GLOSSARY OF TECHNICAL TERMS

This glossary of technical terms contains explanations of certain technical terms used in this document in connection with our Company and our business. Such terminology and meanings may not correspond to standard industry meanings or usages of those terms.

"μm"	micrometer
"AEC-Q100"	a set of qualification standards for integrated circuits
"AI"	artificial intelligence
"AR"	augmented reality, a technology that overlays digital information onto the real-world environment in real-time
"automated test equipment" or "ATE"	a specialized system used to automatically perform various tests and measurements on electronic devices, components, or systems
"back-end-of-line" or "BEOL"	the final stages of the semiconductor manufacturing process, where interconnections between the various components on a chip are created, and the chip is packaged
"bandwidth"	the maximum amount of data that can be transmitted through a communication channel or network within a given time
"BGA"	ball grade array, a type of integrated circuit package
"bumping"	the process of creating solder bumps or copper pillars on the chip's surface to enable flip-chip packaging
"burn in"	the process of identifying and eliminating any early-life failures or defects of electronic components or devices
"CAGR"	compound annual growth rate
"chip interconnection"	the process of creating electrical connections between the different components on a semiconductor chip
"controller chip"	a specialized microprocessor, with specific external interfaces and protocol processing modules responsible for communication with the host
"CPU"	central processing unit, an integrated circuit that serves as the computational and control core of an electronic product
"CXL"	an open standard interconnect technology designed to enable high-speed, low-latency communication between CPUs, accelerators
"CXL DRAM module"	DRAM module that uses the CXL interface
"DDR"	double data rate, a memory technology used to double the data transfer rate
"die"	an individual integrated circuit chip die that is cut from a semiconductor wafer
"die singulation"	the process of separating integrated circuit die from the silicon wafer on which they are fabricated during semiconductor manufacturing
"die stacking"	a packaging technology that vertically stacks multiple integrated circuit dies

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"DRAM"	dynamic random access memory, a semiconductor storage device
"embedded storage"	integrated non-volatile memory solutions embedded directly within electronic devices or SoCs
"eMCP"	embedded Multi-Chip Package, a type of integrated circuit package that combines multiple semiconductor chips in a single, compact package
"eMMC"	embedded MultiMediaCard, a type of memory solution that integrates Flash memory and a memory controller in a single package
"eMMC 5.1 protocol"	the latest version of the eMMC standard
"ePOP"	embedded Package-on-Package, a packaging technology that integrates eMMC and LPDDR within a single package
"fan-out"	an interconnection scheme where the input/output pads are located outside the chip area
"Fan-out Memory Stacking" or "FOMS"	a fan-out packaging approach that integrates stacked memory dies with organic materials through advanced packaging technology
"FC-BGA packaging"	flip chip ball grid array packaging, a packaging technology that uses solder bumps or balls to connect the semiconductor die directly to the substrate
"Flip Chip"	a packaging technology where the semiconductor die is flipped over and connected to the substrate or package substrate using solder bumps or balls
"frequency"	the rate at which a power electronic device, such as a switch or rectifier, operates; it is the number of cycles per unit time (Hz)
"front-end-of-line" or "FEOL"	the initial stages of semiconductor manufacturing, where the active devices, such as transistors, are fabricated on the silicon wafer
"FTL"	a software component in SSDs that manages the mapping between logical addresses and physical storage locations, handles wear leveling, and provides a block-based storage interface to the host system
"full-stack"	a comprehensive approach to engineering or software development from the hardware and low-level firmware to the high-level software and user interface
"GB"	gigabyte, a unit of digital information storage, commonly used to measure the capacity of storage devices, memory, and data transfers, where one gigabyte is equal to one billion bytes
"GPU"	a specialized processor primarily designed for rapid rendering of images and video
"IATF 16949"	an international quality management system standard specific to the automotive industry
"IC"	integrated circuit, a small unit or package which is made as a single indivisible structure (such as a chip)
"IOPS"	Input/Output Operations Per Second, a performance metric used to measure the responsiveness of storage systems

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"ISO 14001"	an international standard that specifies the requirements for an effective environmental management system
"ISO 45001"	an international standard that specifies the requirements for an occupational health and safety management system
"ISO 9001"	an international standard that sets out the requirements for a quality management system
"JEDEC"	Joint Electron Device Engineering Council (now known as the JEDEC Solid State Technology Association), a global organization in the microelectronics industry
"latency"	the time delay between the initiation of an action or request and the desired outcome or response, a critical factor in the performance and responsiveness of various electronic systems and communication networks
"LDPC"	low-density parity check, an error-correcting code used in high-speed data transmission systems to ensure reliable and robust data transfer
"low-latency sensor fusion"	the integration and real-time processing of data from multiple sensors (e.g., cameras, LiDAR, GPS) with minimal delay
"LPCAMM2"	Low Power Consumption Automotive Microcontroller Module 2, a specification for energy-efficient automotive microcontrollers
"LPDDR"	Low-Power Double Data Rate, a type of DRAM designed for mobile and low-power devices
"MB"	megabyte, a unit of digital information storage, where one megabyte is equal to one million bytes
"Mbps"	megabits per second, a unit of measurement for data transfer rates, typically used to describe the bandwidth or speed of communication networks and internet connections
"memory"	devices or subsystems that store programs and data within an electronic system, encompassing input data, software instructions, intermediate results and final outputs, and storing and retrieving information at addresses specified by a controller
"memory media"	the physical carriers or core components that serves as the foundational hardware for all memory devices
"media research"	a research field focused on the technological advancement, performance optimization, and material innovation of memory media
"memory wall"	a bottleneck in computer architecture where the processor speed outpaces the memory access speed
"Moore's Law"	an observation made by Gordon Moore that the number of transistors on a semiconductor chip tends to double approximately every two years, leading to a corresponding increase in computing power and a decrease in cost per transistor
"multi-die stacking"	an advanced packaging technique that vertically stacks semiconductor dies or thinned wafers on top of each other

