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Epson Toyocom to Launch Production of Ultra-Compact Real-Time Clock Module With Built-in ID-ROM for Effective Digital Rights Management

Epson Toyocom Corporation, the leader in quartz crystal devices, today announced plans to launch volume production of a new, ultra-compact real-time clock module. The RX-8731LC, engineered for use in devices such as portable media players, has a built-in ID-ROM for effective digital rights management (DRM)^{*1}. The modules will begin shipping in June 2007.

In addition to basic calendar and timer functions, the RX-8731LC package integrates peripheral circuitry that supports ID-ROM, E²PROM, general-purpose I/O ports (GPIOs) and a multitude of other functions for digital players.

This module ships with unique ID information written to the 48-bit internal ID-ROM at the factory. The ID information can be used as a unique identifier for a specific device in DRM schemes, which encourage licensed distribution of digital contents and prevent their unauthorized copying and distribution. The RX-8731LC thus facilitates the embedding of ID information in digital players.

The ultra-compact package, which measures a mere $3.6 \times 2.8 \times 1.2$ mm, answers the need for smaller devices. Meanwhile the package also houses a QMEMS^{*2} tuning fork crystal unit that eliminates the need for customer clock adjustments.

Main Specifications

Item	RX-8731LC Specifications
Operating power-supply voltage	1.7V - 5.5V
Standby current consumption	0.35 μ A (Typ.) / 3V
Frequency stability	$5 \pm 23 \times 10^{-6}$
External dimensions	$3.6 \times 2.8 \times 1.2$ mm (12-pin VSOJ)

- I²C-Bus^{*3} interface (400 kHz)
- 32.768 kHz built-in crystal unit eliminates the need for clock adjustments
- Automatic leap year correction, full calendar & clock
- Day, hour, minute alarm
- 32.768-kHz output enable (CMOS output)
- 80-bit E²PROM stores portable media player settings (playback method, volume, audio settings, etc.)
- ID-ROM: 48-bit unique identifier for DRM set at factory
- Four GPIO ports can be used to control peripheral circuitry

Glossary

- *1 Digital rights management (DRM)
Systems used to protect copyrights by restricting the copying and use of digital music and other digital content.

- *2 QMEMS
QMEMS is a combination of "quartz," a crystalline material with excellent characteristics such as high stability and high precision, and "MEMS" (micro electro mechanical system). QMEMS quartz devices are created using quartz material instead of the semiconductors used by MEMS. We perform precision microfabrication on the quartz material to offer high performance in a compact package.

- *3 I²C-Bus is a trademark of Philips Electronics N.V.