



2x Frequency Multiplier Module, 24 GHz to 33 GHz Output Frequency, +14 dBm Output Power, Field Replaceable 2.92mm

## Frequency Multipliers Technical Data Sheet

**PE88X2001**

### Features

- X2 Frequency Multiplier
- Wide Frequency Band
- GaAs HBT MMIC Technology
- Low Phase Noise -132 dBc/Hz @ 100 kHz offset
- Output Power +17 dBm
- Single +5V Bias Voltage
- Integrated DC Blocking Capacitors
- Hermetically Sealed Module
- Mil Spec Compliant
- Field Replaceable 2.92mm Connectors
- -55°C to +85°C Operating Temperature

### Applications

- Electronic Warfare
- Electronic Countermeasures
- Point-To-Point Radio
- Point-To-Multipoint Radio
- VSAT Radios
- Fiber Optic
- Space Systems
- Test Instrumentation
- Telecom Infrastructure

### Description

The PE88X2001 is a low noise X2 Active Broadband Frequency Multiplier Module that covers a wide output frequency bandwidth from 24 GHz to 33 GHz. The design utilizes advanced GaAs HBT MMIC semiconductor technology that produces low additive SSB phase noise performance with a typical level of -132 dBc/Hz at 100 kHz offset. Additional typical performance includes an output power level of +17 dBm with an input signal of +3 dBm. Input/output ports are matched for 50 ohms and are DC blocked. The design requires a single +5V DC supply. The compact drop-in package is RoHS compliant and hermetically sealed with field replaceable 2.92mm connectors. And for added confidence, this rugged package assembly is designed to meet MIL-STD-883 test conditions for Hermeticity and Temperature Cycle.

### Electrical Specifications (TA= 25°C, VDC1 = 5 Vdc)

| Description            | Minimum | Typical | Maximum | Units |
|------------------------|---------|---------|---------|-------|
| Input Frequency Range  | 12      |         | 16.5    | GHz   |
| Output Frequency Range | 24      |         | 33      | GHz   |
| Impedance              |         | 50      |         | Ohms  |
| Output Power           | +14     | +17     |         | dBm   |
| Operating DC Voltage 1 |         | 5       |         | V     |

Click the following link (or enter part number in "SEARCH" on website) to obtain additional part information including price, inventory and certifications: [2x Frequency Multiplier Module, 24 GHz to 33 GHz Output Frequency, +14 dBm Output Power, Field Replaceable 2.92mm PE88X2001](#)





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### Performance by Frequency

| Description                                  | Min. | Typ.      | Max. | Units  |
|----------------------------------------------|------|-----------|------|--------|
| Frequency Range, Input                       |      | 12 - 16.5 |      | GHz    |
| Frequency Range, Output                      |      | 24 - 33   |      | GHz    |
| Output Power                                 | +14  | +17       |      | dBm    |
| Fo Isolation (With Respect To Output Level)  |      | 20        |      | dBc    |
| 3Fo Isolation (With Respect To Output Level) |      | 30        |      | dBc    |
| Input Return Loss                            |      | 13        |      | dB     |
| Output Return Loss                           |      | 20        |      | dB     |
| SSB Phase Noise (100 KHz Offset)             |      | -132      |      | dBc/Hz |
| Supply Current                               |      | 81        |      | mA     |

### Mechanical Specifications

|                  |                                 |
|------------------|---------------------------------|
| <b>Size</b>      |                                 |
| Length           | 1.086 in [27.58 mm]             |
| Width            | 0.85 in [21.59 mm]              |
| Height           | 0.28 in [7.11 mm]               |
| Weight           | 0.09 lbs [40.82 g]              |
| Input Connector  | Field Replaceable 2.92mm Female |
| Output Connector | Field Replaceable 2.92mm Female |

### Environmental Specifications

|                    |                                                                                                  |
|--------------------|--------------------------------------------------------------------------------------------------|
| <b>Temperature</b> |                                                                                                  |
| Operating Range    | -55 to +85 deg C                                                                                 |
| Storage Range      | -65 to +150 deg C                                                                                |
| ESD Sensitivity    | ESD Sensitive Material, Transport material in Approved ESD bags. Handle only in ESD Workstation. |



### Compliance Certifications (visit [www.Pasternack.com](http://www.Pasternack.com) for current document)

RoHS Compliant

### Plotted and Other Data

Notes:

