

# ISSCC GLOSSARY

## 1

<b>1P1M</b>	1-Polysilicon layer 1-Metal layer
<b>1T1C</b>	1-Transistor 1-Capacitor

## 3

<b>3D</b>	3-Dimensional
<b>3G</b>	Third-Generation (Wireless)
<b>3T</b>	3-Transistor

## 6

<b>6T</b>	6-Transistor
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## 8

<b>8T</b>	8-Transistor
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## $\Delta\Sigma$

<b><math>\Delta\Sigma</math></b>	Delta-Sigma
<b><math>\Delta\Sigma M</math></b>	Delta-Sigma Modulator

## $\Sigma\Delta$

<b><math>\Sigma\Delta</math></b>	$\Delta\Sigma$ is preferred.
<b><math>\Sigma\Delta M</math></b>	$\Delta\Sigma M$ is preferred.

## A

<b>a-Si</b>	Amorphous Silicon
<b>AC</b>	Alternating Current
<b>A/D</b>	Analog-to-Digital Converter
<b>AAC</b>	Advanced Audio Coding
<b>ACI</b>	Adjacent-Channel Interface
<b>ACL</b>	Access Control List
<b>ACLR</b>	Adjacent-Channel Leakage Power Ratio
<b>ACPR</b>	Adjacent-Channel Power Ratio
<b>ADC</b>	Analog-to-Digital Converter
<b>ADDLL</b>	All-Digital DLL
<b>ADPLL</b>	All-Digital PLL
<b>ADSL</b>	Asynchronous Digital Subscriber line
<b>ADU</b>	Analog-to-Digital Unit
<b>AES</b>	Advanced Encryption Standard
<b>AFC</b>	Automatic Frequency Control
<b>AFE</b>	Analog Front End
<b>AFM</b>	Adaptive Flash Management™
<b>AGC</b>	Automatic Gain Control
<b>AGU</b>	Address-Generation Unit
<b>AIP</b>	Artificial-Intelligent Partner
<b>ALU</b>	Arithmetic Logic Unit
<b>AM</b>	Amplitude Modulation
<b>AMI</b>	Advanced Metering Infrastructures
<b>AMLCD</b>	Active-Matrix LCD
<b>AMOLED</b>	Active-Matrix OLED
<b>AMP</b>	Asymmetric Multi-Processing
<b>AMPS</b>	Advanced Mobile-Phone Service
<b>AMS</b>	Analog Mixed-Signal (System)
<b>APD</b>	Avalanche Photo-Diode
<b>APG</b>	Algorithmic Pattern Generator
<b>API</b>	Application-Programming Interface
<b>APSK</b>	Amplitude Phase-Shift Keying
<b>ARM</b>	Advanced RISC Machine
<b>ASIC</b>	Application-Specific Integrated Circuit
<b>ASK</b>	Amplitude Shift Keying
<b>ASP</b>	Average Selling Price
<b>ASP</b>	Advanced Simple Profile (MPEG-4 Video)
<b>ATA</b>	Advanced Technology Attachment
<b>ATD</b>	Address-Transition Detection
<b>ATE</b>	Automatic Test Equipment
<b>ATM</b>	Asynchronous Transfer Mode
<b>ATSC</b>	Advanced Television Systems Committee
<b>AVC</b>	Audio-Visual CODEC
<b>AVC</b>	Automatic Volume Control (use AGC)
<b>AWG</b>	Arrayed-Waveguide Grating

## B

<b>BAN</b>	Business Area Network
<b>BAW</b>	Bulk Acoustic Wave
<b>BB</b>	Baseband
<b>BBT</b>	Band-to-Band Tunneling
<b>BCD</b>	Bipolar-CMOS-DMOS Process
<b>BCD</b>	Binary-Coded Decimal
<b>BCH</b>	Bose-Chaudhuri-Hocquenghem {a type of error-correcting code}
<b>BD</b>	Blu-ray disc
<b>BER</b>	Bit-Error Rate
<b>BGA</b>	Ball-Grid Array
<b>BGR</b>	Band-Gap Reference
<b>BiCMOS</b>	Bipolar Complementary-MOS
<b>BIOS</b>	Basic Input/Output System
<b>BIST</b>	Built-in Self-Test
<b>BJT</b>	Bipolar Junction Transistor
<b>BL</b>	Bitline
<b>BLE</b>	Bluetooth Low Energy
<b>BOM</b>	Bill of Materials
<b>BPF</b>	Bandpass Filter
<b>BPSK</b>	Binary Phase-Shift Keying
<b>BSI</b>	BackSide Illumination
<b>B-VOP</b>	Bidirectional-Video Object Planes
<b>BW</b>	Bandwidth

