Robust 5 V MCU with 8-bit S08 compatibility

Kinetis KE0x Family

The Kinetis KE0x family is the entry point into the Kinetis E series and is pin-compatible across the E series and with the 8-bit S08P family.

TARGET APPLICATIONS

- Appliances
- Analog power
- DC/DC
- DC fans
- Industry
- Metering/PLC
- Offline UPS

This family includes a powerful array of analog, communication, timing and control peripherals with varying flash memory size and pin count. Additionally, the series offers highly robust, cost-effective and energy-efficient MCUs that provide the appropriate entry-level solution. Ultimately, this product group is the next-generation MCU solution, offering enhanced ESD/EMC performance for cost-sensitive, high-reliability device applications used in high electrical noise environments.

FREEDOM DEVELOPMENT PLATFORMS

Part Number	Kinetis Family Support	RSL Price
FRDM-KE02Z	KE02, 20 MHz	$12.95
FRDM-KE02Z40M	KE02, 40 MHz	$12.95
FRDM-KE04Z	KE04, 8 KB Flash	$12.95
FRDM-KE06Z	KE06, KE04, 64-128 KB Flash	$12.95

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 +105 °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 16 KB RAM
- Up to 256 B EEPROM

Clocks

- Oscillator (XOSC): Loop-controlled Pierce oscillator, crystal or ceramic resonator range of 31.25 to 39.0625 kHz or 4 to 20 MHz
- Internal clock source (ICS): Internal FLL with internal or external reference, precision trimming of internal reference allowing 1% deviation across temperature range of 0 °C to 70 °C and 1.5% deviation across temperature range of –40 °C to +105 °C, up to 48 MHz
- Internal 1 kHz low-power oscillator (LPO)

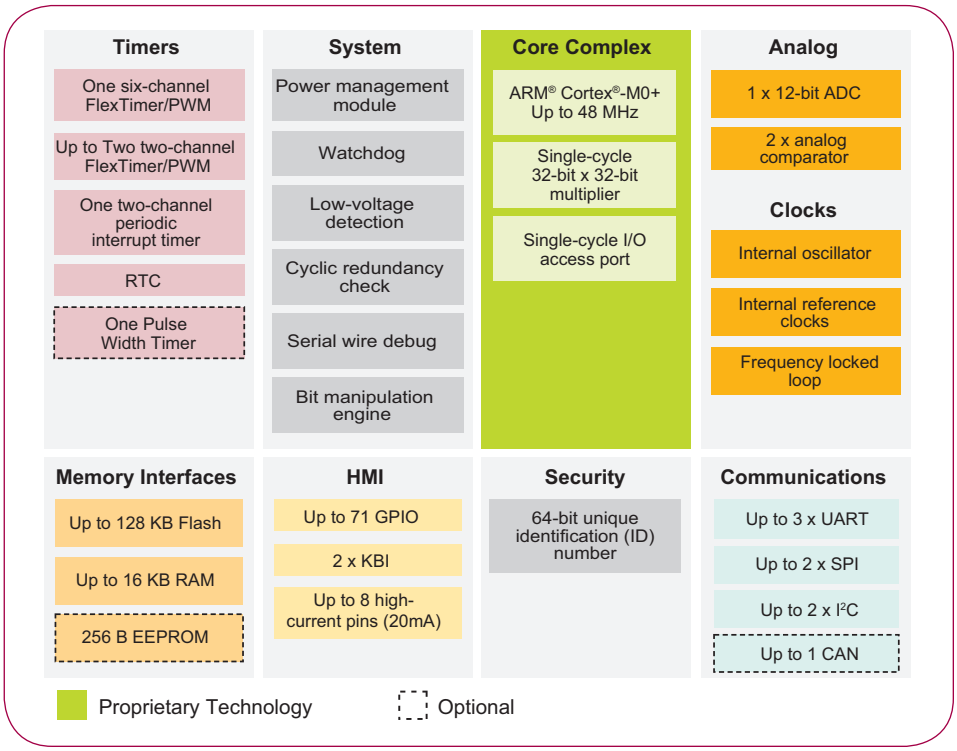
System Peripherals

- Power management module (PMC) with three power modes: run, wait and 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
- 64-bit unique identification (ID) number per chip

Human-Machine Interface

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

KINETIS KE0x FAMILY BLOCK DIAGRAM



- Two 8-bit keyboard interrupt modules (KBI)
- Up to 8 ultra-high-current sink pins supporting 20 mA source/sink current

Analog Modules

- One 16-channel 12-bit 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)
- Two 2-channel FlexTimer/PWM (FTM)
- One 2-channel periodic interrupt timer (PIT)
- One real-time clock (RTC)
- One pulse width timer (PWT)
- Serial Interfaces
- Three UART Interfaces (LIN capable)
- Two Serial Peripheral Interfaces
- Two I2C interfaces
- One CAN module

TOOLS

Freedom Development Platforms Features:

- Capacitive touch slider, MMA8451Q accelerometer, Tri-color LED
- Flexible power supply options—USB and external source
- Easy access to MCU I/O
- IrDA transmitter and receiver
- Thermistor sensor to measuring temperature
- Form factor compatible with Arduino™ R3 pin layout
- New, OpenSDA debug interface
  - Mass storage device flash programming interface (default)
  - Tool installation not required to evaluate demo apps
  - P&E Microcomputer Systems® Debug interface provides run-control debugging and compatibility with IDE tools
  - CMSIS-DAP interface: new ARM standard for embedded

