



WR-12 Waveguide 6x Active Frequency Multiplier,  
E-Band, 60 GHz to 90 GHz Output Frequency,  
+15 dBm Pout, Input SMA, UG-387/U Flange

## Waveguide Frequency Multipliers Technical Data

PE88X2024

### Features

- WR-12 Waveguide 6x Active Frequency Multiplier
- Output Frequency 60 GHz to 90 GHz, E Band
- Input Frequency 10 GHz to 15 GHz
- Pout +15 dBm typ
- Bias Voltage Range +6 Vdc to +8 Vdc
- DC current 300 mA typ
- 50 Ohm Design
- Input RF Connector SMA Female
- Output Waveguide WR-12 with UG-387/U flange
- Solder Pins for DC Bias Voltage and Ground
- Operational Temperature Range -40°C to +80°C
- Rugged and Compact Aluminum Gold Plated Package Design

### Applications

- Test & Measurement
- Military Electronic Systems
- Military & Commercial Communications
- Research & Development

### Description

The PE88X2024 is a WR-12 Waveguide 6x Active Frequency Multiplier that covers the full E frequency band from 60 GHz to 90 GHz with an input frequency band from 10 GHz to 15 GHz. Typical performance for the 50 ohm design includes -1 dBm input power, +15 dBm output power, and -15 dBc harmonics. Maximum input power (CW) is +10 dBm, and DC bias is +6 Vdc at 198 mA typ. The rugged and small size aluminum package design is gold plated and supports an SMA female connector for the RF input port and a UG-387/U waveguide flange pattern at the output port. Solder pins are used for DC bias voltage and ground pin. The module operates across a wide temperature range from -40°C to +80°C maximum.

### Electrical Specifications@ +25°C

| Description            | Minimum | Typical | Maximum | Units |
|------------------------|---------|---------|---------|-------|
| Input Frequency Range  | 10      |         | 15      | GHz   |
| Output Frequency Range | 60      |         | 90      | GHz   |
| Input Power            | -2      | -1      | 10      | dBm   |
| Output Power           |         | 15      |         | dBm   |
| DC Voltage             | 5       | 6       | 8       | Volts |
| DC Current             |         | 197     |         | mA    |
| Input VSWR             |         | 2.5:1   |         |       |
| Harmonics              |         | -15     |         | dBc   |

Click the following link (or enter part number in "SEARCH" on website) to obtain additional part information including price, inventory and certifications: [WR-12 Waveguide 6x Active Frequency Multiplier, E-Band, 60 GHz to 90 GHz Output Frequency, +15 dBm Pout, Input SMA, UG-387/U Flange PE88X2024](#)



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### Biasing Up and Power Down Procedure

| Biasing Up Procedure |                            |
|----------------------|----------------------------|
| Step 1               | Connect Ground Pin         |
| Step 2               | Apply DC Supply Voltage    |
| Step 3               | Turn ON RF input           |
| Power Down Procedure |                            |
| Step 1               | Turn OFF RF input          |
| Step 2               | Turn OFF DC Supply Voltage |
| Step 3               | Remove Ground              |

#### Electrical Specification Notes:

- 1.) DC Supply must be able to source at least 0.5A DC at startup
- 2.) Open and short circuit loads are not recommended at the multiplier output.
- 3.) Ensure proper 50 Ohm load before turning the multiplier "ON".
- 4.) Do not put any foreign objects inside the waveguide. The warranty will be voided.

### Mechanical Specifications

#### Size

|        |                    |
|--------|--------------------|
| Length | 1.5 in [38.1 mm]   |
| Width  | 1.5 in [38.1 mm]   |
| Height | 0.937 in [23.8 mm] |
| Weight | 0.2 lbs [90.72 g]  |

#### Body Material and Plating

|                           |                                      |
|---------------------------|--------------------------------------|
| Body Material and Plating | Aluminum                             |
| Finish                    | GLD                                  |
| Input Port                | SMA Female                           |
| Output Port               | WR-12 Waveguide with UG-387/U Flange |
| DC Bias                   | Feed-thru Pin                        |

### Environmental Specifications

#### Temperature

|                 |                  |
|-----------------|------------------|
| Operating Range | -40 to 80 deg C  |
| Storage Range   | -40 to 100 deg C |

### Compliance Certifications (see [product page](#) for current document)

### Plotted and Other Data

Notes:

