

# A 512kB MONOS type Flash Memory Module

## Embedded in a Microcontoller

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We present a 512kB MONOS type flash memory module embedded in a microcontroller fabricated with a 0.18 $\mu$ m CMOS process. Our new memory cell structure enables the whole read path in the module to be composed of low voltage transistors, and therefore achieves compact layout of peripheral circuits. The measured program time and erase time for a 64kB block were less than 4ms and less than 11ms, respectively. The area of the 512kB module is 5.4mm<sup>2</sup>.