



Next-generation  
5 V 32-bit MCUs with  
enhanced robustness  
and touch interface

## Kinetis® KE1xZ MCU Family

The Kinetis KE1xZ MCU family provides a highly scalable portfolio of robust 5 V MCUs based on the Arm® Cortex®-M0+, extending the Kinetis E series by offering higher performance and broader scalability with robust NXP Touch software, 1Msps ADC and FlexTimers.

### TARGET APPLICATIONS

- ▶ Home appliances
- ▶ Industry
- ▶ CAN bus control node
- ▶ Motor control
- ▶ Smart lighting
- ▶ Circuit breaker

The 5 V Kinetis KE1xZ MCU family features a 48/72 MHz Arm Cortex-M0+ core with up to 256 KB flash, 32 KB SRAM, and a complete set of analog/digital features. The new TSI provides a high level of stability and accuracy for your HMI system, while the 1-Msps ADC and FlexTimer modules offer a perfect solution for BLDC motor-control systems. CAN IP is ideal for the industrial control node.

### FEATURES

#### Performance

- ▶ Configurable nested vectored interrupt controller
- ▶ Memory-mapped divide and square root module
- ▶ Up to 8-channel DMA controller extended to 63 channels with DMAMUX

#### Human-machine interface

- ▶ Up to 8 high-drive pins providing maximum 20mA current
- ▶ Robust new TSI supports both the mutual-cap mode and the self-cap mode, providing flexibility for up to 36 touch sensing channels

#### Timers

- ▶ Up to 3x FlexTimers (2/4/6/8 channels)
- ▶ Low-power timer with flexible wake-up control
- ▶ Programmable delay block with flexible trigger system
- ▶ Low-power periodic interrupt timer with 4 channels

#### Memory

- ▶ Up to 256 KB program flash, 32 KB SRAM
- ▶ Up to 32 KB FlexNVM with ECC for data flash and with EEPROM emulation
- ▶ Up to 2 KB FlexRAM for EEPROM emulation
- ▶ Up to 128-byte flash cache
- ▶ Up to 8 KB boot ROM with built-in bootloader



## Clock interfaces

- ▶ System oscillator (OSC) input ranges from 32 KHz, 4~40 MHz
- ▶ 32 KHz oscillator (OSC32) input
- ▶ High-accuracy fast internal reference clock (FIRC)
- ▶ High-accuracy slow internal reference clock (SIRC)

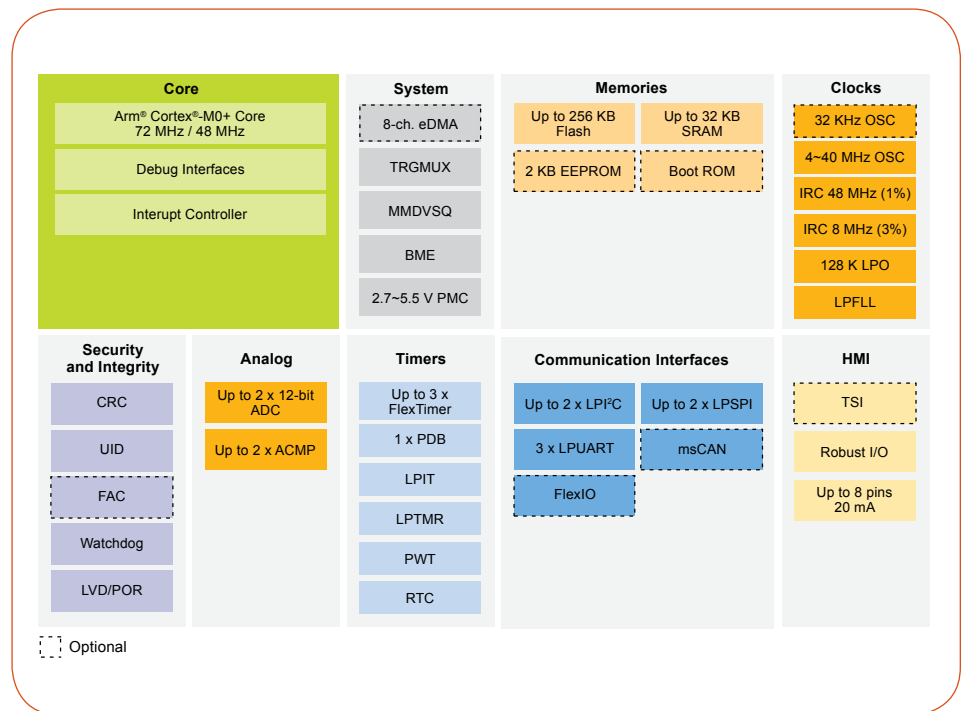
## Analog modules

- ▶ 12-bit ADC with up to 16-channel analog inputs per module, up to 1Mps
- ▶ High-speed analog comparators (CMP) with internal 8-bit digital-to-analog converter (DAC)

