Kinetis Microcontrollers

Freescale Tech Days 2013

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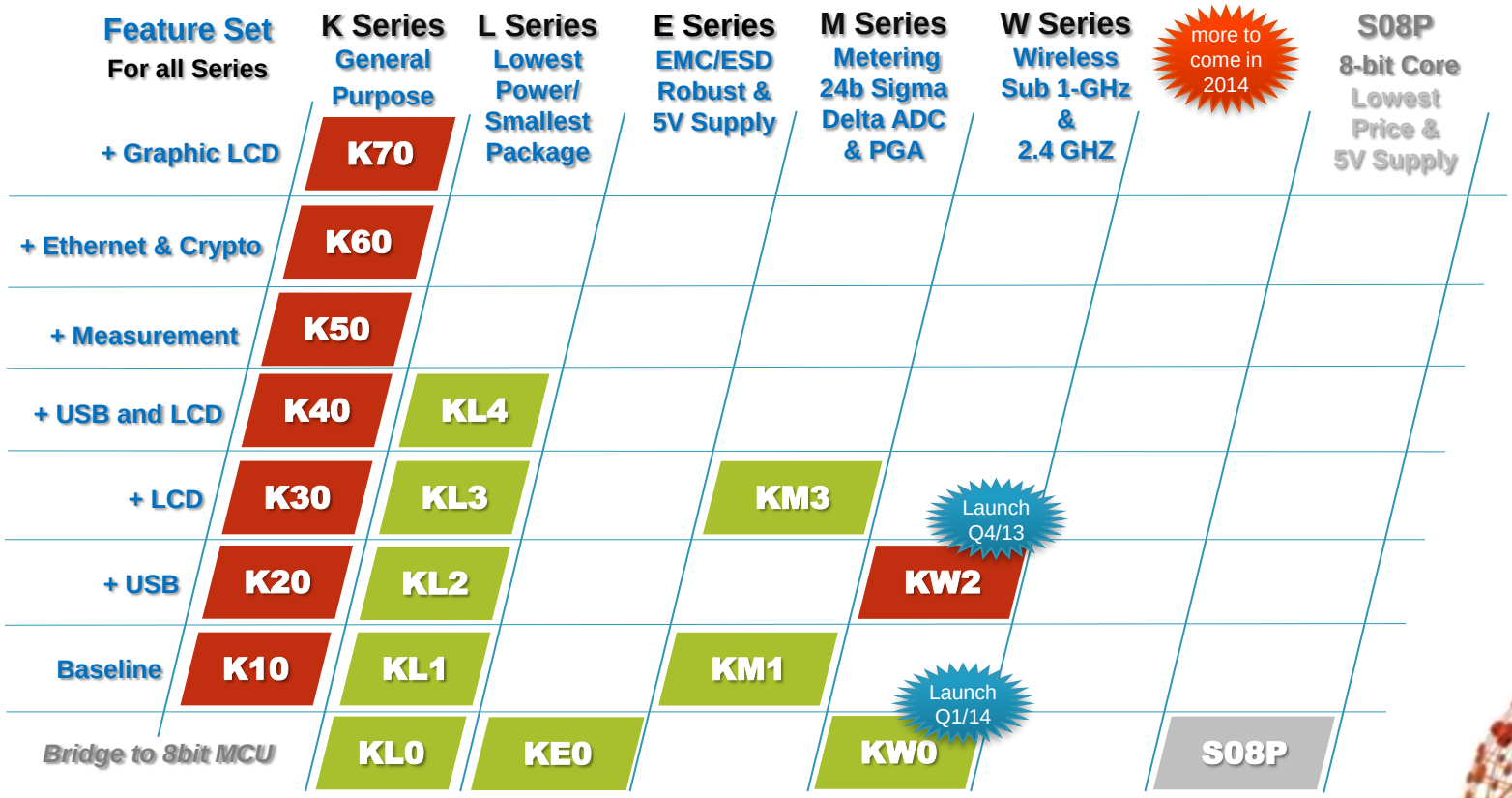
The Kinetis Concept

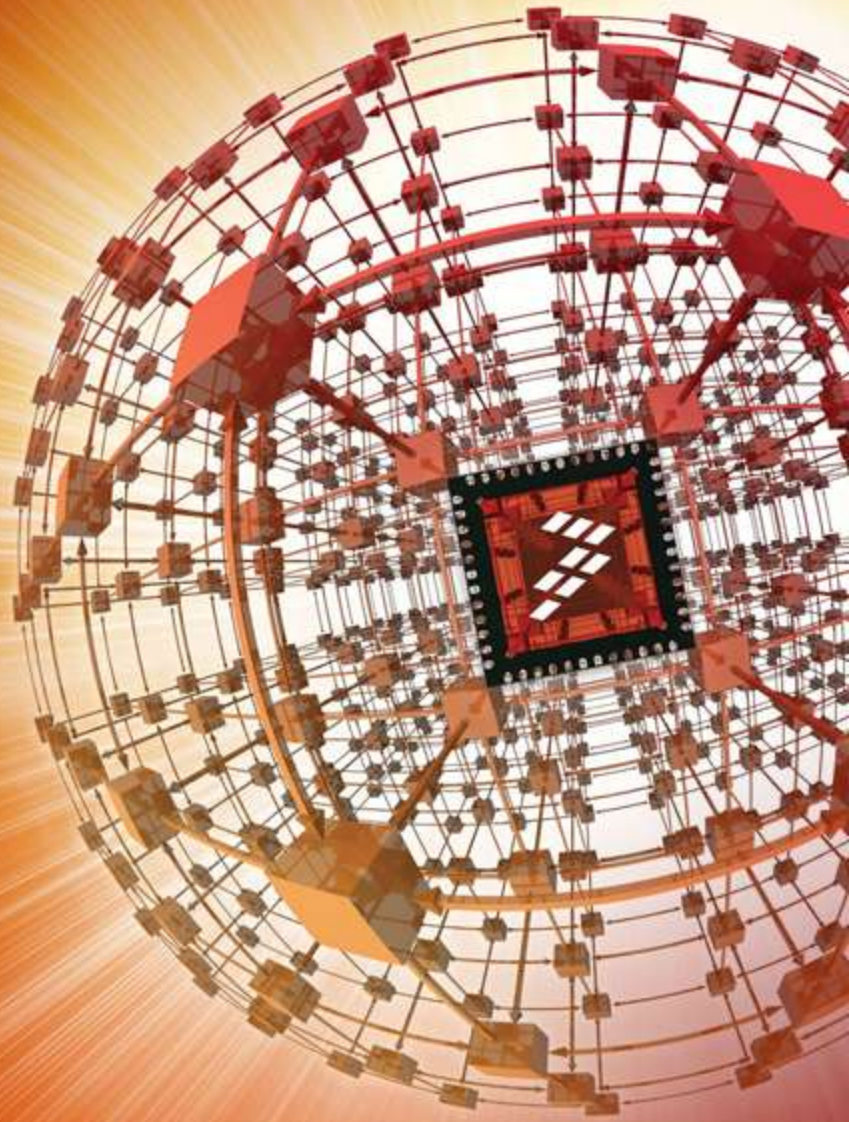
Kinetis is the branding for all ARM® Cortex™-M based microcontrollers

Cores	Scalability	Families
• Freescale uses the **most advanced cores** from ARMs offering: – Cortex™ M4 for highest computation performance – Cortex™ M0+ for lowest power and smallest packages	• Depending on their capabilities they are grouped to K10/KL1, K20/KL2/KW20 etc. In a family **direct scalability** between these groups is given	• Today, **five Kinetis families are available**. Kinetis L, K and E series are in production, Kinetis W and M series are available in samples and will be in production autumn 2013.

Kinetis MCU Families



ARM® Cores used by Freescale Kinetis



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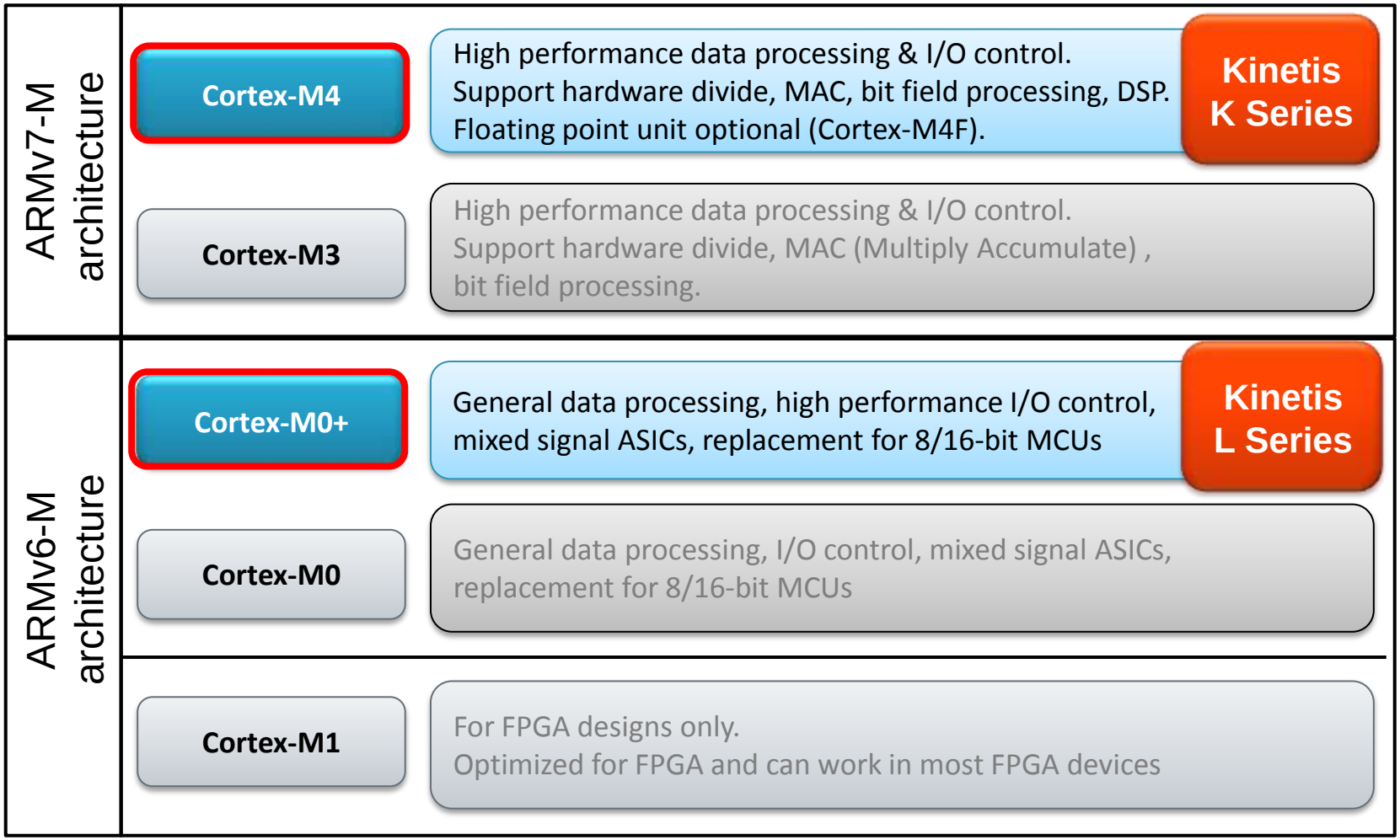
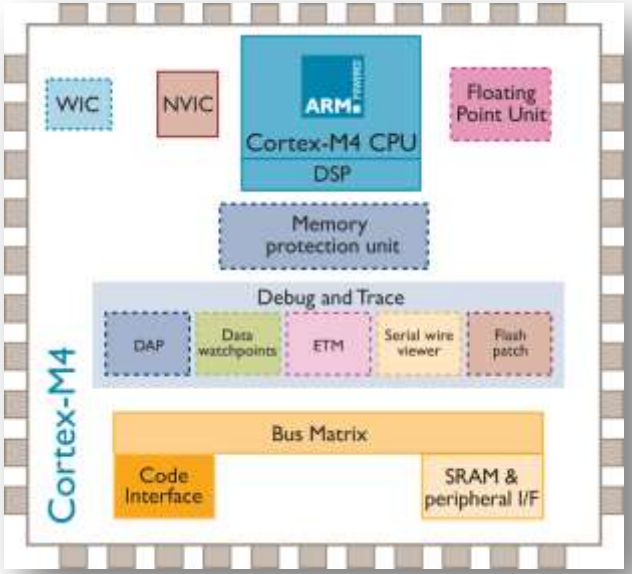
Kinetis Series powered by ARM® Cortex™



Kinetis: Why ARM® Cortex™-M4?

