


Handbook
for
Generic Photonic IC Design

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Nomenclature

2D	Two-Dimensional
ABC	Absorbing Boundary Condition
ADS	Advanced Design System (Agilent)
ASE	Amplified Spontaneous Emission
ASIC	Application Specific IC
ASPIC	Application Specific Photonic IC
Aspic™	Advanced Simulator for Photonics Integrated Circuits (Filarete)
AWG	Arrayed Waveguide Grating
AWG	Arrayed waveguide grating
BB	Building Block (used for both BBB and CBB, where the distinction is not relevant)
BBB	Basic Building Block
BCB	Benzocyclobutene
BER	Bit Error Rate
BOTDR	Brillouin Optical Time Domain Reflectometry
BPM	Beam Propagation Method
BPM	Beam Propagation Method
BPM	Beam Propagation Method
BTB	Basic Technology Block
CBB	Composite Building Block
CMOS	Complementary Metal–Oxide–Semiconductor
CMRR	Common-Mode Rejection Ratio
COBRA	Communication Technologies; Basic Research and Applications (TU/e research institute)
CW	Continuous Wave

DBR Distributed Bragg Reflector

DFB Distributed Feedback Laser

DH Double Hetero

DI Delay Interferometer

DQPSK Differential Quadrature Phase Shift Keying

DRC Design Rule Checking

DS Down Stream

DUT Device Under Test

DUV Deep Ultra-Violet (193 nm)

E-beam Electron-beam

E-o efficiency Electro-Optics (conversion) efficiency

EAM Electro-Absorption Modulator

EDFA Erbium-Doped Fiber Amplifier

EI Electrical Isolation section

EME Eigen-Mode Expansion

EME Eigenmode Expansion Method

EME Eigenmode Expansion Method

ePIXnet European Network of Excellence on Photonic Integrated Components and Circuits, FP6 ICT NoE

ER Extinction Ratio

ERM Electro-Refractive (phase) Modulator (depletion-type)

ERMI Electro-Refractive (phase) Modulator (Injection-type)

EuroPIC European manufacturing platform for Photonic Integration Circuits, FP7 NMP SME project

FDE finite-difference eigenmode

FDTD Finite Difference Time Domain Method

FDTD Finite Difference Time Domain Method

FDTD Finite Difference Time Domain

FEFD Finite Element Frequency Domain Method

FEFD Finite Element Frequency Domain

FEFD Finite Element Frequency Domain

FET Field Effect Transistor

FMW Fibre Matched Waveguide
FP Fabry-Perot
FPR Free Propagation Region
FPR Free Propagation Region
FSR Free Spectral Range
FSR Free Spectral Range
FWHM full-width at half-maximum
Ge Germanium
IC Integrated Circuit
IIR Infinite Impulse Response
IMOS InP Membrane on Silicon
InGaAs Indium Gallium Arsenide
InGaAsP Indium Gallium Arsenide Phosphide
InP Indium Phosphide
IO Input-Output
IOP PD IOP Photonic Devices (IOP = Dutch Innovation Research Project)
IP Intellectual Property
IPB IP-Block
JePPIX Joint European Platform for Photonic Integration of Components and Circuits
LiDAR light detection and ranging
LSI Large Scale Integration
MEMPHIS Merging Electronics and Micro and nano-Photonics in Integrated Systems,
Dutch SmartMix project.
MEMS micro electro-mechanical systems
MFD Mode Field Diameter
MI Michelson Interferometer
MIR Mid Infrared
MIR Multimode Interference Reflector (MMI-Reflector)
MMI Multi-Mode Interference
MOVPE Metal-Organic Vapour-Phase Epitaxy
MPW Multi Project Wafer
MPW Multi-Project Wafer

MQW Multit-Quantum Well

MQW Multi Quantum Well

MZI Mach-Zehnder Interferometer

NIR Near Infrared

OCT Optical Coherence Tomography

OPA optical phased array

OWC Optical Wireless Communication

OWC optical wireless communication

PARADIGM Photonic Advanced Research And Development for Integrated Generic Manufacturing, EU FP7 ICT Integrating Project

PBS Polarization Beam Splitter

PC Polariszation Controller

PCB Printed Circuit Board

PD Photo Detector

PD Photodiode

PDA Photonic Design Automation

PDG Polarization Dependent Gain

PDK Process Design Kit

PHASAR Phased Array (early name for AWG)

PHASAR Phased array

PI-SOA Polarization Independent SOA

PIC photonic integrated circuit

PM-DQPSK Polarisation Multiplexing Differential Quadrature Phase-Shift Keying

PML Perfectly Matched Layer

POSA PIC Optical Sub-Assembly

PR Polarisation Rotation section

PRBS Pseudo Random Binary Sequence

PS Polarisation Splitter

QD Quantum Dot

QW Quantum Well

R&D Research & Development

ROSA Receiver Optical Sub-Assembly

RR	Ring Resonator
SA	Saturable Absorber
SAG	Selective Area Growth
SE	Spontaneous Emission
SEM	Scanning Electron Microscope
SFDR	Spurious-Free Dynamic Range
Si	Silicon
SiN	Silicon Nitride
SiPH	Silicon Photonics
SLSR	Sidelobe Suppression Ratio
SME	Small or Medium Enterprise
SOA	Semiconductor Optical Amplifier
SOI	Silicon On Insulator
SOP	State Of Polarization
SPM	Self Phase Modulation
SR	Splitting Ratio
SSC	Spot Size Convertor
SSMF	Standard Single Mode Fibre
STW GTIP	Generic Technologies in Integrated Photonics, STW Perspectief Project (STW = Dutch Technology Foundation)
SWIR	Short-Wave Infrared
TBR	Tunable Bragg Reflector
TE	Transverse Electric (field)
TEC	Thermo-Electric Cooler
Ti-Pt-Au	Titanium-Platinum-Gold (contact)
TM	Transverse Magnetic (field)
TOM	Thermo-Optic Modulator
TOSA	Transmitter Optical Sub Assembly
TPA	Two-Photon Absorption
TWTD	Travelling Wave Time Domain method
US	Up Stream
VLSI	Very Large Scale Integration

WDM	Wavelength Division Multiplexing
WG	Waveguide (passive)
WGR	Waveguide grating router
WGS	Deep etched waveguide (strong confinement)
WGT	Waveguide Termination
WGW	Shallow etched waveguide (weak confinement)
WLC	Wavelength Converter
XFP	10 Gigabit Small Form Factor Pluggable module
XPM	Cross Phase Modulation

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