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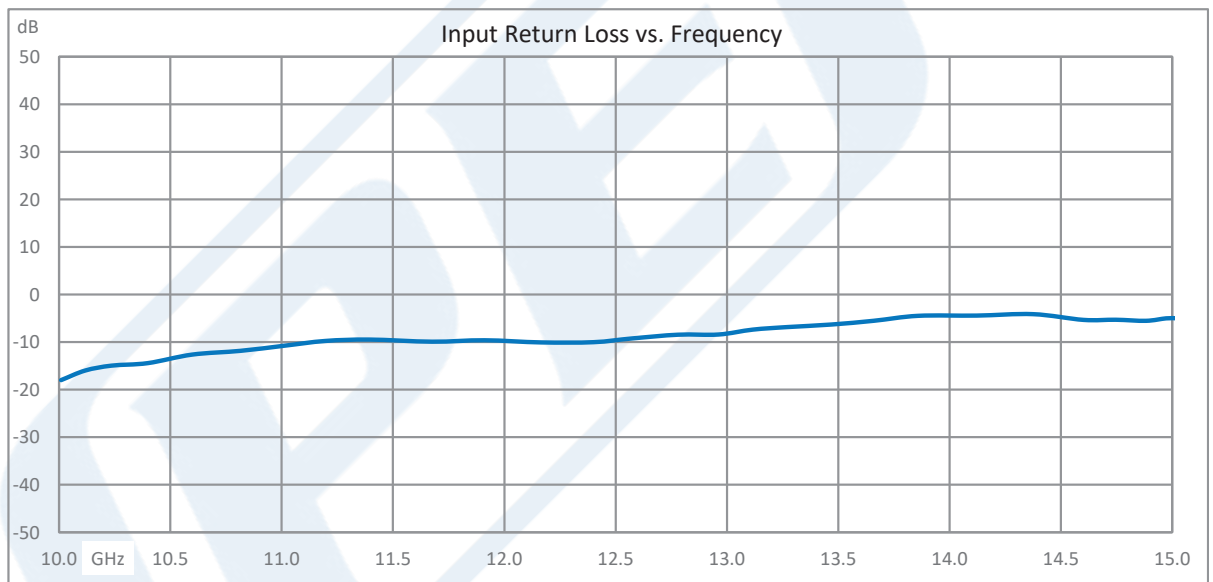
## Waveguide Frequency Multipliers Technical Data

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### Absolute Maximum Rating

| Parameter               | Rating          |
|-------------------------|-----------------|
| Operating Temperature   | -40°C to +80°C  |
| Storage Temperature     | -40°C to +100°C |
| Total Power Dissipation | 4W              |
| Input Power (CW)        | +10dBm          |
| DC Operating Voltage    | +12V            |

