

Fiber Optical Modulator DP-QPSK

1530-1610 nm, 30GHz, 128Gbps



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The DPSK series fiber optical modulator supports high-speed modulation up to 128 Gbps using the DP-QPSK (Dual-Polarization Quadrature Phase Shift Keying) transmission format. It integrates four independently driven Mach-Zehnder Interferometer (MZI) modulators—each with a low V_{π} of 3.5 V, ~30 GHz bandwidth, dedicated DC bias ports, and monitor photodiodes for auto bias control—all in a single package. Two MZI pairs form dual I/Q modulators for the X and Y polarizations. A single-polarization CW laser is input into the device, split into two orthogonal polarization paths, modulated independently, and then recombined into a dual-polarization optical output. The system achieves 128 Gbps by combining a 30 Gbaud symbol rate, QPSK modulation (2 bits per symbol), and dual-polarization, effectively utilizing all four MZIs to deliver a 4x data rate increase over a single-modulator setup. It offers low insertion loss (≤ 12 dB) and operates across the full C+L band.

Features

- Low Drive Voltage, RF V_{π} Voltage 3.5V@32GBaud
- 128Gbps (32GBaud) Mach-Zehnder Modulator for DP-QPSK Transmission Format
- Separated DC Bias Port for Each Mach-Zehnder Interferometer
- Dual QPSK modulators and Polarization Beam Combiner are Integrated in One Package
- Integrated Monitor Photodiode for Auto Bias Control
- Low Insertion Loss, ≤ 12 dB

Specifications *

Parameter	Min	Typical	Max	Unit
Operating Wavelength	1530		1610	nm
Optical Bandwidth (-3dB Down)	23	28	35	GHz
Insertion Loss (for each polarization)			14	dB
RF Drive Voltage			7.0	Vpp
Bias Half Wave Voltage			14	V
DC Extinction Ration for Parent MZI	22			dB
DC Extinction Ration for Child MZI	20			dB
Optical Delay (between X and Y)	*1	-6	-1	ps
	*2	13.5	18.5	
Operating Temperature	-5		75	°C
Package Size (L x W x H)	90.5 x 13.2 x 7.0			mm

Applications

- DP-QPSK 128Gps Optical Transmission System

Note: The specifications provided are for general applications with a cost-effective approach. If you need to narrow or expand the tolerance, coverage, limit, or qualifications, please [click this link](#):

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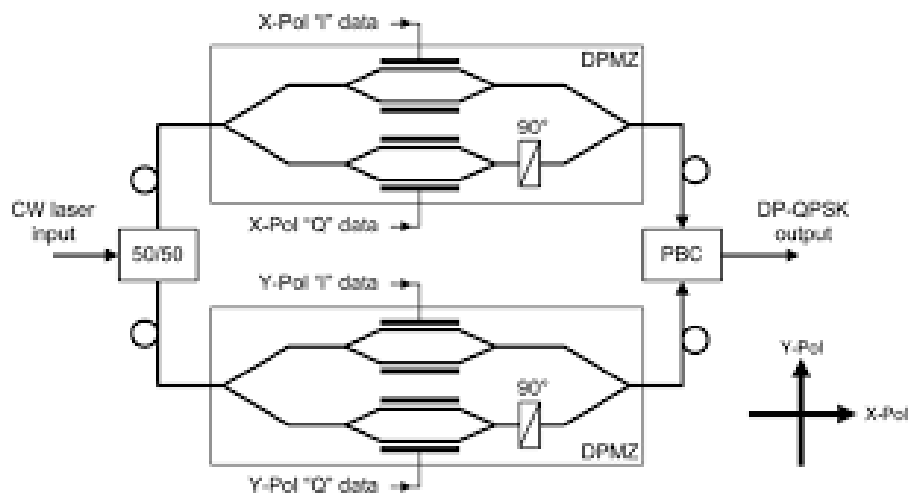
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Function Diagram



Mechanical Dimensions (mm)

*Product dimensions may change without notice. This is sometimes required for non-standard specifications.

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Ordering Information

	5	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	11	5	1
Prefix	Wavelength	Driver *	Connector		Input Fiber	Output Fiber
DPSK-	1550 nm = 5	Non = 001 Yes = 002 Special = 000	Non =1 FC/APC =2		PM1550 = 5	SM28 = 1

* Driver comes with two differential RF linear amplifiers and two RF inputs and power supply \$2990

Application Notes

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RF Performance