Learn more at: **www.nxp.com/freedom**

KINETIS KE0x FAMILY OPTIONS

MC Part Number	CPU	Pin	Package	Flash	SRAM	EEPROM	UART (LIN slave capable)	SPI (8-bit)	I²C (400 Kbps)	CAN	16-bit Flex Timer (6-ch.)	16-bit Flex Timer (2-ch.)	PWT	Total GPIOs
MKE02Z16VLC2	20 MHz	32	LQFP	16KB	2 KB	256 B	2	2	1	–	1	2	–	28
MKE02Z32VLC2	20 MHz	32	LQFP	32 KB	4 KB	256 B	2	2	1	–	1	2	–	28
MKE02Z64VLC2	20 MHz	32	LQFP	64 KB	4 KB	256 B	2	2	1	–	1	2	–	28
MKE02Z16VLD2	20 MHz	44	LQFP	16 KB	2 KB	256 B	3	2	1	–	1	2	–	37
MKE02Z32VLD2	20 MHz	44	LQFP	32 KB	4 KB	256 B	3	2	1	–	1	2	–	37
MKE02Z64VLD2	20 MHz	44	LQFP	64 KB	4 KB	256 B	3	2	1	–	1	2	–	37
MKE02Z32VLH2	20 MHz	64	LQFP	32 KB	4 KB	256 B	3	2	1	–	1	2	–	57
MKE02Z64VLH2	20 MHz	64	LQFP	64 KB	4 KB	256 B	3	2	1	–	1	2	–	57
MKE02Z32VQH2	20 MHz	64	QFP	32 KB	4 KB	256 B	3	2	1	–	1	2	–	57
MKE02Z64VQH2	20 MHz	64	QFP	64 KB	4 KB	256 B	3	2	1	–	1	2	–	57
MKE02Z16VLC4	40 MHz	32	LQFP	16 KB	2 KB	256 B	2	2	1	–	1	2	–	28
MKE02Z32VLC4	40 MHz	32	LQFP	32 KB	4 KB	256 B	2	2	1	–	1	2	–	28
MKE02Z64VLC4	40 MHz	32	LQFP	64 KB	4 KB	256 B	2	2	1	–	1	2	–	28
MKE02Z16VLD4	40 MHz	44	LQFP	16 KB	2 KB	256 B	3	2	1	–	1	2	–	37
MKE02Z32VLD4	40 MHz	44	LQFP	32 KB	4 KB	256 B	3	2	1	–	1	2	–	37
MKE02Z64VLD4	40 MHz	44	LQFP	64 KB	4 KB	256 B	3	2	1	–	1	2	–	37
MKE02Z32VLH4	40 MHz	64	LQFP	32 KB	4 KB	256 B	3	2	1	–	1	2	–	57
MKE02Z64VLH4	40 MHz	64	LQFP	64 KB	4 KB	256 B	3	2	1	–	1	2	–	57
MKE02Z32VQH4	40 MHz	64	QFP	32 KB	4 KB	256 B	3	2	1	–	1	2	–	57
MKE02Z64VQH4	40 MHz	64	QFP	64 KB	4 KB	256 B	3	2	1	–	1	2	–	57
MKE04Z8VTG4	48 MHz	16	TSSOP	8 KB	1 KB	–	1	1	1	–	1	1	1	14
MKE04Z8VWJ4	48 MHz	20	SOIC WB	8 KB	1 KB	–	1	1	1	–	1	1	1	18
MKE04Z8VFK4	48 MHz	24	QFN	8 KB	1 KB	–	1	1	1	–	1	1	1	22
MKE04Z64VLD4	48 MHz	44	LQFP	64 KB	8 KB	–	3	2	2	–	1	2	1	38
MKE04Z128VLD4	48 MHz	44	LQFP	128 KB	16 KB	–	3	2	2	–	1	2	1	38
MKE04Z64VQH4	48 MHz	64	QFP	64 KB	8 KB	–	3	2	2	–	1	2	1	58
MKE04Z128VQH4	48 MHz	64	QFP	128 KB	16 KB	–	3	2	2	–	1	2	1	58
MKE04Z64VLH4	48 MHz	64	LQFP	64 KB	8 KB	-	3	2	2	–	1	2	1	58
MKE04Z128VLH4	48 MHz	64	LQFP	128 KB	16 KB	-	3	2	2	–	1	2	1	58
MKE04Z64VLK4	48 MHz	80	LQFP	64 KB	8 KB	–	3	2	2	–	1	2	1	71
MKE04Z128VLK4	48 MHz	80	LQFP	128 KB	16 KB	–	3	2	2	–	1	2	1	71
MKE06Z64VLD4	48 MHz	44	LQFP	64 KB	8 KB	–	3	2	2	1	1	2	1	38
MKE06Z128VLD4	48 MHz	44	LQFP	128 KB	16 KB	–	3	2	2	1	1	2	1	38
MKE06Z64VQH4	48 MHz	64	QFP	64 KB	8 KB	–	3	2	2	1	1	2	1	58
MKE06Z128VQH4	48 MHz	64	QFP	128 KB	16 KB	–	3	2	2	1	1	2	1	58
MKE06Z64VLH4	48 MHz	64	LQFP	64 KB	8 KB	–	3	2	2	1	1	2	1	58
MKE06Z128VLH4	48 MHz	64	LQFP	128 KB	16 KB	–	3	2	2	1	1	2	1	58
MKE06Z64VLK4	48 MHz	80	LQFP	64 KB	8 KB	–	3	2	2	1	1	2	1	71
MKE06Z128VLK4	48 MHz	80	LQFP	128 KB	16 KB	–	3	2	2	1	1	2	1	71

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