### Typical Performance Data



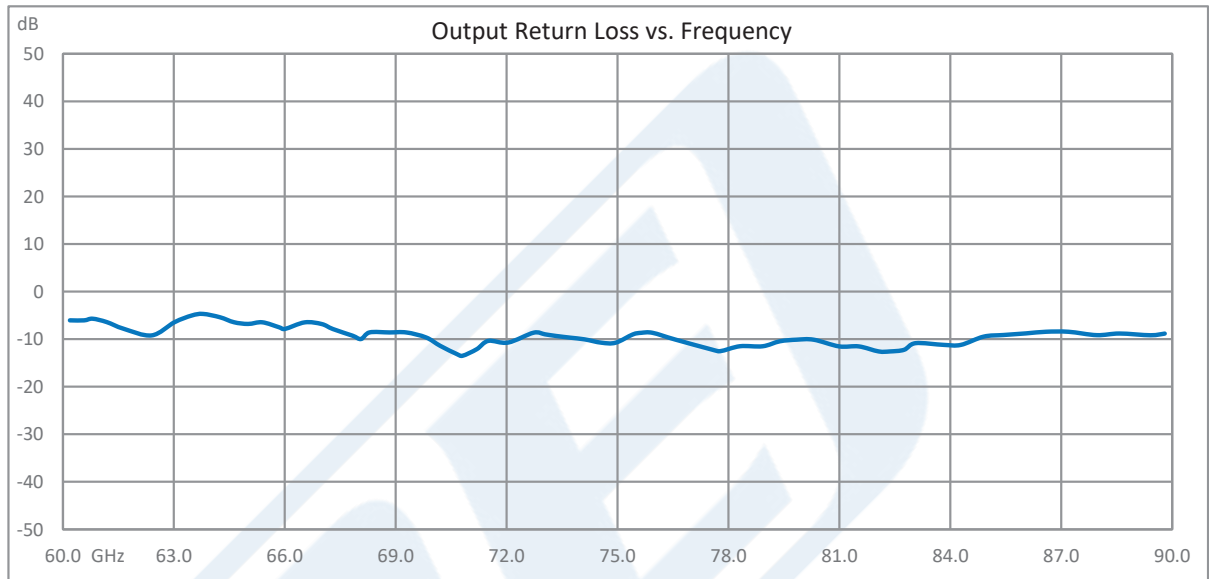
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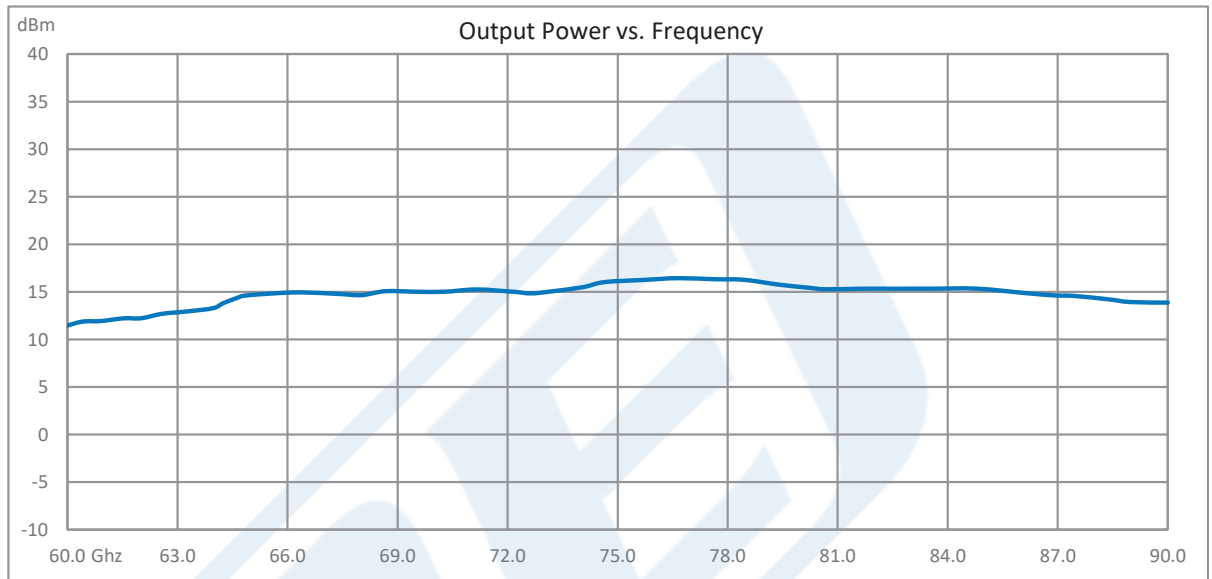
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WR-12 Waveguide 6x Active Frequency Multiplier, E-Band, 60 GHz to 90 GHz Output Frequency, +15 dBm Pout, Input SMA, UG-387/U Flange from Pasternack Enterprises has same day shipment for domestic and International orders. Our RF, microwave and millimeter wave products maintain a 99.4% availability and are part of the broadest selection in the industry.

