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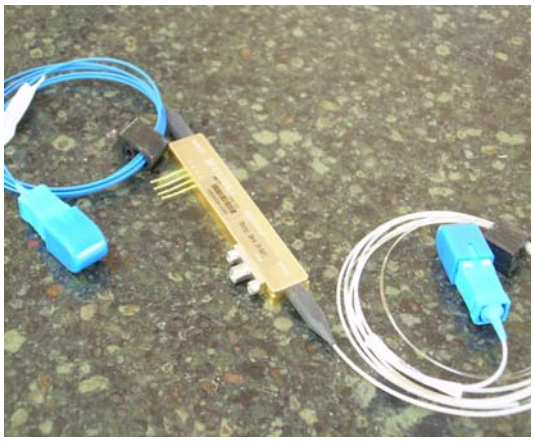
Mach-10™ 082: Fixed-Chirp Intensity Modulator with integrated PD using Field Replaceable GPO Connector

7.1.2.SP.0082 Rev A

Description

The Mach-10™ Fixed-Chirp Intensity Modulator with Integrated Photodetector was designed for customers seeking small form-factor modulators with increased bandwidth for FEC implementation; supporting data rates from 9.953 Gb/s to 12.5 Gb/s. The Fixed-Chirp Intensity Modulator with Integrated Photodetector is based on Titanium-indiffused z-cut Lithium Niobate and uses a Mach-Zehnder interferometric architecture. Designed for integration into 300 pin MSA compatible transponders, it is ideal for metro and long-haul DWDM applications requiring less than a 2 dB power penalty for +/-1,600 ps/nm dispersion.

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 extremely small footprint and low profile make it ideal for customers seeking to reduce the size of their current 300 pin MSA compatible metro or long-haul transponder platforms. The Fixed-Chirp Intensity Modulator with Integrated Photodetector is a single-ended drive configuration.



Applications

- ✓ High-Speed Data Communications
  - o SONET OC-192 Interfaces
  - o SDH STM-64 Interfaces
  - o WDM transmission at +10 Gb/s
- ✓ Undersea Communications
- ✓ Internet Router Interfaces
- ✓ High-speed test equipment

Features

- → Superior Frequency Performance
- → Small Size – 300 pin MSA Transponder Compatible Footprint with FRSMP connector
- → Low Drive Voltage
- → Long-Term Bias Stability
- → Hermetic Packaging - High Reliability - Telcordia GR-468 Compliant
- → Integrated Photodetector
- → C & L Band Operation

Ordering Information

Mach-10 082-XX-X-X-X-XX

Part #	Bandwidth	Output Fiber Type	Input Connector	Output Connector	Bias Operating Point	Pin Leads
082	10 = 10 GHz*	S = SMF*	S = SC/PC*	S = SC/PC*	PS = Pos. Slope	BNL = Bent*
	12 = 12 GHz	P = PMF	B = Bare Fiber	B = Bare Fiber	NS = Neg. Slope*	STL = Straight
			F = FC/uPC	F = FC/uPC	PK = Peak	
			L = LC/PC	L = LC/PC	NL = Null	
			A = FC/aPC	A = FC/aPC		
			M = Mu	M = Mu		

* Default options unless otherwise specified

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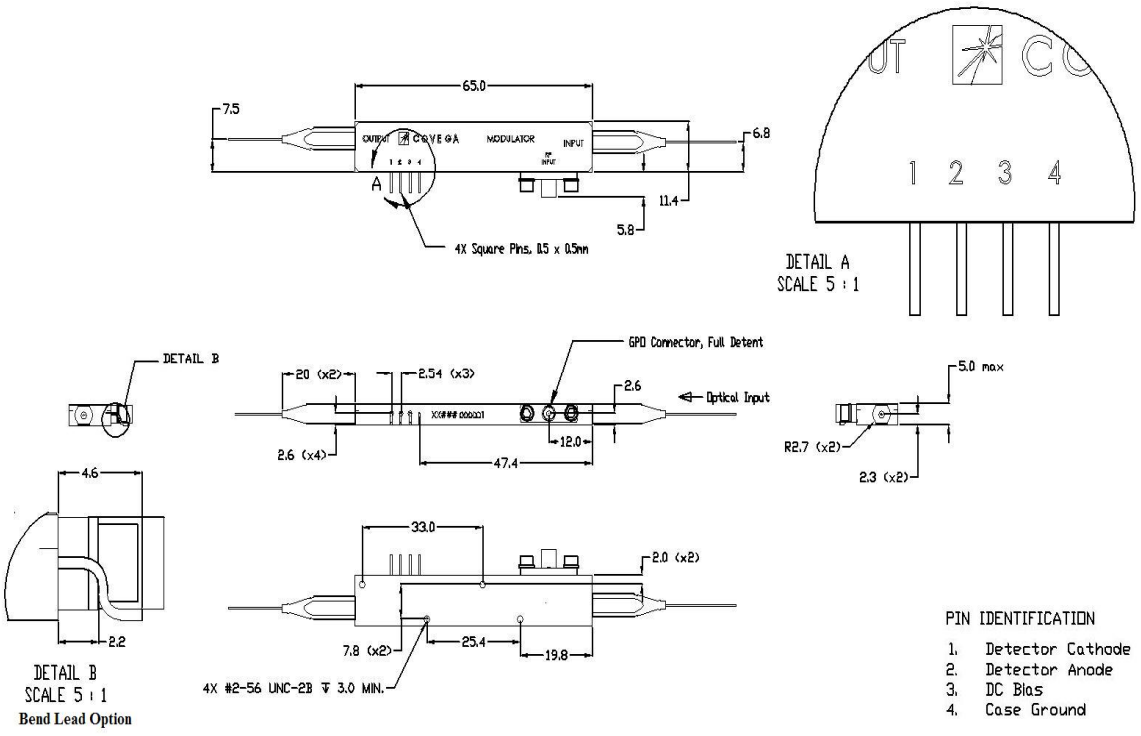
Mach-10™ 082

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	$\lvert\alpha\rvert$	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)	$f_{c\text{-}3dB}$	10.0	12.0		GHz
S11 (dc to 10 GHz)			-12	-10	dB
RF Drive Voltage (PRBS)	V_{PRBS}		5.5	6	V
Vpi Bias Port (@ DC)				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)