Mach-10™ 051: -0.7 Fixed-Chirp Intensity Modulator with integrated PD

7.1.2.SP.0051 Rev D   Preliminary Model

Description

The Fixed-Chirp Intensity Modulator with Integrated Photodetector was designed for customers seeking small form-factor modulators with low drive voltage requirements. The Fixed-Chirp Intensity Modulator with Integrated Photodetector is based on Titanium-indiffused z-cut Lithium Niobate and uses a Mach-Zehnder interferometric architecture. The device was designed to support an array of applications where keeping a low drive voltage is critical: long-haul transmission, digital, analog, and Binary Phase Shift Keyed (BPSK) signaling.

The integrated photodetector can be used for optical power monitoring and modulator bias control, eliminating the need for an external fiber tap and splicing. The Fixed-Chirp Intensity Modulator with Integrated Photodetector is a single-ended drive configuration with separate DC bias pins, making it pin-for-pin compatible with COVEGA's Small Form Factor Zero-Chirp Intensity Modulators. The 051 Fixed-Chirp Intensity Modulator has the lowest drive voltage of any COVEGA Small Form Factor Modulator: typically less than 4.0V.
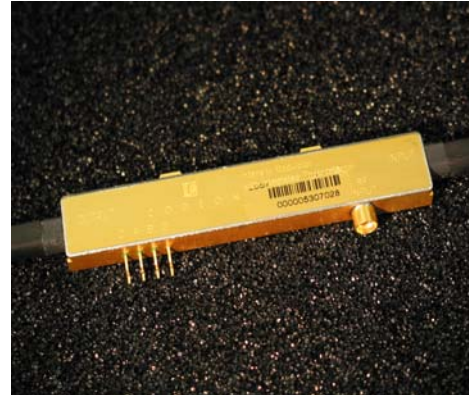
Features

→ Superior Frequency Performance

→ Small Size – 300 pin MSA Transponder Compatible Footprint

→ Low Drive Voltage

→ Long-Term Bias Stability

→ Hermetic Packaging - High Reliability - Telcordia GR-468 Compliant

→ Integrated Photodetector

→ C & L Band Operation

Applications

✓ High-speed data communications
  o SONET OC-192 interfaces
  o SDH STM-64 interfaces
  o WDM transmission at +10 Gb/s
✓ (D)BPSK
✓ Analog
✓ High-speed test equipment

Ordering Information

Mach-10 051-10-X-X-X-NS-XXX

Part #	Bandwidth	Output Fiber Type	Input Connector	Output Connector	Bias Operating Point	Pin Leads
051	10 = 10 GHz	S = SMF*	S = SC/PC*	S = SC/PC*	NS = Negative Slope	BNL = Bent*
		P = PMF	B = Bare Fiber	B = Bare Fiber		STL = Straight
			F = FC/uPC	F = FC/uPC		
			L = LC/PC	L = LC/PC		
			A = FC/aPC	A = FC/aPC		
			M = Mu	M = Mu		
* Default options unless otherwise specified						

Mach-10™ 051

Specifications

Parameter		Min	Typ	Max	
Operating Case Temperature	T_{CASE}	0		70	C
Operating Wavelength	λ	1525		1605	nm
Optical Insertion Loss (Connectorized)	I.L.		4.0	5.0	dB
Insertion Loss Variation (EOL)	ΔI.L.	-0.5		0.5	dB
Modulator Chirp Parameter	$|\alpha|$	0.6		0.8	
Optical Return Loss		40			dB
Optical On/Off Extinction Ratio (@ DC)	E.R.	20			dB
Optical Extinction Ratio (PRBS)	E.R.	13			dB
Bit Rate Frequency	f_{BR}	9.953		12.5	Gb/s
E/O Bandwidth (-3 dB with Linear Fit)	f_{c-3dB}	8.0			GHz
S_{11} (dc to 10 GHz)			-12	-10	dB
RF Drive Voltage (PRBS)	V_{PRBS}		3.8	5	V
Vpi RF Port (@ 1 GHz)	V_{RF}		3.5	4.5	V
Vpi Bias Port (@ DC)			3.0	8	V
DC Bias Voltage Range (EOL)	V_{BIAS}	-8		8	V
PD Responsivity (ref. to output power)		0.1		0.5	mA/mW
Output Optical Power Monitoring Range		-5		10	dBm
Output Monitor Variation		-0.5		0.5	dB
Monitor Photodiode Reverse Bias Voltage		-5.5		-3.0	V
SPECIFICATIONS SUBJECTED TO CHANGE WITHOUT NOTICE					

Packaging
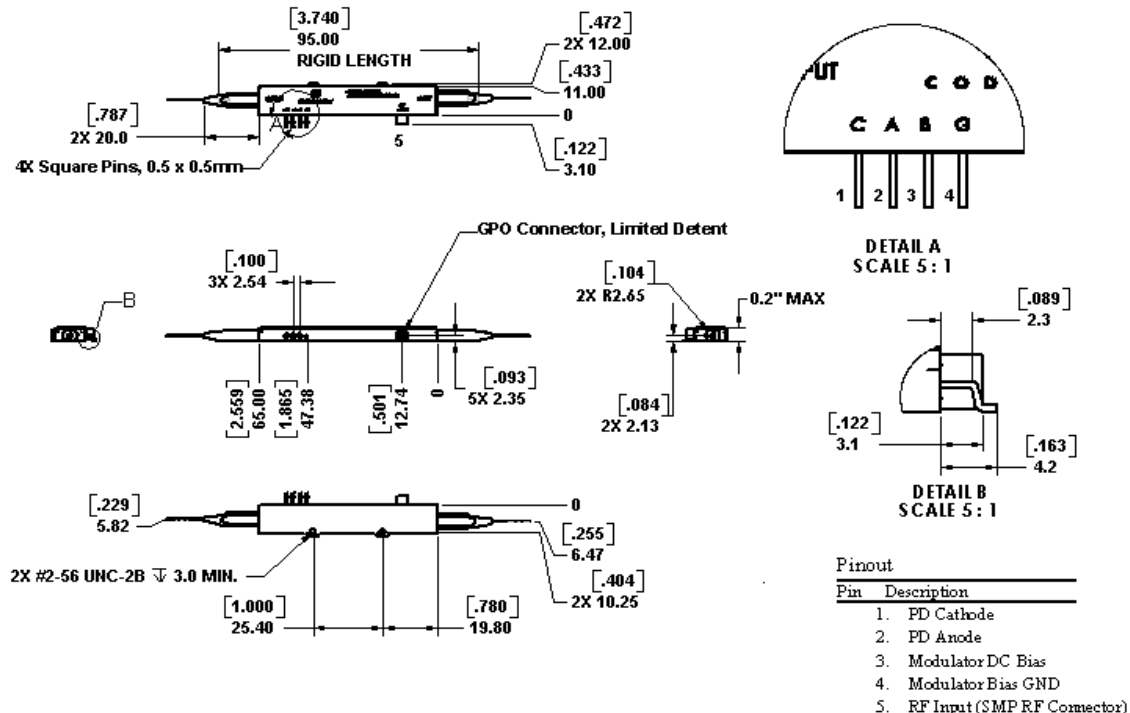
Dimensions in mm unless otherwise specified; Tolerances are ± 0.05 (decimals) ± 1 (angles)