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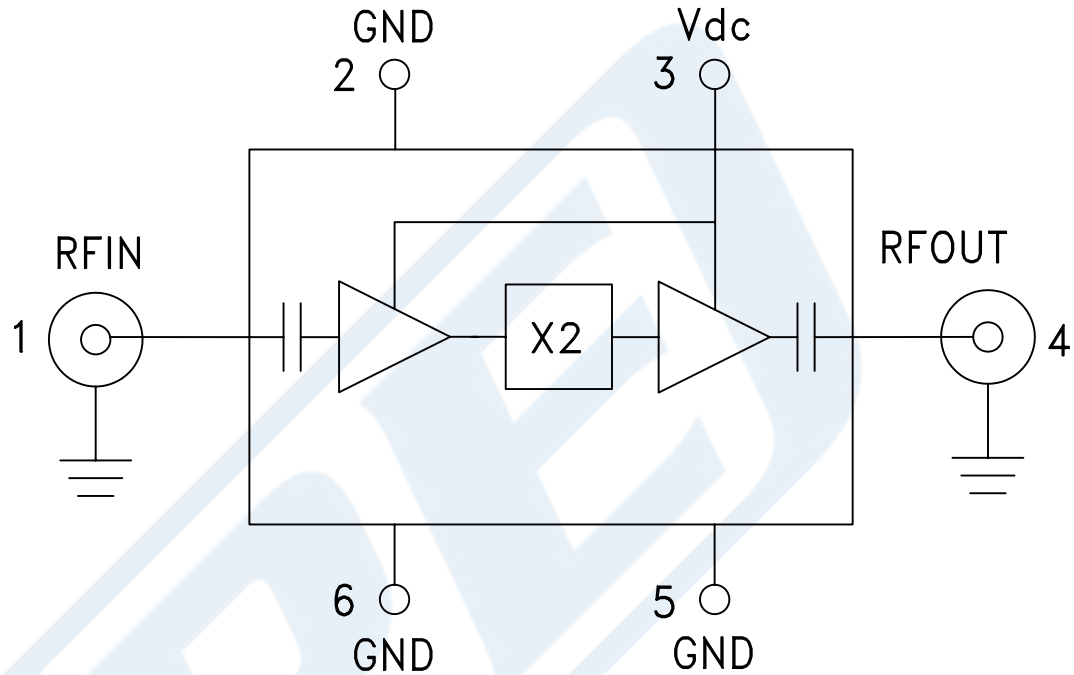


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Functional Block Diagram



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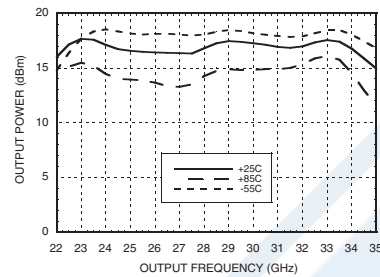
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## Frequency Multipliers Technical Data Sheet

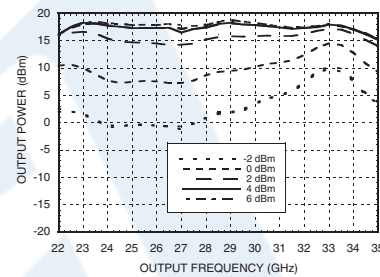
**PE88X2001**

### Typical Performance Data

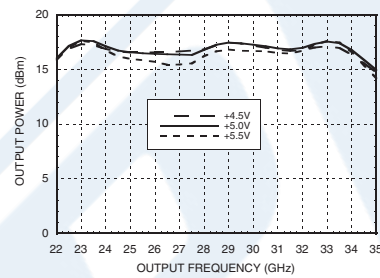
**Output Power vs. Temperature @ 3 dBm Drive Level**



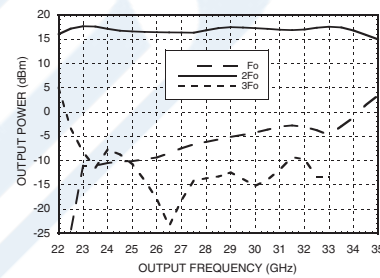
**Output Power vs. Drive Level**



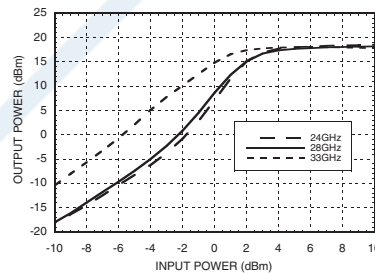
**Output Power vs. Supply Voltage @ 3 dBm Drive Level**



**Isolation @ 3 dBm Drive Level**



**Output Power vs. Input Power**



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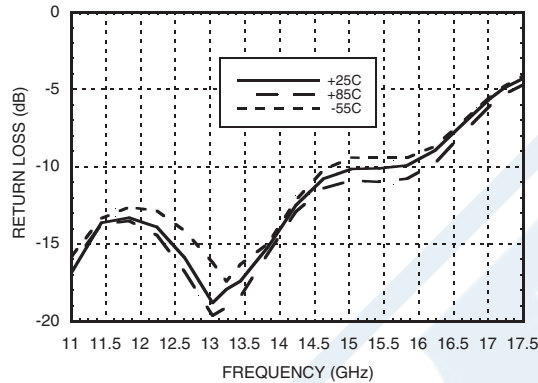


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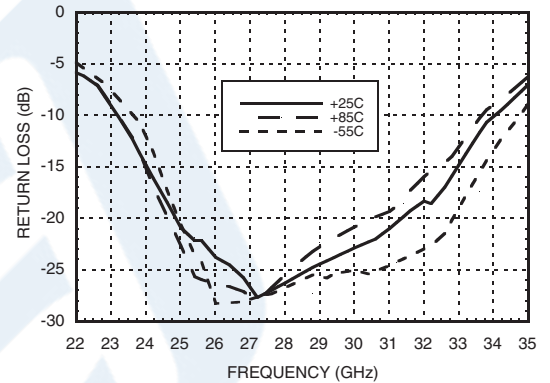
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**Input Return Loss vs. Temperature @ 0 dBm Drive Level**



