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Source: Ramtron  
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## Ramtron upgrades FM31x Processor Companion family with superior trickle charger and RTC that uses a standard 12.5pF external crystal

New single-chip solution reduces bill of materials cost in processor-based systems

COLORADO SPRINGS, CO — January 14, 2008 — Ramtron International Corporation (Nasdaq: RMTR), a leading developer and supplier of nonvolatile ferroelectric random access memory (F-RAM) and integrated semiconductor products, today announced that it has upgraded its FM31x Processor Companion family to include a more efficient trickle charger and a real-time clock (RTC) that requires only a standard 12.5pF external watch crystal. The new FM3127x/L27x Processor Companion features 4, 16, 64, or 256 kilobits (Kb) of nonvolatile F-RAM memory, a high-speed two-wire interface, and highly integrated support and peripheral functions for advanced processor-based systems.

Ramtron's new Processor Companion is a single-chip solution that replaces discrete components and reduces cost and board space in processor-based designs. It supports commonly-needed system functions in a variety of metering, consumer, communications, industrial, and computing applications.

"We have improved the FM3127x/L27x Processor Companion to deliver features requested by our customers," explains Craig Taylor, Ramtron Director of Technical Marketing. "These improvements include an RTC that operates with a low-cost 12.5pF crystal, reducing overall system costs. In addition, we have added a superior trickle charger that can typically charge a 1 Farad supercapacitor in less than three hours," adds Taylor. "This allows designers to use a capacitor as a backup supply without any additional components in advanced metering applications, consumer products that require an RTC, and many others systems."

### About the FM3127x/L27x

The F-RAM memory on these new Processor Companions boasts NoDelay™ writes, virtually unlimited endurance, and low power consumption. The FM3127x/L27x features an enhanced trickle charger, a 12.5pF external watch crystal, a programmable low-VDD reset, a programmable watchdog timer, a manual reset function, dual battery-backed event counters, a lockable serial number, and a general-purpose comparator that can be used for early warning power-fail interrupts (NMI). The FM31272, FM31274, FM31276, and FM31278 operate from 4.0 to 5.5 volts over the entire industrial temperature range (-40 to +85 degrees C). The FM31L272, FM31L274, FM31L276, and FM31L278 operate from 2.7 to 3.6 volts over the entire industrial temperature range.

### FM3127x/L27x Features:

**Processor Supervisor:** Provides a host processor with two basic functions: detection of power supply fault conditions and a watchdog timer to escape a software lockup condition. A reset pin (/RST) drives the processor-reset input during power faults, power-up/down, and software lockups. The reset pin also provides a switch debounce function to facilitate manual reset inputs.

**Early Power-Fail Interrupt:** An early power-fail warning is provided to the processor well before VDD drops out of specification. The comparator is used to create a power-fail interrupt (NMI). This is ideal for saving critical data in nonvolatile F-RAM.

**Serial Number:** A separate memory location to write a 64-bit serial number is provided. It is a writable nonvolatile memory block that can be locked by the user once the serial number is set. Once locked, the serial number cannot be altered.

**Real-Time Clock (RTC) Operation:** A timekeeping device that can be battery- or capacitor-backed for permanently powered operation. The RTC offers a software calibration feature that provides high accuracy. It requires only a 12.5pF external watch crystal.

**Dual Event Counters:** Two 16-bit, battery-backed event counters cascading to one 32-bit counter, including a



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programmable edge detect. This unique counter can be used to log system intrusions (tamper events) or virtually any other general-purpose event.

**Backup Power:** The RTC is intended to be permanently powered. When the primary system power fails, the voltage on the VDD pin will drop. When VDD is less than 2.5V, the RTC (and event counters) will switch to the backup power supply on VBAK. The backup source can be either a battery or capacitor.

**Built-in Trickle Charger:** Enables the user to charge a 1F supercapacitor with no external components in typically less than three hours. The VBAK pin can optionally provide a trickle charge current. Data is nonvolatile so it won't be lost if the capacitor fails.

**Memory:** Provides 4Kb, 16Kb, 64Kb, or 256Kb of nonvolatile F-RAM memory. F-RAM memory technology replaces system SRAM and other nonvolatile memories since it reads and writes at bus speed with no delay, virtually unlimited write cycles, low power, and 10-year data retention.

#### About the Processor Companion

The Processor Companion is a highly integrated F-RAM enhanced system management solution that supports virtually any processor-based design. By integrating a nonvolatile F-RAM, individual system features are improved over discrete versions, creating a single-chip solution with superior bill of material cost and reduced board space.

#### Pricing and Availability

Samples of the FM3127x and FM31L27x are available now in a RoHS-compliant, 14-pin SOIC package. Unit pricing begins at \$1.81 in high volume.

#### About Ramtron

Ramtron International Corporation, headquartered in Colorado Springs, Colorado, is a fabless semiconductor company that designs, develops and markets specialized semiconductor memory and integrated semiconductor solutions used in a wide range of product applications and markets worldwide. For more information, visit [www.ramtron.com](http://www.ramtron.com).

For a 300-dpi product photo, visit [www.ramtron.com/doc/Press/Images.asp](http://www.ramtron.com/doc/Press/Images.asp).



The banner features the Synplicity logo on the left, which consists of a red stylized 'S' above the word 'Synplicity' in a serif font. The main text is centered on a purple gradient background and reads 'WEBCAST Meeting The Challenges of FPGA Design With Synplify® Premier'. A 'View Webcast' button is located in the bottom right corner.

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