

NXP MICROCONTROLLERS OVERVIEW

JAMES HUANG
REGIONAL MARKETING, BL MICR
GREATER CHINA

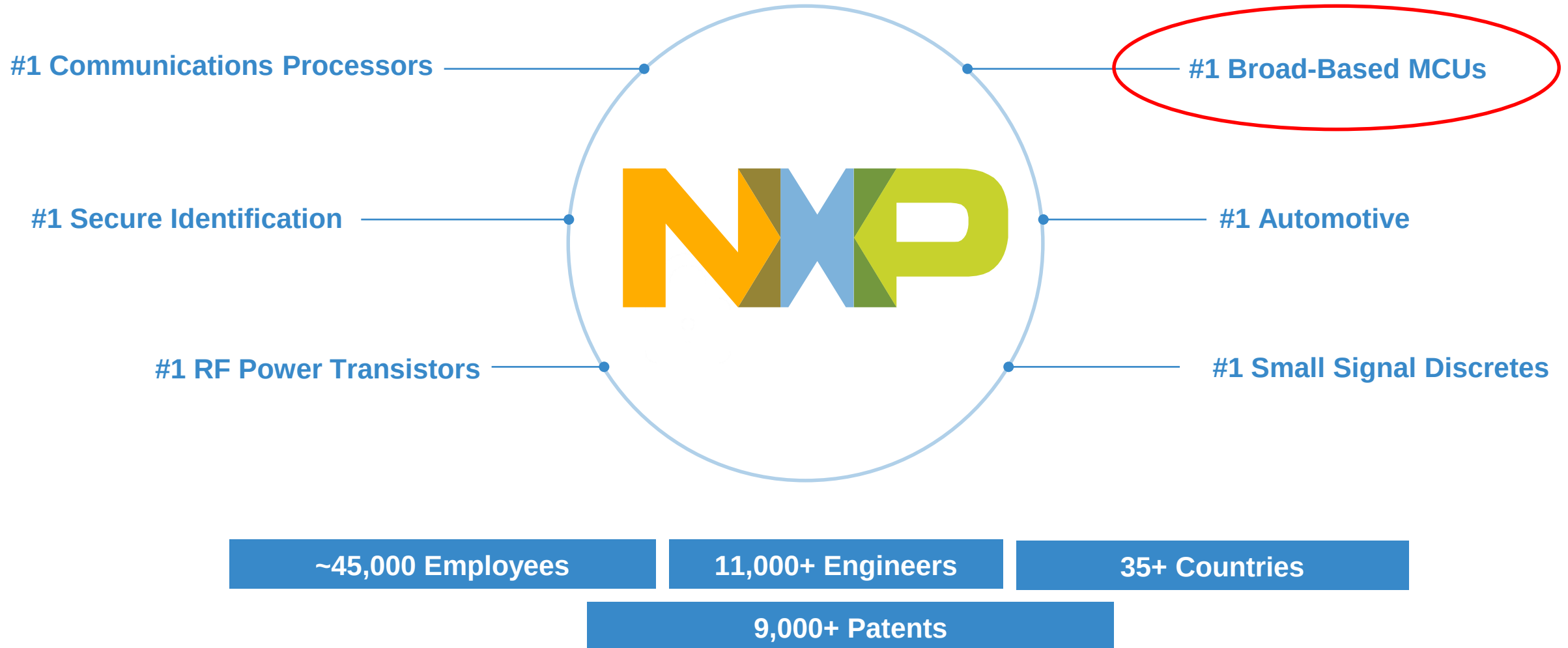
MAY 2017



SECURE CONNECTIONS
FOR A SMARTER WORLD

NXP Semiconductors

NXP MICROCONTROLLERS A New Position of Strength



MICR BL

Why Customers Choose Us

- Comprehensive portfolio supporting the diverse IoT landscape
- Extensive software and development environment
- Industry leading customer support, quality, and longevity
- Broad ecosystem of partners enabling system solutions
- Ease of use solutions tailored for mass market

Example Customers



Products

Kinetis & LPC 32-bit
ARM® Microcontrollers

i.MX ARM® Applications
Processors

Applications



Wearable / Healthcare

- Health / Fitness & Wireless Healthcare
- Diabetes & Cardiac Care
- Diagnostics & therapy



Smart Home

- Smart meters & grid
- Integrated wireless connectivity solutions
- Home energy control



Smart Accessories

- Game controllers and consoles
- Wearable computing
- eReaders, tablets, portable navigation



Vehicle Networking & Information

- Infotainment, software define radio
- Navigation systems, E-call



Home Appliances

- Energy efficient refrigerators, dishwashers
- Human-machine interface
- Connected appliances

