

# High-performance FRAM with integrated counter function slashes energy consumption

December 11 2014, by Sherry Chen

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Fujitsu Semiconductor America today announced the release of MB85RDP16LX, an ultra-low-power FRAM device with an integrated binary counter function.

The new [device](#) incorporates multiple optimizations that can slash [energy consumption](#) to less than 10 percent of what is required by standard FRAM solutions. With the MB85RDP16LX, Fujitsu is targeting industrial automation applications involving [energy harvesting](#) for rotary encoders, motor control and sensors.

The new device provides significant [energy](#) savings by integrating the counter function into the FRAM device. This contrasts with conventional system environments using standard memory, which require the MCU to read data from the memory device before performing computation and writing new data back to the memory to complete the counting operation. In contrast, the MB85RDP16LX replaces these separate read/write operations with a single command from the MCU and uses only the binary counter, resulting in [energy savings](#) of up to 94 percent.

The power-up time of the MB85RDP16LX has been optimized to 5  $\mu$ s, which is 38 times faster than standard FRAM devices. This enables extremely fast device wake-up while consuming as little energy as possible.

MB85RDP16LX can be connected via single- and dual-SPI interfaces. A dual SPI interface offers customers the option of halving the clock frequency, achieving further power saving gains without impacting performance. Customers also have the option to configure with either a 43-bit or a 46-bit binary counter.

To satisfy the broad temperature ranges required by the industrial automation market, the MB85RDP16LX has been specified for an operating temperature range of -40 to 105 °C without compromising its 10-year data retention time.

MB85RDP16LX comes in an SON-8 package with physical dimensions

of 2 mm x 3 mm, which permits the design of miniature devices. Compared with typical SOP-8 packages, more than 80 percent of the memory's PCB space can be saved.

Also available through Fujitsu is a 16kbit FRAM without the binary counter for general data storage. MB85RS16N devices are available in SOP and SON packages with operating temperature up to 95°C.

Provided by Fujitsu

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