- **Backwards compatible with ARM Cortex-M3**
  - Does everything the Cortex-M3 does and more but in less cycles (more energy efficient!)
- **New features**
  - Single cycle MAC (Up to 32 x 32 + 64 -> 64)
  - DSP extensions, Single Precision Floating Point Unit
- **Freescale IP and Innovation**
  - Cache, Cross-Bar and DMA for increased throughput
  - MPU for system resource protection
  - Low-leakage Wake-up Unit for low power operation



Dotted boxes denote optional blocks

- **Architected for Digital Signal Processing**
  - Motor Control: advanced algorithms, faster control loops, more responsive to speed commands and changing loads, increased power efficiency
  - Automation: high calculation and algorithm bandwidth at a low cost
  - Power management: designed for low/battery powered systems (CLK @ 0.5x ARM Cortex M3)
  - Audio and Video: 5x performance improvement over software, extended battery operation

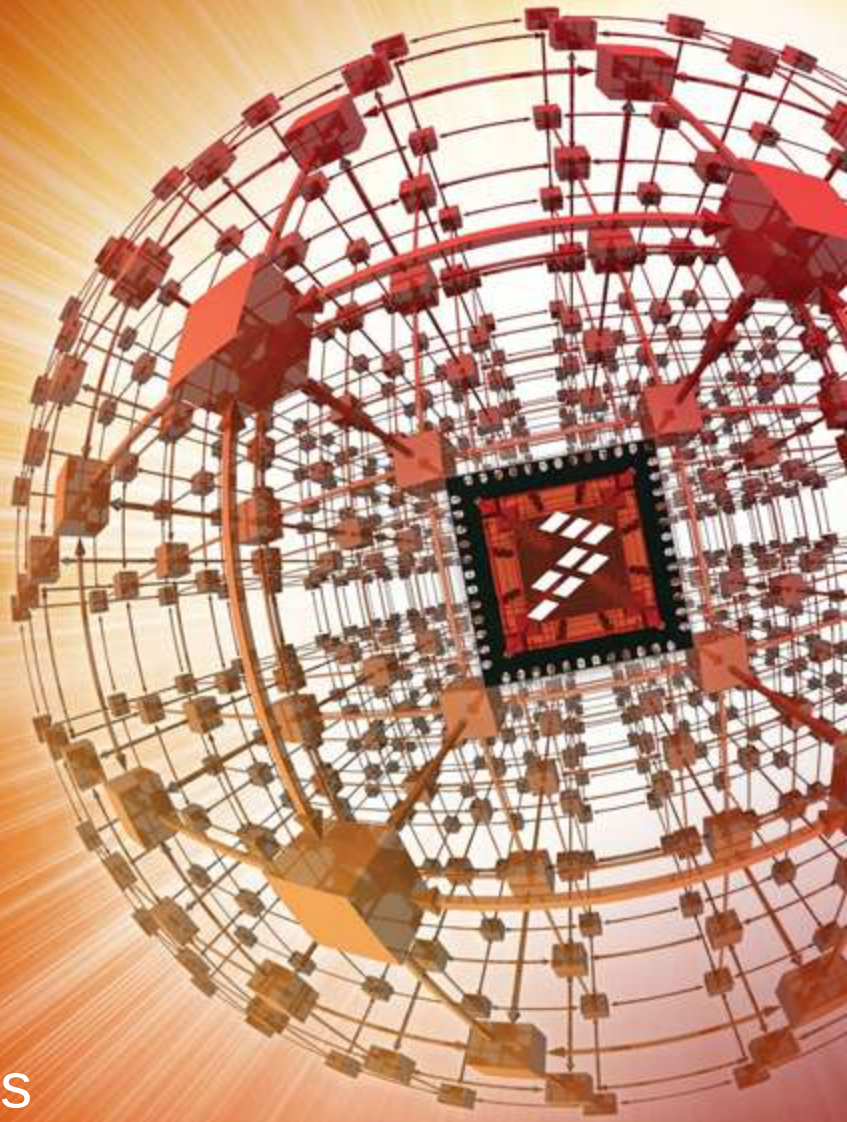
CM0+ Core & Platform Features

- ARM Cortex-M0+ Core
  - 100% compatible with Cortex M0
  - Efficient instruction set for low power and small code size
  - 0.95 DMIPS per MHz performance when executing from internal RAM (single cycle accesses)
  - Single cycle 32 bit x 32 bit multiply
  - NVIC with 4 priority levels and hardware preemption
  - I/O port for single cycle GPIO loads and stores
- Peripheral Bridge Crossbar (AXBS-Lite)
  - Support for concurrent accesses from DMA/CORE to memory and peripherals
- Bit Manipulation Engine (BME)
  - Decorated load and store capability for peripherals improving processing efficiency and small code size
- Flash Memory Controller (FMC)
  - 4-way, 4-set 32-bit Flash cache for improving flash access times
- Debug Facilities
  - Supports the standard ARM 2-pin serial wire debug (SWD) debug port only
  - Micro-Trace Buffer (MTB) for on-chip trace capabilities

Kinetis K Series

Design Potential. Realized

with ARM® Cortex™-M4



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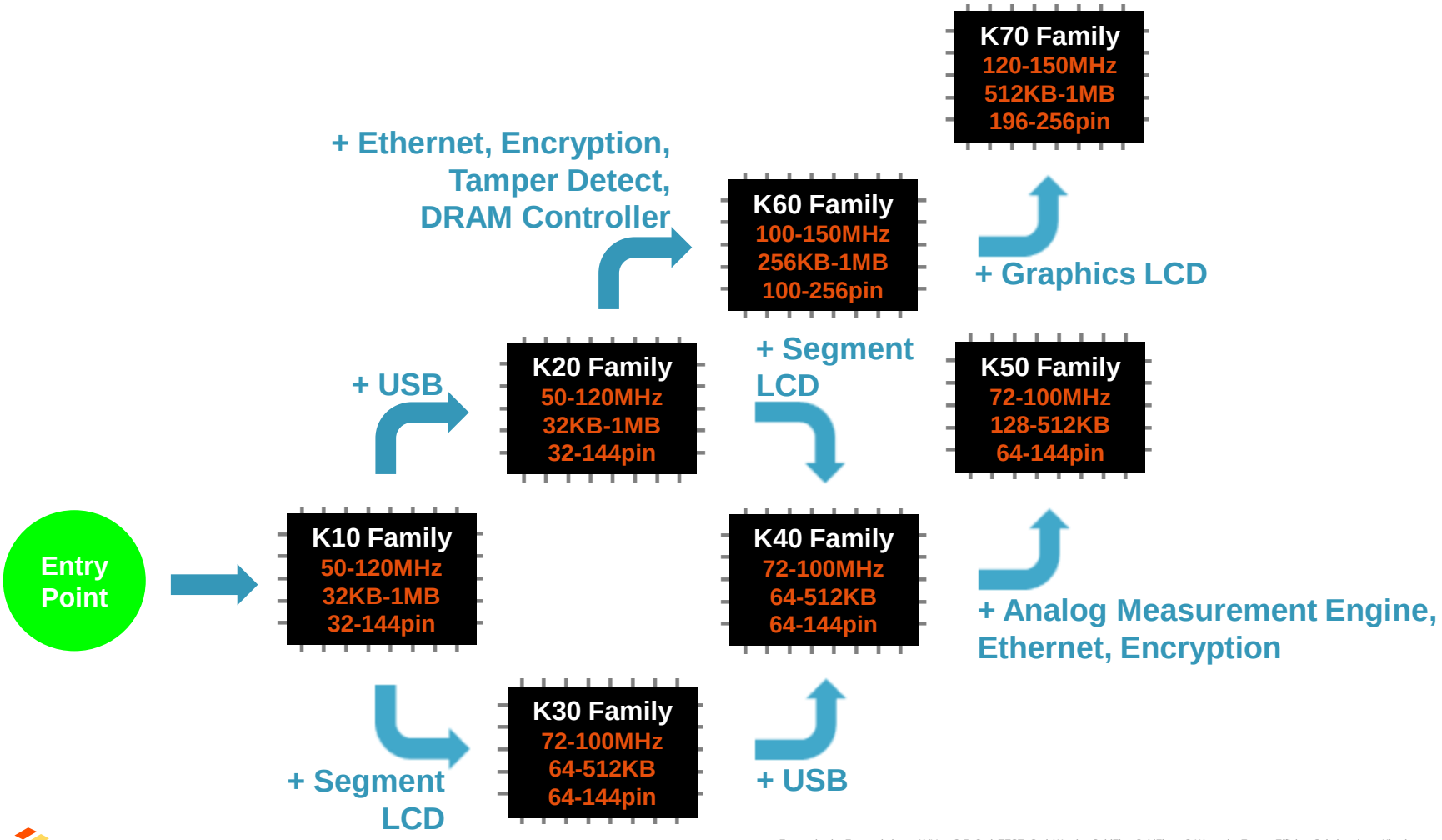
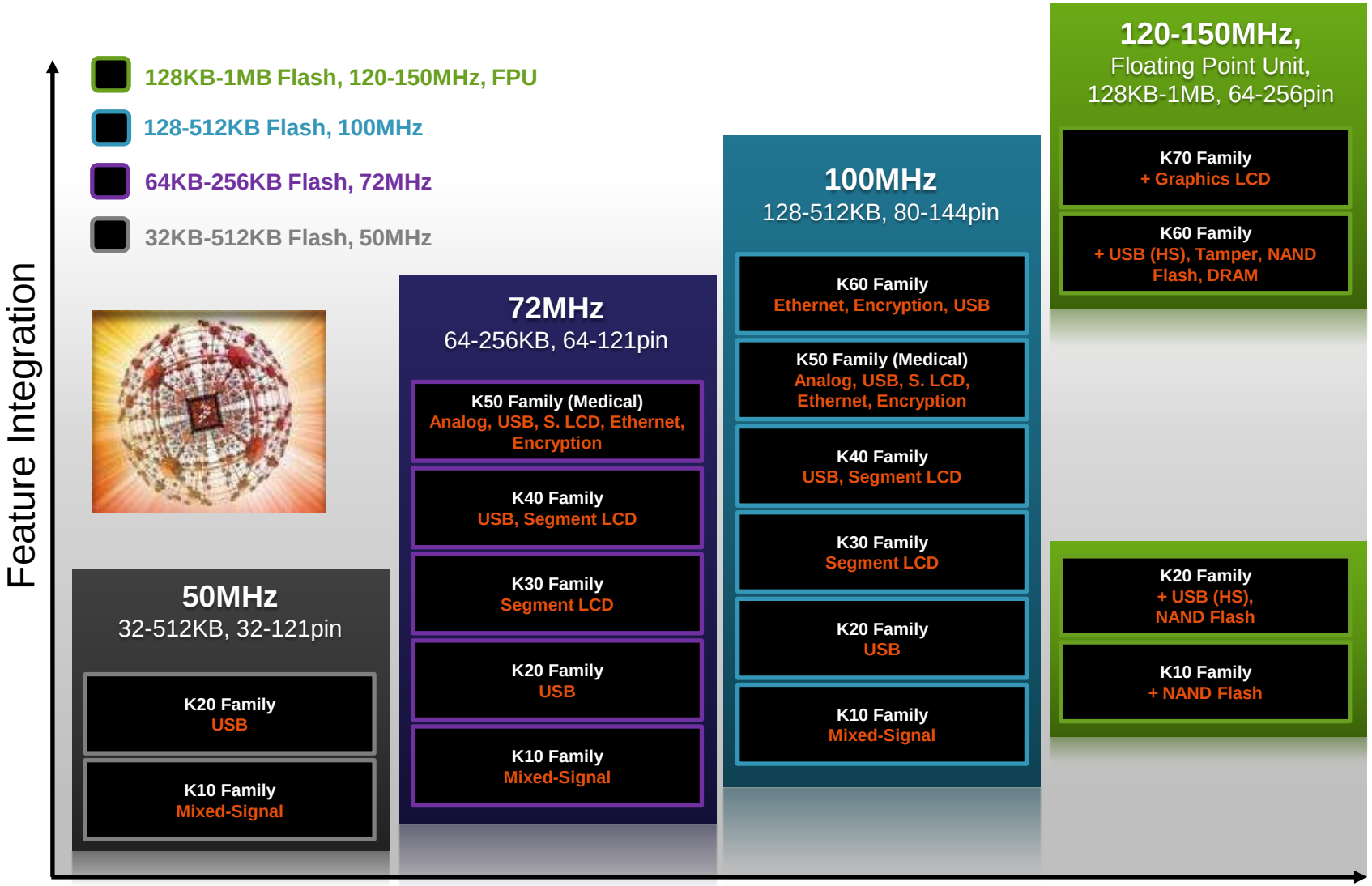
K Series: MCU Family Compatibility