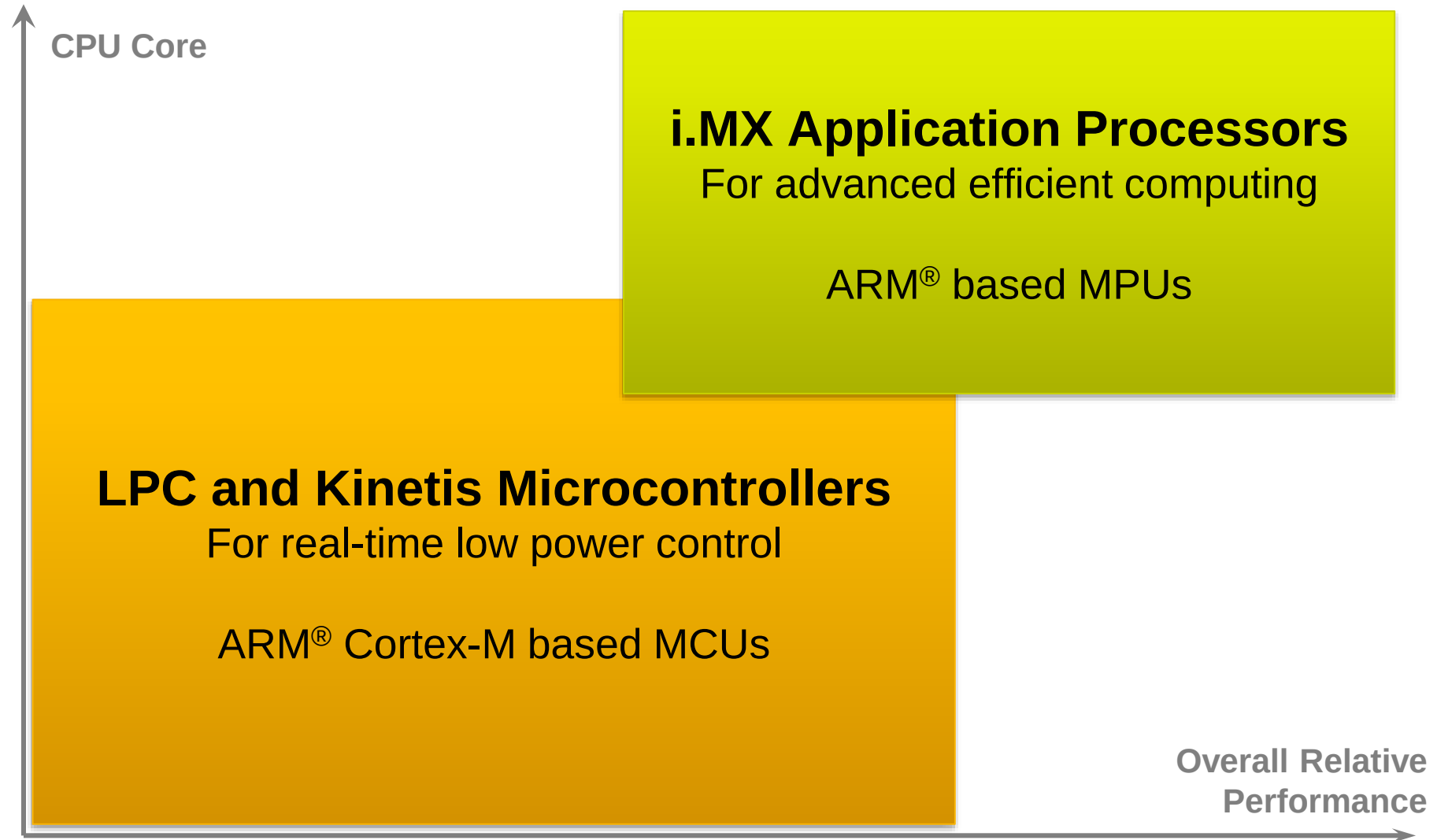


Factory Automation & Drives

- Machine-to-machine
- Motor control
- Industrial networking

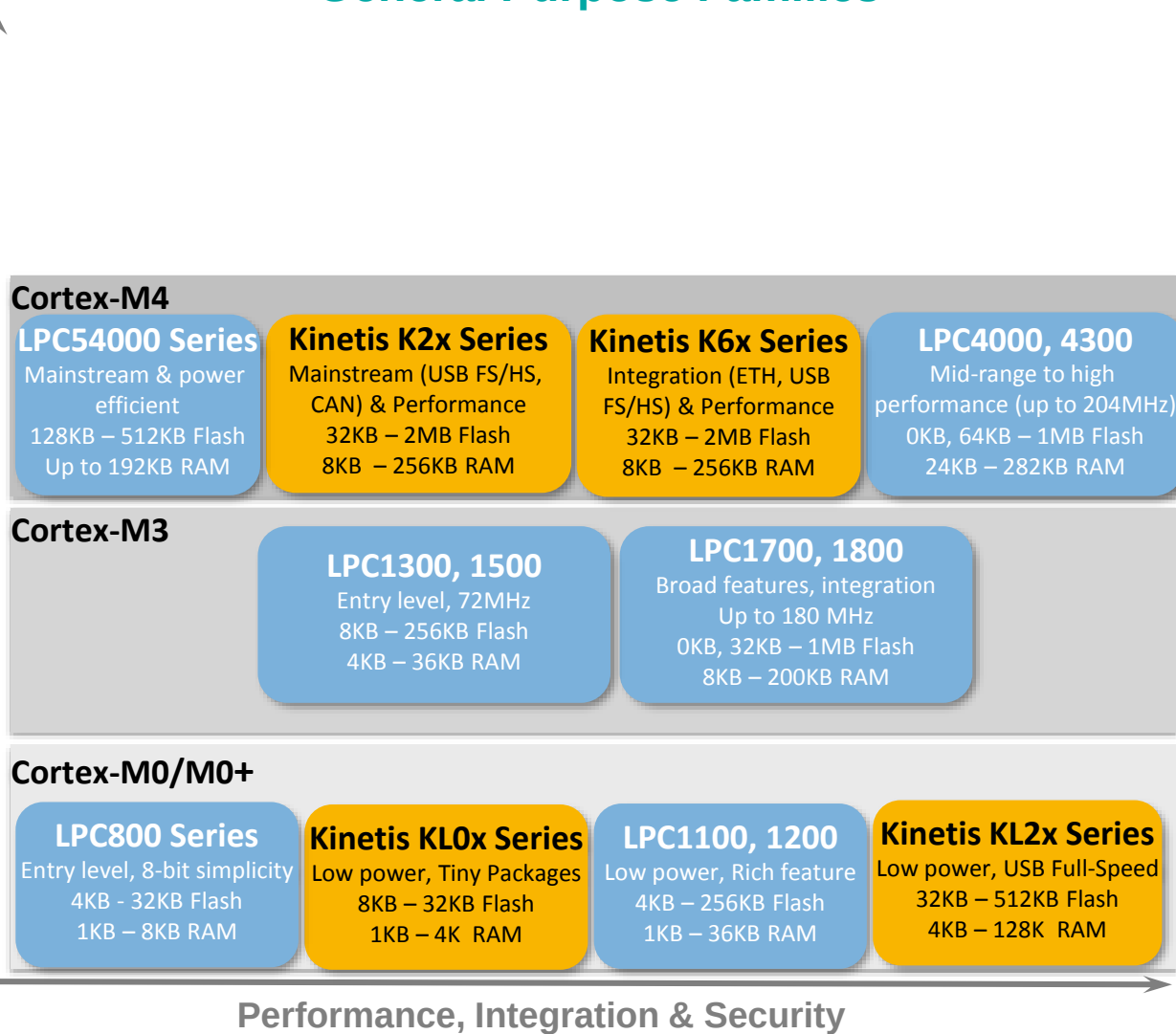


Scalable ARM based Processors and Controllers

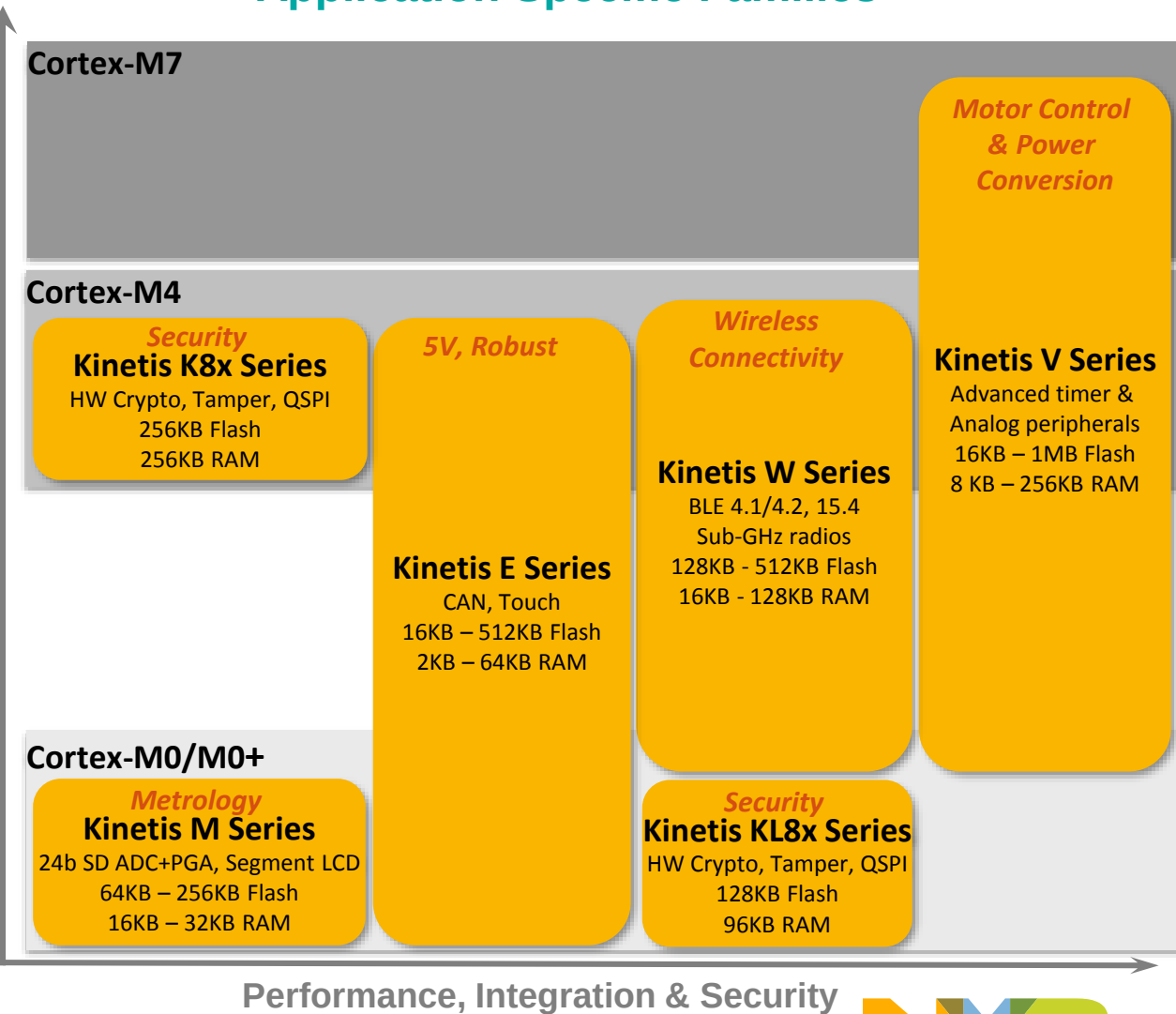


Kinetis + LPC: A Powerhouse Portfolio of ARM-based MCUs

General Purpose Families



Application Specific Families



NXP ARM Cortex-M MCUs Powerhouse Portfolio

ATTRIBUTES		PORTFOLIO			TARGET APPLICATIONS
		M0/M0+	M3/M4	M7	
General Purpose	Performance efficiency		LPC5410x, M4 w/M0+ Copr. 100MHz Power Efficiency up to 512K Flash, 104K SRAM	LPC5411x, M4 w/M0+ Copr. Flex Comm Interfaces, Voice Triggering, X-less USB, up to 256K Flash, 192K SRAM	Always-on devices Voice control IoT
	Advanced integration	KL80/81, M0+ HW Security Crypto, USB, FlexIO up to 128K Flash, 96K SRAM	K64/66/65, M4 ENET, USB FS/HS, Security (K65) up to 2MB Flash, 256K SRAM	K80/81, M4 HW Security Crypto, Tamper, QSPI, USB up to 256K Flash, 256K SRAM	Industrial control Payment, Metering Wearables, Display UI Printers
	Mainstream	LPC1100, M0+/M0 Options CAN or USB, EEPROM up to 256K Flash, 36K SRAM	LPC1800, M3 180MHz, 2x HS USB, LCD, CAN, ENET Flashless, up to 1M Flash, 200K SRAM	LPC4000, M4 Graphic LCD, FS USB, ENET, CAN up to 512K Flash, 96K SRAM	Consumer/Gaming Accessories Wearables Home Automation Data Concentrators Industrial
	Low-cost & Small Form Factor	LPC81x/82x, M0+ 30MHz, ADC, Low Pin Count up to 32K Flash, 8K RAM	LPC1700, M3 Graphics LCD, FS USB, ENET, CAN up to 512K Flash, 96K SRAM	LPC1500, M3 CAN, Advanced Analog,PWMs up to 256K Flash, 36K RAM	Wake-up unit System task/Co-processor Power Management Control System
Application Specific	Wireless Connectivity	KW20/30/40Z, M0+ 802.15.4+BLE 4.1 Radio, DC/DC 160K Flash, 20K RAM	KW21/31/41Z, M0+ 802.15.4+BLE 4.2 Radio, DC/DC, Balun Up to 512K Flash, Up to 128K RAM	KW2xD, M4 802.15.4 Radio, Thread Up to 512K Flash & 64K RAM	Home Automation Thread BLE Apple HomeKit
	Motor Control & Power Conversion	KV1x, M0+ BLDC, entry-level PMSM Up to 128K Flash, Up to 16K RAM	KV3x, M4 Mid-range PMSM, UPS power control, KMS Up to 512K Flash, Up to 96K RAM	KV4x , M4 High-perf motors, UPS, solar & mid- range AC/DC control, KMS Up to 256K Flash, Up to 32K RAM	BLDC / PMSM motors Photo voltaic Industrial Controls
	5V Robust	KE02/4/6, M0+ ADC, CAN (KE06) Up to 128K Flash, Up to 16K RAM, 256B EEPROM	KE1xF (M4F) / KE1xZ (M0+) Higher perf. & more comm. interfaces 256K / 512K Flash, 32K / 64K RAM, 2xCAN, new TSI (Z)		Appliance Smart Lightning

(not a complete portfolio summary)

KMS = Kinetis Motor Suite



Strength in Product Longevity

- ▶ NXP (both NXP LPC and former Freescale) have longstanding track records of **providing long-term production support** for our products
- ▶ NXP has a **formal product longevity program** for the market segments we serve
 - For the automotive and medical segments, NXP will make a broad range of solutions available for a minimum of **15 years**
 - For all other market segments in which NXP participates, NXP will make a broad range of solutions available for a minimum of **10 years**
 - **Life cycles** begin at the time of launch
 - Includes NXP's standard end-of-life notification policy
- ▶ For a complete list of participating products, visit, nxp.com/productlongevity



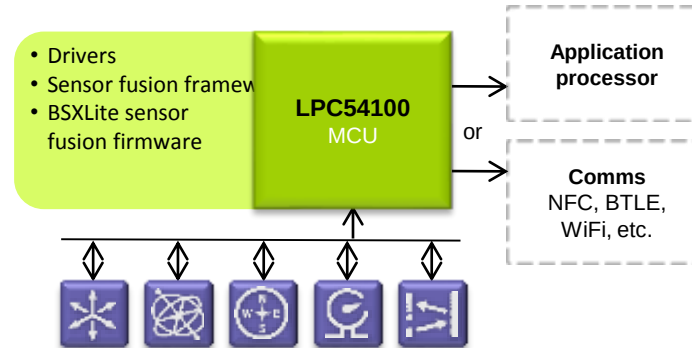
LPC REFERENCE DESIGN/DEMOS



Reference Design 1 — Wearable

Features:

- Targeting sports, environment and health
- Support NFC, Single BT BLE & Dual band BT
- Support true color 160*128 OLED
- Onboard 1MB SPI Flash and 1Mbit SRAM
- Buzzer and vibration motor
- Easy to measure power consumption

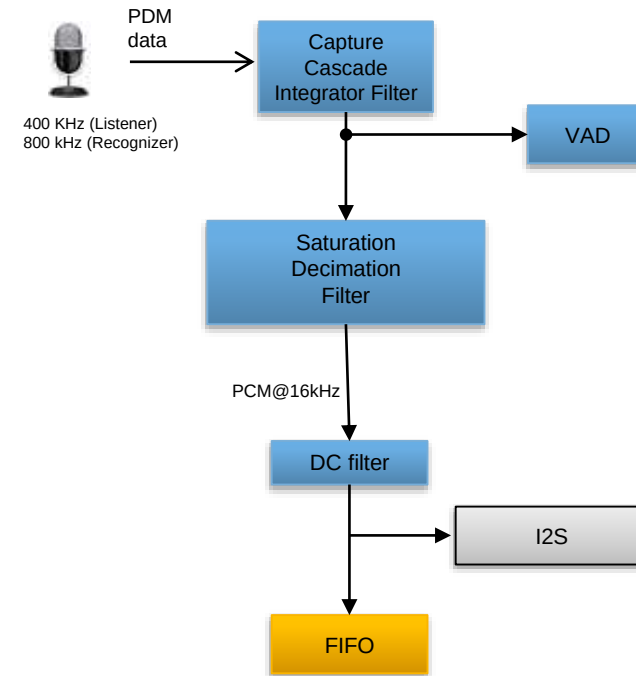


Reference Design 2 — Voice triggering implementation with H/W VAD

Features:

- Stereo PDM-PCM decimation, DC filtering, saturation
- H/W VAD Wave Envelope and floor noise detection

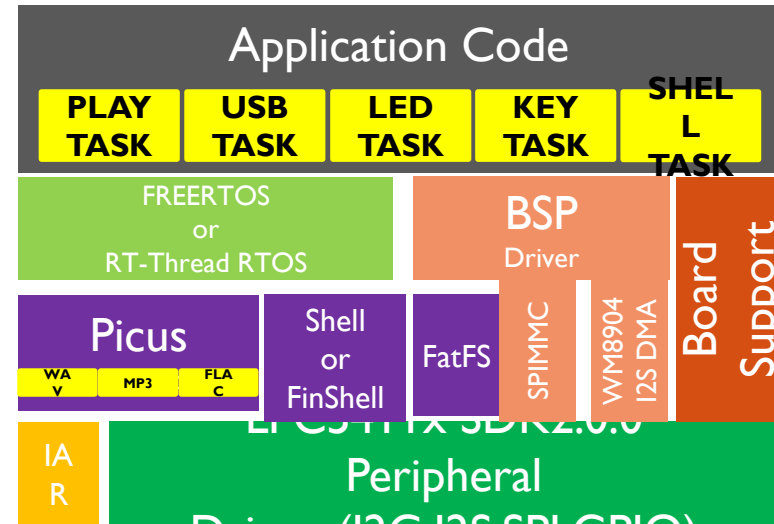
Voice Detection Stages		Uses	Average current
<u>Stage 1</u>	Always on listening • Detects audio envelope change • No audio batching • Runs only under quiet environment	• DMIC at lowest sample rate • VAD • WD osc (600 kHz)	*<50μA
<u>Stage 2</u>	Detects possible speech • Audio data batching • Speech envelope detection	• FRO (12 MHz) and nominal DMIC sample rate (800kHz) • M4 • DMA	*<300μA
<u>Stage 3</u>	Recognizer • Trigger command recognition	• FRO (48 MHz) • M4	*<1.5mA



Reference Design 4 — Audio Decoder

Features:

- Based on LPC5411x series
- Single CM4F for audio decoder
- Based on SDK2.0.0 and IAR
- Based on xFSL Picus Audio decoder library
- Support FreeRTOS with Shell & FatFS
- SPI connect with TFcard
- Support wav, mp3, flac
- Support play, pause, next song, volume +/-
- USB MSC update music



KINETIS REFERENCE DESIGN/DEMOS

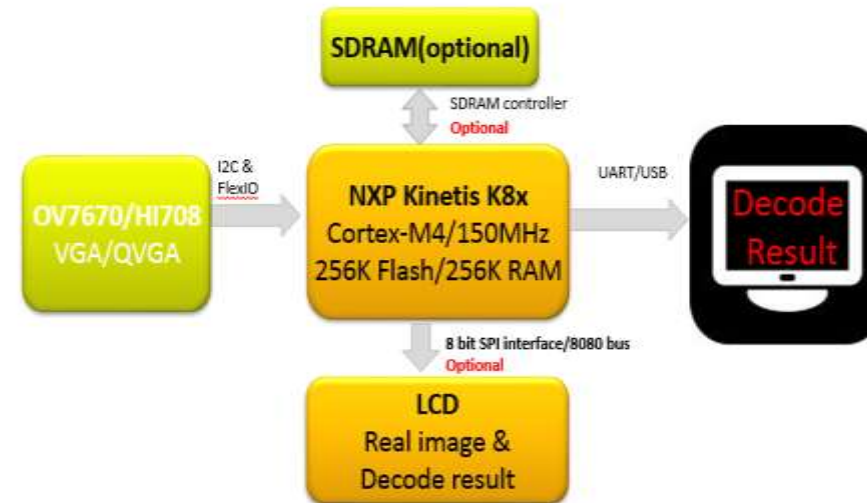
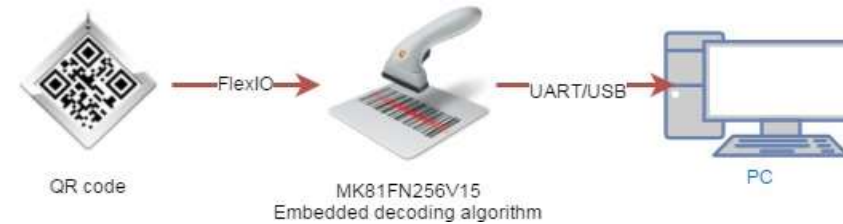


Reference Design 1 – QR Decoder

QR decoder can quickly scan and decode both 1D and 2D barcode information. It is based on the NXP tower system, utilizes the Kinetis SDK FlexIO camera driver to bring in image data and display the decode result on TWR-LCD and/or a terminal.

Supported Symbolologies:

- QR(Quick Response Code)
- UPC-A UPC-E
- EAN8 EAN13 EAN128
- ITF-6 ITF-14 Interleaved 2 to 5
- CODE39 CODE128
- CodaBar



Reference Design 2 – Smart Plug

- Based on the Kinetis MKM14Z64 MCU
 - a low-power high-performance 32-bit ARM® Cortex™ - M0+ core @50MHz
- Cost optimized solution with single-phase meter and wireless control.
- Includes two parts
 - Metering part is used to measure electronic power in single-phase
 - WiFi part is used for wireless control.
- Users can use application in an android phone to check plug status, e.g current active power, reactive power, grid frequency, history run time, etc, and control it by setting it to ON/Off, setting timer for ON/Off at fixed time.



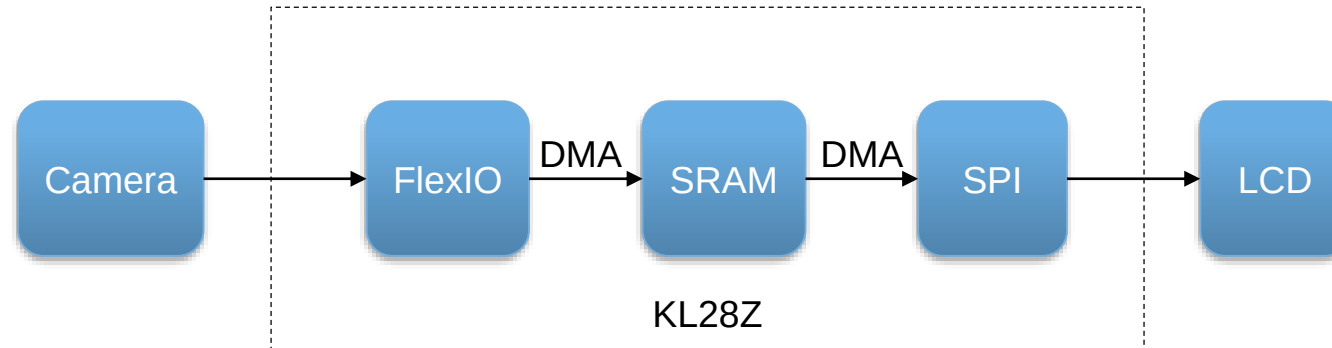
Reference Design 3 – Three Phase Power Meter

- Low cost NXP ARM Cortex™ M0+ SoC KM14 for metering
- Conforms to China National Grid Standard
- High performance of 0.5% accuracy for Active and Reactive energy under full temperature range
- ESD performance up to +/- 12KV
- High accuracy RTC clocking with 5ppm resolution



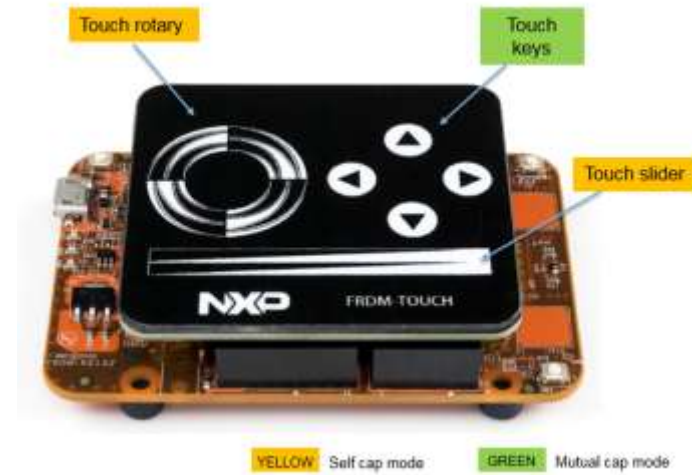
Demo 1 - FlexIO Camera Demo

- Based on FRDM-KL28Z EVK board.
- FlexIO emulates camera interface
- Captures 320x240 QVGA images via 8-bit width data bus.
- Displays images on a TFT LCD via SPI bus.
- The sample rate is up to 15fps.



