

New 2012
Expanded Product Line

λ (0.65, 0.75, 0.85, 0.98, 1.06, 1.3, 1.55, 1.7, ..., 2.0 μm)

- **Very-Low- V_π** : 1x1, 1x2, 2x2 X & Z-cut 10/20Gbps Intensity modulators (<4V, <3.5V and <3V); Phase modulators (<4V, <3V, custom <2.5V)
- **Very-High-Extinction-Ratio** (>30, >40, >50, and >60dB) modulators
- 1x1, 1x2, 2x2 Dual-Drive (10/20/40Gb/s), <2.5V/side
- 2.0 μm Phase & Intensity Modulators (10/20Gbps)
- **QPSK** modulators
- **SFF x-cut** modulators

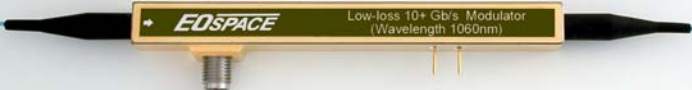
General Polarization Control, Tracking, Scrambling



Polarization MUX, PMD/PDL Compensation Systems

High-speed Polarization Controllers

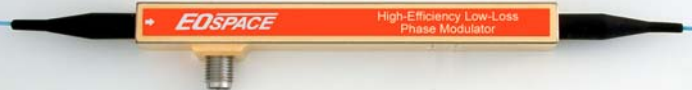
- Low Insertion Loss < 3 dB, (< 2 dB option)
- Response Time << 100 ns
- Multiple Integrated Device Stages: 1, 3, 4, 5, 6, 7, 8 etc.
- Available for $\lambda = 2000^+$, 1550, 1310, 1060, 850 nm, etc.



($\lambda = 2000, 1700, 1550, 1310, 1060, 980, 830, 750, 650\text{nm}$)

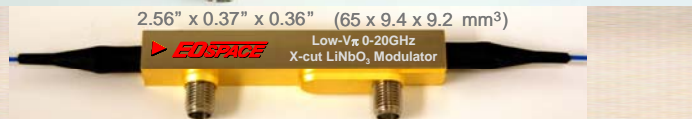
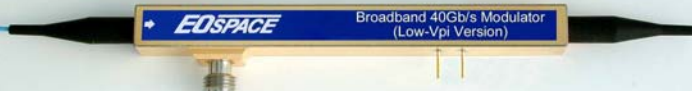
Shorter- λ 10-40+ GHz Modulators

- **Phase & Intensity & High Extinction Ratio** (>30, >40 & >50dB)
- Low Insertion Loss < 4 dB, (< 3 dB option, 2 dB custom)
- Low- V_π : <4V, <3V and <2V (ultra-low- V_π version)



10/20/40+ GHz Phase Modulators

- **Ultra-Low-Loss** versions: < 2 & < 3 dB, <5V@1GHz, >10/20GHz
- **Ultra-Low- V_π** version: < 3V@1GHz, >20 GHz, < 4 & < 3dB
- **Extra-Bandwidth** version: < 4V@1GHz, >30 GHz, < 4 & < 3dB
- Custom: V_π < 2.5 V; Integrated Polarizer



2.56" x 0.37" x 0.36" (65 x 9.4 x 9.2 mm³)



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

- **Z-cut: Pre-chirp, Very-Low- V_π** (new! ~3V available)
 - V_π < 3.5V@1GHz, BW >30-40GHz, < 4 dB, (< 3 dB option)
- **X-cut: Zero-chirp, Very-Low- V_π** (new! <4V available)
 - V_π < 5.0V@1GHz, BW >30-40GHz, < 5 dB, (< 4 dB option)
- **Ultra-Low- V_π Dual-Drive** (with GPPO & RF1.85mm) versions

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

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

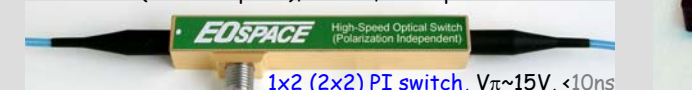
Other available : • 1x2 (& 2x2) Dual-Output Modulators • Dual- λ : 1300/1550nm • Integrated Polarizer • Integrated PD device versions : • High Extinction (>30 & >40 & >60 dB) • Extended Temperature Range (-40° & -55°C → +100°C) Modulator

High-speed (ns) 1xN, NxN Switches

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



1x2 (2x2) Ultra-high-speed SP Switch/Modulator >10GHz (>18GHz option), V_π ~5V, <<100ps



1x2 (2x2) PI switch, V_π ~15V, <10ns



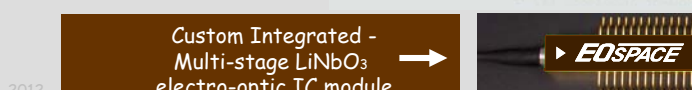
1xN SP Switches ($\lambda=1.55, 1.3, 1.06\mu\text{m}, \dots$)

+ Custom Electro-optic IC Modules



8x8 switch

8x8 Strictly Non-blocking Switch

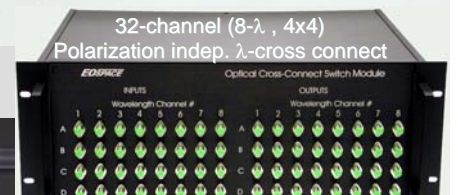


Custom Integrated - Multi-stage LiNbO_3 electro-optic IC module



1x8 SP switch, 10ns

Custom "Application-Specific" 1xN Electro-optic IC module



32-channel (8- λ , 4x4) Polarization indep. λ -cross connect