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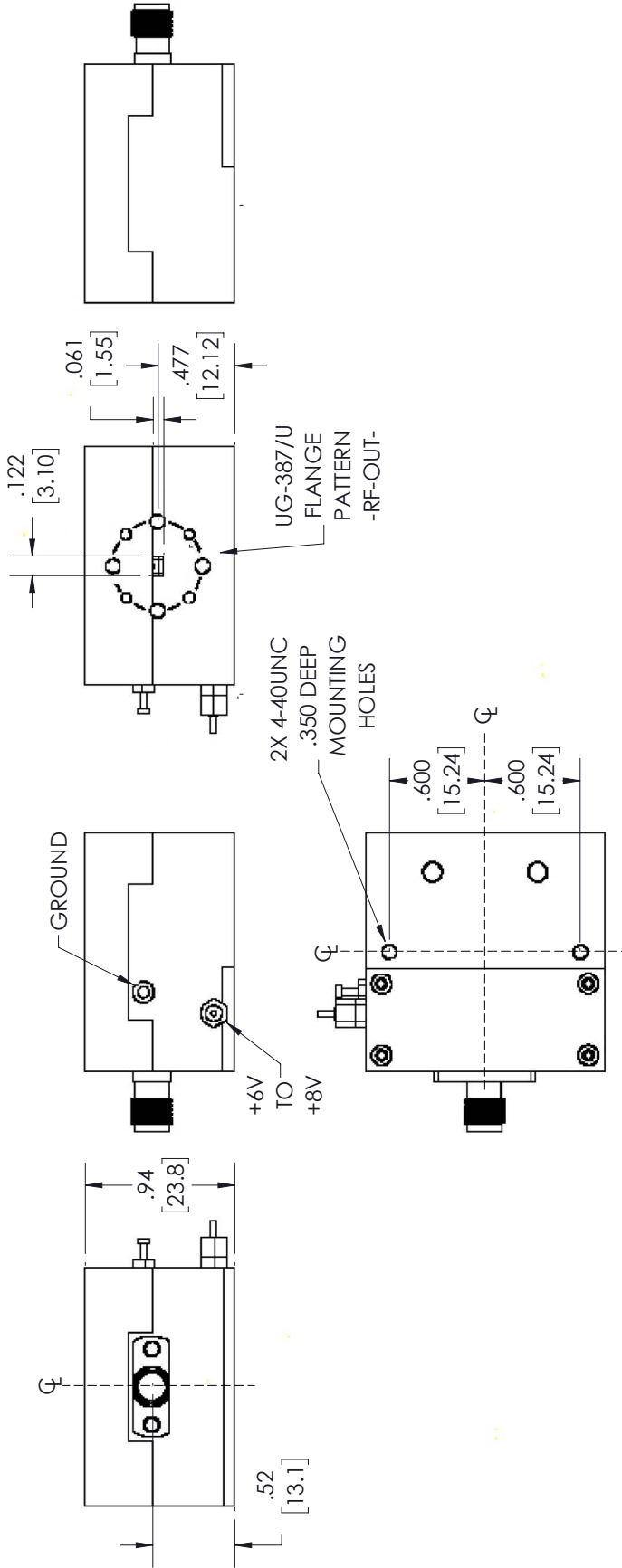
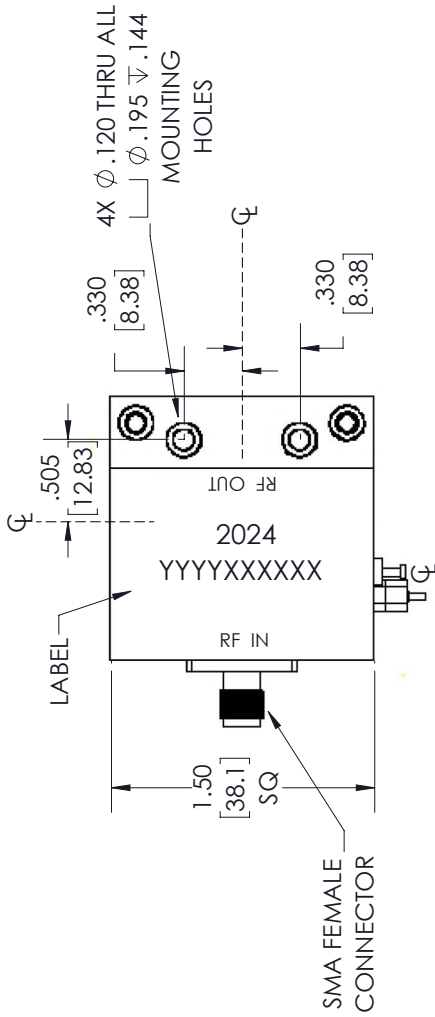
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# PE88X2024 CAD Drawing

WR-12 Waveguide 6x Active Frequency Multiplier, E-Band, 60 GHz to 90 GHz  
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| REVISIONS |                 |            |
|-----------|-----------------|------------|
| REV.      | DESCRIPTION     | DATE       |
| A         | INITIAL RELEASE | 03/11/2022 |



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THIRD-ANGLE PROJECTION

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SHEET 1 OF 1

SCALE N/A

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UNLESS OTHERWISE SPECIFIED LEADING DIMENSIONS ARE INCHES DIMENSIONS IN [ ] ARE MILLIMETERS

TOLERANCES:

|              |        |             |
|--------------|--------|-------------|
| .X = ±.2     | [5.08] | FRACTIONS   |
| .XX = ±.02   | [.51]  | ± 1/32      |
| .XXX = ±.005 | [.13]  | ANGLES ± 1° |

CABLE LENGTH (L) TOLERANCES:

|                       |        |                 |
|-----------------------|--------|-----------------|
| L ≤ 12                | [305]  | = +1 [25] / -0  |
| 12 [305] < L ≤ 60     | [1524] | = +2 [51] / -0  |
| 60 [1524] < L ≤ 120   | [3048] | = +4 [102] / -0 |
| 120 [3048] < L ≤ 300  | [7620] | = +6 [152] / -0 |
| 300 [7620] < L = +5%L | / -0   |                 |

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