Demo 3 – New TSI Demo

- FRDM-TOUCH is a shield board connected to the FRDM-KE15Z board which integrates new generation touch sensing interface
 - supporting both self capacitance and mutual capacitance mode
 - 16-bit conversion resolution and configurable sensitivity to handle different overlay material, thickness
 - **IEC61000-4-6 certified (both 3V/10V), immunity to a wide range of noise**
- Demo touch keys, touch slider, rotary & touch key matrix
- When you touch the keys on FRDM-TOUCH board, the RGB LED is turned on. When you touch the slider, the blue LED will gradually illuminate based on the distance your finger moved on the touch slider



FRDM-TOUCH



TSI-EVB





INTRODUCING LPC MICROCONTROLLERS FOR THE BROAD MARKET



Where Does LPC Fit in the Market



Maintain Global Leadership in the Broad Market by Continuing to Invest in Innovative & Differentiated Technologies



LPC800 MCU Series

- Cortex-M0+ up to 30 MHz
- Differentiated features
- From 8 to 64K flash range
- Down to TSSOP 16



LPC54000 MCU Series

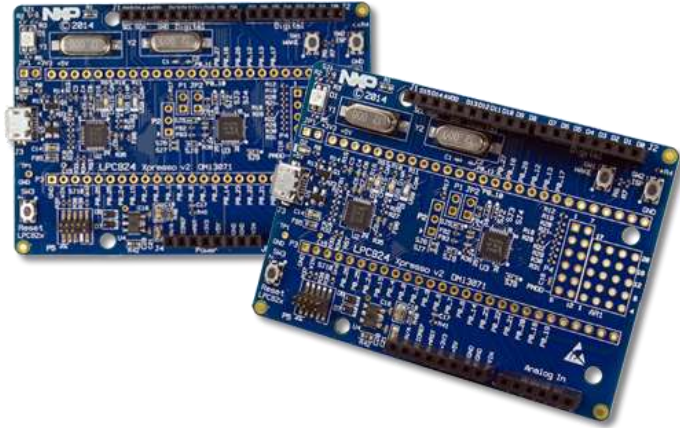
- Cortex-M4 100MHz & 180MHz platforms
- Improved power-efficiency
- Flexible comm. Interfaces
- Advanced Peripheral Integration
- From 128K to 512K Flash



INTRODUCING
LPC800 MCU SERIES
CORTEX-M0+
FOR THE BROAD 8-BIT MARKET



LPC800 Entry-Level Microcontrollers



Expanding our Cortex-M0+ based LPC800 MCU series,

- Addressing market's aggressive move from 8- to 32-bit architecture
- Satisfying need for improved power-efficiency & portfolio scalability
- Simple Code Bundles & ROM drivers
- Differentiated features in a low-price MCU

Entry
LPC800 Series
Cortex-M0+

Q2

LPC845

**Peripheral & Memory
Expansion from
NXP's Popular LPC824**

64K Flash, 8-16K RAM

[QFN, LQFP]

Q3

LPC802

**Addressing the
Growing Demand for
8-bit Alternative MCUs**

16K Flash, 2K RAM

[TSSOP]

Q3

LPC804

**NXP's Game Changing
8-bit Alternative MCU**

32K Flash, 4K RAM

* Information Subject to Change



LPC800 MCU Series

Global Market Success

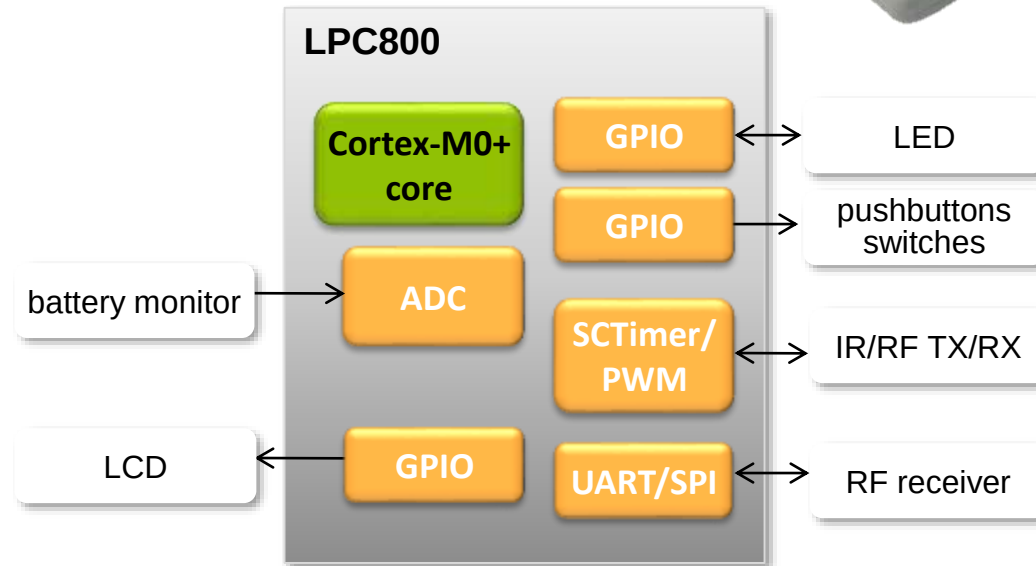
- Low-power Cortex-M0+ based solution
- LPC800 provides
 - ADC for analog battery monitor functionality
 - SCTimer/PWM handles IR/RF signal generation without CPU intervention
 - UART and SPI peripherals for interface to external RF frontends
 - GPIO for interface to
 - LED and LCD control
 - Pushbuttons/switches

Brief Global Overview
More China Success in Later Session

Industrial RFID Tag & Reader

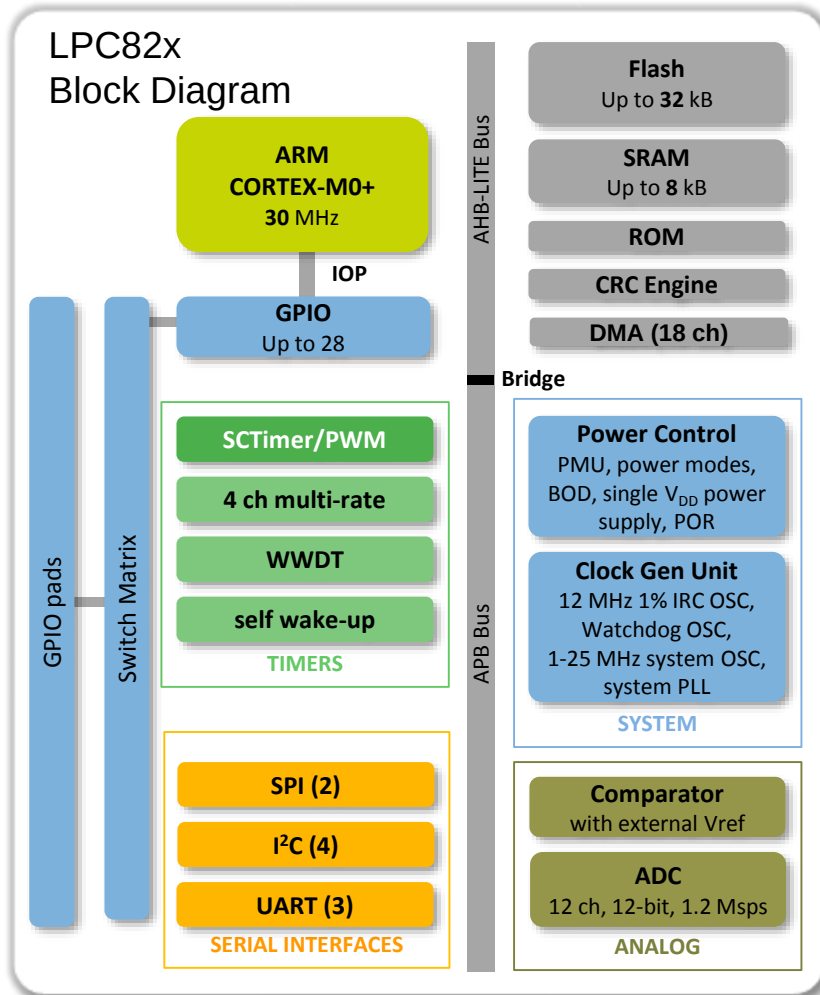


Smart Home Remote Control



LPC82x Overview

Builds on LPC800 Series Power Efficiency & Flexibility



• System

- 30-MHz Cortex-M0+ ARM core
- **32 kB Flash, with 64 B page size**
- 8 kB RAM
- **18-channel DMA**

• Exceptional power efficiency

- **Down to 90 μ A/MHz (active)**
- Five power modes
- **Power profile APIs for simple runtime power optimization**
- Integrated PMU

• Ample serial connectivity

- 4 I²C (1 Fm+, 3 Fm), 2 SPI, 3 UART
- 29 GPIO with **pattern matching**

• **Switch matrix for flexible I/O pin assignment of common blocks**

• Analog

- **1.2 Msps ADC: 12 ch, 12-bit** with flexible triggers to optimize power use
- **Comparator**: four input pins, external or internal VREF

• Timers:

- **SCTimer/PWM**
- multi-rate
- windowed watchdog
- **self wake-up**

• Single power supply: 1.8 to 3.6V

• Temperature range: -40 to +105 °C

• Packages: TSSOP20, HVQFN33

LPC824-Lite Board Introduction

- ❑ NXP LPC824 in HVQFN33 package based on Cortex-M0+ Cores
- ❑ Debug interface
 - On-board CMSIS-DAP debug interface
 - 10 pins JTAG connector, support SWD mode
 - mbed tools and USB virtual COM
- ❑ One adjustable potentiometer
- ❑ Four buttons
- ❑ Eight user LEDs
- ❑ Three debugger LEDs
- ❑ Expansion options
 - Arduino UNO R3-compatible connectors
 - Prototyping area
- ❑ LPC824-Lite Board Kit
 - Schematic (Format: PDF, ORCAD)
 - Chip documents
 - User guide
 - Virtual COM tool and driver
 - Target firmware
 - Example code



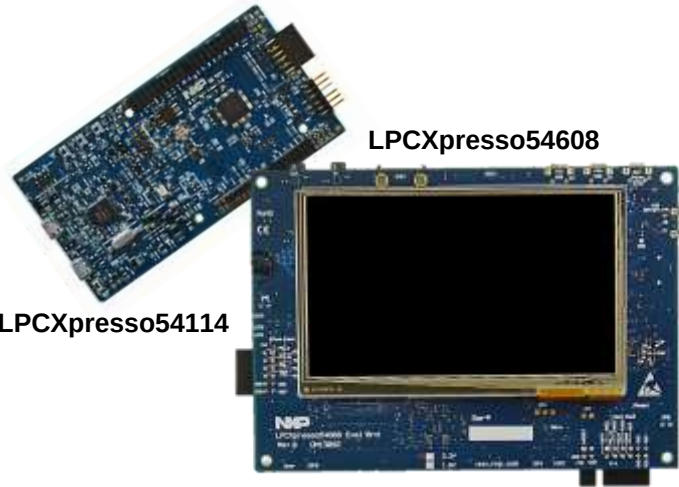


INTRODUCING LPC54000 MCU SERIES CORTEx-M4

FOR THE BROAD MAINSTREAM MARKET



LPC54000 Mainstream Microcontrollers



Expanding our Cortex-M4 based LPC54000 MCU series,

- Address market's need for scalable, mainstream portfolio
- Range of power & performance scalability
- Differentiated set of features

Mainstream
LPC54000 Series
Cortex-M4

Q1

Q2

Q3

Q4

LPC546xx Family of Microcontrollers

**NXP's Latest Mainstream MCU;
Upgrade Path from LPC1700**

Up to 180 MHz Core
256-512K Flash
16K EEPROM
136-200K RAM
Memory Expansion

[LQFP, TFBGA]

**Ultimate Power & Performance
Scalability with Numerous
Connectivity & HMI Options**

Updated Peripherals,
Added Security & Protection

Up to 180 MHz Core
0K Flash
360K RAM
Memory Expansion

[LQFP, TFBGA]

More to Come

**Providing our
developers on
LPC1768
platform with an
upgrade path**

** Information Subject to Change*



Migration to LPC54xxx

Legacy part	Migrating part
LPC23xx/24xx LPC175x/176x (80/100pin)	LPC54605/54606
LPC2000, LPC17xx/40xx (180/208pin)	LPC5460x
LPC213x (64pin)	LPC54101 or LPC5411x

Introducing LPC54000 Series of Power-efficient Microcontrollers

LPC5410x

**Cortex-M4F at
100 MHz**

256-512 KB Flash
104 KB RAM

LPC5411x

**Cortex-M4F at
100 MHz**

128-256 KB Flash
96-192 KB RAM

FRO, FS USB,
DMIC Subsystem

LPC546xx MCU Series

**Broad Family of Products Offering
Scalable performance, advanced integration & flexible connectivity**

Cortex-M4F at 180 MHz

256-512 KB Flash
136-200 KB RAM

FRO, FS/HS USB,
DMIC Subsystem

Six product families,
TFT-LCD Controller,
Ethernet,
CAN2.0 / CAN FD,
Optional Security

Cortex-M4F at 180 MHz

0 KB Flash
360 KB RAM

FRO, FS/HS USB,
DMIC Subsystem

Six product families,
TFT-LCD Controller,
Ethernet,
CAN2.0 / CAN FD,
Optional Security

- **Boards, Samples and Software (IAR/Keil) available today**
- **Mass Production shipping January-2017**

LPC54000 MCU Series

Global Market Success

Brief Global Overview
More China Success in Later Session

In Home Display for Smart Energy



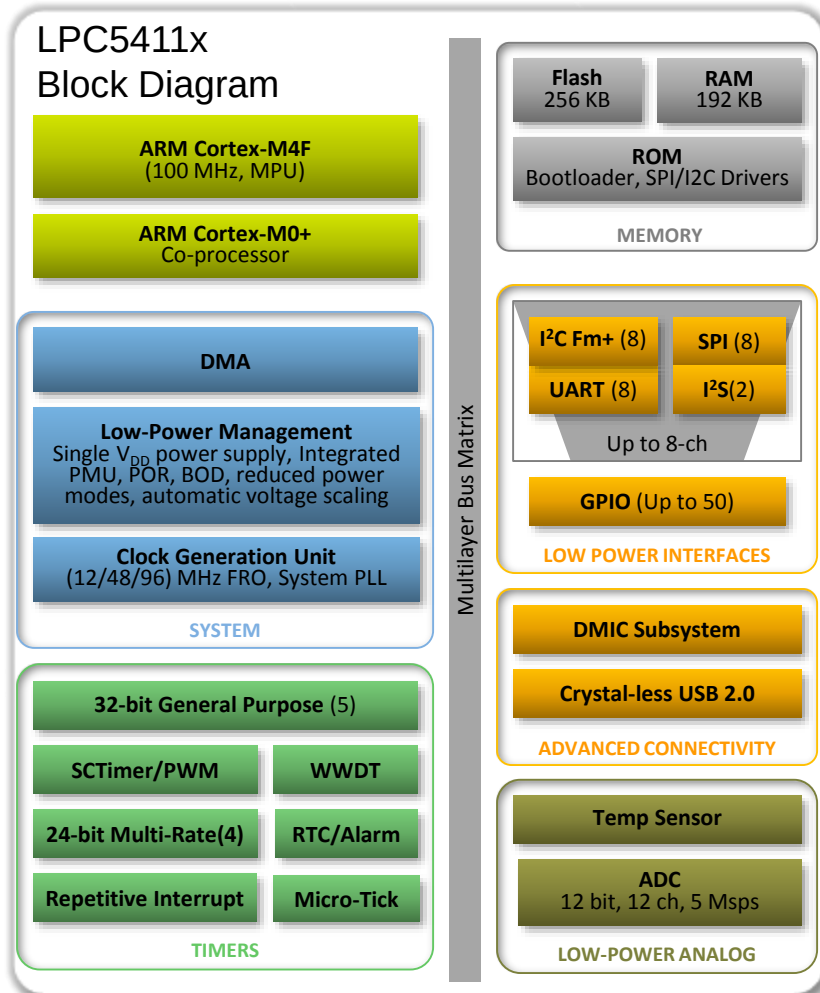
Elderly Care Monitoring w/ Voice Activation