## C

<b>C4</b>	Controlled-Collapse Chip Connection
<b>CAD</b>	Computer-Aided Design
<b>CAM</b>	Content-Addressable Memory
<b>CAN</b>	Controller Area Network
<b>CAS</b>	Column-Address Strobe
<b>CCCS</b>	Current-Controlled Current Source
<b>CCD</b>	Charge-coupled Device
<b>CCK</b>	Complementary Code Keying
<b>CCO</b>	Current-Controlled Oscillator
<b>CCVS</b>	Current-Controlled Voltage Source
<b>CDAC</b>	Capacitor DAC
<b>CDMA</b>	Code-Division Multiple Access
<b>CDR</b>	Clock and Data Recovery
<b>CDS</b>	Correlated Double Sampling
<b>CF</b>	Compact Flash
<b>CFA</b>	Color Filter Array
<b>CFL</b>	Compact Fluorescent Lamp
<b>CHE</b>	Channel Hot-Electron (Injection)
<b>CIS</b>	Complex-Instruction-Set Computer
<b>CIS</b>	CMOS Image Sensor
<b>CLI</b>	Command Line Interface
<b>CML</b>	Current-Mode Logic
<b>CMOS</b>	Complementary Metal-Oxide Semiconductor
<b>CMRR</b>	Common-Mode Rejection Ratio
<b>CMU</b>	Clock Multiplier Unit
<b>CMUT:</b>	Capacitive micromachined ultrasonic transducer
<b>CNFET</b>	Carbon Nanotube NFET
<b>CO</b>	Central-Office (hardware)
<b>CODEC</b>	Coder-Decoder
<b>COFDM</b>	Coded FDM
<b>CoMP</b>	Coordinated MultiPoint
<b>CPE</b>	Customer Premises Equipment
<b>CPU</b>	Central Processing Unit
<b>CPW</b>	CoPlanar Waveguide
<b>CRC</b>	Cyclic Redundancy Check
<b>CSMA</b>	Carrier-Sense Multiple Access
<b>CT</b>	Continuous Time (system)
<b>CUI</b>	Command User Interface
<b>CVD</b>	Chemical Vapor Deposition

# ISSCC GLOSSARY

## D

<b>D/A</b>	Digital-to-Analog Converter
<b>DAB</b>	Digital-Audio Broadcasting
<b>DAC</b>	Digital-to-Analog Converter
<b>dBFS</b>	dB relative to Full Scale
<b>DBS</b>	Direct-Broadcast Satellite
<b>DCC</b>	Duty-Cycle Corrector
<b>DCO</b>	Digitally Controlled Oscillator
<b>DCT</b>	Discrete Cosine Transform
<b>DCVS</b>	Differential Cascode Voltage Switch
<b>DCVS</b>	Digitally-Controlled Voltage Source
<b>DCXO</b>	Digitally Controlled Crystal Oscillator
<b>DDFS</b>	Direct-Digital Frequency Synthesis (or synthesizer)
<b>DDR</b>	Dual Data Rate
<b>DDS</b>	Direct Digital Synthesis
<b>DECT</b>	Digitally Enhanced Cordless Communication
<b>DEM</b>	DEModulator
<b>DEM</b>	Dynamic Element Matching
<b>DEMOS</b>	Depletion MOS
<b>DEMUX</b>	Demultiplexer
<b>DES</b>	Data-Encryption Standard
<b>DEVN</b>	Differential Error Vector Magnitude
<b>DFE</b>	Decision-Feedback Equalizer
<b>DFP</b>	D-type Flip Flop
<b>DFT</b>	Design for Testability
<b>DFT</b>	Discrete Fourier Transform
<b>DfY</b>	Design-for-Yield
<b>DIMM</b>	Dual In-Line Memory Module
<b>DIP</b>	Dual In-line Package
<b>DLL</b>	Delay-Locked Loop
<b>DMA</b>	Direct Memory Access
<b>DMB</b>	Digital Multimedia Broadcasting
<b>DMIPS</b>	Dhrystone Million Instructions Per Second
<b>DMOS</b>	(Double-)Diffused MOS
<b>DNA</b>	Deoxyribonucleic Acid
<b>DNL</b>	Differential Non-Linearity
<b>DNR</b>	Dynamic Range (DR preferred)
<b>DPT</b>	Double Patterning Technology
<b>DOM</b>	Digital Optical Module
<b>DR</b>	Dynamic Range (see also DNR)
<b>DRAM</b>	Dynamic Random-Access Memory
<b>DRC</b>	Design-Rule Check
<b>DSB</b>	Double Side Band
<b>DSC</b>	Digital Still Camera
<b>DSL</b>	Digital Subscriber Line
<b>DS-OFDM</b>	Direct-Sequence Orthogonal Frequency Division Multiplexing
<b>DSP</b>	Digital Signal Processing
<b>DSSS</b>	Direct-Sequence Spread-Spectrum
<b>DT</b>	Discrete Time
<b>DTL</b>	Diode-Transistor Logic
<b>DTV</b>	Digital Television
<b>DUT</b>	Device Under Test
<b>DVB</b>	Digital-Video Broadcasting
<b>DVB-C</b>	Digital-Video Broadcasting - Cable
<b>DVB-H</b>	Digital-Video Broadcasting - Handhelds
<b>DVB-S</b>	Digital-Video Broadcasting - Satellite
<b>DVB-T</b>	Digital-Video Broadcasting - Terrestrial
<b>DVD</b>	Digital Video Disc
<b>DVFS</b>	Dynamic Voltage Frequency Scaling
<b>DVS</b>	Dynamic Voltage Scaling
<b>DWA</b>	Data Weighted Averaging
<b>DWDM</b>	Dense-Wavelength-Division Multiplexing
<b>DWMT</b>	Discrete Wavelet Multi-Tone

