



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)

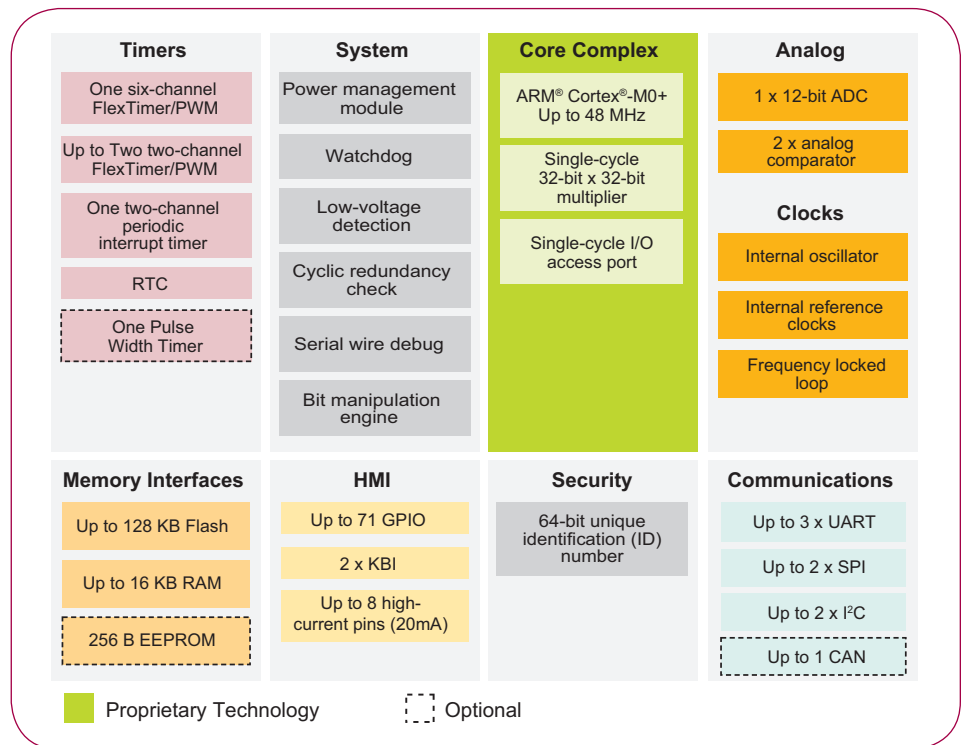
System Peripherals

- ▶ 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)	I ² C (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

www.nxp.com/Kinetis/Eseries

© 2012–2015 Freescale Semiconductor, Inc.

Kinetis is a trademark of Freescale Semiconductor, Inc., Reg. U.S. Pat. & Tm. Off. All other product or service names are the property of their respective owners. ARM and Cortex are registered trademarks of ARM Limited (or its subsidiaries) in the EU and/or elsewhere. All rights reserved.

Document Number:
KINETISKE0XFS REV 3