



NvSRAM uses a one-to-one pairing of a nonvolatile memory bit and a fast SRAM memory bit in each memory cell. These nvSRAMs behave exactly as standard fast SRAMs with access times as fast as 20 ns, so they can be interfaced easily to leading microprocessors and microcontrollers. When IC power is disrupted or lost, the event is detected and every SRAM bit is saved into nonvolatile memory in one quick array write using energy from a small capacitor. Data is automatically recalled to SRAM on power restore. Writes to the SRAM during active operation are nondestructive and unlimited.

NvSRAM has been a mainstay for quality industrial control, server, and military systems for many years. In 2008, Cypress pushed nvSRAM densities up to 8 Mb from 256 Kb and 1 Mb in 2007 using breakthrough 130 nm SONOS process technology. Now designers can take advantage of nvSRAM in service processors, point-of-sale, RAID systems, and a variety of new industrial control and medical applications.

– **Cypress Semiconductor**

## 8 Mb nvSRAM never loses data

In an era of falling NAND flash ROM prices, many of us carry around over 1 GB of data on our keychains. So why is 8 Mb – a mere fraction of that amount – something to get excited about? The answer is simple: When data is written to these SRAMs and a tiny glitch such as a power spike or other anomaly occurs, the data is safe and secure. In defense systems, such a power interruption cannot be tolerated, else lives might be lost. Previously, small amounts of serial EEPROMs or battery-backed SRAMs were used to prevent critical data loss, but they were either slow, required CPU intervention of an unforeseen event, or had that nasty battery to maintain.

Cypress Semiconductor's (formerly Simtek's) STK14EE8 and STK14EE16 nvSRAMs are available in x8 or x16 widths and use a captured charge to maintain data integrity. Read access is as fast as 25 ns with a 45 ns R/W cycle time. Unlike flash, they feature unlimited endurance, and data is automatically recalled from buried nonvolatile store when the power returns; no CPU is required. Data retention exceeds 20 years, they are powered from a standard 3.0 VDC supply, and, of course, they're available in industrial temperatures from -40 °C to +85 °C. These fast, reliable nvSRAMs are available in svelte 44-pin/54-pin (x8/x16) TSOPII or 48-pin BGA packages. Future versions of the family will be denser and might have security features such as scrubbing.

**Model: STK14EE8 and STK14EE16**

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