- Power-efficient LPC54000 MCU Series
 - Options for Large SRAM
 - Advanced Peripherals digital sensor interface, external wireless connectivity
- Integrated Graphics Controller, Digital Microphone Subsystem to detect voice triggers

LPC5411x Overview

Low-Power Microcontrollers Based on Cortex-M4 Cores With Optional M0+ Co-processor



- **CPU**

- 100MHz Cortex-M4F
- Cortex-M0+ Co-processor

- **Memory**

- 256 KB Flash, 192 KB RAM

- **Interfaces for connectivity & sensors**

- Stereo DMIC subsystem (PDM, decimator, HW VAD)
- 8 Flexcomm interfaces: 8 SPI, 8 I2C, 8 UART, 2 I²S channels. Max 8 channels
- Crystal-less FS USB
- Power-efficient 5.0 Msps, 12-bit ADC: full-spec performance (1.62 to 3.6V, -40 to 105 °C)

- **Clocks & timers**

- 12/48/96 MHz FRO
- 100 kHz-1.5MHz WDOG OSC,
- 32 Xtal OSC
- external clock input
- Basic & advanced timers including SCTimer/PWM
- Asynchronous peripheral bus

- **Packages**

- LQFP64 (10 x 10 mm)
- WLCSP49 (3.45 x 3.45 mm)

- **Other**

- Operating voltage: 1.62 to 3.6V
- Temperature range: -40 to 105 °C

Low Active Currents for Always-On Processing

- ❑ 900µA @12MHz w/ 2µs wakeup time in Sleep mode
- ❑ 7µA w/ 19µs wakeup time in Deep Sleep mode
- ❑ 300nA w/ 1.2mS wakeup time in Deep Power Down mode

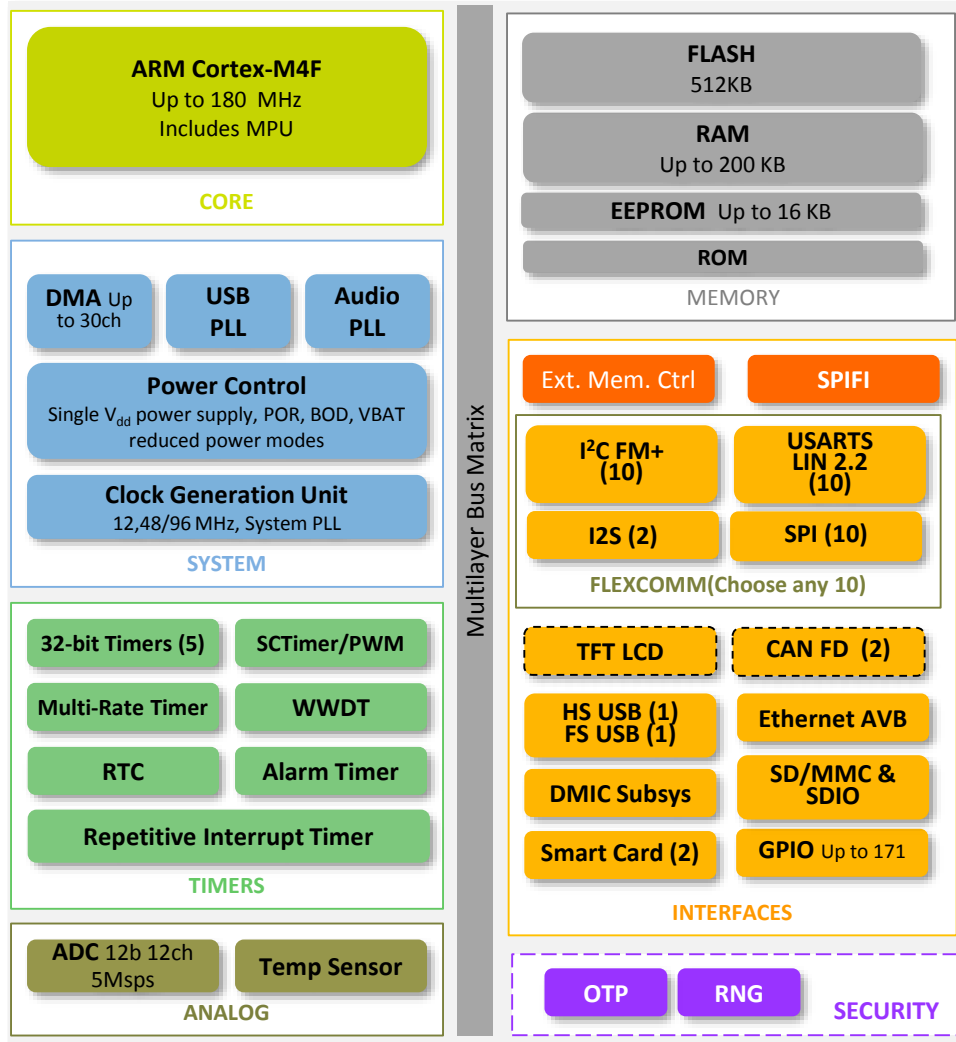
LPC54114-Lite Board Introduction

- ❑ LPC54114J256BD64 Cortex-M4/M0+ Dual Core
- ❑ Debug interface
 - On-board CMSIS-DAP debug interface
 - 10 pins JTAG connector, support SWD mode
 - mbed tools and USB virtual COM
 - ISP jumpers
- ❑ One adjustable potentiometer
- ❑ Four user buttons and one reset button
- ❑ Four user LEDs for and one power LED
- ❑ One set of 3.5 mm audio jack
- ❑ One TF card interface, One stereo Mic
- ❑ One I2C temperature sensor, One SPI Flash
- ❑ Expansion options
 - Arduino UNO R3-compatible connectors
 - Prototyping area
- ❑ LPC54114-Lite Board Kit
 - Schematic
 - Chip documents
 - User guide
 - Virtual COM tool and driver
 - Target firmware
 - Example code



LPC546xx Overview

Power-Efficient Microcontrollers (MCUs) With Advanced Peripherals



Connectivity, High-end Graphical UI & Security

• Core & Memory

- Cortex-M4F, 180MHz
- 1.71 V to 3.6 V, -40 C to 105 C
- Up to 512 KB Flash & Up to 200 KB RAM
- **16 KB EEPROM**
- **XIP from QSPI via SPIFI**
- External Memory Ctrl (up to 32 bits)

• Key Features

- **Graphic LCD with resolutions up to 1024 x 768**
- **CAN-FD controller x2**
- Digital mic subsystem supporting voice detection

- **Hi-Speed and Full Speed USB**
- **USB: 1x HS (H/D) w/on-chip HS PHY**
- **XTAL-less FS USB (H/D)**
- FlexComm-flexible serial connectivity
 - 10 Flexcomm interfaces: 10 SPI, 10 I2C, 10 UART, 2 I²S channels. Max 10 channels

• Advanced Security Option

- **OTP for enhanced CRP**
- **True Random Number Generator**
- **verification**
- **Single and dual-image boot support**

LPCXpresso54608 Board Introduction

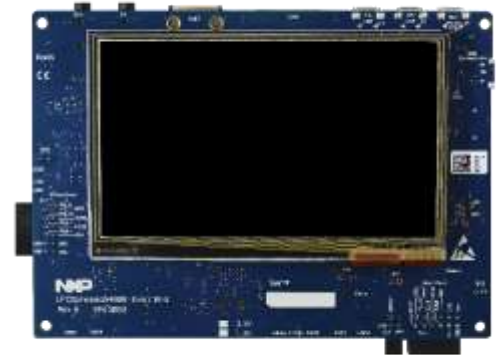
□Key Features

- 272x480 color LCD with capacitive touch screen
- On-board, high-speed USB, Link2 debug probe with CMSIS-DAP and SEGGER J-Link protocol options, support for external debug probe
- UART and SPI port bridging from LPC546xx target to USB via the on-board debug probe
- 3 x user LEDs, plus Reset, ISP (3) and user buttons
- Multiple Expansion options, including Arduino UNO and PMod
- Built-in power consumption measurement for target LPC546xx MCU
- 128Mb Micron MT25QL128 Quad-SPI flash
- 8MB Micron MT48LC8M16A2B4 SDRAM
- Knowles SPH0641LM4H digital microphone
- Full size SD/MMC card slot
- NXP MMA8652FCR1 accelerometer
- Stereo audio codec with line in/out
- High and full speed USB ports with micro A/B connector for host or device functionality
- 10/100Mbps Ethernet (RJ45 connector)

□Support Materials

- [NXP.com Board Page](#)
- [Start Guideline](#)
- [LPCXpresso54608: Out of Box & Getting Started Introduction](#)
- [Board Schematics](#)
- [Board User Manual](#)

LPCXpresso54608 front



LPCXpresso54608
Demo



LPCXpresso54608 back





INTRODUCING **KINETIS PORTFOLIO** FOR MARKET SPECIFIC APPLICATIONS



Winning across segments with Kinetis MCUs



Kinetis K2x
Kinetis KL1x



Kinetis K1x
HomeKit



Kinetis K1x
HomeKit



Kinetis K2x
Kinetis KL1x



Kinetis KL3x



Kinetis K3x



Kinetis KL1x



Kinetis K1x
Kinetis KV3x



Kinetis K, Kinetis W



EXTERNAL USE



Kinetis K2x



Kinetis KE0x



Kinetis KE0x



Kinetis KE0x
Kinetis KV3x



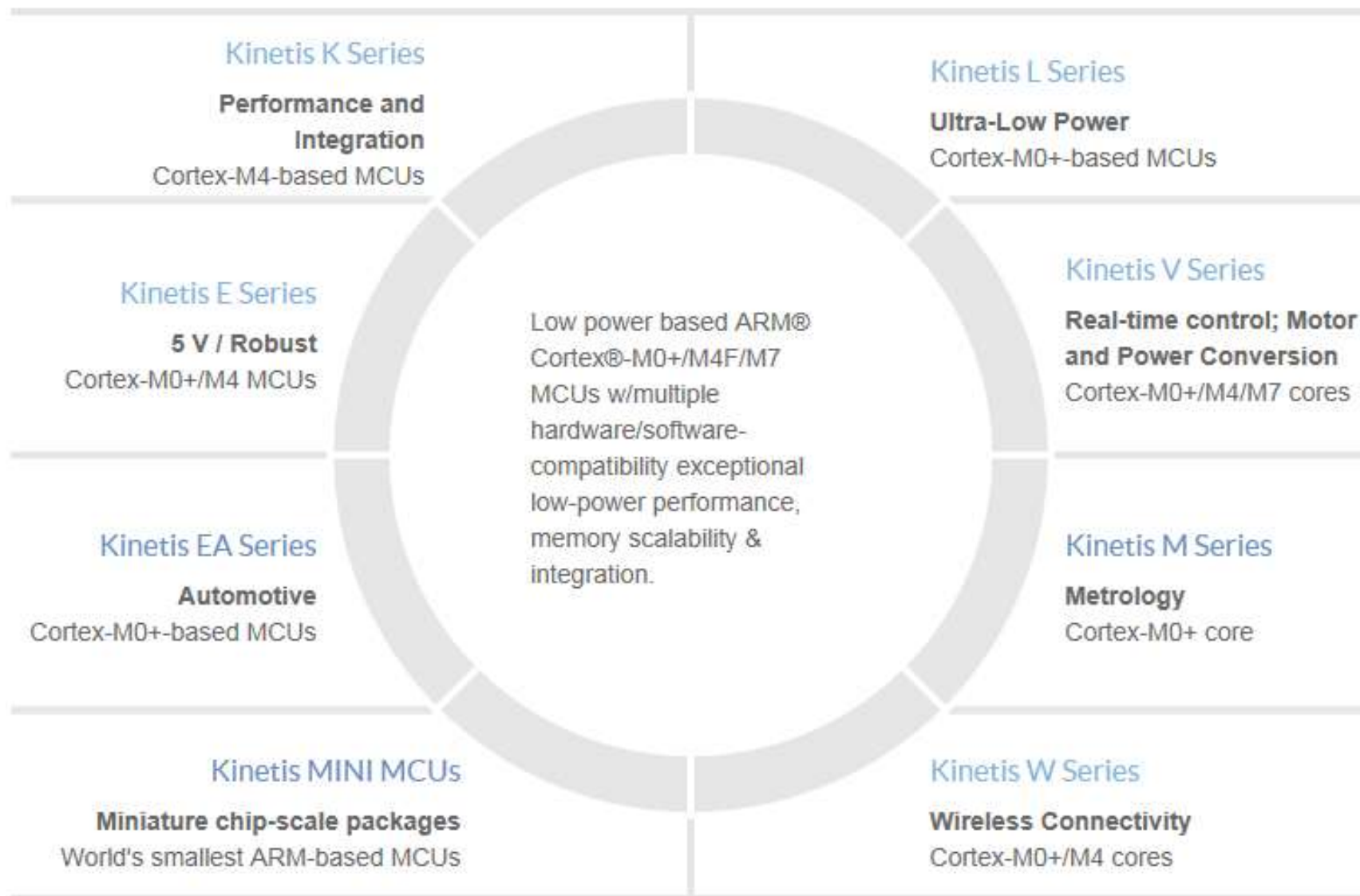
Kinetis K2x



Kinetis K2x



Kinetis Microcontroller Portfolio



NXP Kinetis Microcontroller Portfolio

Performance & Integration

General Purpose 23 Packages	Wireless Connectivity	Secure	Control & Power Conversion	5V / Robust	Ultra-Low Power General Purpose 19 Packages	Metrology
• From 50 to 180 MHz • 32kB to 2MB Flash 8 to 256 kB SRAM • Memory Expansion • High Precision Analog • Options with › Advanced Security & Protection › FS/HS+PHY USB › CAN, Ethernet › Segment/Graphics LCD › PGA/OpAmps › FlexIO	<i>Application Specific</i> 4 Packages • Sub-1GHz and 2.4GHz (inc. BLE & 802.15.4, Zigbee, Thread) • 128 to 512kB Flash 16 to 64 kB SRAM • High Precision Analog • Options with FS USB	<i>Application Specific</i> 4 Packages • From 72 to 120 MHz • HW Cryptography • Anti-Tamper • 128 to 256kB Flash 128 to 256kB RAM • QSPI	<i>Application Specific</i> 5 Packages • From 75 to 168 MHz • 16 to 512kB Flash 8 to 96 kB SRAM • Fast, High Precision Analog, Timers/PWM • Real-time computation and math acceleration • Options with CAN	<i>Application Specific</i> 10 Packages • From 20 to 168 MHz • 8kB to 512kB Flash 1 to 64 kB SRAM • Enhanced ESD/EMC Performance • High Current Output • Options with › CAN › New touch sensor › FlexIO	• From 48 to 72 MHz • 8kB to 512kB Flash 1 to 128 kB SRAM • Smart, Autonomous Peripherals/Timers • High Precision Analog • Options with › Advanced Security & Protection › FlexIO	<i>Application Specific</i> 4 Packages • From 50 to 75 MHz • 64kB to 256kB Flash 16 to 32 kB SRAM • AFE w/ up to Quad 24b Sigma-Delta ADCs • Options with › LCD
K Series	W Series	K8x KL8x	V Series	E Series	L Series	M Series

ARM Cortex-M4 Based MCUs

ARM Cortex-M7 Based MCUs

ARM Cortex-M0+ Based MCUs



KINETIS CONNECT





JN5169

Low power, High Performance 802.15.4 wireless microcontroller

32b RISC @32MHz
32kB RAM
512kB flash
Tx Power +10dBm
Rx Sensitivity -96dBm
Tx 23.3mA, Rx 14.7mA
QFN40 6x6mm
Tamb -40°C / +125°C