Hardware & software compatible MCU families with scalable performance, memory and feature integration



Kinetis K-Series: four Sub-Families available



Kinetis K Series: Feature Overview

Common Features

System

ARM® Cortex™-M4 Core + DSP
Multiple Low-Power Operation Modes, Clock Gating, 1.71V-3.6V, 5V Tolerant I/O [1]
DMA, Memory Protection Unit [2], Cross Bar Switch
Operating Temp: -40°C to + 105°C [3]

Memory

90nm TFS Flash Memory (High Reliability, Fast Access)
FlexMemory (EEPROM) [4]
SRAM
Internal Memory Security/Protection

Analog Peripherals

16-bit ADC
Programmable Gain Amplifiers [1]
12-bit DAC [5]
High-Speed Comparators Low-Power Touch Sense Interface [7]

Serial Interfaces

UART, SPI, I^2C
SAI (I^2S)

Timers

RTC
Motor Control Timers
Low-Power Timers
Programmable Delay Block
System Timers

Other Peripherals

CRC
eSDHC [4]
External Bus Interface [4]

Optional Features

CPU	Internal Memory	Communication	HMI	Security	Memory/Expansion	Analog

K70 Family: Graphics LCD

CPU	Internal Memory	Communication				HMI	Security		Memory/Expansion		Analog
120 to 150 MHz	Floating Point Unit	512 KB to 1 MB Flash	128 KB SRAM	USB OTG (FS and HS) [6]	CAN	Ethernet (IEEE® 1588)	Graphics LCD	Hardware Encryption	Tamper Detection	NAND Flash Controller	DRAM Controller	--

K60 Family: Ethernet, Security

CPU	Internal Memory	Communication				HMI	Security		Memory/Expansion		Analog
100 to 150 MHz	Floating Point Unit	256 KB to 1 MB Flash	64 KB to 128 KB SRAM	USB OTG (FS and HS)	CAN	Ethernet (IEEE1588)	--	Hardware Encryption	Tamper Detection	NAND Flash Controller	DRAM Controller	--

K50 Family: Analog Measurement Engine

CPU	Internal Memory	Communication				HMI	Security		Memory/Expansion		Analog
72 to 100 MHz	--	128 KB to 512 KB Flash	32 KB to 128 KB SRAM	USB OTG (FS)	--	Ethernet (IEEE 1588)	Segment LCD	Hardware Encryption	--	--	--	Measurement Engine

K40 Family: USB, Segment LCD

CPU	Internal Memory	Communication				HMI	Security		Memory/Expansion		Analog
72 to 100 MHz	--	64 KB to 512 KB Flash	16 KB to 128 KB SRAM	USB OTG (FS)	CAN	--	Segment LCD	--	--	--	--	--

K30 Family, Segment LCD

CPU	Internal Memory	Communication				HMI	Security		Memory/Expansion		Analog
72 to 100 MHz	--	64 KB to 512 KB Flash	16 KB to 128 KB SRAM	--	CAN	--	Segment LCD	--	--	--	--	--

K20 Family: USB

CPU	Internal Memory	Communication				HMI	Security		Memory/Expansion		Analog
50 to 120 MHz	Floating Point Unit	32 KB to 1 MB Flash	8 KB to 128 KB SRAM	USB OTG (FS and HS)	CAN [1]	--	--	Hardware Encryption	Tamper Detection	NAND Flash Controller	--	--

K10 Family: General Purpose

CPU	Internal Memory	Communication				HMI	Security		Memory/Expansion		Analog
50 to 120 MHz	Floating Point Unit	32 KB to 1 MB Flash	8 KB to 128 KB SRAM	--	CAN [1]	--	--	Hardware Encryption	Tamper Detection	NAND Flash Controller	--	--

[1] Feature not available on 50 MHz MCUs
[2] Feature not available on 50 MHz and 72 MHz MCUs
[3] Feature not available on 50 MHz MCUs and CSP packages (K50 and CSP package are -40°C to +85°C)
[4] Feature not available on all K10, K20, K30, K40, K50, K60 and K70 MHz MCUs
[5] Feature not available on K10 and K20 50 MHz MCUs
[6] HS USB on 120/150 MHz MCUs only
[7] Feature not available on K11/12/21/22 MCUs (K50 and CSP package are -40°C to +85°C)

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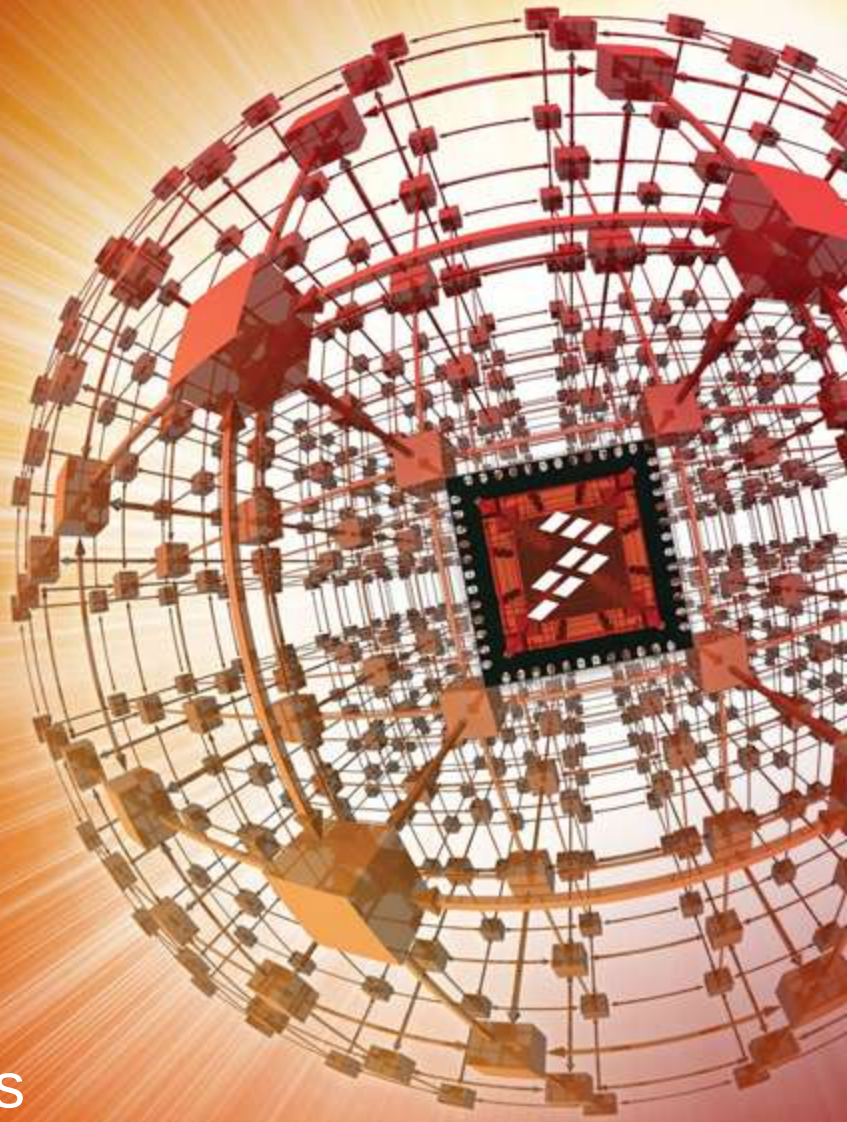
Kinetis L Series

Design Made Simple

with ARM® Cortex™-M0+



www.freescale.com/kinetis/LSeries

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Why 32bit, as 8/16bit can do the job already?

