



Intel® Quark™ SoC X1000 Series

The Intel® Quark™ SoC X1000 series is part of a roadmap of innovative Intel® architecture-based system-on-a-chip (SoC) devices. The SoC is targeted to enable solutions in rapidly growing markets, from industrial Internet of Things (IoT) to other embedded devices. The Intel Quark SoC X1000 series will bring low power and Intel® processor compute capabilities to thermally constrained, fanless, and headless designs.

With its security and manageability hardware-enabled enhancements, the Intel Quark SoC X1000 series is ideal for IoT applications and for the next wave of cost-effective intelligent, connected devices. Featuring secure boot, extended lifecycle support, extended temperature, and ECC, the processor provides an excellent solution for embedded market segments, such as transportation, energy, and commercial and industrial control.

The single-core, single-threaded Intel Quark SoC X1000 series is compatible with the Intel® Pentium® processor instruction set architecture (ISA). It remains software compatible with previous 32-bit Intel architecture and complementary silicon, plus it offers rich I/O capabilities and flexibility via high-bandwidth interfaces and connectivity options. The Intel Quark SoC X1000 series seamlessly interfaces to sensors and various memory options through several expansion ports.

Industry Standard Software Support

The SoC supports industry-standard software. Intel provides an integrated software stack with drivers and scripts that support the built-in hardware-based root of trust and take advantage of the open source bootloader and Universal Extensible Firmware Interface (UEFI).

Hardware Highlights

- **Simplified system design and BOM optimization** – The Intel Quark SoC series offers a high degree of integration of various I/Os and acceleration functionality. The device is designed specifically with processing capabilities in mind for small-form-factor solutions targeted for simplified system designs and a true Application Specific Standard Product (ASSP). The Intel Quark SoC is ideal for low-cost, small form factor, 4-layer boards.
- **Industrial temp range and ECC** – The Intel Quark SoC series offers embedded-specific enhancements, including support for embedded OSs and industrial environments. Plus, it provides enhanced system reliability through an integrated memory controller with error-correcting code (ECC).
- **Secure data and operations** – The Intel Quark SoC series enables you to secure endpoints and enhance content security using hardware-assisted capabilities, such as a secure boot on-die ROM, to guarantee only chosen software runs on the device.
- **Long lifetime support** – Intel provides 10-year reliability life support.





For more information on the Intel® Quark™ SoC X1000 Series, visit intel.com/content/www/us/en/intelligent-systems/quark/quark-x1000-overview.html

SPECIFICATIONS	
INSTRUCTION SET ARCHITECTURE	32-bit, Intel® Pentium® processor-compatible
#CORES/#THREADS	1/1
SPEED	400 MHz
MEMORY I/F	DDR3 @ 800 MTs with ECC
SRAM	512 KB, on-die
PACKAGE DIMENSIONS	15mm x 15mm
PACKAGE TYPE	BGA, 0.593 pitch
OPERATING TEMP	0 to 70° C (commercial) Extended temperature variants (-40°C to +85°C)
INTERFACES	Two (2) Ethernet* (on chip interfaces) PCI Express* USB 2.0 SD/SDIO/eMMC SPI UART I ² C/GPIO

PROCESSOR NUMBER	MM NUMBER	OPERATING TEMPERATURE	ECC	SECURE BOOT
X1000	930237	Commercial		
X1010	930239	Commercial	•	
X1020D	930236	Commercial	•	•
X1020	934775	Commercial	•	•
X1001	934413	Extended		
X1011	934415	Extended	•	
X1021D	934411	Extended	•	•
X1021	934943	Extended	•	•

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