## E

<b>ECC</b>	Error-Correcting Code
<b>ECG</b>	Electro-CardioGram
<b>ECL</b>	Emitter-Coupled Logic
<b>ECP</b>	Emitter-Coupled Pair
<b>EDGE</b>	Enhanced Data rates for Global Evolution
<b>EDR</b>	Enhanced Data Rate
<b>EEG</b>	Electro-EncephaloGram
<b>EEPROM</b>	Electrically Erasable Programmable Read-Only Memory
<b>EFR</b>	Enhanced Full-Rate {GSM}
<b>EIRP</b>	Effective Isotropic Radiated Power
<b>EKG</b>	Electro-CardioGram (see ECG)
<b>EMG</b>	ElectroMyoGram
<b>EMI</b>	Electro Magnetic Interference
<b>eICIC</b>	enhancement in Inter-Cell Interference Coordination
<b>ENOB</b>	Effective Number of Bits
<b>EOT</b>	Electrical Oxide Thickness
<b>EPON</b>	Ethernet-based Passive Optical Network
<b>EPROM</b>	Erasable Programmable Read-Only Memory
<b>ERBW</b>	Effective-Resolution Bandwidth
<b>ESD</b>	ElectroStatic Discharge
<b>EUV</b>	Extreme UltraViolet
<b>EVDO</b>	EVolution Data Optimized (in the context of CDMA)
<b>EVM</b>	Error-Vector Magnitude
<b>EWC</b>	Enhanced Wireless Consortium

## F

$f_{max}$	Unity power gain frequency.
$f_s$	Sampling frequency
$f_t$	Transit frequency
<b>FAMOS</b>	Floating-gate Avalanche-injection MOS Transistor
<b>FAN</b>	Field Area Network
<b>FBAR</b>	Film Bulk Acoustic Resonator
<b>FBDIMM</b>	Fully Buffered DIMM
<b>FCC</b>	Federal Communications Commission (U.S.)
<b>FDM</b>	Frequency-Division Multiplexing
<b>FDMA</b>	Frequency-Division Multiple-Access
<b>FDNR</b>	Frequency-Dependent Negative Resistor
<b>FDSOI</b>	Fully Depleted Silicon-on-Insulator
<b>FEC</b>	Forward Error Checking
<b>FEM</b>	Front End Module
<b>FeRAM</b>	Ferro-electric Random Access Memory
<b>FET</b>	Field-Effect Transistor
<b>FF</b>	Flip-Flop
<b>FFC</b>	Flexible-Flat Cable
<b>FFE</b>	Feed-Forward Equalizer
<b>FFT</b>	Fast Fourier Transform
<b>FIB</b>	Focused Ion Beam
<b>FIFO</b>	First In-First Out
<b>FinFET</b>	A MOSFET with the gate on two sides {acronym describes the physical shape}
<b>FIR</b>	Finite Impulse Response {filter}
<b>FLOPS</b>	Floating-Point Operations Per Second
<b>FLOTOX</b>	Floating-gate Tunnel Oxide
<b>FM</b>	Frequency Modulation
<b>FMCW</b>	Frequency Modulated Continuous Wave
<b>FN</b>	Fowler-Nordheim
<b>FO4</b>	Fan-Out of 4
<b>FOM</b>	Figure Of Merit
<b>FPGA</b>	Field-Programmable Gate Array
<b>FPN</b>	Fixed Pattern Noise
<b>FPU</b>	Floating Point Unit
<b>FSG</b>	FluoroSilicate glass {dielectric}
<b>FSG</b>	Fluorine-doped Silicate Glass
<b>FSK</b>	Frequency-Shift Keying
<b>FSM</b>	Finite-State Machine