Feature rich

Easy-to-use

Connectivity

Extended battery life

Sleek design

User expectations

Typical Markets and Applications for Kinetis L

Banking

OTP

Cash Registers

Building Control

Smoke Detector

Thermostat

Instrumentation, Medical & Metering

Mass-Market

Electronic Label

ETC

Fiber Module

RFID

Mass-Market

Joy Sticks

Remote Controller

Aero Model

Scale

Shaver

Mouse

GPS Watch

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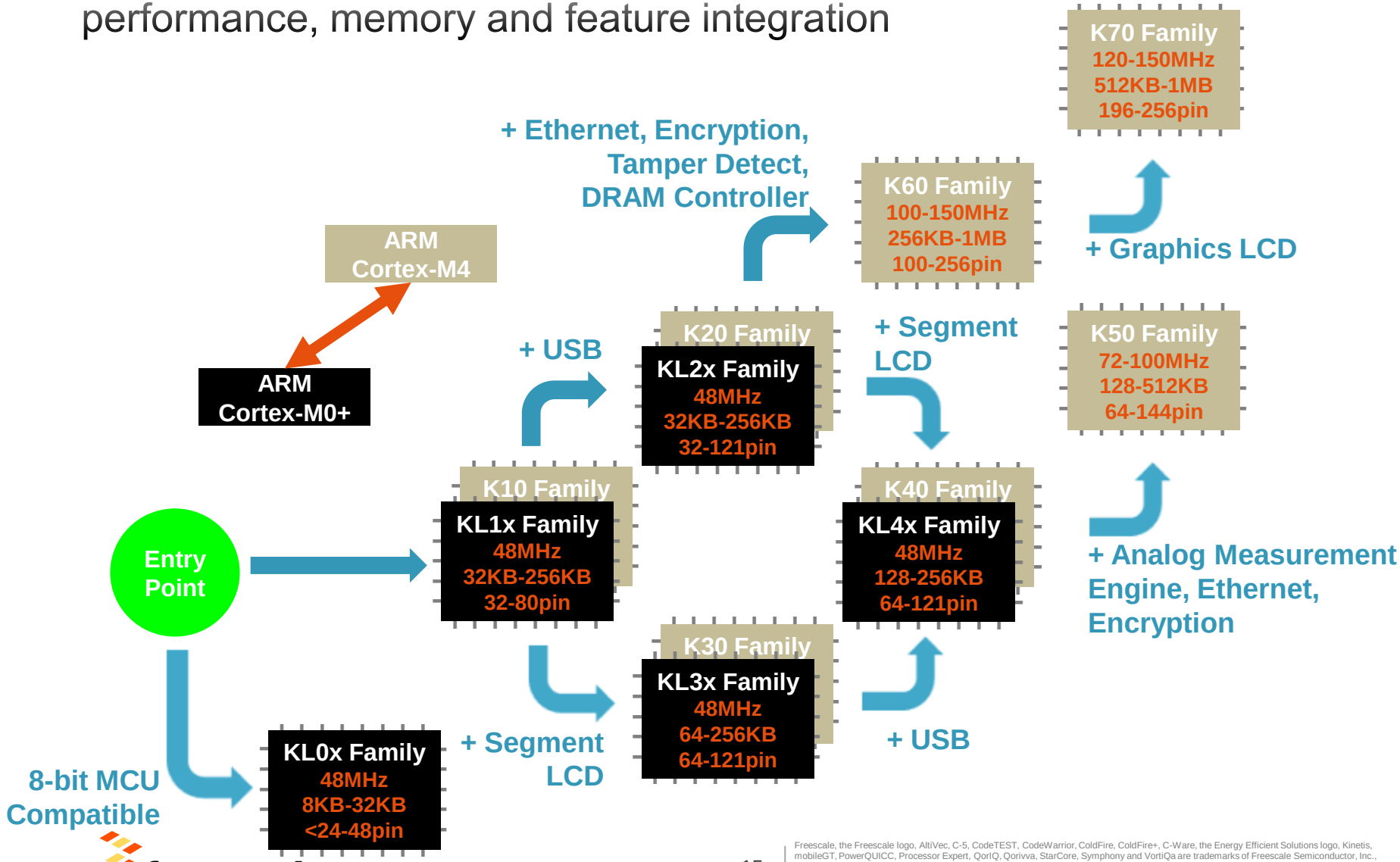
Kinetis L/K Series: MCU Family Compatibility

Hardware & software compatible MCU families with scalable performance, memory and feature integration



Kinetis L Series: MCU Families

Common Features

System

ARM Cortex-M0+ Core, 48MHz

Multiple low-power modes & peripherals, low-power Boot, Clock Gating

1.71-3.6V, -40 to 105°C [1]

Memory

90nm TFS Flash, SRAM

Internal Memory Security/Protection

Analog Peripherals

12/16-Bit ADC, 12-bit DAC

High-Speed Comparator

Serial Interfaces

UART (Including 1 LPUART)

SPI, IIC

Timers

Real Time Clock [2]

16bit Low Power TPMs (GP Timer/PWM)

Low Power Timers

32bit Periodic Interrupt Timer

Optional Features

Family	Flash	SRAM	Pin Count	Key Features						
				USB OTG	Seg LCD	DMA	ADC	DAC	I2S	TSI
KL46	128-256KB	16-32KB	64-121	✓	✓	✓	16-bit	12-bit	✓	✓
KL36	64-256KB	8-32KB	64-121		✓	✓	16-bit	12-bit	✓	✓
KL34	64KB	8KB	64-100		✓	✓	12-bit			
KL26	128-256KB	16-32KB	64-121	✓		✓	16-bit	12-bit	✓	✓
KL25	32-128KB	4-16KB	32-80	✓		✓	16-bit	12-bit		✓
KL24	32-64KB	4-8KB	32-80	✓		✓	12-bit			
KL16	256KB	16-32KB	64-80			✓	16-bit	12-bit	✓	✓
KL15	32-128KB	4-16KB	32-80			✓	16-bit	12-bit		✓
KL14	32-64KB	4-8KB	32-80				12-bit			
KL05	8-32KB	1-4KB	24-48			✓	12-bit	12-bit		✓
KL04	8-32KB	1-4KB	24-48			✓	12-bit			
KL02	8-32KB	1-4KB	16-32				12-bit			

[1] Feature not available on CSP packages
[2] For KL02, use software to support

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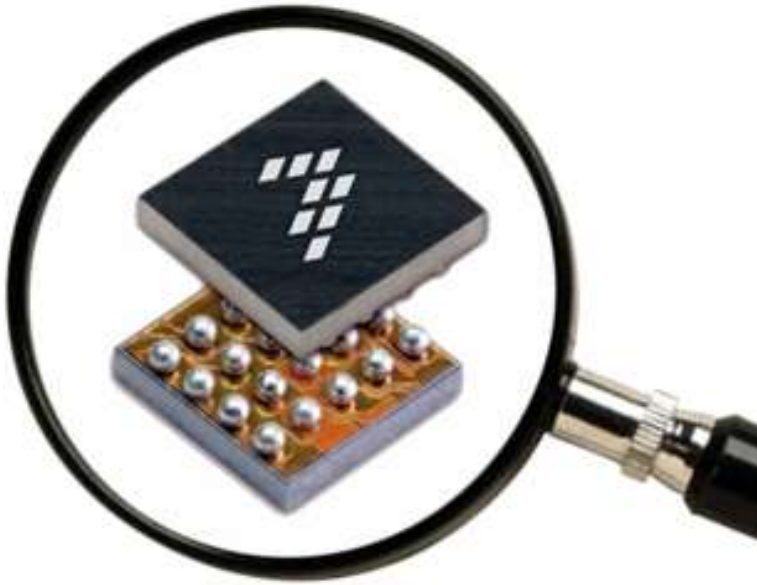
...netis L Series: Memory & Package Scalability

Package	Size (mm)	Pitch (mm)	MCU Families	Samples / Qual
16QFN	3 x 3 x 1	0.5	KL02	Apr2013 / Aug2013
24QFN	4 x 4 x 1	0.5	KL05/KL04/KL02	Now / Now Feb2013 / Jun2013
20CSP	2 x 2 x 0.56	0.4	KL02	Q213 / Q413
25CSP	2.3 x 2.3 x 0.56	0.4	KL05	Proposed
35CSP	2.55 x 3 x 0.56	0.4	KL15/KL25	Q213 / Q313

The World's Smallest ARM® Powered MCU

Microscopic Package. Massive Potential.

- 1.9 mm x 2.0 mm x 0.56 mm
- Advanced wafer-level chip scale package for the ultimate in PCB area reduction
- 25% smaller with 60% more GPIO than the next competing solution
- 32-bit ARM® Cortex™-M0+ core with high density feature integration: 32 KB flash, precision analog, ultra low power and more
- Start developing today with the Kinetis L series FRDM-KL05Z Freescale Freedom development platform
- Mass Production planned for July 2013



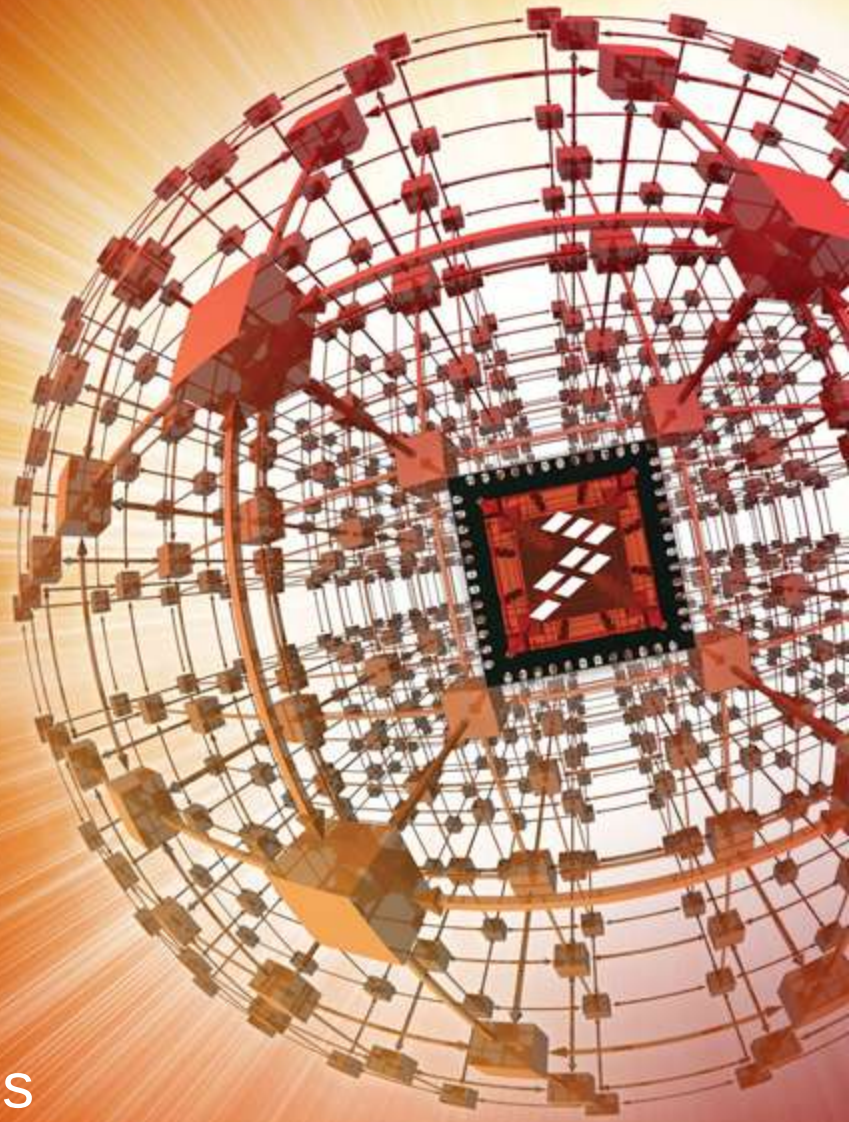
For more information, visit
freescale.com/Kinetis/KL02CSP