Development Kit
HA and lighting
integrating **easy and secure NFC**

commissioning

Modules

NXP Modules

Target Applications
HBA, Lighting., Smart meters

Energy metering
Availability
Now



JN5174/78/79

Low power, High Performance 802.15.4 wireless microcontroller

Cortex M3 @32MHz
32kB RAM,
160/256/512kB flash
Tx Power +10dBm
Rx Sensitivity -96dBm
Tx 22.5mA, Rx 14.8mA
QFN40 6x6mm
Tamb -40°C / +125°C

Development Kit
HA and lighting
integrating **easy and secure NFC**

commissioning

Modules

NXP Modules

Target Applications
HBA and Lighting

Availability
Sampling Now
Full Release June 2016



KW2xD

High Performance 802.15.4 wireless microcontroller

Cortex M4 @50MHz
64kB RAM,
512kB flash
Tx Power +8dBm
Rx Sensitivity -102dBm
Dual-PAN, Antenna Div.
Tx 19mA, Rx 17mA
LGA 8x8mm
Tamb -40°C / +85°C

Development Kit
FRDM, USB Dev Boards

Modules

From Partners

Target Applications
Home and Building Automation

Availability
Now



KW21Z

Very Low power, High Performance 802.15.4 wireless microcontroller

Cortex M0+ @48MHz
128kB RAM,
512kB flash
Tx Power +4dBm
Rx Sensitivity -101dBm
Dual-PAN, Antenna Div.
Tx 6.5mA, Rx 6.5mA
QFN 7x7mm, WLCSP
Tamb -40°C / +105°C

Development Kit
FRDM, USB Dev Boards

Modules

From Partners

Target Applications
Home and Building Automation

Availability
Sampling April 2016
Full Release Sept 2016



KW31Z

Very Low power, High Performance BLE 4.2 wireless microcontroller

Cortex M0+ @48MHz
128kB RAM,
512kB flash
Tx Power +4dBm
Rx Sensitivity -96dBm
TRNG
Buck Boost DC/DC from 0.9V to 4.2V

Tx 6.5mA, Rx 6.5mA,
QFN 7x7mm, **WLCSP**
Tamb -40°C / +105°C

Development Kit
FRDM, USB Dev Boards

Modules

From Partners

Target Applications
Secure BLE applications,
Home Automation

Availability
Sampling April 2016
Full Release Sept 2016



QN9080

Ultra Low Power, High Performance BLE 4.2 wireless microcontroller

Cortex M4 **with FPU**
128kB RAM, 256kB ROM
512kB flash
Tx Power +2dBm
Rx S -95dBm w/o DC-DC
Rx S -93dBm w/ DC-DC
Tx 3.4mA, Rx 3.6mA,
ADC: 14 ENOB @ 32 kHz
Fusion Sensor processor
QFN 6x6mm, **WLCSP**
Tamb -40°C / +105°C

Development Kit
EVb, miniDK

Modules

To be defined

Target Applications
Watches and wristband

Availability
1H 2017



KW41Z

Very Low power, High Perfs '15.4 / BLE 4.2 wireless microcontroller

Cortex M0+ @48MHz
128kB RAM,
512kB flash

Tx Power +4dBm
TH Rx Sens -101dBm
BLE Rx Sens -96dBm
Dual-PAN, Antenna Div.
Tx 6.5mA, Rx 6.5mA,
QFN 7x7mm, **WLCSP**
Tamb -40°C / +105°C

Development Kit
FRDM, USB Dev Boards

Modules

From Partners

Target Applications
Home and Building Automation

Availability
Sampling April 2016
Full Release Sept 2016



NXP NFC I2C TAG

NTAG I2C plus connected NFC tag solution by NXP

ISO/IEC 14443-2/3, NFC forum compliant - Type 2 Tag
888B EEPROM or 1904B EEPROM
Access Protection via RF : WRITE ONLY per 16 Bytes
Pass through mode: 64B SRAM buffer to transfer data
Signal output : To detect RF field or synchronise data
Energy harvesting : To power external components
SOT902 (leadless) – TSSOP8 (8pin)



PN7120

Best plug'n play full NFC solution – easy integration into any OS environment

ISO15693 compliant -longer read range than ISO14443
Reading distance up to 70mm
MIFARE Classic security (CRYPTO1 HW)
Host protocol : NCI 1.0
Host Software : Android driver and Linux driver
Host interface : I2C
VFBGA49

Kinetis KW41Z/31Z/21Z

Core/System

- Cortex-M0+ running up to 48 MHz
- Four independently programmable DMA controller channels

Memory

- Up to 512kB Flash
- Up to 128 kB SRAM

Radio

- Support for BLE v4.2, 802.15.4, Generic FSK
- -95 dBm in BLE mode, -100 dBm in 802.15.4 mode
- -30 to +3.5 dBm programmable output power
- 6.8 mA Rx & 6.1 mA Tx (0dBm) current target (DC-DC enabled)
- On-chip balun with single ended bidirectional RF port

Communications/HMI/Timers

- 2xSPI, 2xI2C, LP-UART, GPIO with IRQ capability (KBI)
- Carrier Modulated Timer (CMT) for infrared transmissions
- Hardware Capacitive Touch Sensing Interface (TSI)
- 3xFlexTimer (TPM) with PWM & quadrature decode support
- Low Power (LPTMR), Programmable Interrupt (PIT) and RTC timers

Analog

- 16-bit ADC with integrated temperature sensor and battery monitor
- 12-bit DAC and 6-bit High-speed Comparator

Security

- AES-128 Accelerator and True Random Number Generator
- Advanced flash security

Integrated DC/DC Converter

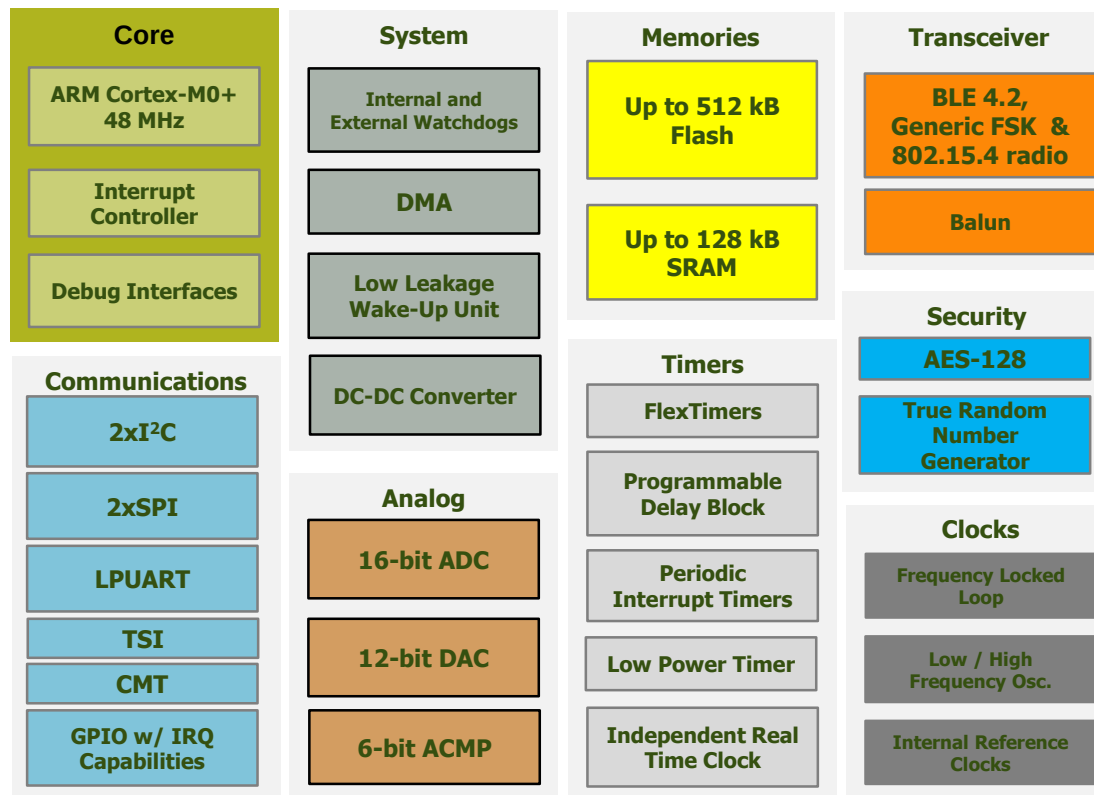
- Normal: 1.71V to 3.6V
- Buck : 2.1V to 4.2V for coin cell operation
- Boost : 0.9V to 1.795V for single alkaline battery operation

Unique Identifiers

- 80-bit unique device ID programmed at factory
- 40-bit unique media access control (MAC) subaddress can be used for Bluetooth Low Energy or IEEE 802.15.4 MAC Address

-40°C to +105°C (QFN)

-40°C to +85°C (WLCSP)



Device	Memory (Flash/RAM)	Protocol	Package
MKW21Z512VHT4 MKW21Z256VHT4	512 kB / 128 KB 256 kB / 128 KB	802.15.4	7x7 48-pin Laminate QFN 4x4 75-pin WLCSP
MKW31Z512VHT4 MKW31Z256VHT4	512 kB / 128 KB 256 kB / 128 KB	BLE v4.2 / Generic FSK	7x7 48-pin Laminate QFN 4x4 75-pin WLCSP
MKW41Z512VHT4 MKW41Z256VHT4	512 KB / 128 KB 256 KB / 128 KB	BLE v4.2 / Generic FSK / 802.15.4 (Supports concurrent operation)	7x7 48-pin Laminate QFN 4x4 75-pin WLCSP
Features	Description		
Software and Protocol Stacks	Bluetooth Smart Host Stack & Profiles Generic FSK (250 kbps, 500 kbps, 1Mbps) Thread Stack, IEEE 802.15.4 MAC, SMAC Thread + BLE Multi-Protocol Stack KSDK, RTOSes, IAR & KDS Support		



Kinetis KW41Z/31Z/21Z: Key Differentiators



Multi-Protocol Radio – High performance radio supporting Bluetooth Smart/Bluetooth Low Energy (BLE) v4.2, Generic FSK and IEEE 802.15.4 (Thread) based standards

Large Memory – Enough memory to adequately contain desired networking stack(s) with ample room remaining for custom applications

Low Power – Low transmit, receive and standby currents that maximizes battery life, including standard coin-cells

Complete Enablement – Fully compliant, certified Bluetooth Low Energy, Thread and 802.15.4 MAC/PHY. Support for Generic FSK, BLE Mesh, SMAC, multiple RTOSes, KSDK 2.0, KDS and IAR IDEs.

Complete Enablement: Software

THREAD

IPv6 + 6LoWPAN, UDP

802.15.4 MAC/PHY



IEEE

2.4 GHz

Bluetooth Low Energy

Core Stack 4.2 Profiles



Bluetooth[®]
SMART

BLE LL/PHY



Bluetooth v4.2
2.4 GHz

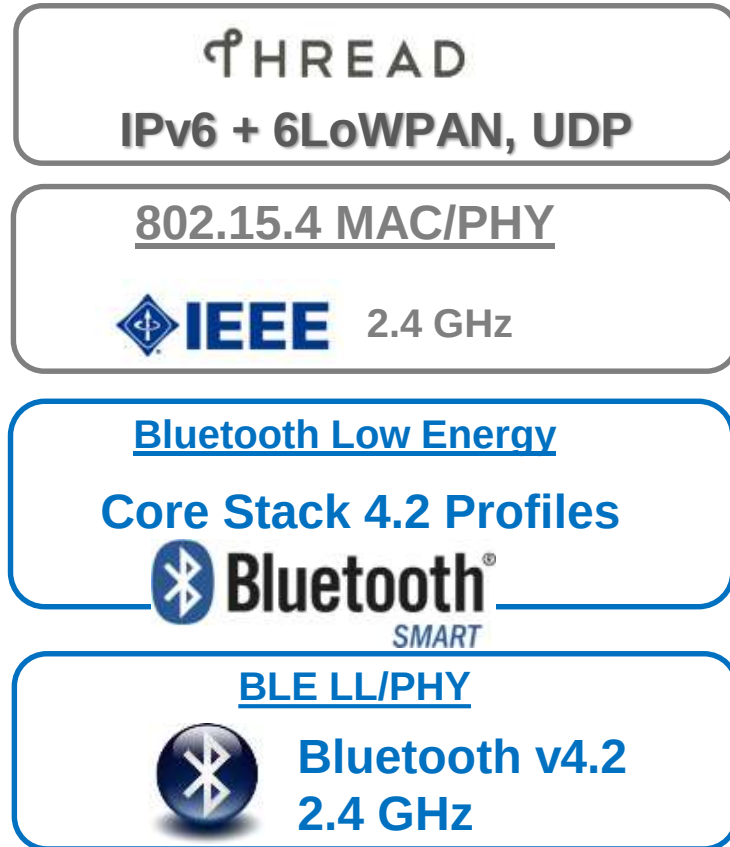
- ✓ Thread R1.1 Compliant Network Stack
- ✓ Thread + BLE Combo Stack
- ✓ IEEE 802.15.4 MAC/PHY
- ✓ Qualified Bluetooth Low Energy v4.2 Stack + Application Profiles
- ✓ Bluetooth Low Energy Mesh Stack
- ✓ IPv6 over BLE
- ✓ Generic FSK at 250, 500 and 1000 kbps
- ✓ SMAC w/ Connectivity Test for Regulatory Certification
- ✓ Support for Host MCU and MPU (Linux®) Processors
- ✓ Full integration with Kinetis SDK
- ✓ Multiple RTOS, including FreeRTOS and uCOSII (BLE)
- ✓ Kinetis Design Studio (KDS)
- ✓ IAR Embedded Workbench®

KW41Z Development Hardware

- **FRDM-KW41Z** Freedom Development Hardware
 - Can be configured as Host or Shield for connection to Host Processor
 - Supports all DC-DC configurations
 - PCB inverted F-type antenna
 - Minimum number of matching components
 - FCC Part15 & EN300 328 compliant
 - Serial Flash for OTA firmware upgrades
 - On board NXP FXOS8700CQ digital sensor, 3D Accelerometer ($\pm 2g/\pm 4g/\pm 8g$) + 3D Magnetometer
 - OpenSDA and JTAG debug
 - Full KSDK support
 - Resale \$145 (2 boards/kit)
- **USB-KW41Z** USB Dongle
 - Ideal for BLE/802.15.4 sniffer or connection to PC/Tablet
 - FCC Part15 & EN300 328 compliant
 - Resale \$60