# ISSCC GLOSSARY

## G

<b>GAA</b>	Gate-All-Around
<b>GaN</b>	Gallium Nitride
<b>GBW</b>	Gain-BandWidth {product}
<b>GCA</b>	Gain-Controlled Amplifier
<b>GDDR</b>	Graphics Double-Data-Rate
<b>GdFM</b>	Generalized Design-for-Manufacturability
<b>GE-PHY</b>	Gigabit-Ethernet Physical
<b>GFSK</b>	Gaussian Frequency-Shift Keying
<b>GFLOPS</b>	Giga Floating-Point Operations Per Second
<b>GIDL</b>	Gate-Induced Drain Leakage
<b>GMSK</b>	Gaussian Minimum-Shift Keying
<b>GOPS</b>	Giga-Operations Per Second
<b>GPRS</b>	General Packet-Radio Service
<b>GPS</b>	Global Positioning System
<b>GPU</b>	Graphic Processing Unit
<b>GSM</b>	Global Standard for Mobile Communication
<b>GUI</b>	Graphical User Interface
<b>GVCO</b>	Gated VCO

## H

<b>HBT</b>	Hetero-junction Bipolar Transistor
<b>HBM</b>	High-Bandwidth Memory
<b>HBM</b>	Human Body Model
<b>HCI</b>	Host-Controller Interface
<b>HCI</b>	Human-to-Computer Interface
<b>HD</b>	High-Density
<b>HDD</b>	Hard-Disk-Drive
<b>HDL</b>	Hardware-Description Language
<b>HDTV</b>	High-Definition TeleVision
<b>HD2</b>	2 <sup>nd</sup> order Harmonic Distortion
<b>HD3</b>	3 <sup>rd</sup> order Harmonic Distortion
<b>HiFi</b>	High Fidelity
<b>Hk</b>	High-k dielectric
<b>HMD</b>	Head Mounted Display
<b>HPF</b>	High-Pass Filter
<b>HSPDA</b>	High-Speed Downlink Packet Access
<b>HT3</b>	Hypertransport 3 (I/O standard)
<b>HTM</b>	Hierarchical Temporal Memory
<b>HV</b>	High Voltage
<b>HVAC</b>	Heating, Ventilation and Air Conditioning
<b>HVMOS</b>	High-Voltage Complementary MOS
<b>HVMOS</b>	High-Voltage MOS

## I

<b>I/O</b>	Input-Output
<b>I/Q</b>	In Phase and Quadrature
<b>IAN</b>	Industrial Area Network
<b>IBOC</b>	In-Band Out-of-Channel
<b>IC</b>	Integrated Circuit
<b>ID</b>	Identification
<b>IF</b>	Intermediate Frequency
<b>IGBT</b>	Insulated Gate Bipolar Transistor
<b>IIP2</b>	Input-referred Input 2 <sup>nd</sup> -order Intercept Point
<b>IIP3</b>	Input-referred Input 3 <sup>rd</sup> -order Intercept Point
<b>IR</b>	Infinite Impulse Response Filter
<b>IMD</b>	Inter-Modulation Distortion
<b>IM2</b>	2 <sup>nd</sup> -order InterModulation distortion
<b>IM3</b>	3 <sup>rd</sup> -order InterModulation distortion
<b>INL</b>	Integral Non-Linearity
<b>InP</b>	Indium Phosphide
<b>IoT</b>	Internet of Things
<b>IP</b>	Intellectual Property
<b>IPC</b>	Inter-Process Communication
<b>IPSEC</b>	Internet (Network) Protocol for Security
<b>IR</b>	Image Rejection
<b>IR</b>	InfraRed
<b>ISDB</b>	Integrated Services Digital Broadcasting
<b>ISDB-C</b>	Integrated Services Digital Broadcasting - Cable

<b>ISDB-S</b>	Integrated Services Digital Broadcasting - Satellite
<b>ISDB-T</b>	Integrated Services Digital Broadcasting - Terrestrial
<b>ISFET</b>	Ion-Sensitive Field-Effect Transistor
<b>ISI</b>	Inter-Symbol Interference
<b>ISM</b>	Industrial, Scientific and Medicine Band
<b>ITU-T</b>	International Telecommunications Union

## J

<b>JPEG</b>	Joint Photographic Expert Group
<b>JTAG</b>	Joint Test-Automation Group

## K

<b>KGD</b>	Known Good Die
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## L

