

32-bit MCUs

Kinetis EA Series MCUs for Automotive

Target Applications

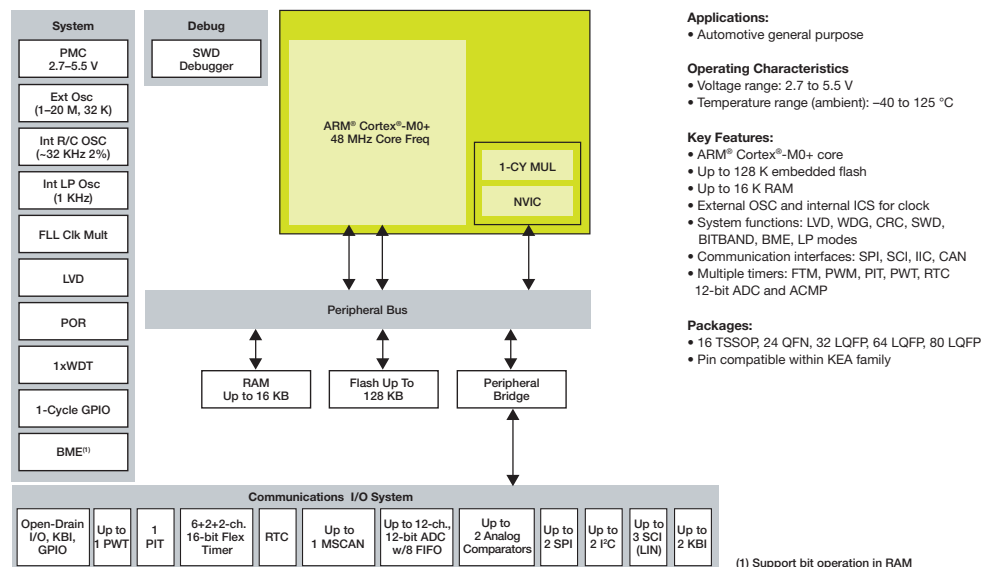
- Infotainment connection module
- Park assistance
- DC/BLDC motor control
- Electronic park brake
- TPMS
- Motorcycle CDI/EFI
- Battery management
- Pump/fan controller
- Passive entry push start
- Ambient lighting
- BCM/HVAC
- Windows/door/sun roof
- Seats/mirror/wiper
- Immobilizer
- Powertrain companion chip
- Generic sensor node

Overview

Kinetis EA series MCUs for automotive provide cost-effective ARM®-based solution for a wide range of automotive applications and are pin-compatible across the Kinetis EA series and with future Kinetis automotive families.

This series includes a set of analog, communication, timing and control peripherals with varying flash memory size and pin count. These scalable devices are highly robust, and offer an enhanced ESD/EMC performance solution for cost-sensitive automotive applications. This series is supported by development tools, software and hardware references to help you quickly start designing.

Kinetis EA Series MCUs Block Diagram



Features

Operating Characteristics

- Voltage range: 2.7 to 5.5 V
- Flash write voltage range: 2.7 to 5.5 V
- Temperature range (ambient): -40 °C to +125 °C

Performance

- Up to 48 MHz ARM Cortex®-M0+ core
- Single-cycle 32-bit x 32-bit multiplier
- Single-cycle I/O access port

Memories and Memory Interfaces

- Up to 128 KB flash
- Up to 256 B EEPROM
- Up to 16 KB RAM

Clocks

- Oscillator (OSC)—loop-controlled Pierce oscillator, crystal or ceramic resonator range of 31.25 kHz to 39.0625 kHz or 4 MHz to 24 MHz
- Internal clock source (ICS)—internal FLL with internal or external reference, precision trimming of internal reference allowing 1% deviation across temperature range of -30 °C to 85 °C and 1.5% deviation across temperature range of -40 °C to 125 °C, up to 48 MHz
- Internal 1 kHz low-power oscillator (LPO)

System Peripherals

- Power management module (PMC) with three power modes: run, wait, stop
- Low-voltage detection (LVD) with reset or interrupt, selectable trip points
- Watchdog with independent clock source (WDOG)
- Programmable cyclic redundancy check module (CRC)
- Serial wire debug interface (SWD)
- Bit manipulation engine (BME)

Security and Integrity Modules

- 80-bit unique identification (ID) number per chip

Human-machine interface (HMI)

- Up to 71 general-purpose input/output (GPIO)

- Up to two 32-bit keyboard interrupt modules (KBI)
- External interrupt (IRQ)

Analog Modules

- One 12 bit with up to 16 channel SAR ADC with internal band gap reference channel, operation in stop mode, optional hardware trigger (ADC)
- Two analog comparators containing a 6-bit DAC and programmable reference input (ACMP)

Timers

- One 6-channel FlexTimer/PWM (FTM)
- Up to two 2-channel FlexTimer/PWM (FTM)
- One 2-channel periodic interrupt timer (PIT)
- One real-time clock (RTC)
- Up to one 16-bit pulse width timer

Kinetis EA Series MCUs Development Tools

Part Number	Features
TRK-KEA128	<ul style="list-style-type: none"> • KEA128 MCU in a 80 LQFP • CAN communications interface
TRK-KEA64	<ul style="list-style-type: none"> • KEA64 MCU in a 64 LQFP
TRK-KEA8	<ul style="list-style-type: none"> • KEA8 MCU in a 24 QFN
KEA128 3-phase Sensorless BLDC Motor Control Reference Design	<ul style="list-style-type: none"> • KEA128 MCU in a 80 LQFP, 3-phase sensorless BLDC motor control • Real-time algorithm parameter tuning using Motor Control Application Tuning (MCAT) tool • LIN and CAN interface
KEA128 Led Lighting Control Reference Design	<ul style="list-style-type: none"> • KEAZ128 MCU in a 64 LQFP, Lighting Control solution • Complete headlight environment control solution, including headlights, LEDs, tail lights, turn signals, lamp current control and diagnostics • LIN and CAN interface
KEA128 Auto Net Reference Design	<ul style="list-style-type: none"> • KEAZ128 MCU implemented as a central gateway, demonstrates its efficient and accurate bus processing and energy-saving capabilities

Product Comparison Table

Device	Flash	RAM	EEPROM	Freq	MS CAN	SCI	SPI	ATD	PWT	Flex-Tim	ACMP	IIC	GPIO	Packages
KEAZN8	8 K	1 K	Emulated	48 MHz	0	1	1	12c12b	1	6c+2c 16b	2	1	Up to 22	16 TSSOP/24 QFN
KEAZN16	16 K	2 K	256 B	40 MHz	0	3	2	16c12b	N/A	6c+2c+2c 16b	2	2	Up to 57	32/64 LQFP
KEAZN32	32 K	4 K	256 B	40 MHz	0	3	2	16c12b	N/A	6c+2c+2c 16b	2	2	Up to 57	32/64 LQFP
KEAZN64	64 K	4 K	256 B	40 MHz	0	3	2	16c12b	N/A	6c+2c+2c 16b	2	2	Up to 57	32/64 LQFP
KEAZ64	64 K	8 K	Emulated	48 MHz	1	3	2	16c12b	1	6c+2c+2c 16b	2	2	Up to 71	64/80 LQFP
KEAZ128	128 K	16 K	Emulated	48 MHz	1	3	2	16c12b	1	6c+2c+2c 16b	2	2	Up to 71	64/80 LQFP

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