

Synopsys and eWBM

eWBM Passes FIDO U2F Authentication Certification for MS1000 Microcontroller with DesignWare Security IP



“Only Synopsys offered the complete portfolio of security IP we needed to deliver the full suite of features our customers required, including secure boot, secure authentication, real-time integrity monitoring, secure storage for management of keys and other sensitive information, and hardware acceleration.” —Stephen Oh, CEO, eWBM

Business

eWBM Co., Ltd. is a fast growing Korean fabless semiconductor company delivering cutting-edge technologies for both internet of things (IoT) and image processing devices. eWBM is creating new concept of system-on-chip (SoC) products targeting wearable devices, smart metering, and home automation by utilizing its high-performance, low-power design capabilities, and integrating the strongest IoT security.

Challenges

- ▶ Deliver SoC with strongest security available, including a Root of Trust
- ▶ Acquire high-quality IP to meet aggressive time-to-market schedules with a limited in-house team size
- ▶ Achieve FIDO universal two-factor (U2F) authentication certification

Synopsys Solution

- ▶ DesignWare Security IP, including:
 - tRoot Secure Hardware Root of Trust
 - True Random Number Generator (TRNG)
 - Security Protocol Accelerator (SPAcc)

Benefits

- ▶ Achieved first-pass silicon success for high-performance, power-efficient MS1000 microcontroller
- ▶ Reduced design risk with silicon-proven DesignWare Security IP
- ▶ Quickly achieved FIDO U2F authentication certification
- ▶ Met aggressive schedule with help from an experienced support team

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Overview

eWBM developed the MS1000, a high-performance, low-power 32-bit microcontroller with enhanced security capabilities and analog sensor interface functionality, to provide data protection for IoT systems. In the existing IoT market, most devices are based on microcontrollers with limited, software-based security capabilities or no security at all. As a result, IoT devices often have significant security vulnerabilities compared to the PCs or mobile products. To address this security gap, eWBM architected the MS1000 with a separate secure module for security processing, which maximizes its security capabilities with as secure boot, real-time integrity monitoring and protection from side-channel attacks without compromising the performance of the main CPU. To improve encryption and decryption speed for secure communication protocols and secure data storage, eWBM required that the MS1000 also contain an embedded cryptographic hardware accelerator.

“To deliver the security features our customers require, we needed to collaborate with a trusted IP provider with a proven track record of success in security IP,” said Stephen Oh, CEO, eWBM. “We selected Synopsys due to its deep portfolio of security IP, including the DesignWare tRoot Secure Hardware Root of Trust, TRNG and SPAcc. Working with Synopsys enabled us to develop the highly secure MS1000 microcontroller, which protects data from external attacks in IoT systems without separate security co-processors, and achieve FIDO U2F authentication certification.”

High-Quality DesignWare IP

eWBM was focused on developing the differentiating features of its MS1000, and they wanted to use proven third-party IP for the critical but standard security functionality. After researching the portfolios of multiple vendors, eWBM selected the Synopsys DesignWare tRoot Secure Hardware Root of Trust, TRNG and SPAcc IP. “We found that only Synopsys could provide the portfolio of security IP we required, while meeting our stringent power, performance, and area objectives,” said Stephen Oh. “The DesignWare Security IP was bug-free and proven to work. Due to its high quality and ease of use, we were able to integrate the DesignWare Security IP very quickly...in about a week.”

Expert and Responsive Technical Support

eWBM found the DesignWare Security IP to be easy to integrate and verify, but when eWBM needed support, they found Synopsys’ worldwide technical support and detailed documentation helped to ease the process. “The technical support team responded quickly, with accurate and thorough explanations,” said Stephen Oh. “The product documentation was accurate and complete, and combined with our close collaboration with Synopsys’ support teams, the process was very smooth. We plan to use DesignWare Security IP in future projects with confidence that it will meet our design and support requirements.”

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