<b>LAGS</b>	Locally-Asynchronous Globally-Synchronous
<b>LAN</b>	Local-Area Network
<b>LBS</b>	Location-Based Services
<b>LCD</b>	Liquid-Crystal Display
<b>LCOS</b>	Liquid-Crystal On Silicon
<b>LDI</b>	LVDS Display Interface
<b>LDCMOS</b>	Laterally Diffused Complementary Metal-Oxide Silicon
<b>LDMOS</b>	Laterally Diffused Metal-Oxide Silicon
<b>LDO</b>	Low Drop-Out {regulator}
<b>LDPC</b>	Low-Density Parity Check
<b>LED</b>	Light-Emitting Diode
<b>LEP</b>	Light-Emitting Polymer
<b>LFCSP</b>	LeadFrame Chip-Scale Package
<b>LFSR</b>	Linear-Feedback Shift Register
<b>LHC</b>	Large Hadron Collider
<b>LIN</b>	Local Interconnect Network
<b>LMS</b>	Least Mean Square
<b>LNA</b>	Low-Noise Amplifier
<b>LNB</b>	Low-Noise Blockers
<b>LO</b>	Local Oscillator
<b>LPCVD</b>	Low-Pressure Chemical-Vapor Deposition
<b>LPF</b>	Low-Pass Filter
<b>LRU</b>	Least-Recently Used
<b>LSB</b>	Least-Significant Bit
<b>LSI</b>	Large-Scale Integration
<b>LTE</b>	Long Term Evolution
<b>LTPS</b>	Low-Temperature-Poly Silicon
<b>LV</b>	Low Voltage
<b>LVDS</b>	Low-Voltage Differential Signaling
<b>LVS</b>	Layout Verification to Schematic

## M

<b>MAC</b>	Media-Access Controller
<b>MAC</b>	Multiply-Accumulate
<b>MASH</b>	Multi-stAge noise SHaping
<b>MBOA</b>	Multi-Band OFDM Alliance
<b>MB-OFDM</b>	Multi-Band OFDM
<b>MCM</b>	Multi-Chip Module
<b>MCP</b>	Multi-Chip Package
<b>MCU</b>	MicroController Unit
<b>MCU</b>	Multipoint Conferencing Unit
<b>MDAC</b>	Multiplying DAC
<b>MEMS</b>	Micro-Electro-Mechanical System
<b>MER</b>	Modulation Error Ratio
<b>MfD</b>	Manufacturing-for-Design
<b>MPU</b>	Microprocessor Units
<b>microSD</b>	micro Secure Digital
<b>MICS</b>	Medical Implant Communication Band
<b>MIM</b>	Metal-Insulator-Metal
<b>MIMO</b>	Multiple- Input, Multiple-Output
<b>MIPI</b>	Mobile Industry Processor Interface
<b>MIPS</b>	Million Instructions Per Second
<b>MISR</b>	Multiple-Input Signature Register
<b>ML</b>	Matchline

# ISSCC GLOSSARY

<b>MLC</b>	Multi-Level Cell
<b>MLSD</b>	Maximum-Likelihood-Sequence Detection
<b>MLSE</b>	Maximum-Likelihood-Sequence Estimation
<b>MMAC</b>	Mega Multiply-Accumulate
<b>MMIC</b>	Monolithic Microwave Integrated Circuit
<b>MMIO</b>	Memory-Mapped I/O
<b>mmW</b>	millimeter-Wave
<b>MODEM</b>	Modulator-Demodulator
<b>MOS</b>	Metal-Oxide-Semiconductor (Silicon)
<b>MOSFET</b>	Metal Oxide Semiconductor Field-Effect Transistor
<b>MOST</b>	MOS Transistor
<b>MOST</b>	Media-Oriented Systems Transport
<b>MP</b>	Multi-Processor
<b>MP3</b>	MPeg-1 audio layer 3 (lossy compression algorithm)
<b>MPEG</b>	Motion-Picture Expert Group
<b>Mpps</b>	Million packets per second (VoIP)
<b>MPPT</b>	Maximum-Power-Point Tracker
<b>MPU</b>	Microprocessors
<b>MSB</b>	Most Significant Bit
<b>MRAM</b>	Magnetic Random-Access Memory
<b>MRAM</b>	Magnetoresistive Random-Access Memory
<b>MRC</b>	Maximum-Ratio Combining
<b>MSB</b>	Most-Significant Bit
<b>MTJ</b>	Magnetic Tunnel Junction
<b>MTPR</b>	Multi-Tone Power Ratio
<b>MUX</b>	Multiplexer
<b>MWPC</b>	Multi-Wire Proportional Chamber

