



# Automotive and Industrial Qualified Bluetooth Low Energy Wireless MCUs

## Kinetis® KW36/35/34 Bluetooth 5 Wireless MCUs with Integrated CAN/ CAN FD and LIN Bus

Kinetis KW36/35/34 wireless MCUs feature AEC-Q100 Grade 2 or industrial qualification and the latest Bluetooth technology for superior durability and performance in automotive, industrial and healthcare applications.

### OVERVIEW

Based on the Arm® Cortex®-M0+ core, the Kinetis KW36/35/34 wireless MCUs integrates a Bluetooth Low Energy version 5 and Generic FSK radio. The radio supports up to 8 simultaneous secure connections in any master/slave combination allowing multiple authorized users to communicate with the device.

Additionally, the Kinetis KW36 MCU exclusively integrates FlexCAN, enabling seamless integration into an automobile's in-vehicle or industrial CAN communication network. The FlexCAN module can support CAN's flexible data rate (CAN FD) for increased bandwidth and lower latency.

### TARGET APPLICATIONS

#### Automotive

- ▶ Car access
- ▶ Car sharing
- ▶ Passive entry/passive start (PEPS) systems
- ▶ Tire pressure measurement sensors (TPMS) systems
- ▶ Wireless onboard diagnostic functions

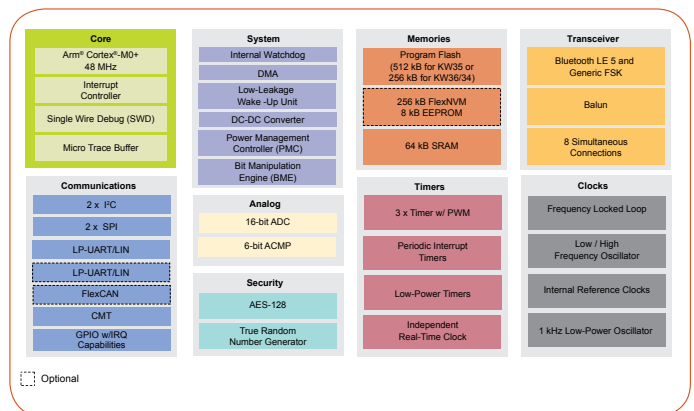
#### Industrial

- ▶ Building control and monitoring
- ▶ Fire and safety

#### Healthcare

- ▶ Home and institutional healthcare
- ▶ Patient monitoring

### KINETIS KW36/35/34 WIRELESS MCU FAMILY BLOCK DIAGRAM



## FEATURES

All MCUs in this family contain an integrated buck DC-DC converter that supports operating voltages from 2.1-3.6 V and significantly reduces the peak current in receive and transmit modes to extend the useful life of a battery. At the same time, this family delivers an excellent link budget that ensures the longest range of communication and a high immunity to interference.

This family has up to 512 kB Flash memory with ECC and 64 kB SRAM allowing plenty of space for protocol stacks, application profiles and custom user firmware. In addition, the radio can provide the necessary information in order to accurately estimate the distance (ranging) of a remote Bluetooth LE device to determine its position.

For automotive applications, Kinetis KW36A/35A/34A devices are AEC-Q100 Grade 2 qualified and are provided in 6 mm x 6 mm 40HVQFN and 7 mm x 7 mm 48HVQFN packages with “wetable” flank package technology enabling optical inspection of soldering, reducing cost and increasing reliability.

## ENABLEMENT

Take advantage of the robust enablement package that includes the fully certified Bluetooth LE 5 host and controller stacks, Bluetooth LE application profiles in source, generic FSK software protocol, RTOS, development tools and IDEs.

These tools are designed for use with Kinetis KW36/35/34 MCUs and are fully integrated in the MCUXpresso software and tools suite.

## KINETIS KW36/35/34 WIRELESS MCU FAMILY FEATURES AND BENEFITS

Features	Benefits
Bluetooth® LE 5 with 8 simultaneous connections	Supports simultaneous secure connections in any master/slave combination Keeps all connections alive for continuous monitoring
6.3 mA typical Rx and 5.7 mA Tx current with DC-DC activated	Significantly reduces power consumption and extends battery life
-95 dBm typical BLE sensitivity -99 dBm typical generic FSK (at 250 kbit/s) sensitivity +5 dBm maximum output power	High link budget improves range and lowers cost by reducing the need for external power amplifiers Integrated balun enables smaller design and reduces system costs
Excellent selectivity and blocking	Significantly improves operation in harsh 2.4 GHz environments
48 MHz Arm® Cortex®-M0+ core Up to 512 kB flash memory with ECC 64 kB SRAM	High-performance, low-power core with adequate memory to run Bluetooth LE, generic FSK protocol stacks and application
AES-128 accelerator True random number generator	Fast encryption/decryption utilizing hardware security algorithms for network commissioning and transmissions of supported protocols
Buck DC-DC converter working from 2.1 V to 3.6 V	Supports a wide range of batteries from coin-cell to Lithium-ion
16-bit analog-to-digital converter (ADC) 6-bit high-speed analog comparator (CMP)	Supports high-performance on-chip analog at the MCU level for sensor aggregation and other sophisticated applications
CAN/CAN FD and LIN Bus	Enables easy integration into automotive in-vehicle and industrial networks
7 x 7 mm 48LQFN 6 x 6 mm “wetable” flanks 40HVQFN 7 x 7 mm “wetable” flanks 48HVQFN	Smaller size and low component count reduces cost. The wettable flanks package technology enable optical inspection of the soldering, reducing cost and increasing reliability.

## PART NUMBERS

Part Number	Qualification	CAN FD	2nd UART with LIN	8kB EEPROM	Package
MKW36A512VFP4	Automotive	Y	Y	Y	6 x 6 40-pin
MKW36Z512VFP4	Industrial	Y	Y	Y	Wetable
MKW35A512VFP4	Automotive	N	N	N	HVQFN
MKW36A512VHT4	Automotive	Y	Y	Y	7X7 48-pin
MKW36Z512VHT4	Industrial	Y	Y	Y	Laminate QFN
MKW35Z512VHT4	Industrial	N	N	N	
MKW36A512VFT4	Automotive	Y	Y	Y	7 x 7 48-pin
MKW35A512VFT4	Automotive	N	N	N	Wetable
MKW34A512VFT4	Automotive	N	N	Y	HVQFN

## DEVELOPMENT TOOLS

Board Name	Description
FRDM-KW36	Freedom development board for Kinetis KW36/35 MCUs with 2.4 GHz Bluetooth® LE and generic FSK wireless connectivity and CAN/LIN connectivity solutions
USB-KW41Z	USB dongle for sniffer operations for Kinetis wireless MCUs with 2.4 GHz Bluetooth LE and generic FSK

[www.nxp.com/Wireless/KinetisKW36](http://www.nxp.com/Wireless/KinetisKW36)

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