



2 GHz to 18 GHz, Bi-Phase Modulator, 0/180 Degrees,
TTL Control, 35nsec Speed, SMA

TECHNICAL DATA SHEET

PE86GM2007

The PE86GM2007 is a 0° to 180° Bi-Phase Modulator that operates across a broadband frequency range from 2 GHz to 18 GHz. 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 < 3.5 dB, 1.7:1 VSWR and 35nsec switching speed. The design is bidirectional with input and output RF ports, and employs dual bias voltages (+5/-12 Vdc) and integrated TTL processing to phase modulate the control data onto the RF, and operates across a wide temperature range of -55°C to +85°C. The rugged and compact package uses TTL, Bias, Ground pins, and field replace 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: 2 GHz to 18 GHz
- Insertion Loss: < 3.5 dB typ
- Switching Speed: 35 nsec typ
- Compact Package Design
- Field Replaceable SMA Connectors
- Dual Bias Voltage: +5/-12 Vdc
- Integrated TTL Driver
- -55°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	2		18	GHz
Impedance		50		Ohms
VSWR		1.7:1	2:1	
Phase Shift		±30		Degrees
Insertion Loss		3.5	5.5	dB
Amplitude Balance		±2		dB
Switch Speed (Risetime)		35	100	ns
Phase State (Off)		0		degrees
Phase State (On)		180		degrees
Bias Voltage (+)		5		Volts
Bias Voltage (-)		-12		Volts
Bias Current @ +5 VDC		40	70	mA
Bias Current @ -12 VDC		10	30	mA

Click the following link (or enter part number in "SEARCH" on website) to obtain additional part information including price, inventory and certifications: [2 GHz to 18 GHz, Bi-Phase Modulator, 0/180 Degrees, TTL Control, 35nsec Speed, SMA PE86GM2007](#)



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Mechanical Specifications

Size

Length	2.25 in	[57.15mm]
Width	1.25 in	[31.75 mm]
Height	0.65 in	[16.51 mm]
Weight	0.25 lbs	[113.4 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

Shock	90 % Non-Condensing
Vibration	MIL-STD-202, Method 213B Cond. B
Altitude	MIL-STD-202, Method 204D Cond. B
Temperature Cycle	MIL-STD-202, Method 105C Cond. B
	MIL-STD-202, Method 107D Cond. A

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

Plotted and Other Data

Notes:

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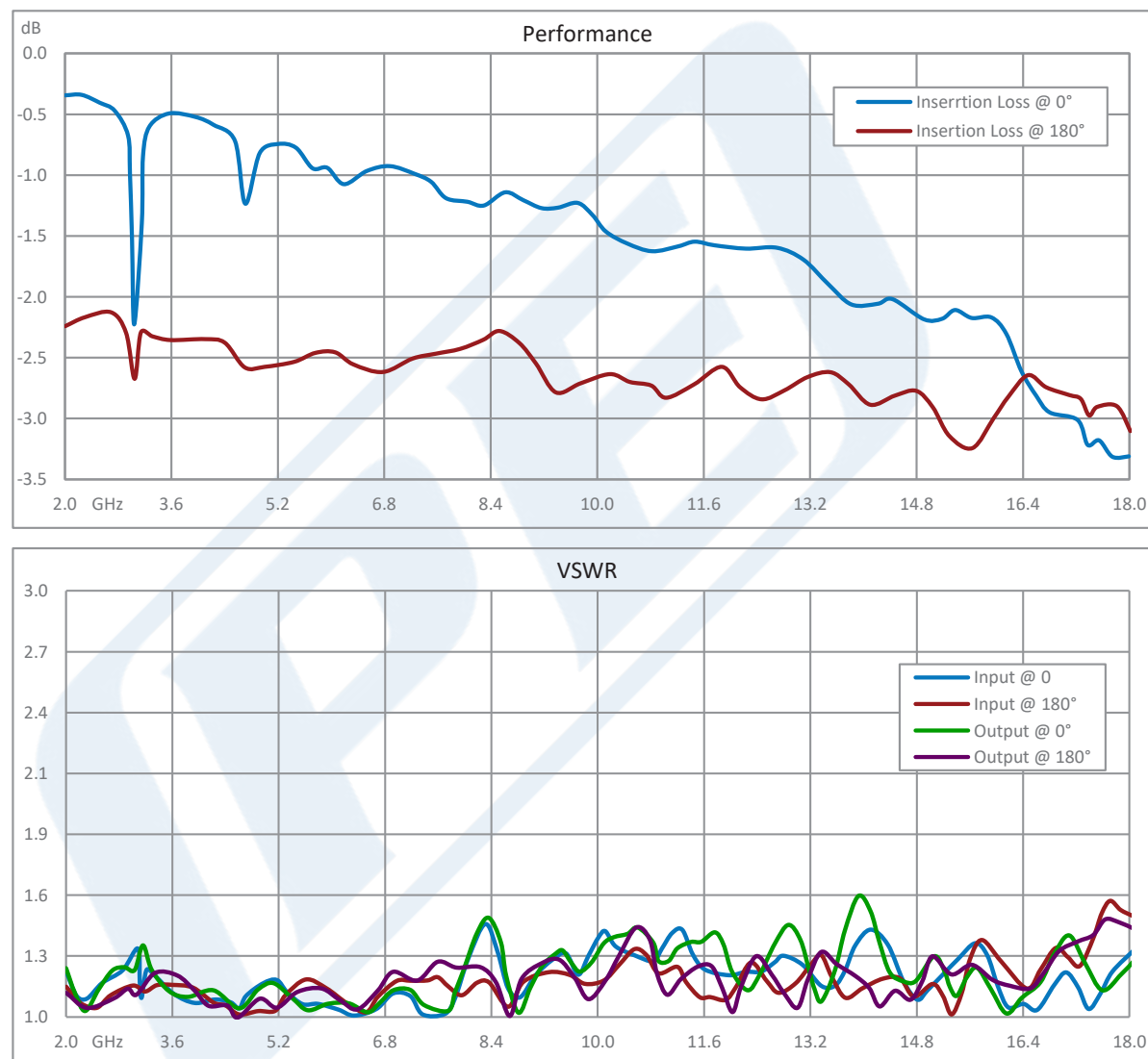