## N

<b>NAICS</b>	Network Assisted Interference Cancellation and Suppression
<b>NAN</b>	Neighbourhood Area Network
<b>NBTI</b>	Negative-Bias Temperature Instability
<b>NEF</b>	Noise Efficiency Factor
<b>NEM</b>	Nano-Electro-Mechanical system
<b>NF</b>	Noise Figure
<b>NFV</b>	Network Function Virtualization
<b>NMOS</b>	N-channel MOS
<b>NMOST</b>	NMOS Transistor
<b>NoC</b>	Network on (a) Chip
<b>NPN</b>	N-type-P-type-N-type bipolar (transistor)
<b>NRTZ</b>	Non Return-To-Zero (see also NRZ)
<b>NRZ</b>	Non-Retun- to-Zero (see also NRTZ)
<b>NTF</b>	Noise Transfer Function
<b>NVM</b>	Non-Volatile Memory
<b>NVRAM</b>	Non-Volatile Random-Access Memory

## O

<b>ODT</b>	On-die Termination
<b>OEM</b>	Original-Equipment Manufacturer
<b>OFDM</b>	Orthogonal Frequency-Division Multiplexing
<b>OIF</b>	Optical-Internetworking Forum
<b>OIP2</b>	Output-referred intercept point for 2 <sup>nd</sup> -order distortion
<b>OIP3</b>	Output-referred intercept point for 3 <sup>rd</sup> -order distortion
<b>OLED</b>	Organic LED
<b>ONO</b>	Oxide-Nitride-Oxide
<b>OOK</b>	On-Off Keying
<b>OSR</b>	Over-Sampling Ratio
<b>OTA</b>	Operational Transconductance Amplifier
<b>OTP</b>	One Time Programmable

## P

<b>P<sub>1dB</sub></b>	1dB gain-compression Point
<b>PA</b>	Power Amplifier
<b>PA</b>	Public-Address (system)
<b>PAE</b>	Power-Added Efficiency
<b>PAM</b>	Pulse-Amplitude Modulation
<b>PAN</b>	Personal-Area Network

<b>PCB</b>	Printed-Circuit Board
<b>PCH</b>	Platform Controller Hub
<b>PCI</b>	Peripheral-Component Interconnect
<b>PCI-X</b>	PCI Express
<b>PCM</b>	Pulse-Code Modulation
<b>PCS</b>	Personal Communication Services
<b>PCU</b>	Power-management Control Unit
<b>PD</b>	Phase Detector
<b>PD-SOI</b>	Partially-Depleted SOI
<b>PDA</b>	Personal Data Assistant
<b>PDN</b>	Power-Delivery Network
<b>PDP</b>	Power-Delay Product
<b>PFD</b>	Phase and Frequency Detector
<b>PGA</b>	Programmable-Gain Amplifier
<b>PGA</b>	Programmable Gate Array
<b>PHEMT</b>	Pseudomorphic High-Electron-Mobility Transistor
<b>PHEVs</b>	Plug-in Hybrid Electric Vehicles
<b>PHY</b>	PHYsical layer (of a communications protocol)
<b>PID</b>	Proportional, Integral, Derivative (a type of control loop)

<b>PLA</b>	Programmable Logic Array
<b>PLC</b>	Power-Line Communication
<b>PLD</b>	Programmable Logic Device
<b>PLL</b>	Phase-Locked Loop
<b>PMOS</b>	P-channel MOS
<b>PMOST</b>	PMOS transistor
<b>PMU</b>	Power Management Unit
<b>PNP</b>	P-type-N-type-P-type bipolar (transistor)
<b>PON</b>	Passive Optical Network
<b>PoP</b>	Package-on-Package
<b>POTS</b>	Plain-Old Telephone Service
<b>ppm</b>	parts per million
<b>PPM</b>	Pulse-Position Modulation
<b>PR</b>	Pseudo Random
<b>PR</b>	Partial Response
<b>PRAM</b>	Phase-Change RAM
<b>PRBS</b>	Psuedo-Random Binary Sequence
<b>PRML</b>	Partial-Response, Maximum-Likelihood
<b>PROM</b>	Programmable Read-Only Memory
<b>PSD</b>	Power Spectral Density
<b>PSK</b>	Phase-Shift Keying
<b>PSNR</b>	Peak SNR
<b>PSRR</b>	Power-Supply Rejection Ratio
<b>PTAT</b>	Proportional To Absolute Temperature
<b>PV</b>	PhotoVoltaics
<b>PVD</b>	Physical Vapor Deposition
<b>PVT</b>	Process, Voltage, Temperature
<b>PWM</b>	Pulse-Width Modulation

## Q

<b>QPT</b>	Quadruple Patterning Technology
<b>QAM</b>	Quadrature Amplitude Modulation
<b>QDR</b>	Quad Data Rate
<b>QoS</b>	Quality of Service
<b>QPSK</b>	Quadrature Phase-Shift Keying
<b>QVCO</b>	Quadrature Voltage-Controlled Oscillator
<b>QVGA</b>	Quarter Video Graphics Array

