



1 GHz to 2 GHz, Bi-Phase Modulator, 0/180 Degrees,  
TTL Control, 30nsec Speed, SMA

## TECHNICAL DATA SHEET

**PE86GM2001**

The PE86GM2001 is a 0° to 180° Bi-Phase Modulator that operates across a frequency range from 1000 MHz to 2000 MHz. This modulator takes a TTL level digital bit stream and encodes it onto the RF carrier using 2 Phase Shift Keying (2PSK). 2 Phase Shift Keying utilizes 2 phases which are separated by 180°. Impressive typical performance includes low insertion loss of 3 dB, 30 nsec switching speed, 20 dB carrier suppression, and 0.5W CW maximum RF input power. The design is bidirectional with input and output RF ports, and employs dual bias voltages (+12/-12 Vdc) and integrated TTL processing to phase modulate the control data onto the RF, and operates across a wide temperature range of -40°C to +85°C. The rugged and compact package uses TTL, Bias, Ground pins, and field replaceable SMA Female connectors. The high reliability design meets MIL-STD-202 environmental test conditions for Humidity, Shock, Vibration, Altitude, and Temperature Cycle.

### Features

- 0° to 180° Bi-Phase Modulator module
- 2 Phase Shift Keying (2PSK) Modulation
- Frequency Range: 1000 MHz to 2000 MHz
- Insertion Loss: 3.0 dB typ
- Switching Speed: 30 nsec typ
- Carrier Suppression: 20 dB
- Compact Package Design
- Field Replaceable SMA Connectors
- Dual Bias Voltage: +12/-12 Vdc
- Integrated TTL Driver
- -40°C to +85°C Operating Temperature
- Designed to meet MIL-STD-202 Test Conditions
- Bi-directional Operation

### Applications

- Communication Systems
- Microwave Radio
- Radar
- High Data Rate Test & Measurement
- Serial Data Transmission
- Basestation Infrastructure

### Electrical Specifications

| Description                                   | Minimum | Typical | Maximum | Units   |
|-----------------------------------------------|---------|---------|---------|---------|
| Frequency Range                               | 1       |         | 2       | GHz     |
| RF Input Power (CW)                           |         |         | +20     | dBm     |
| Maximum Peak RF (Survival)<br>1μs Pulse Width |         |         | 0.5     | Watts   |
| Impedance                                     |         | 50      |         | Ohms    |
| VSWR                                          |         |         | 2:1     |         |
| Phase Balance                                 |         |         | 5       | Degrees |
| Insertion Loss                                |         | 3       | 6       | dB      |
| Amplitude Balance                             |         | ±1      | ±1.3    | dB      |
| Carrier Suppression                           |         | 20      |         | dB      |
| Switching Speed                               |         | 30      |         | ns      |
| Phase State (Off)                             |         | 0       |         | degrees |
| Phase State (On)                              |         | 180     |         | degrees |
| Bias Voltage (+)                              |         | 12      |         | Volts   |
| Bias Voltage (-)                              |         | -12     |         | Volts   |
| Bias Current @ +12 VDC                        |         |         | 75      | mA      |
| Bias Current @ -12 VDC                        |         |         | 20      | mA      |

Click the following link (or enter part number in "SEARCH" on website) to obtain additional part information including price, inventory and certifications: [1 GHz to 2 GHz, Bi-Phase Modulator, 0/180 Degrees, TTL Control, 30nsec Speed, SMA PE86GM2001](#)



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### Mechanical Specifications

#### Size

|        |           |           |
|--------|-----------|-----------|
| Length | 1 in      | [25.4mm]  |
| Width  | 1 in      | [25.4 mm] |
| Height | 0.5 in    | [12.7 mm] |
| Weight | 0.125 lbs | [56.7 g]  |

#### Configuration

|                  |                    |
|------------------|--------------------|
| Design           | Bi-Phase Modulator |
| Connector Option | Field Replaceable  |
| RF Connector     | SMA Female         |

### Environmental Specifications

#### Temperature

|                 |                 |
|-----------------|-----------------|
| Operating Range | -55°C to +85°C  |
| Storage Range   | -65°C to +125°C |

|                   |                                   |
|-------------------|-----------------------------------|
| Humidity          | MIL-STD-202F, Method 103B Cond. B |
| Shock             | MIL-STD-202F, Method 213B Cond. B |
| Vibration         | MIL-STD-202F, Method 204D Cond. B |
| Altitude          | MIL-STD-202F, Method 105C Cond. B |
| Temperature Cycle | MIL-STD-202F, Method 107D Cond. A |

