

Fact Sheet

Kinetis KW2x Wireless MCUs Freescale's Next-Gen 802.15.4 Platform

Target Applications

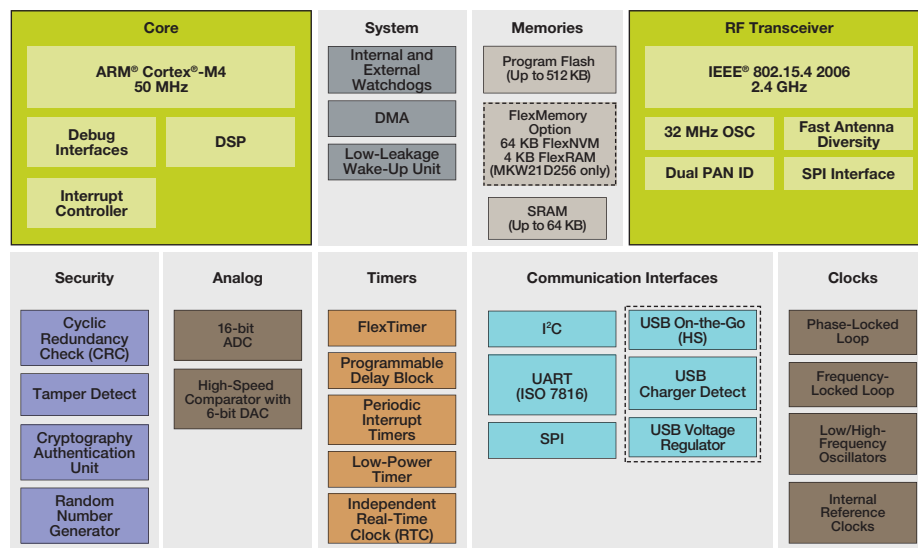
- **Smart energy**
 - In-home displays
 - Load control
 - Smart thermostat
 - Metering
 - Solar panel monitoring
 - PEV charge monitoring
 - Home energy gateways
- **Commercial and industrial**
 - Security and access control
 - Smart grid and smart metering
 - Building control and monitoring
 - Asset tracking
 - Fire/security
 - Building HVAC control
 - Retail pricing management
 - Usage data collection
- **Residential**
 - Access control
 - Smart thermostats
 - Remote control
 - Curtain/window blind control
 - Lighting control
 - Intruder alarms
 - Water heater control
- **Health care**
 - Home health care
 - Patient monitoring
 - Fitness monitoring
 - Institutional care
 - Medication asset
 - Monitoring/billing
 - Asset tracking

Design with new 802.15.4 solutions for Kinetis MCUs

Overview

The new Kinetis KW2x wireless MCU expands the successful Kinetis MCU family based on the ARM® Cortex®-M4 CPU core. The Kinetis KW2x integrates a class-leading 2.4 GHz RF transceiver, ARM Cortex-M4 core and a robust feature set for a reliable, secure and low-power IEEE® 802.15.4 wireless solution. These wireless MCUs offer up to 512 KB of flash, 64 KB of RAM and up to 64 KB of FlexMemory. Dual PAN support allows the system to simultaneously participate in two ZigBee® networks, eliminating the need for multiple radios. Software protocol stacks, tools and IDE are compatible with Kinetis MCUs. ZigBee® protocol software is seamlessly integrated into Kinetis software development tools for rapid creation of embedded systems.

Kinetis KW2x Wireless MCU



□ Optional

Enablement

- Tower System hardware development environment
- Freescale BeeKit wireless connectivity toolkit
- ZigBee-compliant network stack
 - ZigBee Pro
 - ZigBee IP
 - ZigBee Home Automation
 - ZigBee Smart Energy 1.x
 - ZigBee Smart Energy (2.0)

Development Tools

Kit Number	Description
TWR-KW21D256	Tower board for solutions that require FlexMemory
TWR-KW24D512	Tower board for solutions that require USB

Features

- ARM Cortex-M4 core with DSP
- Up to 512 KB of flash and up to 64 KB of RAM
- Up to 64 KB of FlexMemory (optional)
- Secure flash
- Tamper detect
- Cryptography acceleration unit
- High-performance IEEE® 802.15.4-2011 transceiver
- Packet processor
- Single ended
- Diversity
- Dual PAN support
- +10 to +8 dBm output power
- -102 dBm sensitivity
- TX 17 mA @ 0 dBm (CPU sleep)
- RX 15 mA
- 128-bit random number generator
- 1.8–3.6 V operating range
- Small footprint
- Compatible with Freescale Kinetis MCU family
- -40 °C to +105 °C operational temperature range

Benefits

- Up to 50 MHz core provides a broad range of application support
- Large memory footprint provides enough memory to run complicated protocol stacks and user applications on a single IC
- FlexMemory provides user-segment byte write/erase EEPROM
- Protects code and data from unauthorized access or modification
- Protects critical IP by detecting tamper events. If a tamper occurs, secure RAM is asynchronously erased and an interrupt can be generated so that the application firmware can take additional actions, including a system reset.
- Coprocessor supports a set of specialized operations to improve throughput of encryption/decryption operations as well as message digest functions, including DES, 3DES, AES, MDA and SHA algorithms
- Supports a number of 802.15.4 protocol stacks, including ZigBee, 6LoWPAN, WirelessHART and ISA 100.11a
- Radio handles many 802.15.4 functions in hardware to reduce the software stack size and reduce power consumption by off loading functions from the CPU
- Single 50 ohm antenna uses single balun to reduce component count and cost
- Freescale fast antenna diversity allows the hardware to automatically select between two antennas for improved reliability in high-interference environments
- System can simultaneously participate in two ZigBee networks, eliminating the need for multiple radios
- 110 dB link budget improves range and lowers cost by reducing the need for external power amplifiers
- Significantly reduces power consumption and extends battery life
- Low Power Preamble Search (LPPS) receiver mode
- Meets the FIPS 140 security requirements for cryptographic modules
- Provides wide voltage range to maximize usable voltage for battery operation
- Smaller size and low component count reduces cost
- Software protocol stacks, tools and IDE are compatible with the Kinetis MCUs, including the KW2x
- Ideal for applications that need extended temperature ranges

Orderable Part Numbers

Device	Flash	RAM	Feature	Package
MKW21D256VHA5	256 KB	32 KB	FlexMemory: 64KB FlexNVM/4KB FlexRAM, No USB	8x8 63-pin LGA
MKW21D512VHA5	512 KB	64 KB	No USB	8x8 63-pin LGA
MKW22D512VHA5	512 KB	64 KB	USB	8x8 63-pin LGA
MKW24D512VHA5	512 KB	64 KB	USB and Smart Energy 2.0	8x8 63-pin LGA

For current information about Kinetis products and documentation, please visit freescale.com/KW2x



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