

2014

Advanced Product Line

λ (0.65, 0.78, 0.85, 0.98, 1.06, 1.3, 1.55, 1.7, 2.0 μm)



- **Low-V π QPSK (I/Q)** Dual-Parallel Nested-MZM X-cut Modulators (**25-50Gbaud**)
- **Low-V π** 1x1, 1x2 X-cut (0-chirp) **20 & 40GHz Compact** Modulators
- **Low-loss, Long- λ (2 μm)** 10 & 20GHz **Phase & Intensity** Modulators
- 1x1, 1x2 **Dual-Drive** Low-V π (<2.5V/side) 10 & 20GHz Modulators
- **Low-V π** : 1x1, 1x2, 2x2 Z & X-cut **Intensity** Modulators (<4V, <3.5V, <3V, <2.5V) **Phase** Modulators (<4V, <3V, custom <2.5V)
- **Ultra-wideband (DC \rightarrow 65GHz \rightarrow 110+GHz)** Modulators (custom)



Low-V π QPSK (I/Q) Dual-Parallel MZM (X-cut Single-Drive)

- **25+Gbaud** version: **Low-V π ~2.9-3.3V@1GHz; >20-25GHz; Excess Loss: <4dB**
- **50 Gbaud** version: **>30-35GHz; V π ~3.9-4.3V@1GHz; Excess Loss: <4dB**

Please contact us -- 100+Gb/s DP-QPSK (Single-Drive X-cut LiNbO₃)

- **25-50 Gbaud** versions • **Body: 112x13x6.8 mm³** • Please contact us for custom config.



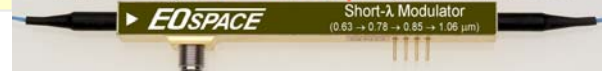
Low-V π 1x1, 1x2 X-cut (0-chirp) 20&40G Compact Modulators

- **20G** version: **Low-V π ~ 3.5-3.8V@1GHz; >20-25GHz; <4dB (<3dB option)**
- **40G** version: **Large BW ~ 30-40GHz; V π ~4.5-4.9V@1GHz; <4dB (<3dB option)**
- **Housing: 65x9x9 mm³** with SMA/2.92mm/1.85mm connector; (65x9x5 mm³ with GPPO)

Short- λ : 0.65 \rightarrow 0.78 \rightarrow 0.85 \rightarrow 0.98 \rightarrow 1.06 μm Phase & Intensity

- **10 & 20 & 40GHz, V π : <4V, <3V & <2V, Insertion loss: <4, <3 & 2dB-custom**
- **High-Extinction-Ratio** versions ($\lambda=1.06\mu\text{m}$: 30, 40 & 50dB)

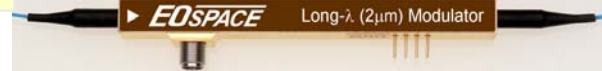
Short- λ (0.63 \rightarrow 1.06 μm) Modulators



Long- λ : 2+ μm Intensity & Phase Modulators (10 & 20GHz)

- **Insertion loss: <4dB, 3dB & (2dB - custom)**
- **V π : Intensity modulator: <7V, (5V-opt.); Phase Modulator: V π <10V, (7V-opt.)**

Long- λ (2+ μm) Modulator



10 & 20 & 40+ GHz Phase Modulators

- **Ultra-Low-V π** version: **~3V@1GHz, >20GHz, <4 & <3dB**
- **Extra-Bandwidth** version: **~4V@1GHz, >30GHz, <4 & <3dB**
- **Ultra-Low-Loss** version: **<2dB & <3dB, <5V@1GHz, 10&20GHz**

40+ Gb/s (Z-cut & X-cut) Modulators

- **Z-cut: Pre-chirp**
 - **V π ~3.5V@1GHz, BW >30-40GHz, <4dB, (<3dB option)**
- **X-cut: Zero-chirp**
 - **V π <4.5V@1GHz, BW >30-40GHz, <5dB, <4dB & (<3dB option)**
- **Low-V π Dual-Drive** (with GPPO & RF 1.85mm) versions

10 & 20+ Gb/s (Z-cut & X-cut) Modulators

- **Z-cut: Pre-chirp: Low-Loss <3dB, (<2dB option)**
 - **BW >12.5GHz, (>18GHz version); V π <5V, <4V@1GHz**
 - **Lower-V π versions: V π <3.5V@1GHz; <3V, <2.5V (custom)**
- **X-cut: Zero-chirp: Low-Loss <4dB, (<3dB option)**
 - **BW >12.5GHz, (>18GHz version); V π <5, <4.5V@1GHz**
 - **Lower-V π versions: V π <4V@1GHz; <3V, <2.5V (custom)**

Other available : • 1x2 (& 2x2) **Dual-Outputs** • **Dual- λ : 1300/1550nm** • **Integrated PD** • **Ultra-High-Power Handling (>1W, >2W)**
device versions : • **High Extinction-Ratio (>30 & >40 & >50 & >60dB)** • **Extended Temperature Range (-40° & -55°C \rightarrow +95°C)**

General Polarization Control, Tracking, Scrambling



High-speed Polarization Controllers

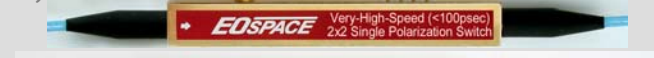
- **Low Insertion Loss <3dB, (~2dB option)**
- **Multiple Integrated Device Stages: 1, 3, 4, 6, 8**

High-speed 1x2, 2x2, 1xN, NxN Switches

Single-Polarization (SP) or Polarization-Independent (PI)



1x2 (2x2) SP switch



1x2 (2x2) PI switch