## R

<b>R/W</b>	ReadWrite
<b>RAM</b>	Random-Access Memory
<b>RAT</b>	Radio Access Technologies
<b>RBW</b>	Resolution BandWidth
<b>RDAC</b>	Resistor DAC
<b>RDF</b>	Random Dopant Fluctuation
<b>RF</b>	Radio Frequency
<b>RFID</b>	RF ID (tag)
<b>RISC</b>	Reduced-Instruction-Set Computer
<b>ROM</b>	Read-Only Memory
<b>rms</b>	root mean square

# ISSCC GLOSSARY

<b>ROM</b>	Read-Only Memory
<b>RSA</b>	A public-key cryptographic system, named after: Ron Rivest, Adi Shamir, and Leonard Adleman
<b>RSSI</b>	Received-Signal-Strength Indicator
<b>RTL</b>	Resistor-Transistor Logic
<b>RTS</b>	Random Telegraph Signal
<b>RTZ</b>	Return-To-Zero
<b>RX</b>	Receiver
<b>RZ</b>	Return-to-Zero (see also RTZ)

## S

<b>SAL</b>	Service Abstraction Layer
<b>SAR</b>	Successive-Approximation-Register
<b>SAW</b>	Surface Acoustic Wave
<b>SATA</b>	Serial Advanced-Technology Attachment
<b>SC</b>	Switched-Capacitor
<b>SCL</b>	Source-Coupled Logic
<b>SCP</b>	Source-Coupled Pair
<b>SCR</b>	Silicon Controlled Rectifier
<b>S-DMB</b>	Satellite Digital-Multimedia Broadcasting
<b>SD</b>	Secure Digital (package type)
<b>SDI</b>	Software-Defined Infrastructure
<b>SDN</b>	Software-Defined Networking
<b>SDR</b>	Software Defined Radio
<b>SDRAM</b>	Synchronous Dynamic Random-Access Memory
<b>SEM</b>	Scanning Electron Microscope
<b>SER</b>	Soft-Error Rate
<b>SER</b>	Symbol-Error Rate
<b>SerDes</b>	Serializer/Deserializer
<b>SFDR</b>	Spurious-Free Dynamic Range
<b>SFI</b>	Serdes Framer Interface
<b>SFP</b>	Small Form-factor Pluggable
<b>S/H</b>	Sample-and-Hold
<b>SHA</b>	Sample-and-Hold Amplifier
<b>SiC</b>	Silicon Carbide
<b>SiGe</b>	Silicon Germanium
<b>SiGe:C</b>	Silicon, Germanium, Carbon
<b>SIL</b>	Safety Integrity Level
<b>SILC</b>	Stress-Induced Leakage Current
<b>SIMD</b>	Single-Instruction Multiple-Data
<b>SINAD</b>	Signal-to-Noise And Distortion (ratio)
<b>SIO</b>	Synchronous I/O
<b>SIP</b>	Single-Inline Package
<b>SiP</b>	System in (a) Package
<b>SL</b>	Searchline
<b>SMP</b>	Symmetric Multi-Processing
<b>SMS</b>	Short-Messaging Service
<b>SNDR</b>	Signal-to-Noise and Distortion Ratio
<b>SNM</b>	Static Noise Margin
<b>SNR</b>	Signal-to-Noise Ratio
<b>SNS</b>	Social-Network Service
<b>SoC</b>	System on (a) Chip
<b>SOI</b>	Semiconductor on Insulator
<b>SONET</b>	Synchronous Optical NETwork
<b>SONOS</b>	Silicon-Oxide-Nitride-Oxide-Silicon
<b>SOS</b>	Silicon On Sapphire
<b>SP</b>	Simple Profile
<b>SPAD</b>	Single-Photon Avalanche Diode
<b>SPDT</b>	Single Pole Double Throw
<b>SPI</b>	System Packet Interface
<b>SRAM</b>	Static Random-Access Memory
<b>SSB</b>	Single Side-Band
<b>SSC</b>	Spread Spectrum Clocking
<b>SSCG</b>	Spread Spectrum Clock Generator
<b>SSD</b>	Solid State Disk
<b>SSN</b>	Simultaneous Switching Noise
<b>SSO</b>	Simultaneous Switching Output
<b>SSTL</b>	Stub Series Terminated Logic
<b>SXGA</b>	Super Extended Graphics Array

