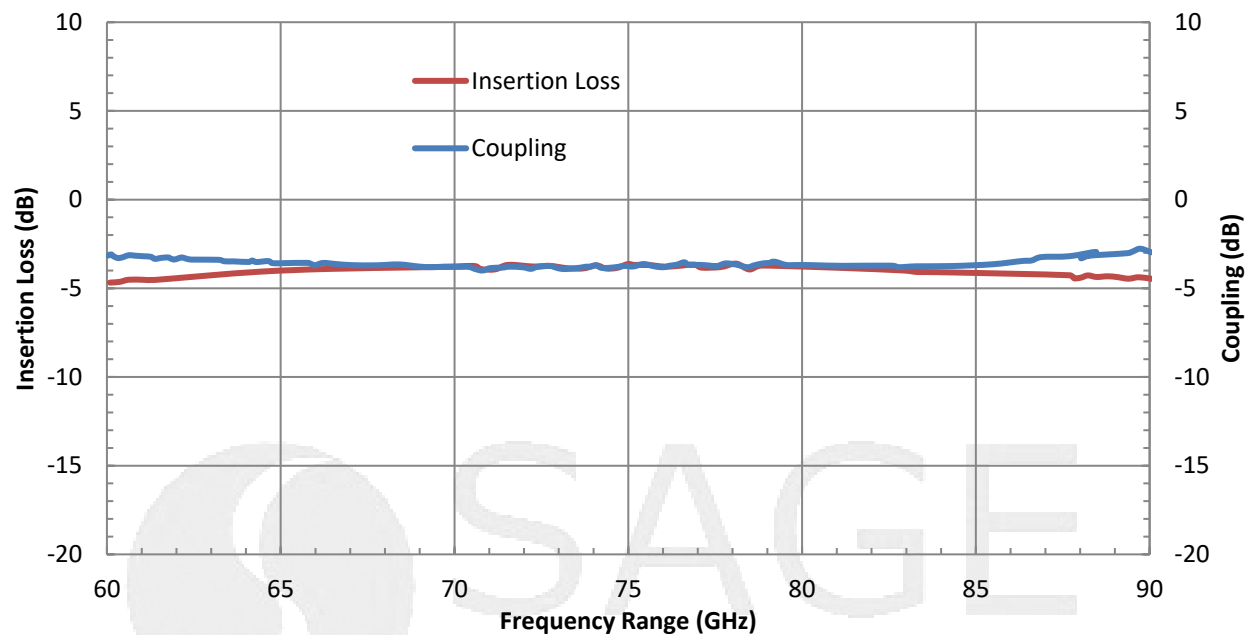


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Mechanical Specifications:

| Item | Specification |
|---------------|---|
| Through Ports | WR-12 Waveguide with UG-387/U Anti-Cocking Flange |
| Coupled Port | WR-12 Waveguide with UG-387/U Anti-Cocking Flange |
| Size | 3.60" (L) X 0.95" (W) x 0.83" (H) |
| Material | Brass |
| Finish | Gold Plated |
| Weight | 7.5 Oz |
| Outline | WD-SB-E-A |

Typical Insertion Loss and Coupling vs. Frequency



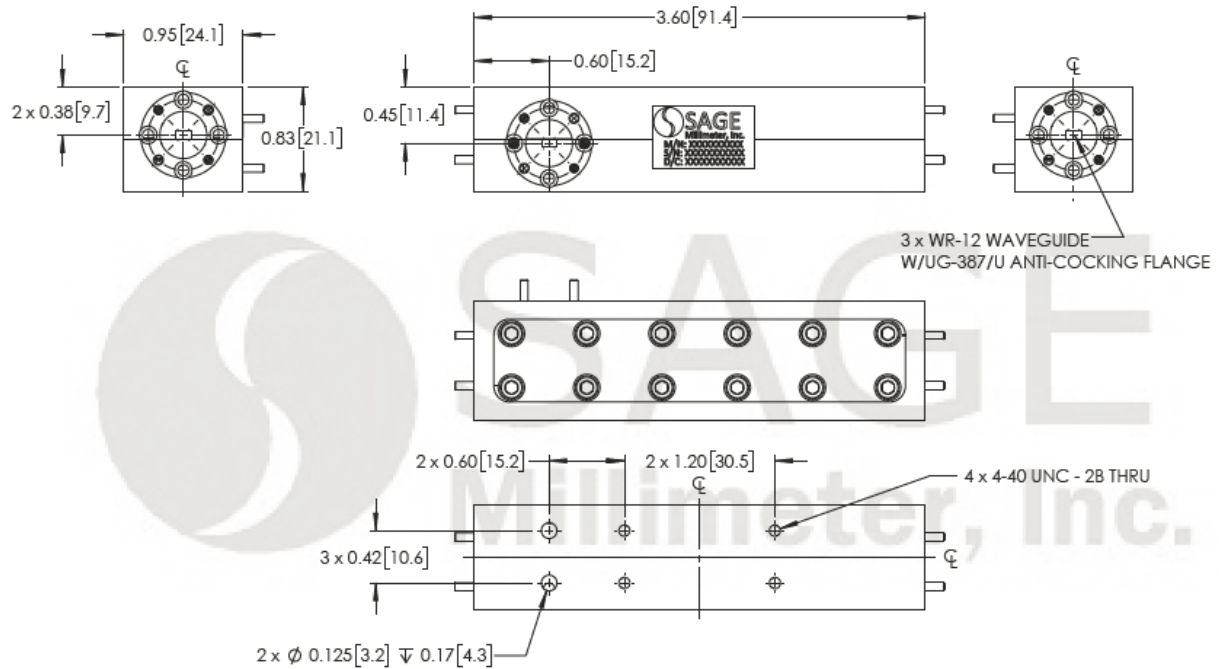
*Insertion loss includes circuit loss





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Mechanical Outline: (Unless otherwise specified, all dimensions are in inches [millimeters])



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.

