Here are definitions of some important technical terms:

- **ADC, or Analog-to-Digital Converter** – A device that converts a continuous physical quantity (usually voltage) to a digital number.
- **Back-End/BEOL** and **Front-End/FEOL** -- In integrated circuit manufacturing, transistors and other active devices are built first (at the front end of the manufacturing line or FEOL), while the interconnect, or the wiring, is built afterward, at the "back end" of the manufacturing line (BEOL).
- **BLE** – Bluetooth Low Energy. Version 4.0+ of the Bluetooth standard, BLE is the latest generation of Bluetooth with focus on connectivity for energy-constrained applications.
- **CMOS/MOS/MOSFET/FET**-- Most transistors today are FETs, or field-effect transistors. Most FETs are built with CMOS manufacturing technology (complementary metal oxide semiconductor). Generically they are called MOSFETs, or sometimes MOS transistors.
- **Compound/III-V Semiconductors** -- Most semiconductors are silicon-based, but researchers continue to investigate other semiconducting materials with higher electron mobilities because they can be used to make faster devices. The tradeoff is that the materials are harder to work with than silicon. Compound semiconductors are made of two or more elements (e.g. GaAs, InP, GaN, etc.) which are generally found in groups III and V of the periodic table of the elements.
- **DAC or Digital-to Analog Converter –** A device that converts digital data into an analog signal (current, voltage, or electric charge).
- **DRAM** – Dynamic random access memory stores information as charge on a capacitor that must be periodically refreshed. Dedicated DRAM chips form the bulk of the main memory for typical computers, tablets, and smartphones.
- **EOT or equivalent oxide thickness** – A distance to compare performance of high-k dielectrics with that of SiO_2 film. An SiO_2 film with the thickness of EOT has the same gate capacitance with the high-k material that is used. The higher k dielectrics can reduce EOT, which enhances the MOSFET performance.
- **ESD** – Electrostatic discharge. A sudden release of static electricity between two object caused by contact. If the ESD hits the integrated circuit, it may cause the device to fail or reduce the lifetime.
- **FD-SOI** -- Fully depleted silicon on insulator is a process technology option that can offer speed and power advantages over conventional bulk silicon transistors.
- **FinFET** -- A transistor whose 3-D shape resembles a fin, usually with multiple gates surrounding it for better on/off switching control.
- **Front-End/FEOL and Back-End/BEOL** -- In integrated circuit manufacturing, transistors and other active devices are built first (at the front end of the manufacturing line or FEOL), while the interconnect, or the wiring, is built afterward, at the "back end" of the manufacturing line (BEOL).
- **HEMT** – High Electron Mobility Transistor, also known as heterostructure FET (HFET) or modulation-doped FET (MODFET). A HEMT is based on a heterojunction which consists of two semiconductors with different band gaps (see also Compound/III-V Semiconductors). By choosing proper materials, the band discontinuity forms high-mobility two-dimensional electron gas at the hetero interface.
- **HKMG, or High-k Dielectrics/Metal Gates** -- A dielectric is an electrical insulator. "k" is the relative permittivity and is a measure of how well a material will prevent current flow between the gate electrode and the channel region of a field-effect transistor, while capacitively coupling the two to control on/off switching. In future CMOS integrated circuits (chips) the gate dielectric will need to provide capacitive coupling equivalent to that of a silicon-dioxide layer that is just a few atoms thick, to allow the length of the channel region to be scaled down to 10 nm and below. Metal gate materials are more compatible with high-k gate dielectrics than are traditional doped polycrystalline silicon material. Much progress has been made in recent years to integrate metal gates into the CMOS process flow for the manufacture of high-performance chips.
- **III-V** -- see Compound/III-V Semiconductors
- **Integrated Circuit** -- An electrical circuit comprising many interconnected elements (e.g. transistors, diodes, capacitors, resistors, inductors) built on a semiconducting substrate.
- **Interconnect** -- The metal lines, or wiring, connecting transistors and other circuit elements. See **Back-End/BEOL**.
- **Interposer** – An electrical interface between chips or between socket and chips. The purpose of an interposer is to connect chips and sockets with different I/O terminals.