## Connectivity and communications

- ▶ LPUART, LPSPI, LPI2C with DMA support and low power availability
- ▶ FlexIO module for flexible and high-performance serial interfaces

## KINETIS KE1xZ MCU FAMILY BLOCK DIAGRAM



## COMPREHENSIVE ENABLEMENT SOLUTIONS

- ▶ NXP Touch Software (KE15Z and KE16Z)
- ▶ NXP Freedom development platforms
  - Low-cost, compatible boards with a rich set of third-party expansion options
- ▶ MCUXpresso software development kit (SDK)
- ▶ Integrated development environments (IDE)
  - MCUXpresso IDE
  - IAR Embedded Workbench®
  - Arm Keil® MDK

## KINETIS KE1xZ MCU FAMILY OPTIONS

| Sub-Family | Part Number   | CPU | Memory |       |        | Features |       |                    |     |     |        |            |            |      |           | Package     |    |    |    |    |
|------------|---------------|-----|--------|-------|--------|----------|-------|--------------------|-----|-----|--------|------------|------------|------|-----------|-------------|----|----|----|----|
|            |               |     | Flash  | SRAM  | EEPROM | LPUART   | LPSPI | LPI <sup>2</sup> C | TSI | CAN | FlexIO | 16-bit PWM | 12-bit ADC | ACMP | FlexTimer | Total GPIOs | LD | LF | LH | LL |
| KE14Z      | MKE14Z256V**7 | 72  | 256 KB | 32 KB | 2 KB   | 3        | 2     | 2                  |     |     | ✓      | 16-ch.     | 2          | 2    | 3         | 58/89       |    |    | ✓  | ✓  |
| KE14Z      | MKE14Z128V**7 | 72  | 128 KB | 16 KB | 2 KB   | 3        | 2     | 2                  |     |     | ✓      | 16-ch.     | 2          | 2    | 3         | 58/89       |    |    | ✓  | ✓  |
| KE14Z      | MKE14Z64V**4  | 48  | 64 KB  | 8 KB  |        | 3        | 1     | 1                  |     |     |        | 8-ch.      | 1          | 1    | 2         | 38/42       | ✓  | ✓  |    |    |
| KE14Z      | MKE14Z32V**4  | 48  | 32 KB  | 4 KB  |        | 3        | 1     | 1                  |     |     |        | 8-ch.      | 1          | 1    | 2         | 38/42       | ✓  | ✓  |    |    |
| KE15Z      | MKE15Z256V**7 | 72  | 256 KB | 32 KB | 2 KB   | 3        | 2     | 2                  | ✓   |     | ✓      | 16-ch.     | 2          | 2    | 3         | 58/89       |    |    | ✓  | ✓  |
| KE15Z      | MKE15Z128V**7 | 72  | 128 KB | 16 KB | 2 KB   | 3        | 2     | 2                  | ✓   |     | ✓      | 16-ch.     | 2          | 2    | 3         | 58/89       |    |    | ✓  | ✓  |
| KE15Z      | MKE15Z64V**4  | 48  | 64 KB  | 8 KB  |        | 3        | 1     | 1                  | ✓   |     |        | 8-ch.      | 1          | 1    | 2         | 38/42       | ✓  | ✓  |    |    |
| KE15Z      | MKE15Z32V**4  | 48  | 32 KB  | 4 KB  |        | 3        | 1     | 1                  | ✓   |     |        | 8-ch.      | 1          | 1    | 2         | 38/42       | ✓  | ✓  |    |    |
| KE16Z      | MKE16Z64V**4  | 48  | 64 KB  | 8 KB  |        | 3        | 1     | 1                  | ✓   | ✓   |        | 8-ch.      | 1          | 1    | 2         | 38/42       | ✓  | ✓  |    |    |
| KE16Z      | MKE16Z32V**4  | 48  | 32KB   | 4KB   |        | 3        | 1     | 1                  | ✓   | ✓   |        | 8-ch.      | 1          | 1    | 2         | 38/42       | ✓  | ✓  |    |    |

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Document Number: KE1xZMCMFAMFS REV 3