Kinetis L Series vs. Kinetis K Series

Category	Kinetis L Series	Kinetis K Series
Core, Performance	ARM Cortex-M0+ (48MHz)	ARM Cortex-M4 (50-150MHz)
Flash	8-256KB	32KB-1MB
Features	Mixed-Signal, USB, Seg. LCD	FlexMemory, Mixed-Signal, USB, Seg. LCD, CAN, Ethernet, Gra. LCD, DRAM, Crypto, Tamper Detect, DRAM
Pin-count	16-121pin	32-256pin
Low Power	~50uA/MHz (VLPR)	~200uA/MHz (VLPR)
Price	From $0.49 (MKL02, 8KB, 16QFN)	From $0.99 (MK10, 32KB, 32QFN)
Target Applications	8 &16-bit replacement	Low/mid/high–end 32-bit

Kinetis E Series

Strong Robustness
High Efficiency
Low Cost
with ARM® Cortex™-M0+



www.freescale.com/kinetis/ESeries

Kinetis E selling points

1. **Better EMC** – Proven passing EFT(IEC61000-4-4) /PSED(IEC61000-4-2) tests in a Microwave single layer PCB design

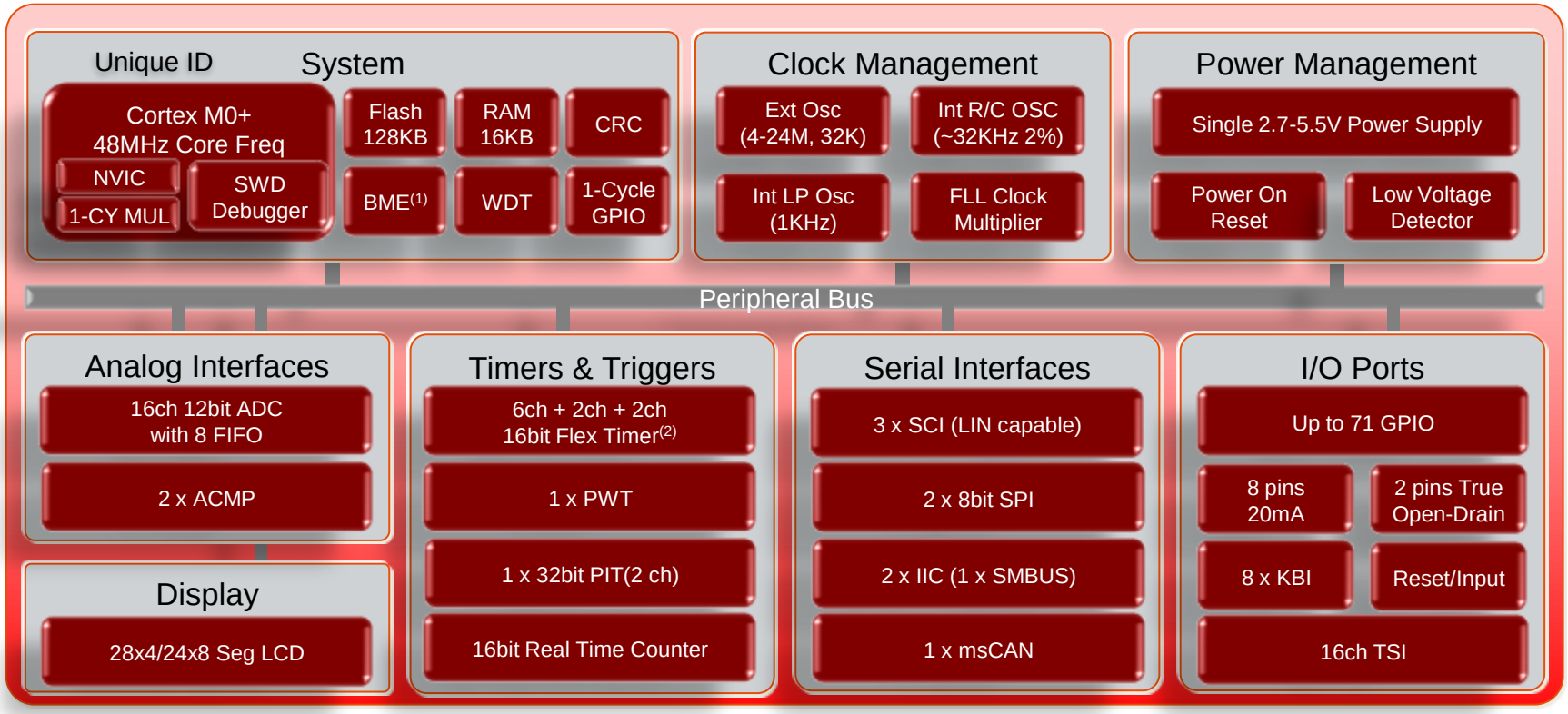
2. **High robustness** – 5V operation provides better noise immunity

3. **Reduce system cost** – No additional BOM for faster response Bit-banging / SW emulation / Direct connection to LED drive circuit / Over-Current and Voltage protection / Up to 256B EEPROM to save an ext EEPROM chip

4. **Easy for PCB layout** – 0.8mm pin pitch for low cost PCBA assy process

5. **Make platform design easier** – Pin compatible with KE and S08P / Rich Eco-system / SW reusable / Save time to market

Kinetis E Series: Master Block Diagram



(1) Support bit operation in RAM

(2) Faster timer running 2 x core clock

- Pin compatible within 5V E-series on same package
- Temp: -40~105°C operation

80LQFP(0.65mm pitch);
64QFP (0.8mm pitch); **64LQFP(0.5mm pitch);**
44LQFP (0.8mm pitch);
32LQFP (0.8mm pitch); **24QFN(0.65mm pitch);**
20SOIC(1.27mm pitch); **16TSSOP(0.65mm pitch)**

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Kinetis E Series: MCU Families

Common Features
System
ARM Cortex-M0+ Core, 48MHz [1]
Multiple power modes, Clock Gating, 2.7V – 5.5V
Operating Temp: -40 to 105°C
Clock Management
External OSC, 4~20MHz, 32KHz
Internal OSC, 32KHz, 1KHz
Analog Peripherals
12-Bit ADC
Analog Comparators
Serial Interfaces
SCI
SPI, IIC
Timers
Real Time Clock
16bit Flex timers
32bit Periodic Interrupt Timer

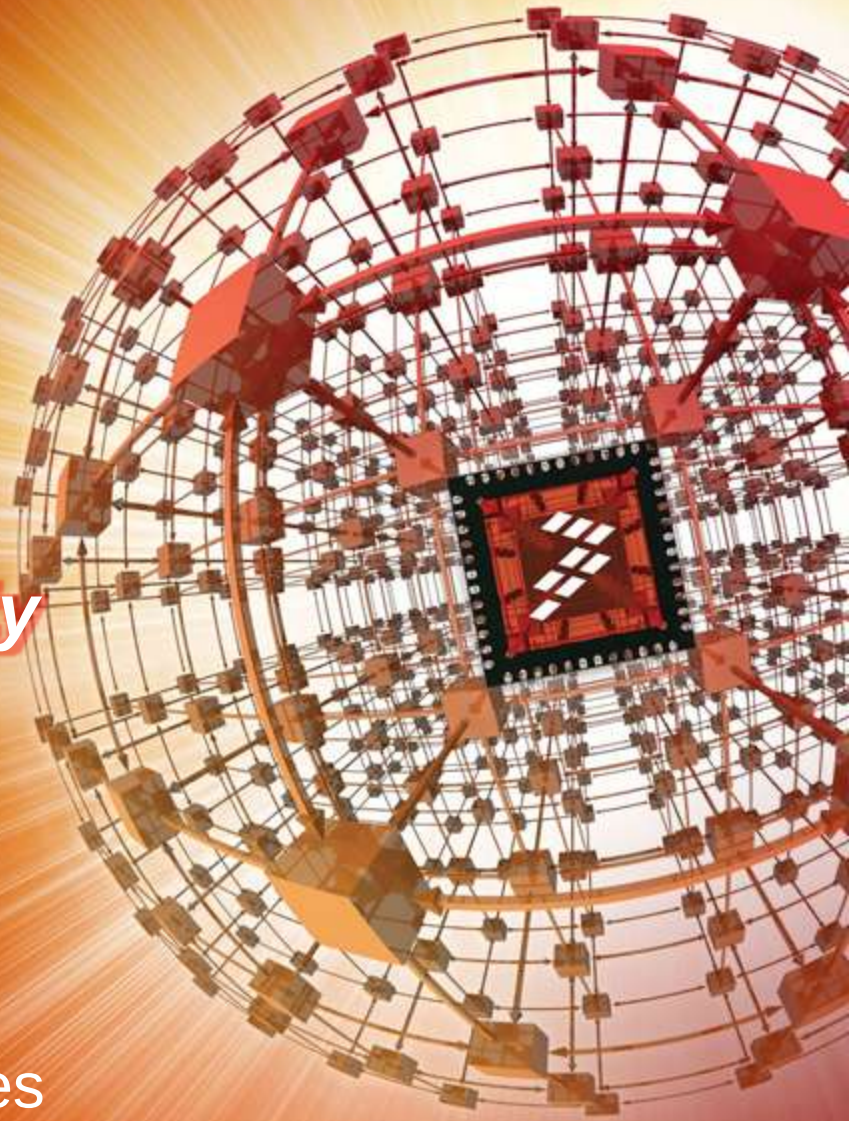
Optional Features									
Family	Speed	Flash	SRAM	Key Features					
				CAN	Seg. LCD	PWT	Fast Timer	ADC	TSI
KE06Z	48MHz	64-128KB	8-16KB	√		√	√	12-bit	
KE35Z	48MHz	16-32KB	2-4KB		√	√	√	12-bit	√
KE05Z	48MHz	16-64KB	2-8KB			√	√	12-bit	√
KE04Z	48MHz	8-128KB	1-16KB			√	√	12-bit	
KE02Z	20MHz	16-64KB	2-4KB					12-bit	