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

### Plotted and Other Data

Notes:

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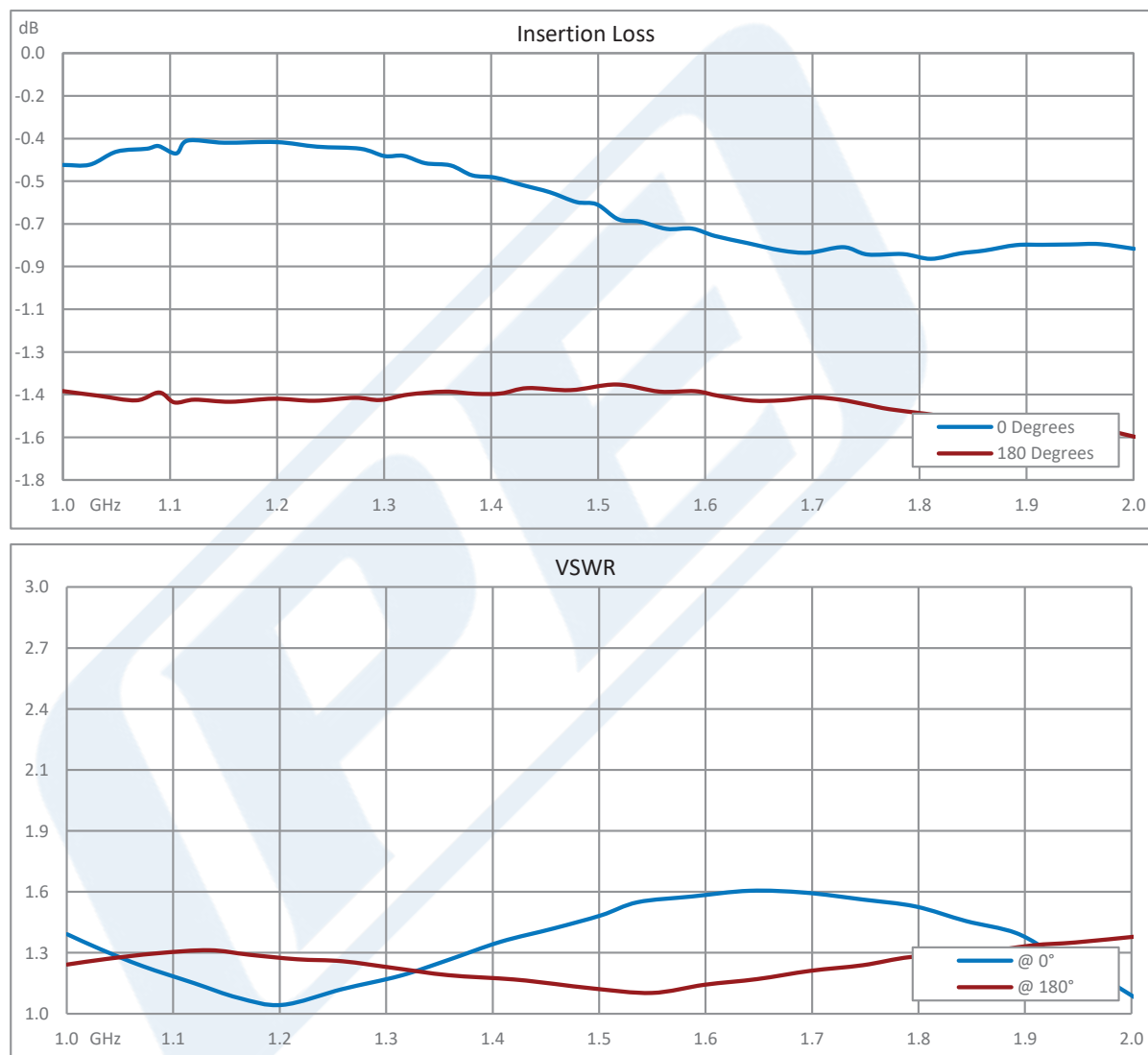


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### Typical Performance Data



