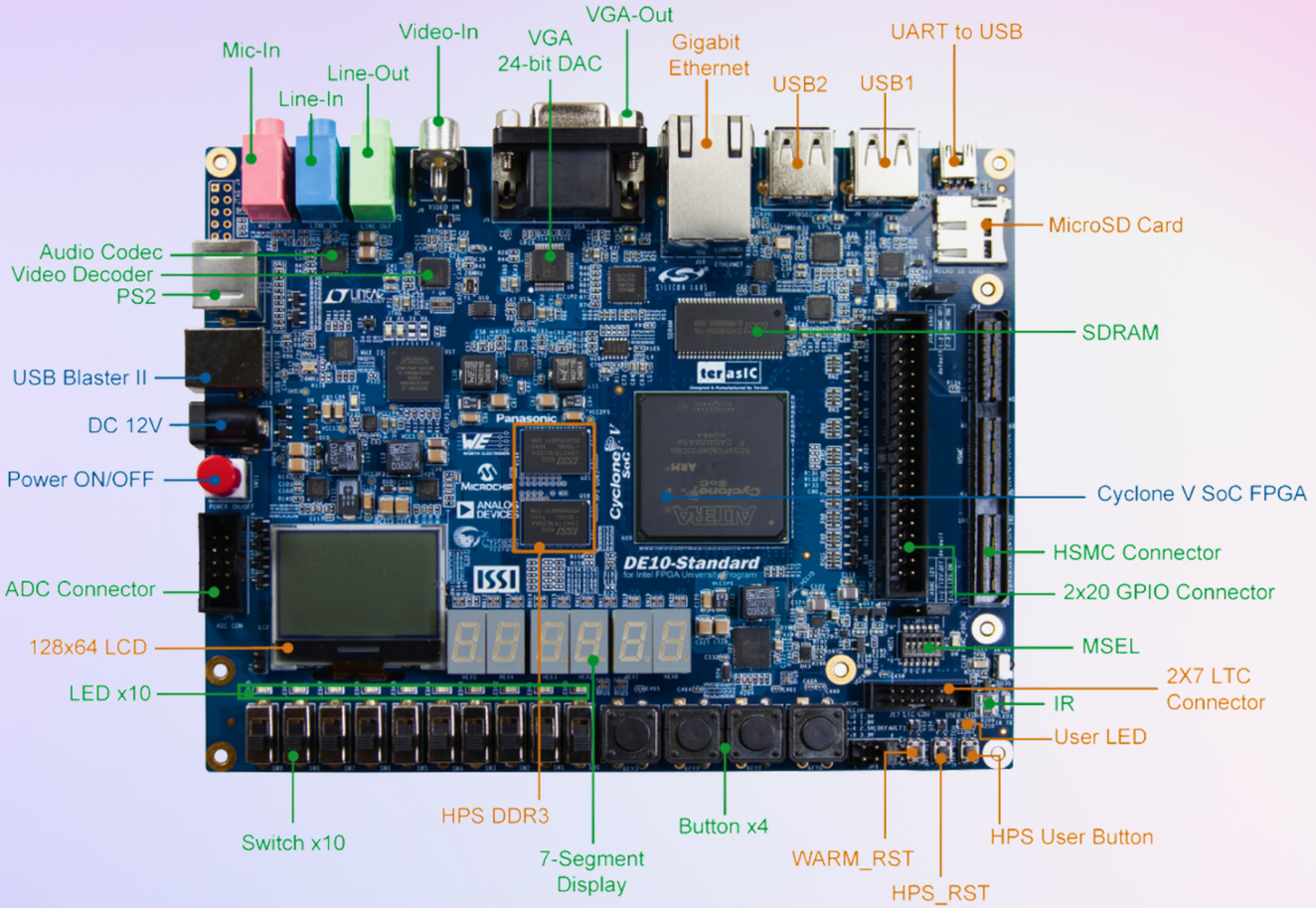
SDRAM IN DE10 STANDARD BOARD



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SDRAM

SDRAM stands for Synchronous Dynamic Random Access Memory. It synchronizes itself with the computer's system clock. This makes it easy to manage faster, and the speed of the SDRAM measured in MHz instead of nanoseconds.

HISTORY

In 1992, Samsung released the first commercial SDRAM – KM48SL2000 memory chip with a capacity of 16 Mb. It was manufactured by Samsung Electronics using a CMOS (complementary metal-oxide-semiconductor) fabrication process and was mass-produced in 1993.

By 2000, SDRAM had replaced almost all other types of DRAM in modern computers due to its higher performance.

SDRAM AS MEMORY

The board features 64MB of SDRAM with a single 64MB (32Mx16) SDRAM chip. The chip
consists of 16-bit data line, control line, and address line connected to the FPGA. This chip uses the
3.3V LVCMOS signaling standard. Connections between the FPGA and SDRAM are shown

USES OF SDRAM IN FPGAs

- Data Storage: SDRAM can be used as a storage medium for large amounts of data in FPGA-based systems. It provides high-capacity storage that can be accessed at relatively high speeds.

- Memory Interfaces: FPGAs often require external memory interfaces to expand their available memory beyond the limited on-chip memory resources. SDRAM can be used as an external memory interface to provide additional storage and enhance the overall performance of the FPGA design.

- DSP Applications: FPGAs are commonly used in Digital Signal Processing (DSP) applications. SDRAM can be used as a storage medium for large datasets, coefficients, and intermediate results in DSP algorithms. It provides the necessary memory bandwidth and capacity to support complex signal processing operations.

- Network and Communication Systems: SDRAM can be utilized in FPGA-based network and communication systems to store packets, buffers, and other data related to network traffic. It facilitates efficient data handling and processing in applications like routers, switches, and network accelerators.

Thank You