The Kinetis KW2x wireless MCU family is based on the ARM® Cortex®-M4 CPU core.

**IEEE® 802.15.4 solutions for Kinetis MCUs**

**Kinetis KW2x Wireless MCUs**

**TARGET APPLICATIONS**

- **Smart Energy**
  - Home energy gateways
  - In-home displays
  - Load control
  - Metering
  - PEV charge monitoring
  - Smart thermostat
  - Solar panel monitoring

- **Commercial and Industrial**
  - Asset tracking
  - Building control and monitoring
  - Building HVAC control
  - Fire/security
  - Retail pricing management
  - Security and access control
  - Smart grid and smart metering
  - Usage data collection

- **Residential**
  - Access control
  - Curtain/window blind control
  - Intruder alarms
  - Lighting control
  - Remote control
  - Smart thermostats
  - Water heater control

- **Healthcare**
  - Asset tracking
  - Fitness monitoring
  - Home healthcare
  - Institutional care
  - Medication asset
  - Monitoring/billing
  - Patient monitoring
The Kinetis KW2x MCU integrates a class-leading 2.4 GHz RF transceiver 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 networks concurrently, eliminating the need for multiple radio transceivers. The Thread networking protocol stack and the ZigBee® stack are seamlessly integrated into the Kinetis software development kit for rapid creation of wireless embedded systems. Several protocol stacks, tools and IDE are compatible with the Kinetis broad microcontroller portfolio.

### ENABLEMENT
- Thread protocol certified network stack
  - Router configurations
  - End-node configurations
- ZigBee Core Stack and 802.15.4 MAC/PHY fully certified
- Source code provided for 2 profiles
  - ZigBee Home Automation (ZHA 1.2.1)
  - ZigBee Light Link (ZLL1.0)
- Source code provided with several demo applications on Thread and ZigBee
- Kinetis Software Development Kit (SDK) support
- Freedom Development Platform (2 units per box)
- USB wireless sniffer for Thread, ZigBee and 802.15.4 MAC

### DEVELOPMENT TOOLS

#### Kit Number
<table>
<thead>
<tr>
<th>Kit Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>FRDM-KW24D512</td>
<td>Freedom Development Platform (2 boards per box)</td>
</tr>
<tr>
<td>USB-KW24D512</td>
<td>USB packet sniffer/dongle</td>
</tr>
</tbody>
</table>

### FEATURES

#### Security
- Cyclic Redundancy Check (CRC)
- Tamper Detect
- Cryptography Authentication Unit
- Random Number Generator

#### Analog
- Comparator with High-Speed ADC
- Delay Block
- Independent Real-Time Clock (RTC)

#### Timers
- FlexTimer
- Programmable Delay Block
- Periodic Interrupt Timers
- Low-Power Timer

#### Communication Interfaces
- UART (ISO 7816)
- SPI
- USB Voltage Regulator

#### Clocks
- Internal Reference Clocks
- Phase-Locked Loop
- Frequency Locked Loop
- Low/High-Frequency Oscillators

#### Interfaces
- UART
- SPI
- USB
- 32 MHz OSC
- Dual PAN ID

#### Debug Interfaces
- ARM® Cortex®-M4 50 MHz
- Debug Interface
- Interrupt Controller
- Low-Leakage Wake-Up Unit

#### DSP
- Programmable DMA
- Low-Leakage Wake-Up Unit

#### I/O Interfaces
- SPI Interface
- USB On-the-Go (OTG) (HS)
- USB Voltage Regulator
- USB Charger Detect

#### RF Transceiver
- IEE® 802.15.4 2006 2.4 GHz
- Dual USB ID
- Fast Antenna Diversity

#### Memories
- Program Flash
- RAM (64 KB/128 KB)
- SRAM (4 KB/8 KB)
- FlexNVM/64 KB FlexRAM

#### System
- Internal and External Watchdog
- DMA
- Low-Power Wake-Up Unit

### DEVELOPMENT TOOLS

#### Device
<table>
<thead>
<tr>
<th>Device</th>
<th>Flash</th>
<th>RAM</th>
<th>Feature</th>
<th>Package</th>
</tr>
</thead>
<tbody>
<tr>
<td>MKW21D256VHA5</td>
<td>256 KB</td>
<td>32 KB</td>
<td>FlexMemory: 64 KB FlexNVM/4KB FlexRAM, No USB</td>
<td>8x8 63-pin LGA</td>
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<tr>
<td>MKW21D512VHA5</td>
<td>512 KB</td>
<td>64 KB</td>
<td>No USB</td>
<td>8x8 63-pin LGA</td>
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<tr>
<td>MKW22D512VHA5</td>
<td>512 KB</td>
<td>64 KB</td>
<td>USB</td>
<td>8x8 63-pin LGA</td>
</tr>
<tr>
<td>MKW24D512VHA5</td>
<td>512 KB</td>
<td>64 KB</td>
<td>USB and Smart Energy 2.0</td>
<td>8x8 63-pin LGA</td>
</tr>
</tbody>
</table>

**Notes: Optional**

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