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"NAND Flash"	a type of non-volatile memory technology commonly used in SSDs, memory cards, and other storage devices
"NVMe"	non-volatile memory express is a high-performance storage protocol designed to connect SSDs directly to a computer's CPU through the PCIe interface
"OEM"	original equipment manufacturer
"OSAT"	outsourced semiconductor assembly and test, third-party companies that specialize in assembling, packaging and testing semiconductor devices, on behalf of chip manufacturers
"packaging"	the process of placing a chip into a protective structure and connecting it so that the chip can function properly as part of an electronic product. For companies with advanced packing capabilities, packaging may involve (i) multiple die-stacking, which means the integration of multiple chips within a single package, thereby allowing more functions to fit into a small space, (ii) fan-out memory stacking, which means the redistribution of chip connections outward to enhance performance and reduce package size, and (iii) wafer-level packaging, which means the execution of packaging processes at the wafer level before individual chips are separated, thereby making the chips smaller and easier to use in slim electronic products
"PC"	personal computer
"PCIe"	peripheral component interconnect express, a high-speed, serial computer expansion bus standard that enables direct communication between peripheral devices and the computer's central processing unit
"plastic encapsulation"	a packaging technique where an electronic component or integrated circuit is completely encased in a protective plastic or resin material
"power cycling"	the process of repeatedly turning a device or system on and off, used to test the reliability and durability of electronic components and systems under varying power conditions
"power integrity"	the stability and quality of the power supply in electronic systems, maintaining optimal performance
"PSSD"	portable solid-state drive, a type of non-volatile storage device that maintains data integrity even in the absence of power
"QoS scheduling"	quality of service scheduling, a mechanism used in network and storage systems to prioritize and manage the flow of data traffic
"quad-level cell" or "QLC"	a type of NAND flash memory that stores four bits of data per memory cell, offering increased storage density and capacity compared, but with potential trade-offs in performance and endurance
"R&D"	research and development
"RAM"	random access memory, a type of computer memory used to store working data and machine code currently in use
"RDIMM"	registered dual in-line memory module, a type of memory module that includes a buffer chip to manage the communication between the memory module and the memory controller

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"RDL"	redistribution layer, a layer of metal interconnects added during semiconductor packaging to reroute input/output pads to new locations
"ROM"	read-only memory, a type of non-volatile memory used to store firmware or software that is not intended to be modified frequently
"SATA"	serial advanced technology attachment, an interface standard that uses serial connection
"shock resistance"	the ability of an electronic device or component to withstand sudden impact or vibration without sustaining significant damage or loss of functionality
"signal integrity"	the quality and reliability of electrical signals in electronic systems, ensuring proper data transmission
"SRAM Error Correction Code" or "SRAM ECC"	a mechanism used in static random-access memory (SRAM) to detect and correct errors in the stored data
"SSD"	solid-state drive, an internal storage component installed within a computer or server
"TB"	terabyte, a unit of digital information storage equal to approximately one trillion bytes
"thermal throttling"	a mechanism used in electronic devices and systems to automatically reduce the performance or power consumption of components to prevent overheating
"throughput"	the measure of the amount of data that can be processed, transmitted, or transferred within a given time
"triple-level cell" or "TLC"	a type of NAND flash memory that stores three bits of data per memory cell, offering higher storage density compared to earlier generations of flash memory
"UFS"	universal flash storage, a high-performance, scalable flash storage specification, offering fast data transfer speeds and improved power efficiency
"uMCP"	UFS-based multi-chip package, a packaging technique that integrates UFS and LPDDR within a single package
"V2X"	vehicle to everything, a communication technology enabling vehicles to exchange information with other vehicles, infrastructure, pedestrians and networks
"VR"	virtual reality, a simulated, computer-generated environment that allows users to interact with a 3D world using specialized devices
"wafer"	a circular silicon substrate used in the manufacturing of ICs
"wafer-level packaging"	a technique where the entire integrated circuit is packaged at the wafer level before being singulated into individual chips
"wear leveling"	a technique used in SSDs and other flash-based storage devices to distribute the wear and tear of write operations evenly across the entire storage medium

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"wire bonding"	a method of interconnecting the chip to the package or substrate using fine metallic wires
"write"	the process of storing or recording data on a storage medium