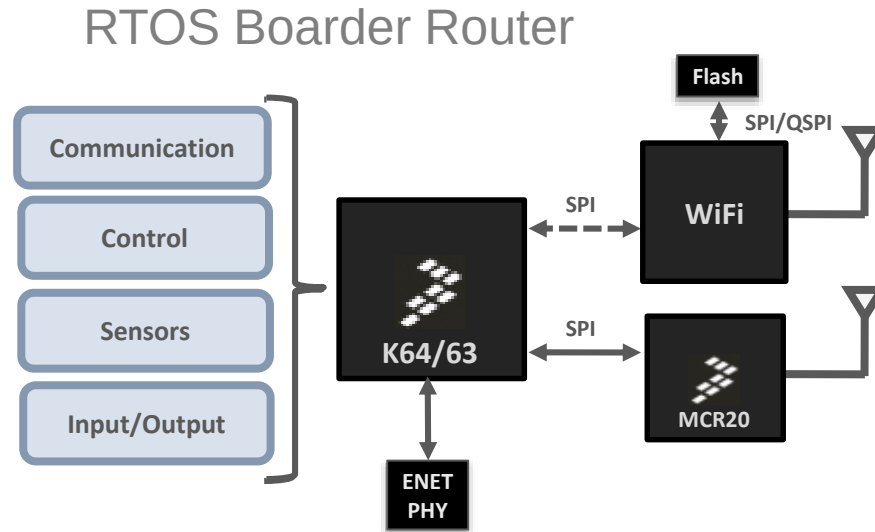
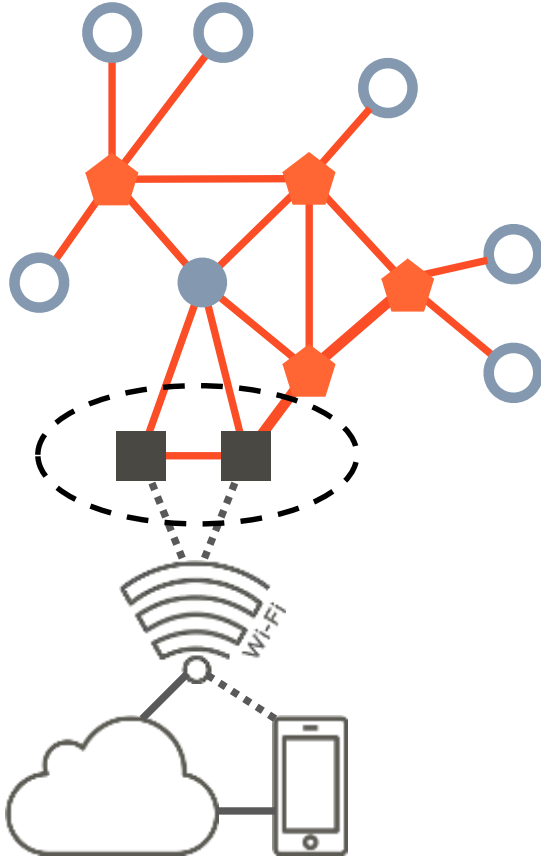


KW41Z Development Software

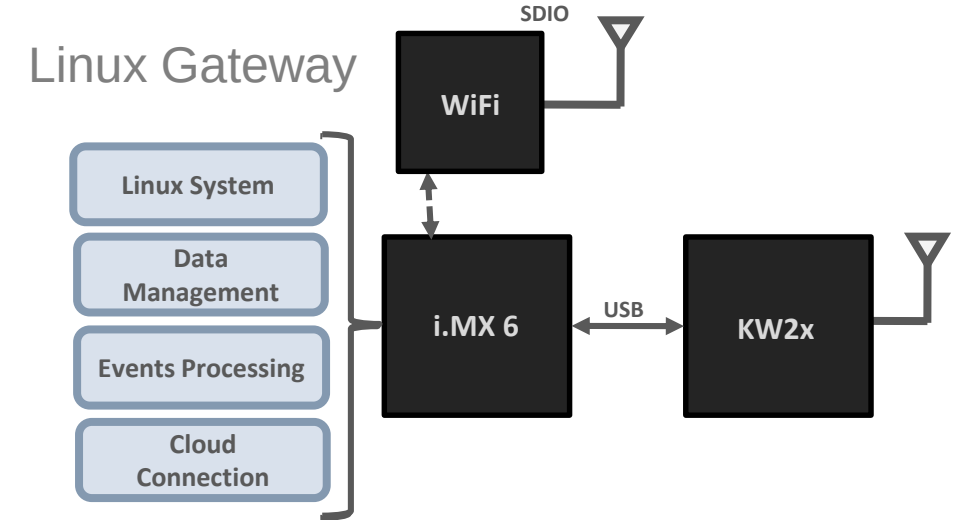


- ✓ Thread R1.1 Compliant Network Stack
- ✓ Thread + BLE Combo Stack
- ✓ IEEE 802.15.4 MAC/PHY
- ✓ Qualified Bluetooth Low Energy v4.2 Stack + Application Profiles
- ✓ Bluetooth Low Energy Mesh Stack
- ✓ IPv6 over BLE
- ✓ Generic FSK at 250, 500 and 1000 kbps
- ✓ SMAC w/ Connectivity Test for Regulatory Certification
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- ✓ Full integration with Kinetis SDK
- ✓ Multiple RTOS, including FreeRTOS and uCOSII (BLE)
- ✓ Kinetis Design Studio (KDS)
- ✓ IAR Embedded Workbench®

Thread Router (Ethernet/Wi-Fi)

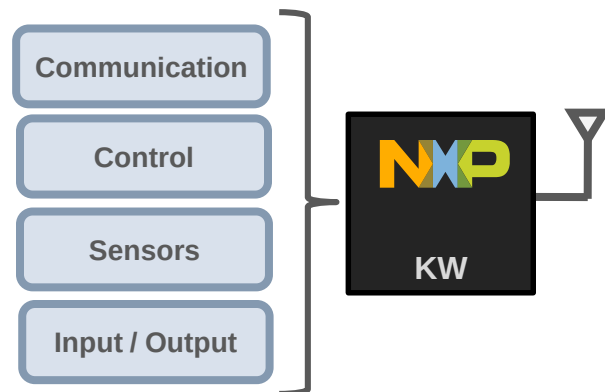
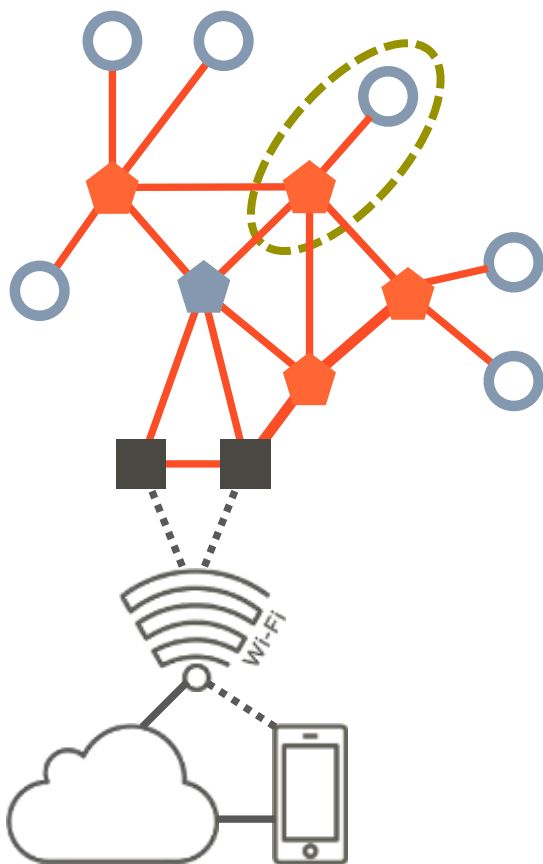


- Kinetis **K64** is standalone MCU with up to 1MB Flash, up to 256K RAM and embedded Ethernet
- Kinetis **K63** MCU adds tamper protection DryIce module
- **MCR20** is an 802.15.4 transceiver
- Thread, Wi-Fi and Ethernet share same IP stack

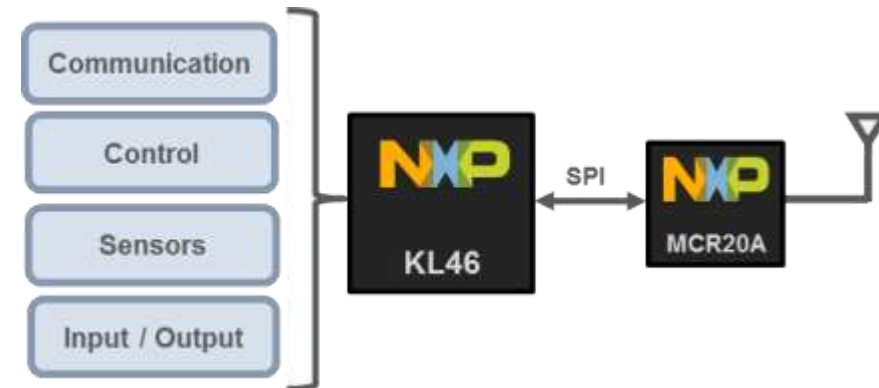


- **i.MX 6** Linux system handles Data Management and Analytics, Events Processing and Cloud Connection
- Kinetis **KW2x MCU** runs the Thread Border Router functionality

Thread Router and End Device



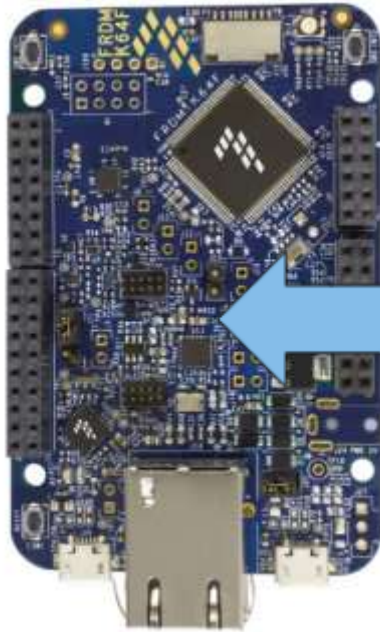
- **KW** devices with 512kB Flash and 64k RAM can run **Border Router or Router Eligible End Device** configurations with an Application
- **KW** devices with 32kB RAM can run Thread End Device configurations with an Application



- **Kinetis L** devices with 32kB RAM can run 802.15.4 MAC/PHY, Thread Network and Application as an **End Device**
- MCR20A is the 2.4GHz Transceiver

Target Development Systems: Gateways/Border Routers/End Nodes

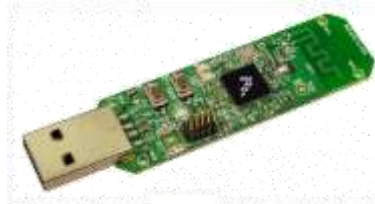
K64F
RTOS Border Router



K64F Freedom Board

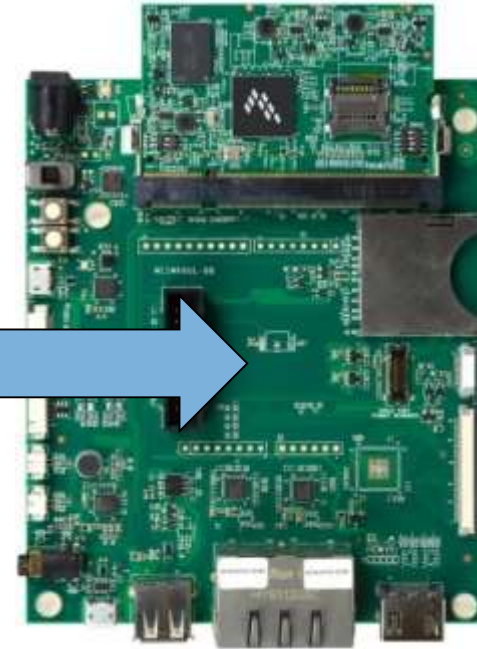
- 120 MHz Cortex-M4F
- Up to 1 MB Flash, UP to 258 KB RAM
- Integrated Ethernet
- Thread and ZigBee
- Launching Oct 6th

KW2x
FRDM-KW24D512



USB-KW24D512

i.MX6UL
Linux Gateway/Border Router

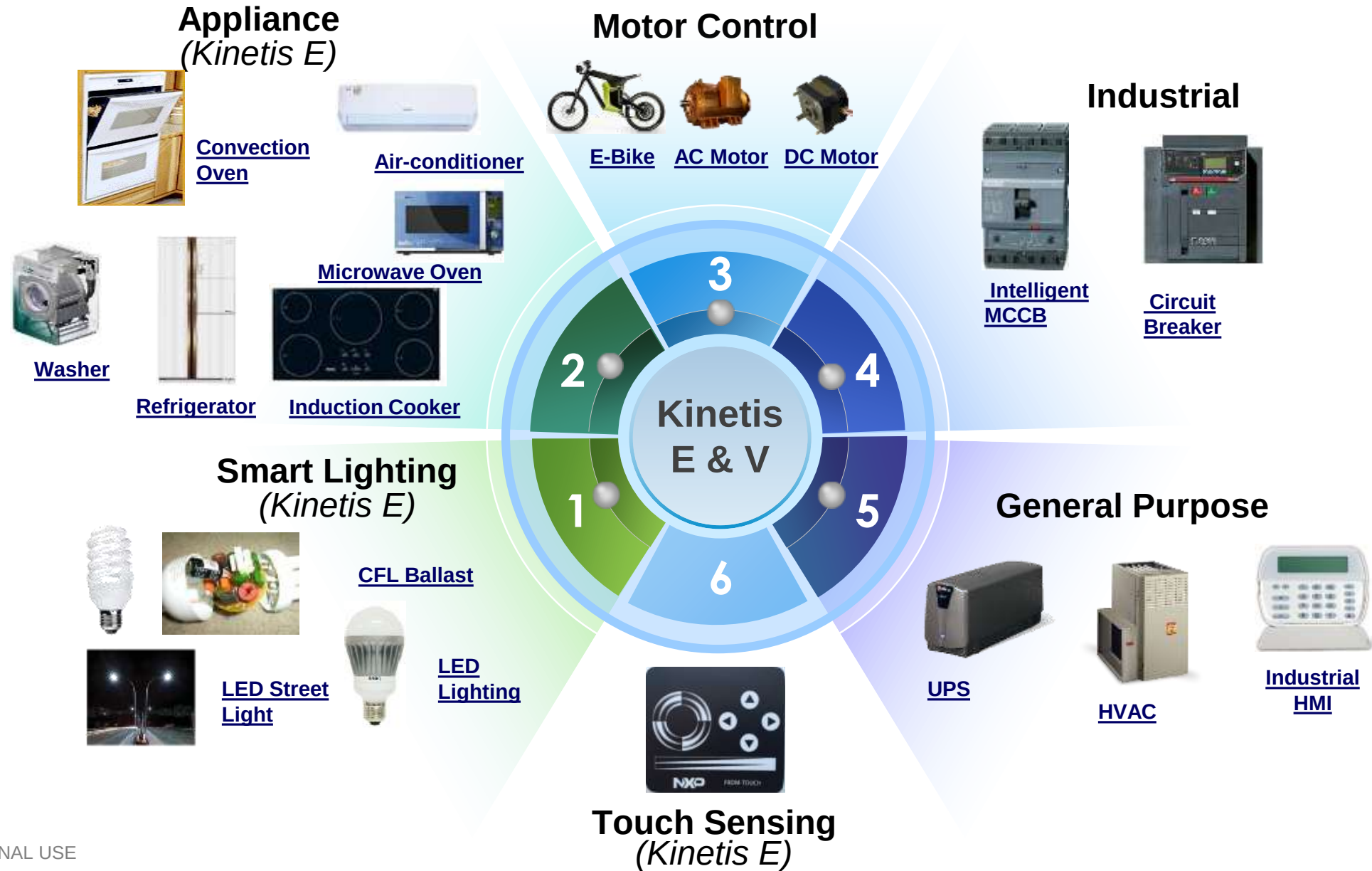


i.MX6UL EVK

- 528MHz Cortex-A7 CPU
- 4 GB DDR3L DRAM memory
- 256 MB Quad SPI Flash
- Arduino/Freedom connector
- Launching Oct 6th