## T

<b>TC</b>	Temperature Coefficient
<b>TCAM</b>	Ternary Content-Addressable Memory
<b>TCOIN</b>	Timing Controller
<b>TCP</b>	Transmission Control Protocol
<b>TDC</b>	Time-to-Digital Converter
<b>TDDB</b>	Time-Dependent Dielectric Breakdown
<b>TDM</b>	Time-Division Multiplexing
<b>TDMA</b>	Time-Division Multiple-Access
<b>TD-SCDMA</b>	Time-Division Synchronous Code-Division Multiple Access
<b>TEM</b>	Tunneling-Electron Microscope
<b>TFLOPS</b>	Tera Floating-Point Operations Per Second
<b>TFT</b>	Thin-Film Transistor
<b>TIA</b>	TransImpedance Amplifier
<b>T/H</b>	Track and Hold
<b>THA</b>	Track-and-Hold Amplifier
<b>THD</b>	Total Harmonic Distortion
<b>THD+N</b>	THD plus Noise
<b>TLB</b>	Translation Lookaside Buffer
<b>ToF</b>	Time of flight
<b>TOPS</b>	Tera-Operations Per Second
<b>TSV</b>	Through-Silicon Via
<b>TTL</b>	Transistor-Transistor Logic
<b>TV</b>	Television
<b>TWh</b>	Tera-Watt hour
<b>TX</b>	Transmitter

## U

<b>UD</b>	Ultra-high Definition
<b>UDTV</b>	Ultra-high-Definition TeleVision
<b>UGC</b>	User-Generated Contents
<b>UHDV</b>	Ultra-High-Definition Video
<b>UHF</b>	Ultra-High Frequency
<b>UI</b>	Unit Interval
<b>UI</b>	User Interface
<b>UIPP</b>	$U_{I,pp}$ (peak-to-peak)
<b>U-NII</b>	Unlicensed National Information Infrastructure
<b>UMPC</b>	Ultra-Mobile-PC
<b>UMTS</b>	Universal Mobile-Telecommunication System
<b>UPROM</b>	Unerasable Programmable Read-Only Memory
<b>USB</b>	Universal Serial Bus
<b>UTP</b>	Unshielded Twisted Pair
<b>UWB</b>	Ultra-WideBand
<b>UXGA</b>	Ultra-eXtended Graphics Array
<b>UPF</b>	Unified Power Format

## V

<b><math>V_i</math></b>	MOS transistor threshold voltage
<b><math>V_T</math></b>	thermal voltage
<b>VCCS</b>	Voltage-Controlled Current Source
<b>VCDL</b>	Voltage-Controlled Delay Line
<b>VCO</b>	Voltage-Controlled Oscillator
<b>VCVS</b>	Voltage-Controlled Voltage-Source
<b>VCXO</b>	Voltage-Controlled Crystal Oscillator
<b>VCSEL</b>	Vertical-Cavity Surface-Emitting Laser
<b>VDMOS</b>	Vertically Diffused MOS
<b>VDSL</b>	Very high bit-rate Digital Subscriber Line
<b>VGA</b>	Variable-Gain Amplifier
<b>VGA</b>	Video Graphics Array
<b>VLIW</b>	Very Long Instruction Word
<b>VLF</b>	Very Low Frequency
<b>VLSI</b>	Very Large-Scale Integration
<b>VoD</b>	Vision on Demand
<b>VoIP</b>	Voice over IP
<b>VR</b>	Voltage Regulator
<b>VRM</b>	Voltage Regulator Module
<b>VRT</b>	Variable-Retention Time
<b>VSB</b>	Vestigial Side Band

# ISSCC GLOSSARY

**VSoC** Virtual System-on-Chip  
**VSWR** Voltage Standing-Wave Ratio  
**VTG** Vertical-Transfer Gate

## W

**WAN** Wide-Area Network  
**WCDMA** Wideband Code-Division Multiple- Access  
**WDM** Wavelength-Division Multiplexing  
**WebRTC** Web Real-Time Communication  
**WEP** Wired-Equivalent Privacy  
**WiFi** Wireless Fidelity;  
{an interoperability certification for  
IEEE 802.11 WLAN products}  
**WiMax** Worldwide Interoperability for Microwave Access  
(IEEE802.16)  
**WL** Wordline  
**WLAN** Wireless Local-Area Network  
**WLCG** Worldwide LHC Computing Grid  
**WSN** Wireless Sensor Node

## X

**XAUI** (10 Gigabit) eXtended Attachment Unit Interface  
**XDR** Extreme Data Rate  
**XENPAK** 10 Gb Ethernet-compatible fiber-optic standard  
**XFMR** TransForMeR  
**XFP** Small form-factor pluggable  
**XGA** Extended Graphics Array  
**XO** Crystal Oscillator

## Z

**ZB** Zettabyte