



5 V robust MCUs
for industrial and
high-performance
home appliances

Kinetis® KE1xF MCU Family

The Kinetis KE1xF MCU family is based on the ARM® Cortex®-M4 core, expanding memory integration for the Kinetis E series with up to 512 KB flash and 64 KB SRAM.

TARGET APPLICATIONS

- ▶ Circuit breaker
- ▶ High-end home appliances
- ▶ Motor control
- ▶ Smart lighting

This 5 V solution with the high-performance Cortex-M4 core running up to 168 MHz, integrates CAN 2.0B compliant FlexCAN and provides a highly reliable serial communication interface for industry applications. The Kinetis KE1xF MCU family also offers a rich suite of communication interfaces including LPUARTs, LPI²Cs, LPSPIs, and FlexIO.

FEATURES

High performance

- ▶ Up to 168 MHz Cortex-M4 core supporting a broad range of processing bandwidth requirements with ambient temperature range (-40 to 105 °C)
- ▶ Single-precision floating point unit (FPU)
- ▶ MPU for memory protect and code safety
- ▶ 8 KB cache helps improve code and data access efficiency
- ▶ Integrated digital signal processor (DSP)
- ▶ Configurable nested vectored interrupt controller
- ▶ 16-channel DMA controller extended up to 64-channel with DMAMUX

Memory

- ▶ Up to 512 KB program flash with ECC
- ▶ Up to 64 KB SRAM with ECC
- ▶ Up to 64 KB FlexNVM with ECC
- ▶ Boot ROM with built-in bootloader

Human-machine interface

- ▶ Supports up to 92 interrupt request (IRQ) sources
- ▶ Up to 89 GPIO pins with interrupt functionality

Clock interfaces

- ▶ 3–40 MHz fast external oscillator (OSC)
- ▶ 32 kHz slow external oscillator (OSC32)
- ▶ 48–60 MHz high-accuracy (up to 1%) FIRC
- ▶ 8 MHz/2 MHz high-accuracy (up to 3%) SIRC
- ▶ 128 kHz low-power oscillator (LPO)
- ▶ Up to 168 MHz phased-lock loop (PLL)



Timers

- ▶ 4 x FlexTimers (FTM) for PWM generation, offering up to 32 standard channels
- ▶ 1 x low-power timer (LPTMR)
- ▶ 3 x programmable delay block (PDB)
- ▶ 1 x low-power periodic interrupt timer (LPIT) with four (4) independent channels, for general purpose

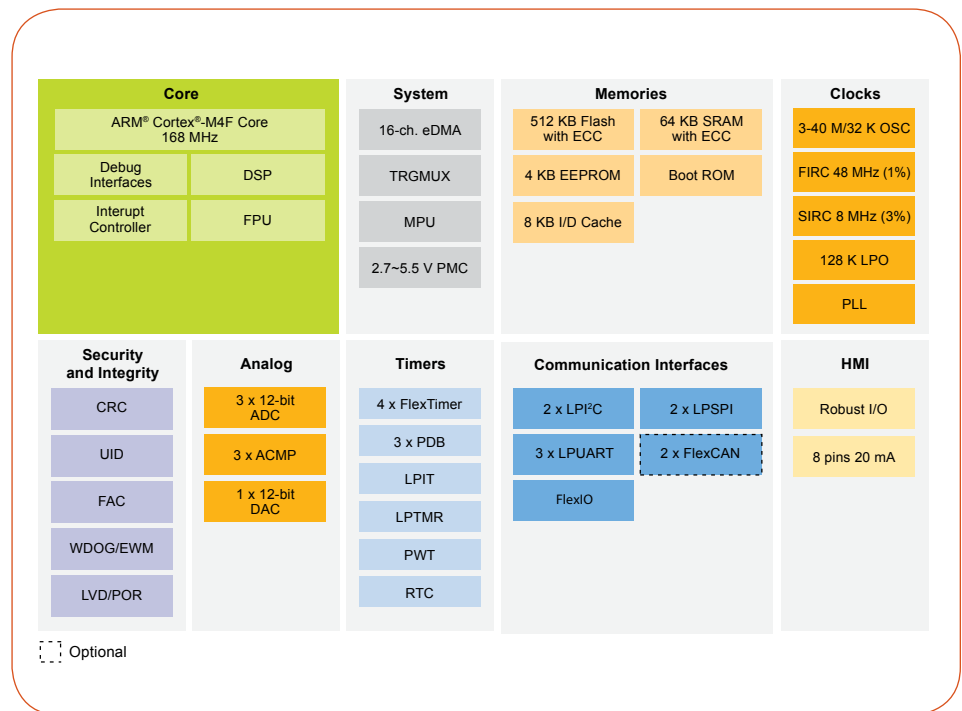
Analog modules

- ▶ 1-Msps 12-bit ADC with up to a 16-channel input per module, up to 1Msps
- ▶ 3 x high-speed analog comparators (CMP) with internal 8-bit digital-to-analog converter (DAC)
- ▶ 1 x 12-bit digital-to-analog converter (DAC)

Connectivity and communications

- ▶ CAN 2.0B compliant FlexCAN modules
- ▶ FlexIO provides flexibility for serial communication interface implementation
- ▶ 3 x LPUART modules with DMA support
- ▶ TriggerMUX: for module interconnectivity

KINETIS KE1xF MCU FAMILY BLOCK DIAGRAM



COMPREHENSIVE ENABLEMENT SOLUTIONS

- ▶ Tower® System modular development platform
 - Rapid prototyping and evaluation
 - Low-cost, interchangeable boards
- ▶ Kinetis software development kit (KSDK)
- ▶ Integrated development environment (IDE)
 - Kinetis Design Studio IDE
 - IAR Embedded Workbench®
 - ARM Keil® MDK

KINETIS KE1xF MCU FAMILY OPTIONS

Sub-Family	Part Number	CPU (MHz)	Memory			Features										Package	
			Flash (KB)	SRAM (KB)	EEPROM (KB)	UART	SPI	I²C	CAN	FlexIO	16-bit PWM	12-bit ADC	DAC (6-bit/12-bit)	FlexTimer	Total GPIOs	LH	LL
																64 LQFP (10 x 10)	100 LQFP (14 x 14)
KE14F	MKE14F256V**16	168	256	32	4	3	2	2		√	32-ch.	√	3/1	4	58~89	√	√
KE14F	MKE14F512V**16	168	512	64	4	3	2	2		√	32-ch.	√	3/1	4	58~89	√	√
KE16F	MKE16F256V**16	168	256	32	4	3	2	2	1	√	32-ch.	√	3/1	4	58~89	√	√
KE16F	MKE16F512V**16	168	512	64	4	3	2	2	1	√	32-ch.	√	3/1	4	58~89	√	√
KE18F	MKE18F256V**16	168	256	32	4	3	2	2	2	√	32-ch.	√	3/1	4	58~89	√	√
KE18F	MKE18F512V**16	168	512	64	4	3	2	2	2	√	32-ch.	√	3/1	4	58~89	√	√

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