[1] 20MHz for KE02

Kinetis M Series

Highest precision & Security

with ARM® Cortex™-M0+



www.freescale.com/kinetis/MSeries

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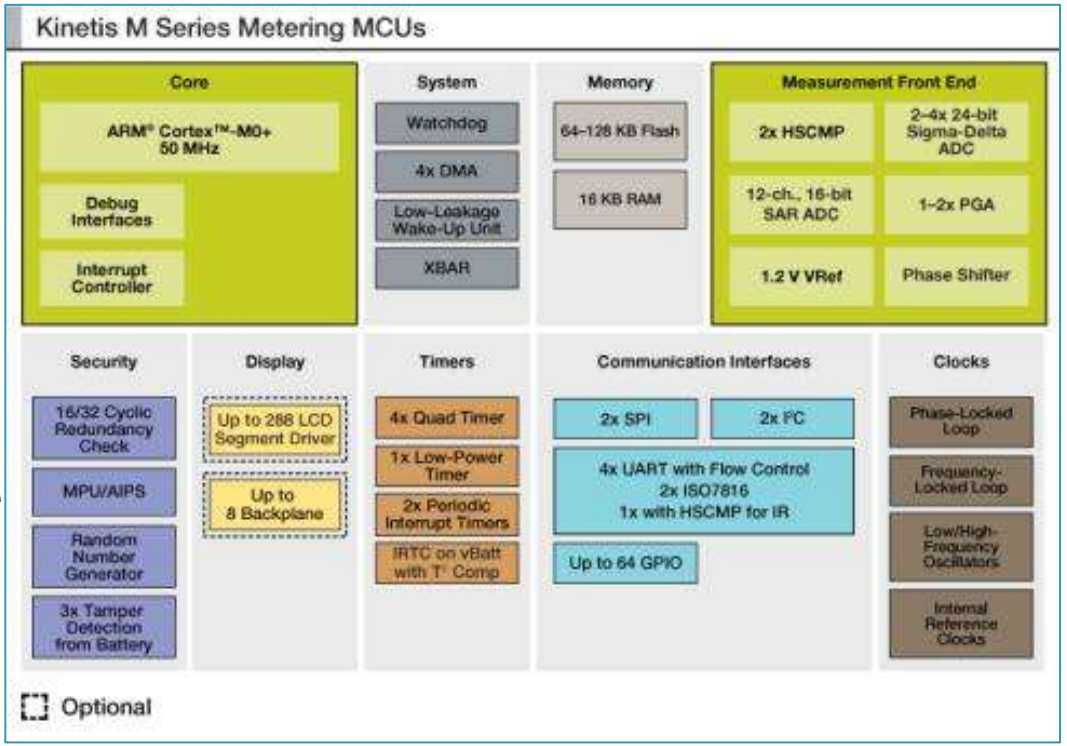
Kinetis M - Highest precision and security

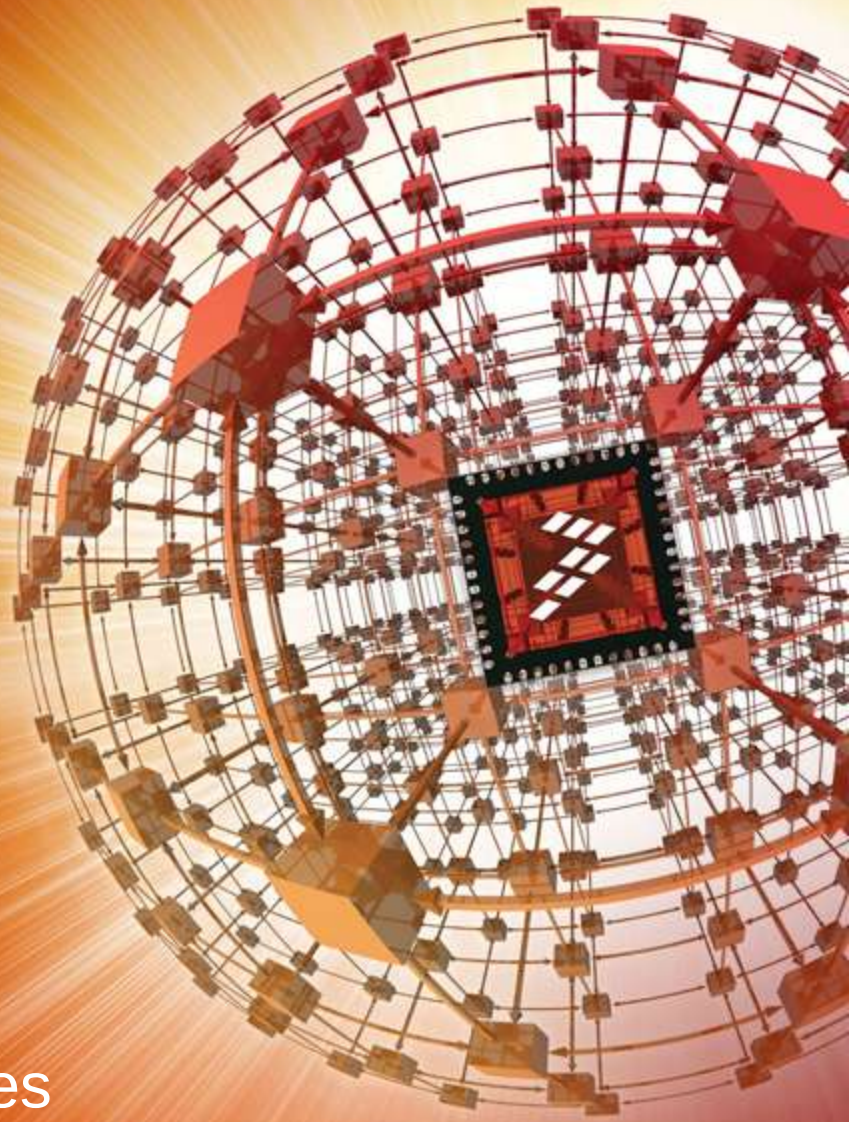
- **Up to 48 MHz Cortex™-M0+ with Ultra-Low-Power**
- **Analog Front End**
  - 24-bit sigma delta ADC with 94 dB SNR
  - Programmable gain amplifier with gains from 1 to 32 with low temperature drift
  - High precision internal voltage reference with low temperature drift
- **Security**
  - Tamper detection with time stamping
  - Random number generator, memory protection unit
- **Interfaces**
  - LCD segment driver up to 288 (8x36) segments
  - High accuracy RTC +5 ppm over temperature range
  - 4x UART, 2x SPI, 2x IIC



Kinetis W Series

From Antenna to Bits

with ARM® Cortex™-M0+ & Cortex™-M4



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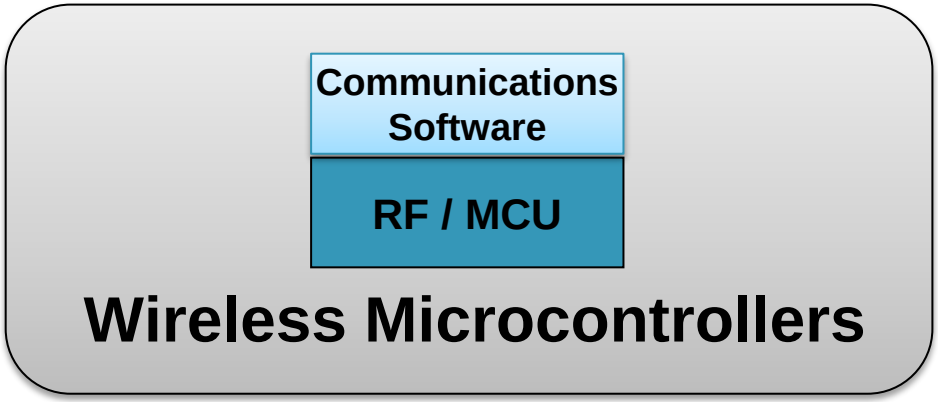
Freescale Wireless Connectivity Strategy

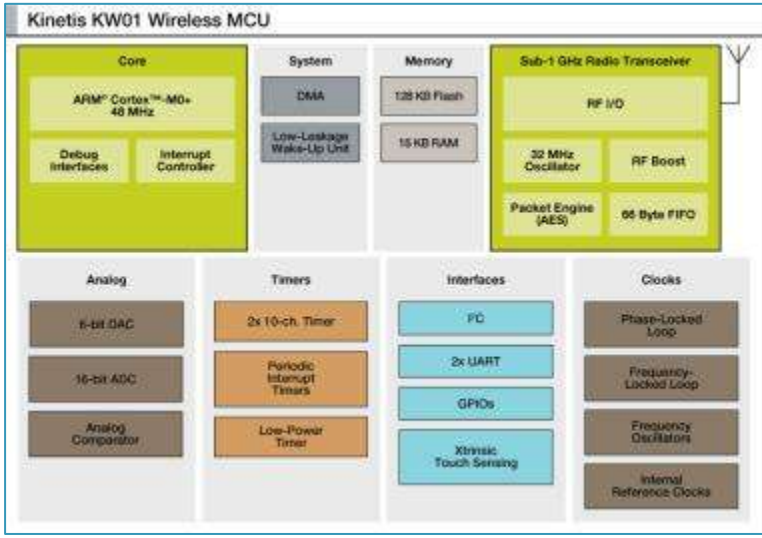
To provide all wireless solutions (from antenna to bits) required for control and monitoring applications in consumer, residential, metering, medical and industrial applications.

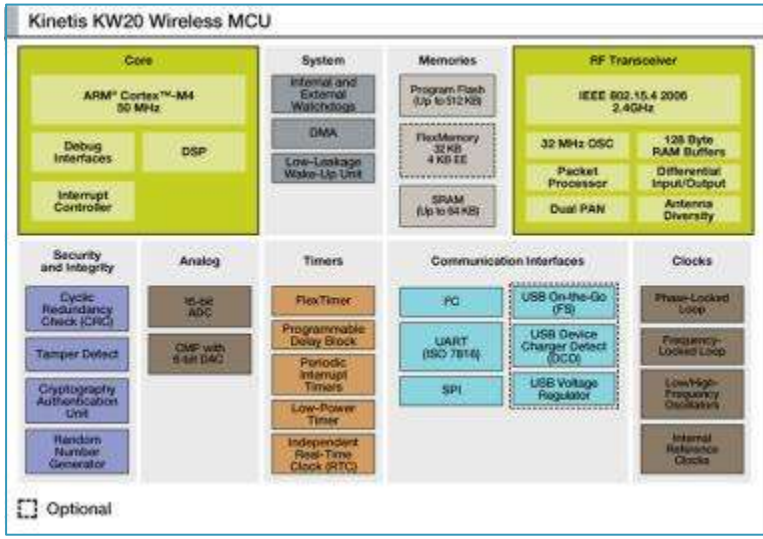


- All ISM frequency bands: **315 MHz, 434 MHz, 868 MHz, 915 MHz, 2.4 GHz**
- **Scalable wireless protocol**: From simple point-to-point lightweight protocol, up to full ZigBee-compliant applications.

