

Integrated Photonics Process Design Kit (PDK)

Understanding the technical and cost challenges associated with integrated photonics design, AIM Photonics has partnered with multiple experts in the Electronic Photonic Design Automation (EPDA) field. When companies use AIM Photonics Silicon Photonics Process Design Kit (PDK) they not only have access to the most up-to-date Silicon Photonics PDK, but also access to a community driving and enabling tomorrow's silicon photonics design methodologies.

Benefits of AIM Photonics Silicon Photonics PDK

- 3 technologies: Full Active, Passive, and Interposer
- Extensive Component Library
- Support for simulation, layout, schematics, DRC in multi-vendor EPDA software support
- O Band [1260nm-1360nm] Support
- C+L Band [1500nm-1600nm] Support
- 100Gbps Modulation and Detection
- Push-pull Analog and Digital Modulators for low chirp, long distance links
- Low loss passives, fiber-to-chip couplers
- Polarization Diversity Circuits (Low PDL)

AIM Photonics PDKv5.0a

Passive Components	Qty	Current Performance
Waveguides	6	Silicon Strip <2.5dB/cm Silicon Low Loss <1dB/cm
		SiN <2.0 dB/cm (>1550nm,L-Band) <1.0dB/cm (O-Band)
Edge Couplers	4	~1.5dB/facet UHNA Fiber (TE-TM) PDL < 0.5dB <3.0dB/facet SMF-28 Fiber (TE-Only)
Vertical Couplers	2	<3dB loss
3dB 4-Port Splitters	2	loss ~0.5dB
3dB Y-junctions	3	loss ~0.2dB
Power Taps (1% & 10%)	3	loss <0.1dB
Layer Transitions	3	loss <0.1dB
Crossing	1	loss <0.2dB
Polarization Rotator	1	loss ~0.5dB,
Polarization Splitter & Rotator	1	loss ~0.65dB, PDL<0.3dB
Waveguide Termination	1	Low reflection <-30dB
Active Devices	Qty	Current Performance
C Band Photodetector	1	BW>45GHz, R~1A/W
C+L Band Photodetector	1	BW>35GHz, R~1.1A/W
O Band Photodetector	1	BW>40GHz, R~0.9A/W
C+L Band MZM	2	25 and 50Gbaud (NRZ and PAM4)
O Band MZM	1	25Gbaud (NRZ and PAM4)
MZM Termination	1	Impedance Matched to MZMs
Microring Filters	4	~26nm FSR (Fully Reconfigurable)
Microdisk Switches	4	<3ns switch
Microdisk Modulators	5	25Gbaud (NRZ and PAM4)
Analog Photodetector	1	SFDR>113dB/Hz ^{2/3*}
Analog MZM	1	SFDR>100dB/Hz ^{2/3*}
Thermo-Optic Phase Shifter	2	P _π <25mW/π
Thermo-Optic Switch	2	P _π <25mW/switch
Variable Optical Attenuator	1	up to 10dB

* Based on reference transmitter and receiver

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