KINETIS CONTROL

Target Market and Applications



Kinetis V series MCU

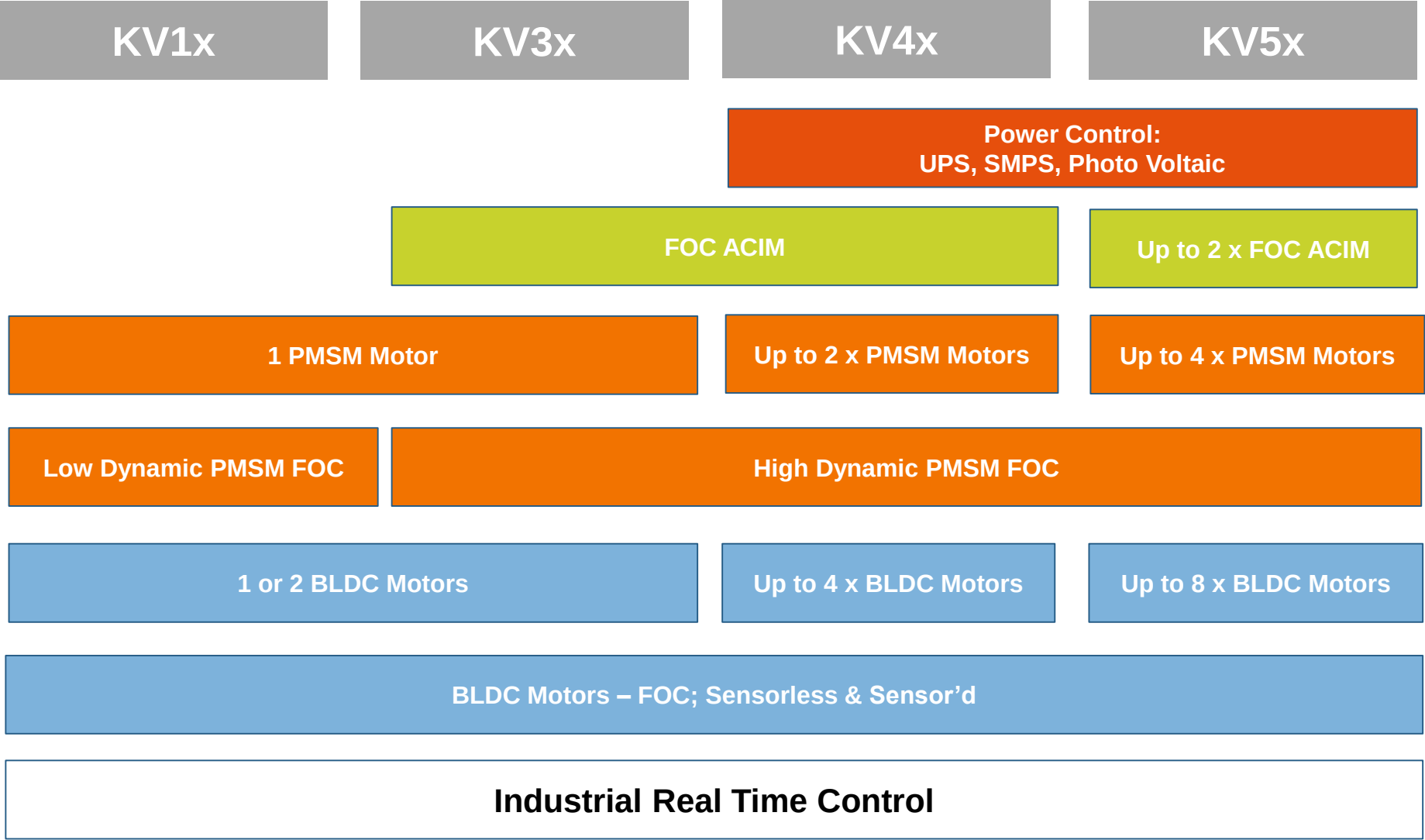
For Motor Control & Digital Power Conversion

- April 26, 2017

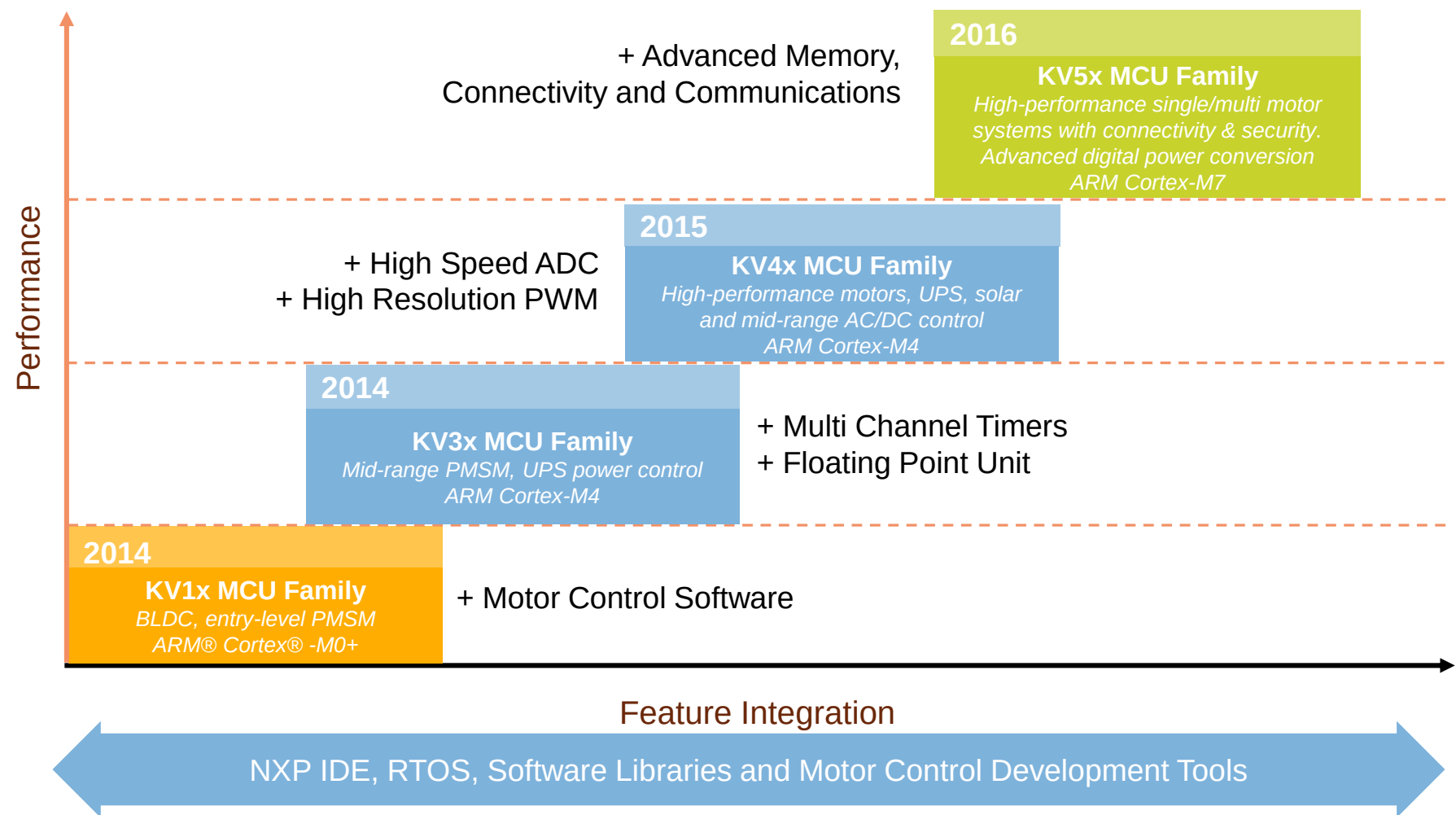


- **ARM Cortex-M0+ / M4 / M7 cores** bring broad choice, and smooth upgrade.
- Scalable MCU families from **75MHz** to **240MHz MCUs**, maximize resource reuse and flexibility
- **Optimized** MCU performance and **high speed/resolution analogy** peripherals.
- **Tower** and **FRDM boards, Libraries** and **KMS (Kinetis motor suite)** reduced motor control learning curve and speed time to market.

Kinetis V - Target Applications



New Levels of Performance, Reliability and Power Efficiency for Motor Control and Digital Power Conversion



Kinetis E series MCUs Based on ARM® Cortex® Cores

5V

- Wide range power supply 2.7V – 5.5V

Robust

- EMC/ESD technology to ensure strong noise immunity

Scalable Performance & High Efficiency

up to 40x higher performance than 8/16-bit MCUs

- ARM Cortex M0+ core up to 72MHz
- ARM Cortex M4 core up to 168MHz

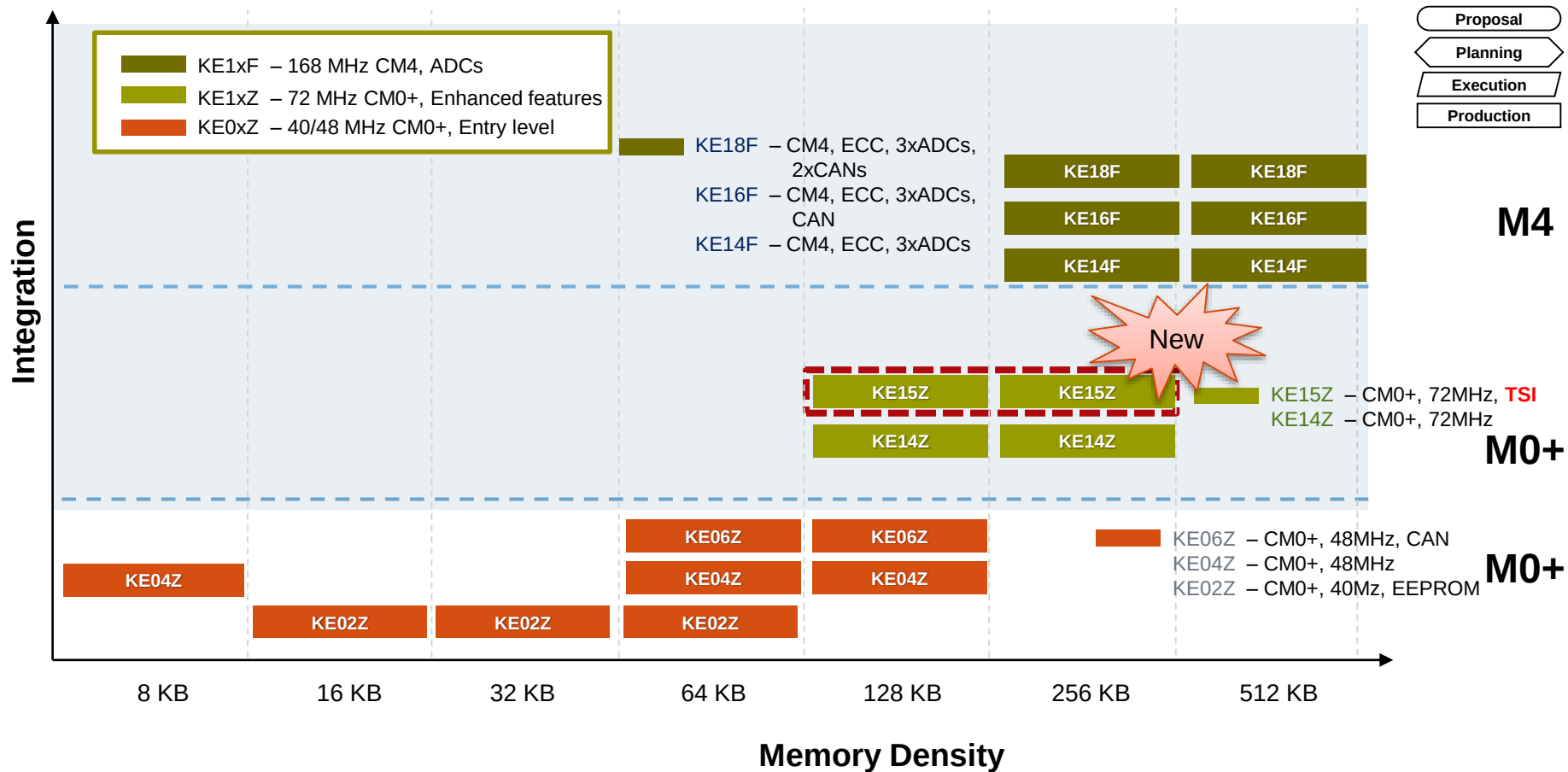
Low Cost

- Optimized for cost-sensitive applications
- Offering low pin count options



Kinetis E Series Product Roadmap

2.7-5.5V MCUs with high reliability and robustness,
Based on ARM® Cortex-M® with best-in-class Enablement



Touch Sense Interface Value Features

- ☐ Two operation modes
 - Self-cap: up to 25 keys
 - Mutual: up to 36 keys
- ☐ Advanced robust in EMC
 - Pass IEC61000-4-6 standard test
- ☐ Advanced robust in waterproof
- ☐ High sensitivity and resolution
- ☐ No need for CPU interfere
- ☐ Ease of use
 - NXP Touch Library support
 - SDK touch APIs support
- ☐ No need for external components



KE15Z/14Z Block Diagram

Key Features:

Core/System

- ARM® Cortex® -M0+ up to 72MHz
- 8ch eDMA
- TRGMUX
- MMDVSQ

Memory

- up to 256KB Flash with ECC
- up to 32KB SRAM
- up to 32KB FlexMemory / 2KB EEPROM
- Boot ROM

Communications

- 3 x LPUART / 2 x LPSPI / 2 x LPI2C / FlexIO

Analog

- 2 x 12b ADC, 1MSPS
- 2 x ACMP
- 1 x 8b DAC

Timers

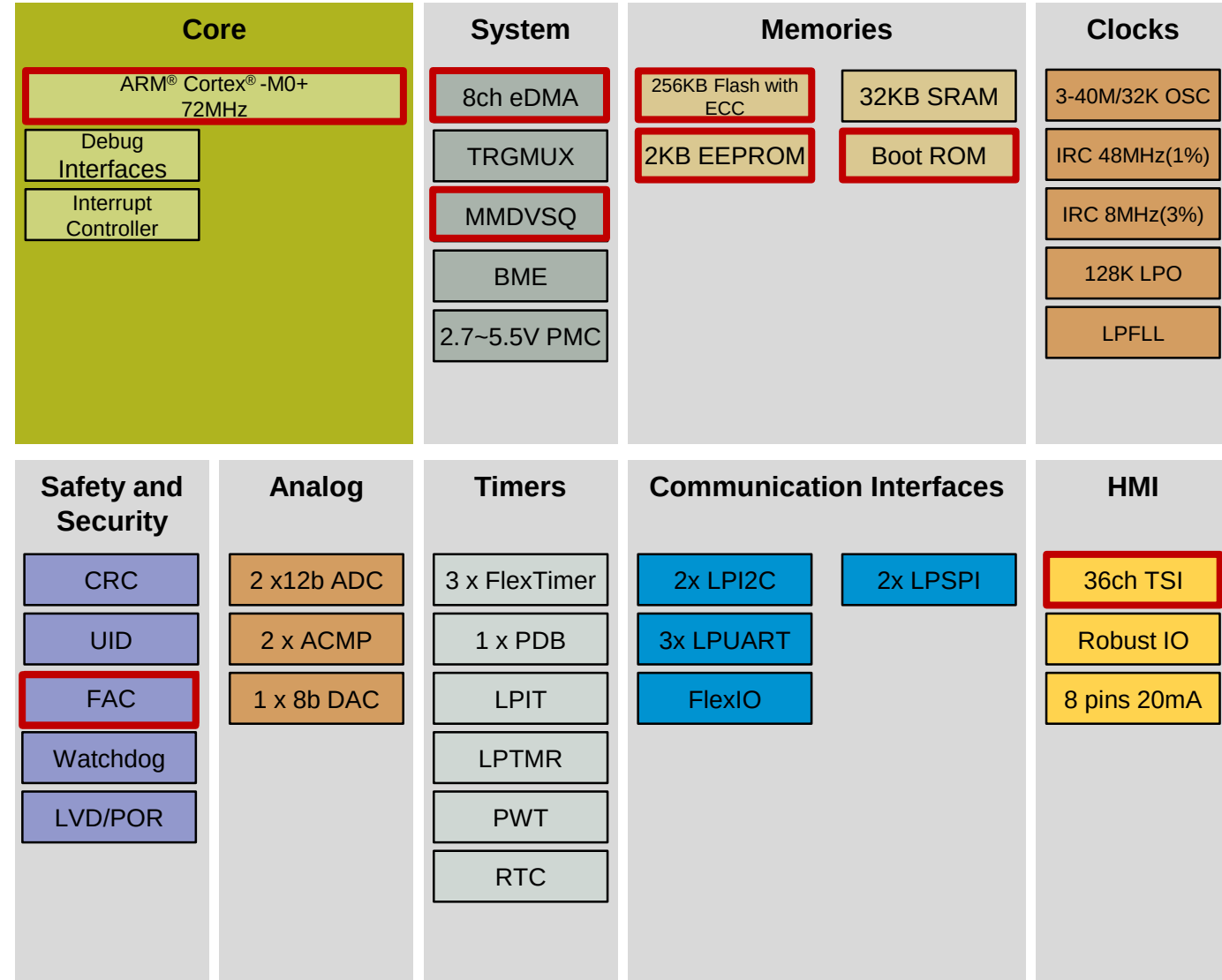
- 1 x 8ch FTM (PWM)
- 2 x 4ch FTM (PWM/Quad Dec.)
- 1 x PDB
- 1 x 4ch LPIT / 1 x LPTMR / 1 x PWT
- 1 x RTC