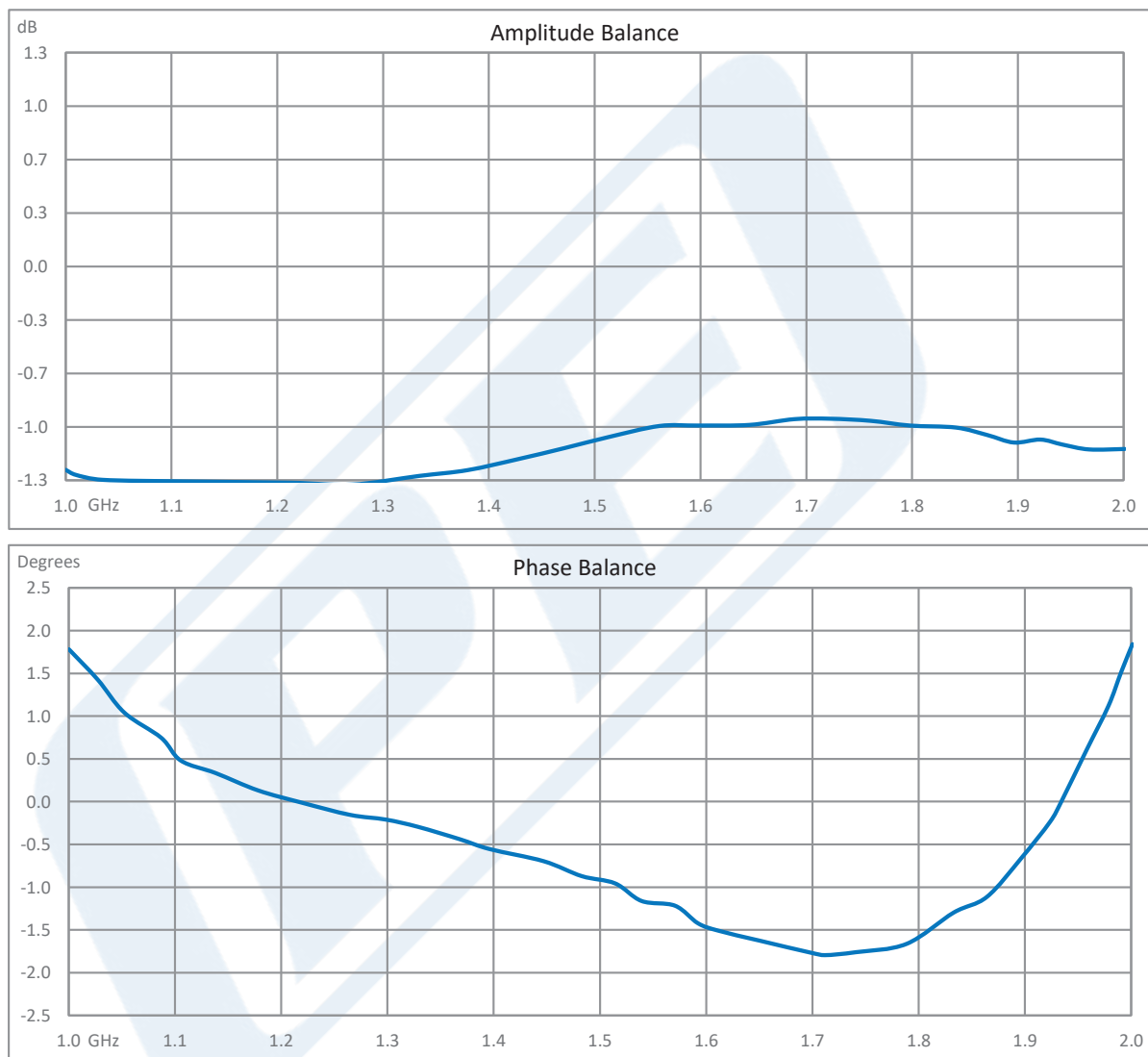
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1 GHz to 2 GHz, Bi-Phase Modulator, 0/180 Degrees, TTL Control, 30nsec Speed, SMA from Pasternack Enterprises has same day shipment for domestic and International orders. Our RF, microwave and millimeter wave products maintain a 99.4% availability and are part of the broadest selection in the industry.

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URL: <https://www.pasternack.com/pe86gm2001-p.aspx>

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# PE86GM2001 CAD Drawing

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