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Typical Performance Data



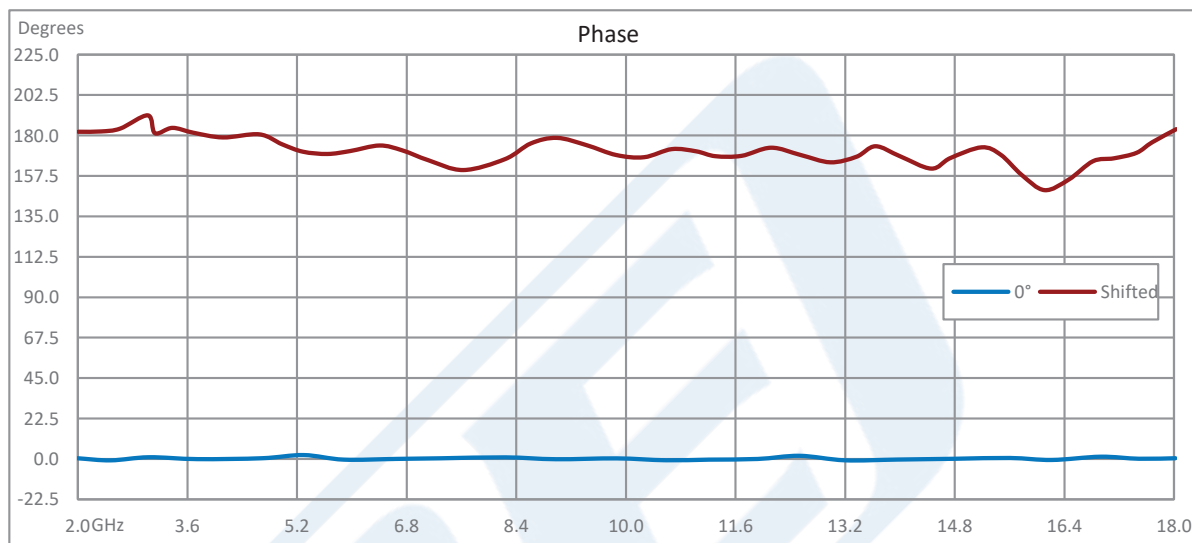
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2 GHz to 18 GHz, Bi-Phase Modulator, 0/180 Degrees, TTL Control, 35nsec Speed, SMA from Pasternack Enterprises has same day shipment for domestic and International orders. Our RF, microwave and millimeter wave products maintain a 99.4% availability and are part of the broadest selection in the industry.