Kinetis W – ARM® Cortex™-M & RF Transceiver

- KW01
  - Up to 48 MHz Cortex™-M0+ with Ultra-Low-Power
  - RF transceiver supports 290-340 MHz, 424-510 MHz, and 862-1020 MHz frequency bands
- KW20
  - Up to 50 MHz Cortex™-M4 with 16-channel-DMA
  - Highly integrated 2.4 GHz RF transceiver
  - 802.15.4 Packet processor





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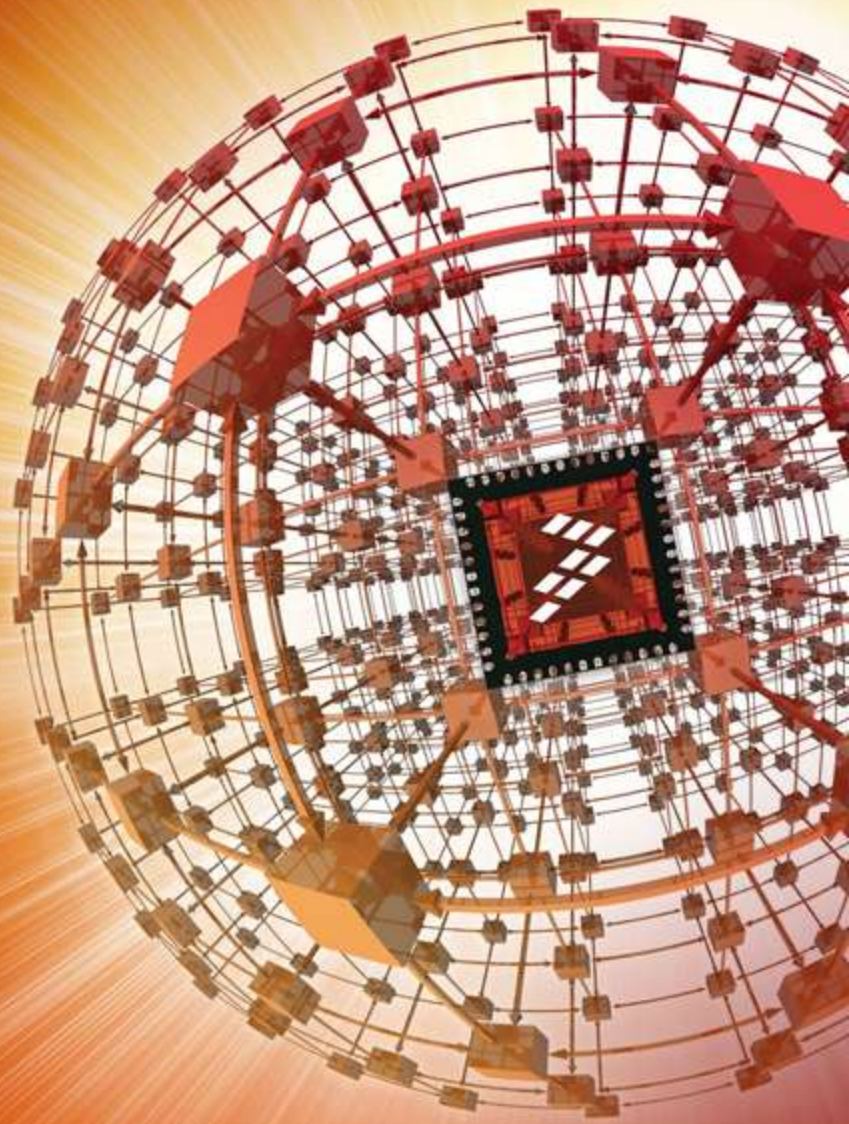
2.4GHz Protocol Stack Comparison

Feature	SMAC	SynkroRF	ZigBee™ RF4CE	ZigBee™ 2007-PRO	ZigBee™ IP
Typical Applications	Cable Replacement	Cable Replacement	RF Remote Control	Home Automation	Smart Energy 2.0
	Wireless Toys and Games	Wireless Control	Home Entertainment and Control	Smart Energy 1.x	
			Home Automation	Building Automation	
				Health Care	
Network Stack	No	Yes	Yes	Yes	Yes
Network Profiles	No	No	Yes	Yes	Yes
Memory Requirements	4-8K	32K	<40K	80-100K	256K min
Network Topology	Point-to-Point	Co-existing Star	Co-existing Star	Tree	Tree
	Star			Mesh	Mesh
Typical # of Nodes	2-100	32 per Controlled Device	32 per Target Device	2-250 ZigBee	IP limit
				2-1000 ZigBee Pro	
Typical IC Cost	$1-2	$2-3	$2-3	$3-4	$4-5
Typical Data Throughput	50-115K	70-100K	70-100K	30-70K	30-70K

Sub-GHz Protocol Stack Comparison

Feature	SMAC	802.15.4g	IPv6	Wireless M-Bus
Typical Application	Cable Replacement	Wireless Meter Reading	Internet of Things M2M	Wireless Meter Reading (Europe)
	Medical	Building Control		
		Medical		
Standard	Proprietary	IEEE 802.15.4	6lowPAN	EN 13757-4:2005
Network Stack	No	No	Yes	Yes
Network Profiles	No	No	No	No
Memory Requirements	4-8K	32K	128K	16-32K
Network Topology	Point to Point	Peer-to-Peer	IP	Point-to-Point
	Star	Tree		Star
		Mesh		
Typical # of Nodes	2-100	2-100	Not limited	2-100
Data Rate	200 Kbps	50-200 Kbps	1-600Kbps	32-100 Kbps
Protocol Stack Provider	Freescale	3rd Party	3rd Party	3rd Party

Kinetis Differentiators



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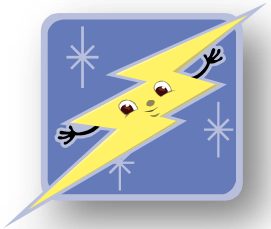
Kinetis Key Differentiators in Technology

Security

- Hardware-accelerated security algorithms and tamper detection
- Secure communication and safe operation
- Unique device ID for tracing and tracking



Performance

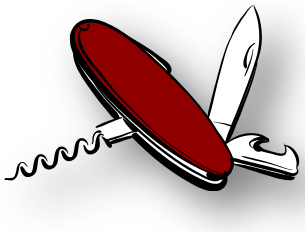
- Non-blocking bus-matrix-switch
- *K Series* with DSP extension in all sub-families
- FLASH memory controller
- MPU/DMA

Low Power

- ~50µA/MHz for *Kinetis L*
- ~200 µA/MHz for *Kinetis K*
- Up to 11 flexible power-modes
- low-power wake-up logic.
- Supply voltage from 1.71V to 3.6V, resp. 2.7V to 5.5V

Mixed Signal

- 16-Bit ADCs
- 12-bit DACs,
- High Speed comparators
- Programmable Gain Amplifiers
- Precision Voltage Reference

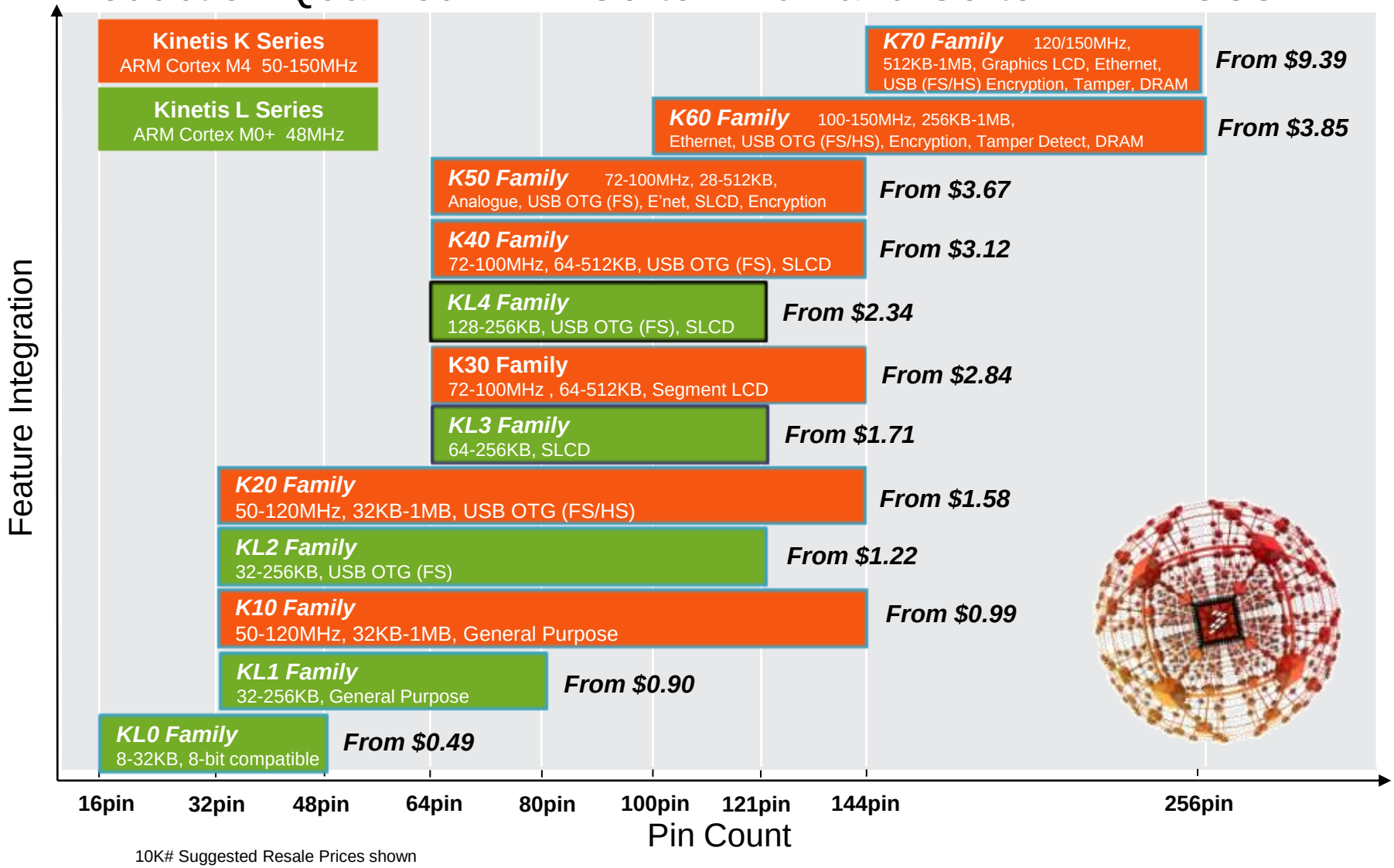


Special Features

- Flex-Memory – up to 10M erase/write cycles
- Touch-sensing with API library
- EEPROM with Kinetis *E Series*
- 24b Sigma Delta ADC in *M Series*
- RF transceiver (sub-1GHz & 2.4GHz) in *W Series*

...netis Portfolio Scalability

Production Qualified ARM Cortex-M0+ and Cortex-M4 MCUs



10K# Suggested Resale Prices shown

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netis K/L Series: Packaging

Kinetis K Series Package
Kinetis L Series Package

Common Packages

32QFN
5 x 5 mm
0.5mm pitch
(K10/20)
(KL0/1/2)

48QFN
7 x 7 mm
0.5mm pitch
(K10/20)
(KL0/1*/2*)

48LQFP
7 x 7 mm
0.55mm pitch
(K10/20)
(KL0/1*/2*)

64LQFP
10 x 10 mm
0.5mm pitch
(K10/20/30/40/50)
(KL1/2/3/4)

80LQFP
12 x 12 mm
0.5mm pitch
(K10/20/30/40/50)
(KL1/2/3*/4*)

100LQFP
14 x 14 mm
0.5mm pitch
(K10/20/30/40/50/60)
(KL3/4)

64MAPBGA
5 x 5 mm
0.5mm pitch
(K10/20)
(KL1*/2*/3*/4*)

121MAPBGA
8 x 8 mm
0.65mm pitch
(K10/20/30/40/50/60)
(KL2/3/4)

Kinetis L Series Only

20WLCSP
2x2x0.56 mm
0.4mm pitch
(KL0)

25WLCSP
2.3x2.3x0.56 mm
0.4mm pitch
(KL0*)

35WLCSP
2.55x3x0.56 mm
0.4mm pitch
(KL1*/2*)

16QFN
3x3x1 mm
0.5mm pitch
(KL02)

