



Automotive and
Industrial Qualified
Bluetooth Low Energy
Wireless MCUs

Kinetis® KW36A/35A, KW36Z/35Z Bluetooth® 5 Wireless MCUs with Integrated CAN/CAN FD and LIN Bus

The Kinetis KW36A/35A and KW36Z/35Z 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 KW36A/35A and KW36Z/35Z wireless MCUs integrates a Bluetooth Low Energy (BLE) 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 a cars 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 on-board diagnostic functions

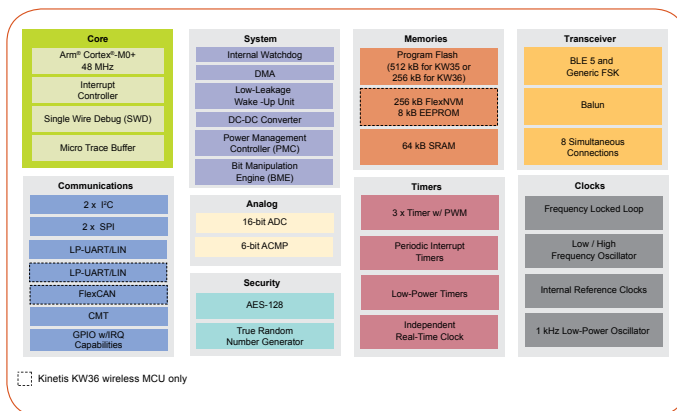
Industrial

- ▶ Building control and monitoring
- ▶ Fire and safety

Healthcare

- ▶ Home and institutional healthcare
- ▶ Patient monitoring

KINETIS KW36A/35A AND KW36Z/35Z 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. 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 calculate Time-of-Flight (ToF), Angle-of-Arrival (AoA) and Angle-of-Departure (AoD) that can accurately estimate the distance/angle of a remote BLE device to determine its position.

For automotive applications, Kinetis KW36A/35A devices are AEC-Q100 Grade 2 qualified and are provided in a 6 mm x 6 mm QFN package with “wettable” flanks package technology that enables optical inspection of the soldering, reducing cost and increasing reliability.

ENABLEMENT

Take advantage of the robust enablement package that includes the fully certified BLE 5 host and controller stacks, BLE application profiles in source, generic FSK software protocol, RTOS, development tools and IDEs. These tools are designed for use with Kinetis KW36A/35A and KW36Z/35Z MCUs and are fully integrated in the MCUXpresso software and tools.

KINETIS KW36A/35A AND KW36Z/35Z WIRELESS MCU FAMILY FEATURES AND BENEFITS

| Features | Benefits |
|---|---|
| BLE 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 +3.5 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 BLE, 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 “wettable” flanks 40QFN | 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 Wettable QFN |
| MKW36Z512VFP4 | Industrial | Y | Y | Y | |
| MKW35A512VFP4 | Automotive | N | N | N | |
| MKW36A512VHT4 | Automotive | Y | Y | Y | 7X7 48-pin Laminate QFN |
| MKW36Z512VHT4 | Industrial | Y | Y | Y | |
| MKW35Z512VHT4 | Industrial | N | N | N | |

DEVELOPMENT TOOLS

| Board Name | Description |
|------------|--|
| FRDM-KW36 | Freedom development board for Kinetis KW36/35 MCUs with 2.4 GHz BLE 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 BLE and generic FSK |