**Output Return Loss vs. Temperature @ 0 dBm Drive Level**



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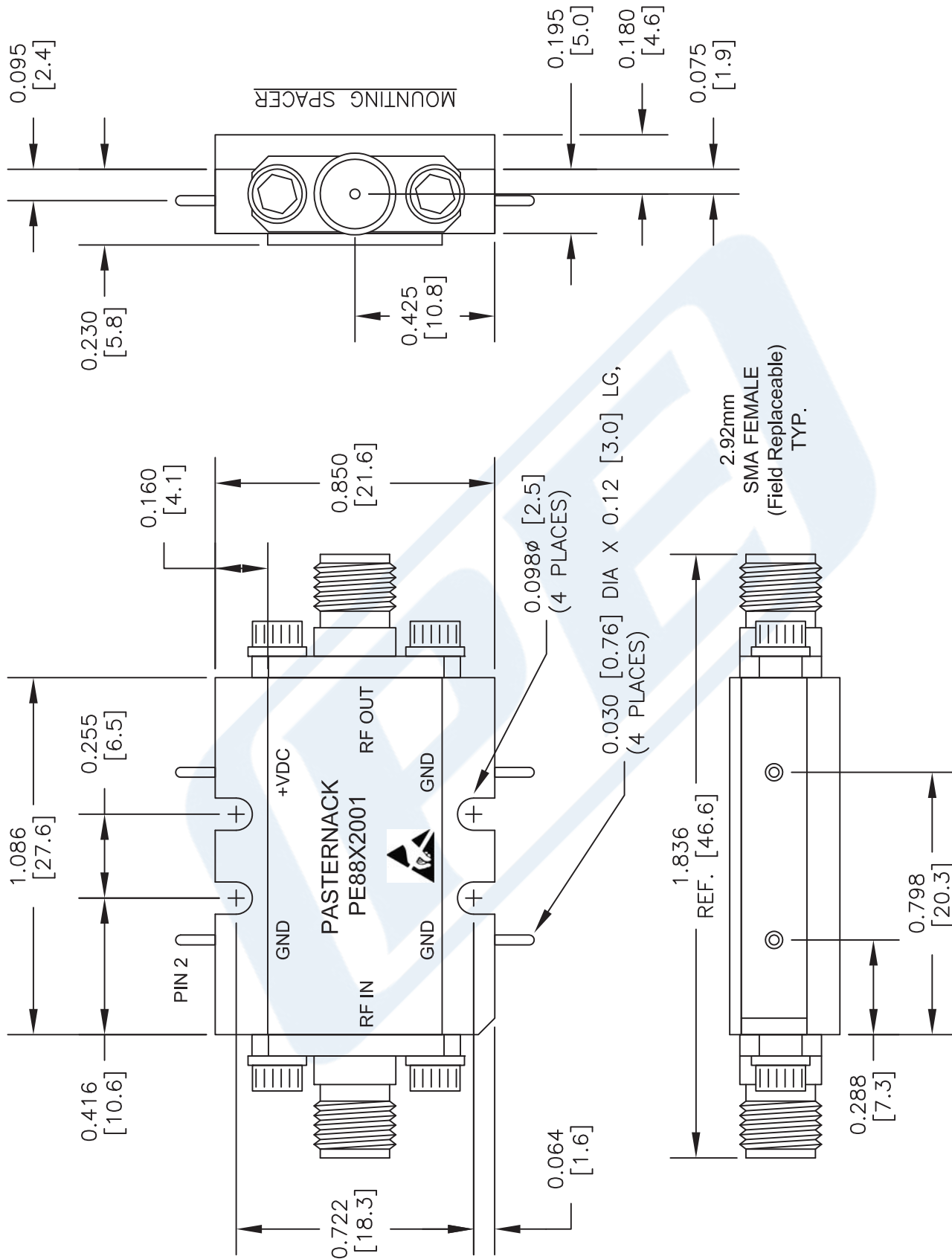
URL: <https://www.pasternack.com/2x-frequency-multiplier-module-33-ghz-14-dbm-2.92mm-pe88x2001-p.aspx>

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# PE88X2001 CAD Drawing

2x Frequency Multiplier Module, 24 GHz to 33 GHz Output Frequency,  
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DWG TITLE

**PE88X2001**

NOTES:  
1. UNLESS OTHERWISE SPECIFIED ALL DIMENSIONS ARE NOMINAL.  
2. ALL SPECIFICATIONS ARE SUBJECT TO CHANGE WITHOUT NOTICE AT ANY TIME.  
3. DIMENSIONS ARE IN INCHES [mm].

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**PE PASTERNAK**  
THE ENGINEER'S RF SOURCE

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FSCM NO. 53919

CAD FILE 051616

SCALE N/A

SIZE A

2233



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