24QFN
4 x4x1 mm
0.5mm pitch
(KL0x)

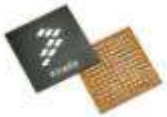
32LQFP
7 x 7 mm
0.8mm pitch
(KL0)

Kinetis K Series Only

90WLCSP
3.9x4.4x0.56 mm
0.4mm pitch
(K10/20*)

110WLCSP
3.9x4.4x0.56 mm
0.4mm pitch
(K10/20*)

120WLCSP
5.3x5.3x0.56 mm
0.4mm pitch
(K10/20/60)



143WLCSP
6.5x5.6x0.56 mm
0.4mm pitch
(K61)

144LQFP
20 x 20 mm
0.5mm pitch
(K10/20/30/40/50/60)

144MAPBGA
13 x 13 mm
1.0mm pitch
(K10/20/30/40/50/60)

256MAPBGA
17 x 17 mm
1.0mm pitch
(K60/70)

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*proposed

Freescale Product Longevity Program

- The embedded market needs **long-term product support**
- Freescale has a longstanding track record of **providing long-term production support** for our products
- Freescale is pleased to introduce a formal **product longevity program** for the market segments we serve
  - For the automotive and medical segments, Freescale will make a broad range of program devices available for a minimum of **15 years**
  - For all other market segments in which Freescale participates, Freescale will make a broad range of devices available for a minimum of **10 years**
  - Life cycles begin at the time of launch
- For terms and conditions and to see a list of participating **Freescale products** available under this program: www.freescale.com/productlongevity

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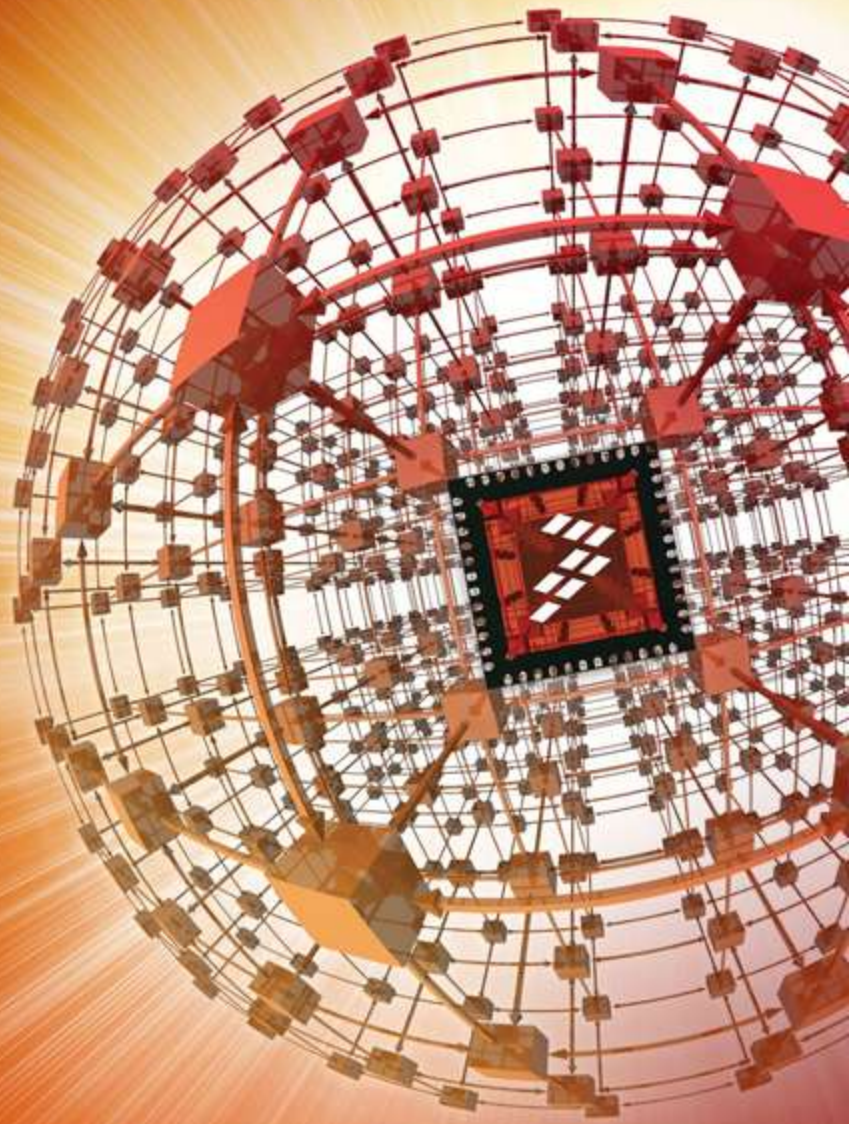
Kinetis Enablement Overview



www.freescale.com/kinetis

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Kinetis Enablement Overview

Kinetis MCU

ARM Cortex-M0+ Core
48MHz, 1.77 CoreMark/MHz, 2-Stage Pipeline, 1-Cycle GPIO, Micro Trace Buffer

ARM Cortex-M4 Core
50-150MHz, 3.40 CoreMark/MHz, HW-divide, MAC, DSP-commands, FPU option

Differentiators
Low-power, Performance, Flex-Memory, Mixed-Signal, Security, HMI Features

Special Functions
Analog Pre-Processing, 24b-Sigma Delta ADC, sub -1GHz & 2.4 GHz Transceiver

Enablement

Freescale Bundle

Hardware
Freedom board, Tower Platform

Software
CodeWarrior, Processor Expert, Driver Suite, eGUI, PEG, FreeMASTER

RTOS
MQX, MQX Lite

ARM Eco System

Kinetis Development Hardware

Freedom Platform

- The new Freescale platform for Kinetis L and Kinetis K microcontroller
- Compatible with Arduino shields

Tower System

- The established and proven platform with highest flexibility and re-usability
- Over 50 add-on boards available.

Device Specific

- Evaluation boards addressing special functions and capabilities of Kinetis devices

Reference Designs

- Home Energy Gateway, 1ph Meter, 3ph Meter, pre-/post-paid Meter, Home Area Network, Home Display, …

Kinetis tools by our Channel Partners

Avnet WiGo

- Freedom Add-on board
- WiFi-Module & LiPo Battery
- Many sensors accessible through web-server

Future - Intersil

- Intersil high-precision analog & power devices
  - Pressure/Strain
  - Thermocouple
  - Power
- Freedom add-on board

Arrow Cloud Connect

- Free online tool chain
- Supports Freedom Platform
- Code library & knowledge base
- Etherios Internet of Things Interface

Kinetis Development Software

IDE

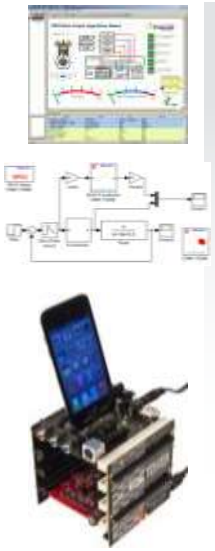
- **CodeWarrior** – eclipse-based *Basic, Standard, Professional* and *Free* Suite with 128k code size limit
- **Processor Expert**/Driver Suite – configuration and code generation tool

RTOS

- **MQX** - Free real-time operating system with USB & Ethernet stacks and file system
- **MQX Lite** - Free and lightweight RTOS for small microcontrollers

Middleware

- **eGui** – Free and lightweight graphic frame-work for small microcontrollers
- **PEG** - high performance, high value tool for medium to high end MCUs with a licence fee associated



Libraries & Tools

- **FreeMaster** - Real-time monitor and control of an app
- **Math & Motor Control Lib** - Wide group of algorithms
- **Made For iPod** - supports development and rapid prototyping of electronic accessories for iPod, iPhone and iPad devices

The ARM® Eco System

Use the broad support for ARM® microcontroller by many companies.

- Re-use your existing…

GNU Tools

MCU Solution Advisor web application

www.freescale.com/SolutionAdvisor

The Solution Advisor helps you quickly identify best-fit processor solutions from the following portfolios:

- 8-bit MCU (microcontroller)
- Kinetis K Series MCU
- Kinetis L Series MCU
- PX Series MCU
- Freescale DSC (digital signal controller)

Interactive MCU selector guide based on:

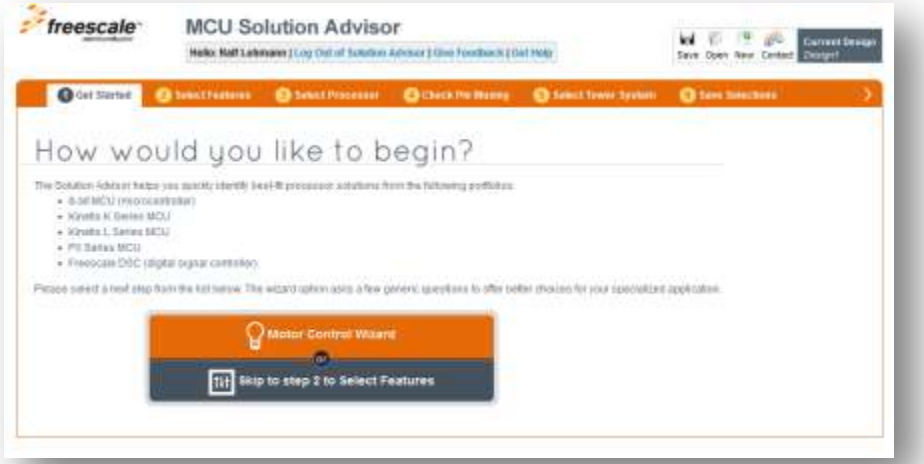
- operating characteristics
- packaging options
- memory and FlexMemory requirements
- a library of configurable hardware modules

Dynamic, sortable, downloadable solution matrix

Pin Muxing verification and suggested placement ***(Full functionality will be restored soon)***

Session and Contact Management
Save, restore, invite, and share

Generates session summary reports



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Industrial
Medical
Consumer

Some Success Stories & Why Kinetis Won

Blood Glucose
Analog & Low Power

WiFi Gateway
MQX & Memory

AC Motor
Performance & IP

E-Meter
Scalability & IP

Wireless Power
Flexibility & SW

Smoke Detector
BOM cost & Low Power

Money Counter
Features & BOM cost

Gaming Mouse
Low Power & USB

Fitness Watch
Features & Timing

Infusion Pump
Tools & Support

Coffee Maker
Scalability & Features

Air Bed Pump
Performance & Peripherals

Card Reader
Security & IP

HVAC Control
ADC & Analog

Guitar Effect
NAND & Audio

KINETIS SERIES

DESIGN POTENTIAL. REALIZED

Ultra-Scalable	Mixed Signal	Energy Efficiency
Market's most scalable portfolio of low-power ARM Cortex-M0+ and ARM Cortex-M4 MCUs with over 400 hardware and software compatible devices	Exceptional integration with fast 16-bit ADCs, DACs, PGAs and more. Powerful, cost-effective signal conversion, conditioning and control	The world's most energy-efficient and scalable MCU Series with power optimized peripherals and flexible power modes

Comprehensive Enablement

Freescale MQX RTOS, Tower System and Eclipse-based CodeWarrior IDE, as well as Kinetis support from most ARM ecosystem providers

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ARM POWERED®


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