



# Planar Monolithics Industries, Inc.

RF & Microwave Components and Modules to 40GHz

ISO9001:2008 Certified

May 21, 2014

## 0.85 to 18.0GHz I/Q Vector Modulator PMI Model No. PIQ-85M18G-360/20-CD-2

PMI Model No. PIQ-85M18G-36020-CD-2 is a Vector Modulator covering the frequency range of 85MHz to 18GHz. This unit provides an attenuator resolution of 0.1dB and a phase shift resolution of 0.8 degrees. The attenuation is phase invariant and the phase is amplitude invariant making it ideal for nulling unwanted signals. The unit can be specifically calibrated for any number of 100MHz bands within the full operating frequency range of 85MHz to 18GHz.



Frequency Range	0.85 to 18.0GHz
Phase Range	360° Nominal
Attenuation Dynamic Range	20dB min.
Attenuation Resolution	0.1dB max.
Insertion Loss	-3dB ± 4dB
Amplitude Variation	±4dB across frequency range
Amplitude Variation, Narrow Band	±0.5dB across any 50MHz (100MHz to 500MHz) ±0.5dB across any 100MHz (500MHz to 18GHz)
Phase Variation, Narrow Band	±2° over any 50MHz (100MHz to 500MHz) ±2° over any 100MHz (500MHz to 18GHz)
Phase Resolution	0.8° max.
Return Loss (Input / Output)	10dB min.
RF Input Power, Operating	0dBm to +10dBm max.
RF Input Power (CW) Damage Threshold	+30dBm CW max.
Control Type	- Frequency Setting: 8-Bit TTL for 100 MHz Bands - Phase Shift Setting: 9-Bit TTL - Attenuator Setting: 8-Bit TTL
Band Switching	Integrated Input / Output Switch (Nominal)
Switching Speed	3µsec typ.
Power Supplies	±15V and +5V
Gain For Output Amplifier	28dB Nominal
Noise Figure For Output Amplifier	4dB Typical
OIP3 For Output Amplifier	27.5dBm Typical
OP1dB For Output Amplifier	16dBm Typical
Size	6.0" x 3.0" x 1.0"
RF Connectors	SMA (F)
Digital / Power Connector	MDM-37PH003P or Equivalent Mating Connector Provided
Finish	Painted Gray

## PLANAR MONOLITHICS INDUSTRIES, INC.

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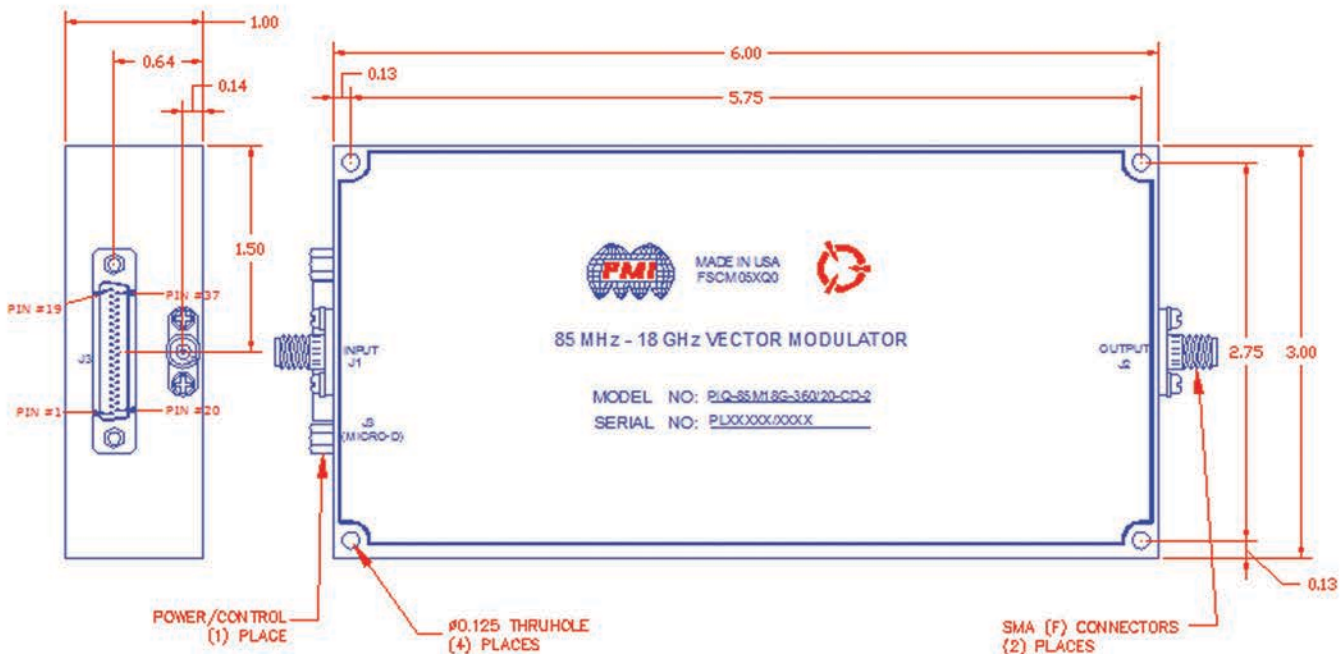
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### SUMMARY TEST DATA