- **Linear Voltage Regulator** – Maintain a steady voltage by changing output resistance according to load current. It requires a higher input voltage than output voltage and normally results in lower efficiency than a switching regulator.
- **Low-k Dielectrics/Interconnect** -- Interconnect refers to the metal wires that connect elements together in an integrated circuit (chip). The close proximity of adjacent wires can result in capacitance that can limit chip performance. A low-k dielectric electrically insulates the copper lines while minimizing their mutual capacitance; however, these materials are generally more fragile and thus pose challenges for manufacturing.
- **MCU** – Microcontroller unit. Microcontrollers typically contain a processor core, memory, and input/output peripherals and are designed for embedded applications.
- **MEMS** -- A micro-electro-mechanical system, containing micrometer-scale moving parts.
- **N-FET/P-FET or NMOS/PMOS** -- MOSFETs come in two varieties (n-channel or p-channel) which operate in a complementary fashion.
- **Non-volatile memory (NVM)** – A type of computer memory that retains its stored information even when the power is off.
- **PAM4** – 4-level pulse amplitude modulation. In communication, the data is represented as one of four discrete levels. This means that each symbol can encode two bits of data instead of the conventional 1 bit/symbol. For the same symbol rate and bandwidth, this doubles the data throughput.
- **Phase-Change Memory/PCM** -- Phase-change materials have crystalline and non-crystalline states which are used to represent the digits “0” or “1” in a non-volatile memory. Electrical current is used to toggle between the two states – heat from the current causes the material to change its state.
- **ReRAM or RRAM** – Resistive random-access memory. A non-volatile random access memory that stores the binary digit by changing the resistivity of material between electrodes.
- **Scaling/Density/Integration** -- Scaling is making transistors and other circuit elements smaller so that more of them will fit on a chip. A denser chip contains more transistors in a given area. Integration is combining circuit elements on a chip to add more functions to achieve lower cost per function.
- **Semiconductor** -- A material that can be made to conduct or to block the passage of electrical current, giving the ability to store and process information.
- **SoC** -- A system-on-a-chip. An integrated circuit which integrates all necessary components of a computer or other electronic system on a single chip.
- **SOI** -- A silicon-on-insulator substrate, used to reduce parasitic capacitance and thereby improve integrated circuit performance
- **Strained silicon & SiGe stressors** -- Silicon is said to be “strained” when its atoms are pulled farther apart or closer together than normal. Doing so alters the ease with which electrons flow through the silicon, enabling transistors built with it to operate faster and /or at lower voltage. The external **stressors** which impart strain are materials with slightly different atomic spacing than silicon. For example, a common way to compressively strain the channel region of a p-channel silicon field-effect transistor is to embed silicon-germanium (**SiGe**), which has larger atomic spacing than does Si, in its source and drain regions.
- **SRAM** -- A type of computer memory (static random access memory) that uses six or more transistors to store each bit of information. It can be written to and read from very quickly.
- **STT-MRAM** – Spin torque transfer magnetic random access memory is an emerging type of non-volatile memory that operates according to the “spin” state of electrons, not their electric charge. STT-MRAMs can be made extremely small.
- **TDC, or Time-to-Digital Converter** – A device for recognizing events and providing a digital representation of the time they occurred.
- **Ternary content-addressable memory (TCAM) –** Content-addressable memory is a specialized memory capable of searching a word in the entire contents. “Ternary” refers to capability of storing and querying “X” don’t care, in addition to 0 and 1.
- **TSV** – Through silicon vias. TSVs provide a connection from the top to the bottom of a silicon die, allowing vertical interconnections for 3-D stacking of dies.

- **UWB** – Ultra-wideband radio is wireless communication that operates in the 3.1-10.6 GHz band using a minimum of 500MHz of bandwidth, typically with very low average radiated power density.
- **Global shutter –** Method of capturing entire scene at single instant in time, rather than by scanning across the scene, like rolling shutter.
- **Effective Number of Bits (ENOB) –** Measure of the dynamic performance of ADCs, including noise and distortion effect, normalized to the performance of an otherwise ideal ADC with finite resolution.
- **Transistor** -- A tiny electrical switch that serves as the building block for integrated circuits. It has no moving parts and is made with a semiconductor material, usually silicon. Transistors can be ganged together by the billions on chips and programmed to receive, process and store information, and to output information and/or control signals.

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