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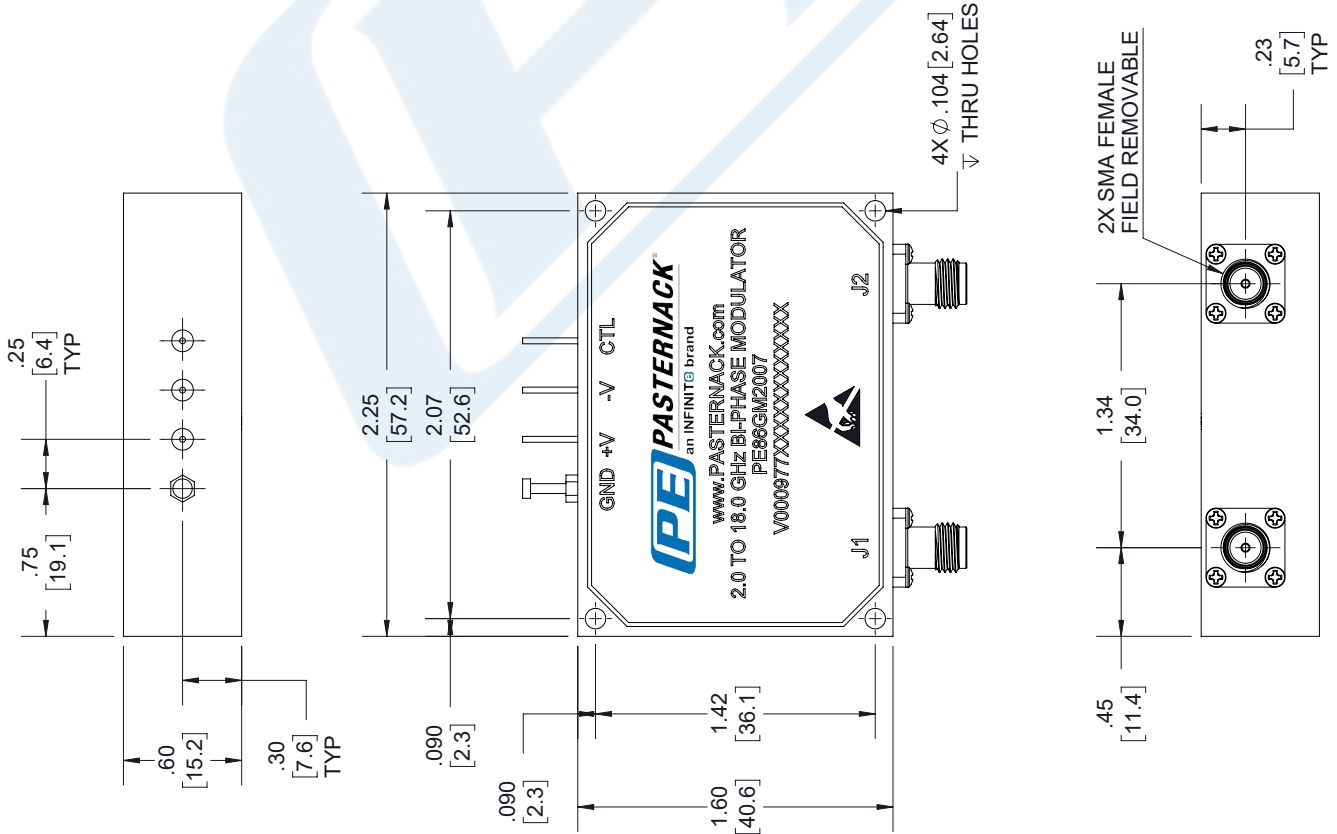
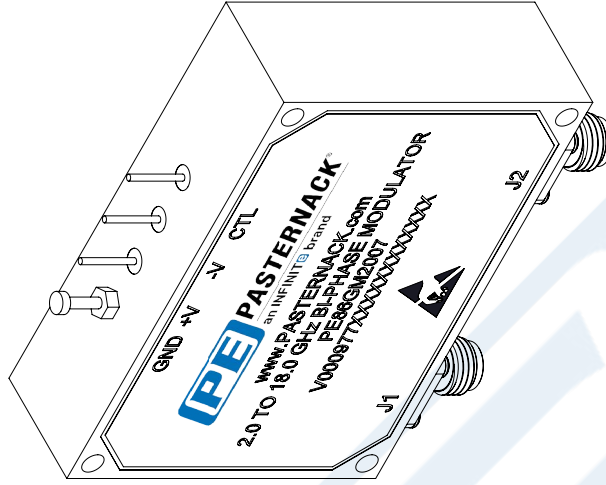
URL: <https://www.pasternack.com/pe86gm2007-p.aspx>

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PE86GM2007 CAD Drawing

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REVISIONS			
REV.	DESCRIPTION	DATE	APPROVED
B	PCR PE86GM2007	7/22/2020	T. GALLA



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

TOLERANCES:
 .X = ± .2 [5.08]
 .XX = ± .02 [.51]
 .XXX = ± .005 [.13]
 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% / -0

ALL DIMENSIONS SHOWN
ARE FOR REFERENCE ONLY.



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Pastermack Enterprises, Inc.
P.O. Box 16759, Irvine, CA 92623.
Phone: 1.949.261.1920 | 1.866.727.8376
Fax: 1.949.261.7451
Website: www.pastermack.com
E-mail: sales@pastermack.com

THIRD-ANGLE PROJECTION



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SHEET 1 OF 1
SCALE N/A

SIZE	CAGE CODE	DRAWN BY	ITEM NO.	REV
A	53919	K.DANG	PE86GM2007	B