TEST ITEM NO:	PARAMETERS	SPECIFIED VALUE	MEASURED VALUE	REMARKS QA/QC
1	Frequency Range	100MHz-18GHz min, 85MHz-18GHz goal	85MHz-18GHz	
2	Phase Range, 0.100-0.5GHz	180° Nominal, 360° Goal	359.3°	
3	Phase Range, 0.5- 18 GHz	360° Nominal	359.3°	
4	Attenuator Dynamic Range	20 dB Min.	20.4 dB	
5	Attenuator Resolution	0.1dB Max.	0.08 dB	
6	Insertion Loss	-3dB ±4dB	See Typical Characteristics	
7	Amplitude Variation	±4dB Across Frequency Range	See Typical Characteristics	
8	Amplitude Variation, Narrow Band	±0.5dB Across Over Any 50MHz 0.1-0.5GHz ±0.5dB Across Over Any 100MHz 0.5-18GHz	< ±0.5dB Typical	
9	Phase Variation, Narrow Band	±2° Across Over Any 50MHz 0.1-0.5GHz ±2° Across Over Any 100MHz 0.5-18GHz (Not incl. the phase error in the Agilent N5230A PNA)	< ±2° Typical	

TEST ITEM NO:	PARAMETERS	SPECIFIED VALUE	MEASURED VALUE	REMARKS QA/QC
10	Phase Resolution	0.8° Max.	0.703125°	
11	Return Loss (Input/Output)	10dB Min.	> 10 dB	
12	RF Input Power, Operating	+5dBm Nominal for Prototype, 0dBm to +10dBm Max.	Pass	
13	RF Input Power (CW) Damage Threshold	+30dBm CW Max.	Pass By Design	
14	Control Type, Frequency Setting	8 Bit TTL for TBD MHz Bands	Pass	
15	Control Type, Phase Shift Setting	9 Bit TTL	Pass	
16	Control Type, Attenuator Setting	8 Bit TTL	Pass	
17	Switching Speed	10µs Typ.	< 2 µs	
19	Power Consumption	+15V -15V +5V	+15 V @ 1.15A -15 V @ 95mA +5 V @ 1mA	
20	Gain for Output Amplifier	28 dB Nominal	N/A	INTERNAL COMPONENT NOT TESTED
21	Noise Figure for Output Amplifier	4 dB Typical	N/A	INTERNAL COMPONENT NOT TESTED
22	OIP3 for Output Amplifier	27.5 dBm Typical	N/A	INTERNAL COMPONENT NOT TESTED
23	OP1dB for Output Amplifier	16 dBm Typical	N/A	INTERNAL COMPONENT NOT TESTED



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