Others

- **Up to 36ch TSI (KE15Z only)**
- Up to 89 GPIO with glitch filter
- 2.7-5.5V, -40 to 105°C

Packages

- 100LQFP(0.5mm pitch)
 - 64LQFP(0.5mm pitch)
- Pin compatible within KE



KE1xF Master Block Diagram

Key Features:

Core/System

- ARM® Cortex® -M4F up to 160MHz
- 16ch eDMA
- TRGMUX
- MPU

Memory

- up to 512KB Flash with ECC
- up to 64KB SRAM with ECC
- up to 64K FlexMemory / 4KB EEPROM
- 8KB I/D Cache
- Boot ROM

Communications

- 2 x FlexCAN
- 3 x LPUART / 2 x LPSPI / 2 x LPI2C / FlexIO

Analog

- 3 x 12b ADC, 1MSPS
- 3 x ACMP
- 1 x 12b DAC

Timers

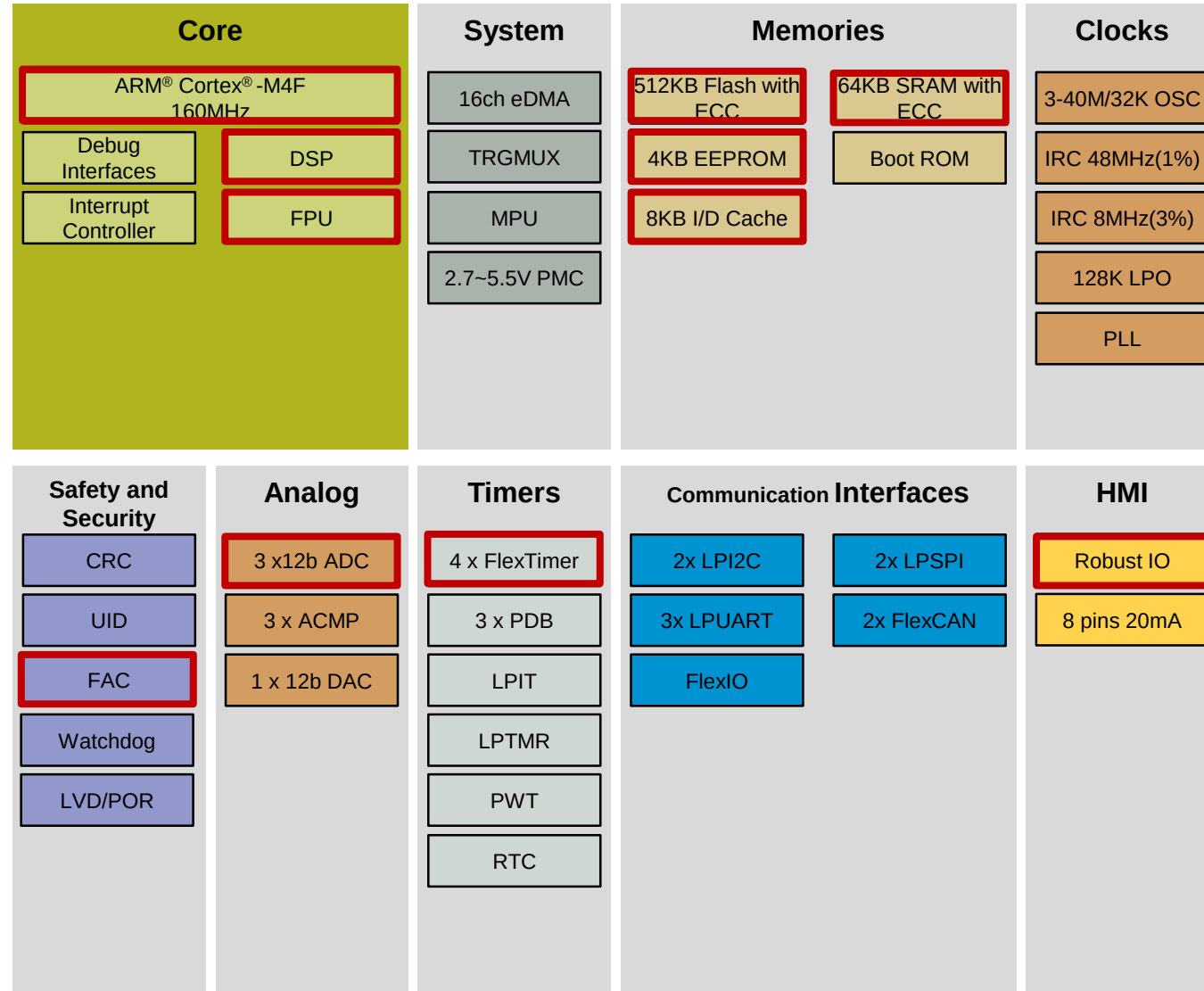
- 2 x 8ch FTM (PWM)
- 2 x 8ch FTM (PWM/Quad Dec.)
- 3 x PDB
- 1 x 4ch LPIT / 1 x LPTMR / 1 x PWT
- 1 x RTC

Others

- Up to 89 GPIO with glitch filter
- 2.7-5.5V, -40 to 105°C

Packages:

- 100LQFP(0.5mm pitch)
 - 64LQFP(0.5mm pitch)
- Pin compatible within KE



Kinetis E Touch HW and SW Support

Freedom Platform

FRDM-KE15Z

- Ultra low-cost/power development platform
- Form factor compatible with Arduino platform
- Compatible with Freedom shield
- Support touch pad



Freedom Shield

FRDM-TOUCH

- Daughter card of FRDM-KE15Z.
- Easy and simple way to evaluate the touch pad, slide and wheel. Including self-cap and mutual-cap mode.



TSI Evaluation Board

RD-KE15Z-TSI

- Evaluation board for new TSI hardware and software design
- More touch keys and types



NXP Touch Library v2.x / NXP KSDK v2.0

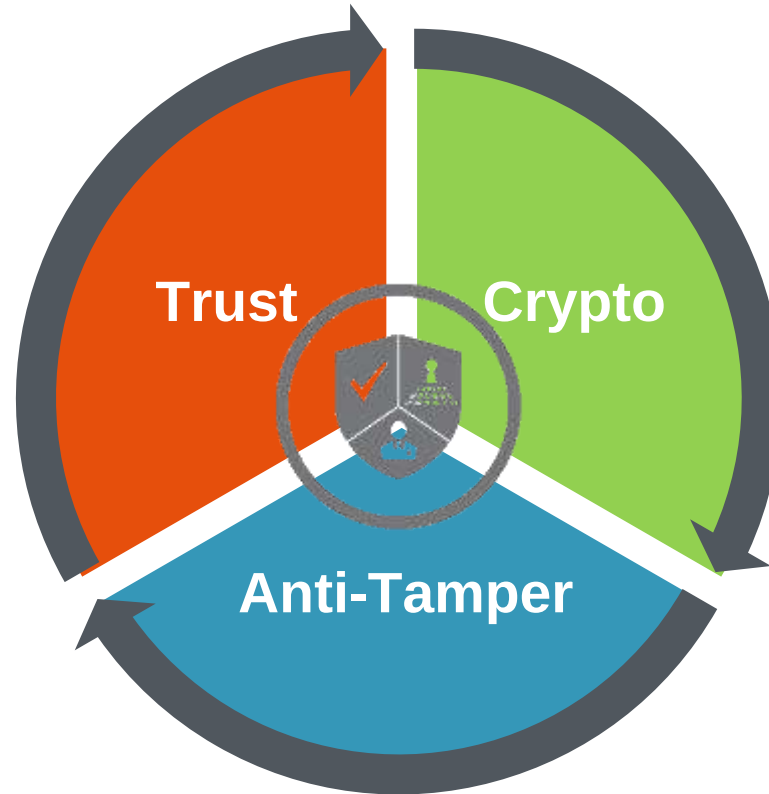
KINETIS SECURE



Kinetis Security Overview

Authorized Access

- Code I/P Protection
 - Internal Memory Protection
 - External Memory Protection
- Debug Port Protection
- Authentication
 - Software Updates
 - Device Verification
- Secure Boot



Data Protection

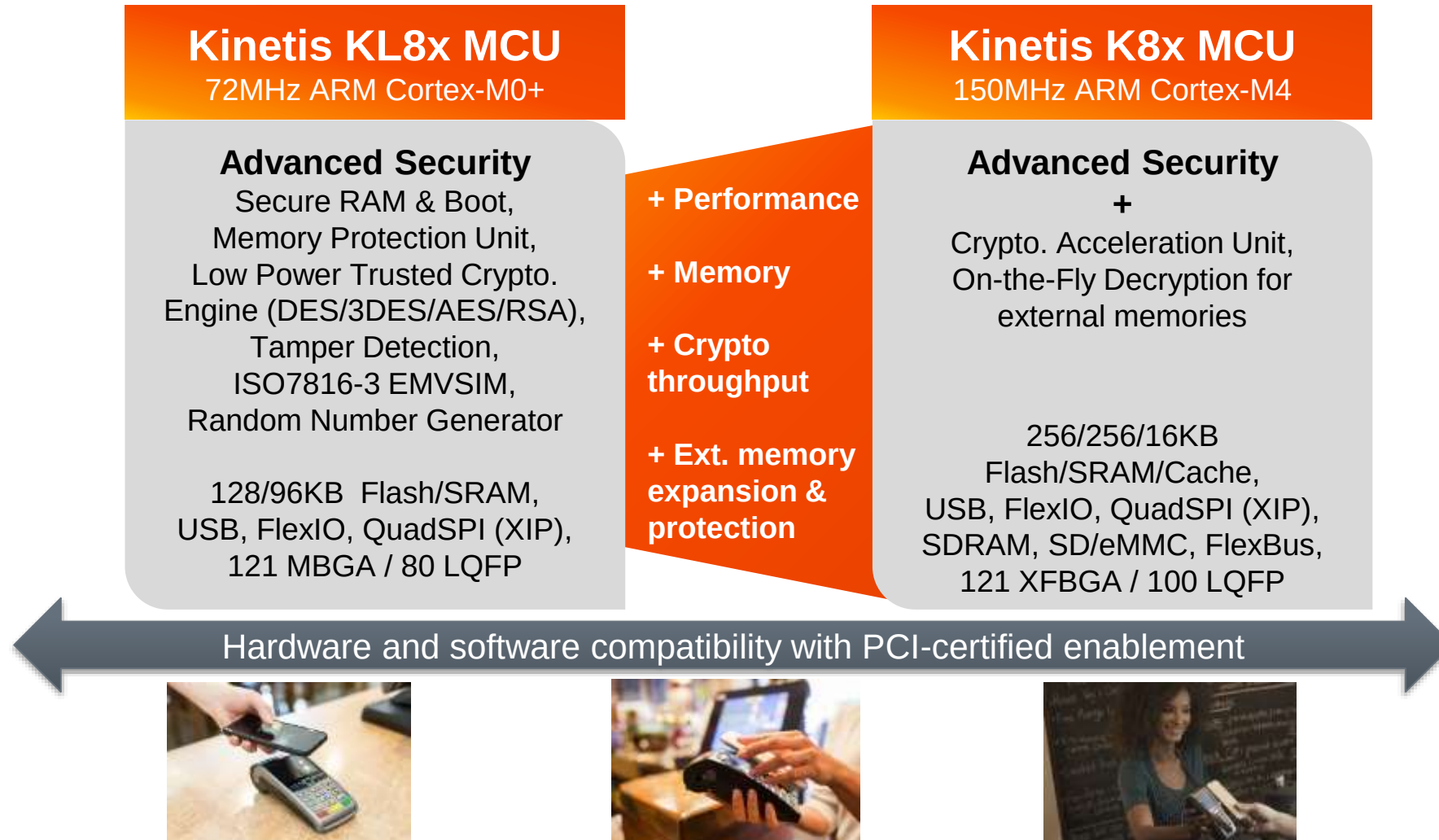
- Symmetric Encryption
 - DES/DES3, AES
- Asymmetric Encryption
 - RSA, ECC
- Hashing
 - CRC, MD5, SHA
- True Random Number Generation
- Security Protocols
 - SSL, HomeKit, Thread

Monitoring of physical and environmental attacks

- Tamper Detection
 - Physical
 - Enclosure Intrusion
 - Drilling and Probing
- Tamper Detection
 - Environmental
 - Voltage
 - Temperature
 - Frequency
- Secure Storage

Kinetis KL8x to K8x

World's most secure ARM® Cortex®-M based MCUs



Kinetis K8x/KL8x MCUs: Enablement

TWR-POS-K81 PIN Pad Reference Design



TWR-POS-K81

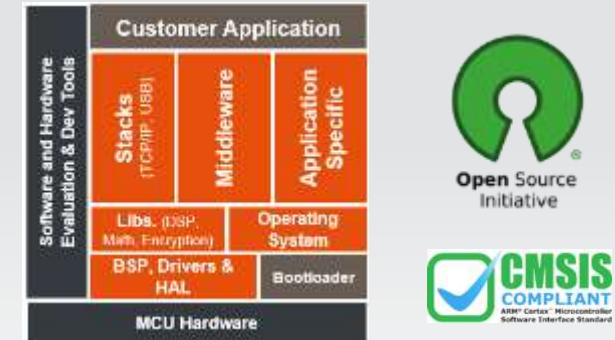
- POS PIN Pad Reference Design for customers seeking Payment Card Industry certifications
- Kinetis K81/KL81 MCU: tamper pins, chip security, EMV SIM, Kinetis SDK w/ Cryptographic Driver s/w
- Chip-and-PIN keypad based on Cirque® SecureSense™ technology (PCI PTS compliant without requiring physical protection for touch sensor)
- Available under NDA (incl. pre-PCI4.x certification reports. Full PCI 4.1 Certification expected Oct 2016)

Tower & Freedom Modules



- TWR (full evaluation) or FRDM (entry-level) development modules
- KL8x MCU
 - [TWR-KL82Z72M](#)
 - [FRDM-KL82Z](#)
- K8x MCU:
 - [TWR-K80F150M](#)
 - [FRDM-K82F](#)
- 8MB SDRAM, 8MB Serial NOR Flash
- Multiple TWR and Arduino™ form-factor compatible peripheral modules
- Available (K8x/KL8x)

Security Software



- Freescale Kinetis SDK software drivers for public key cryptography
- Support for multiple toolchains including GNU GCC, IAR, Keil, and Kinetis Design Studio

KINETIS GENERAL

KS22 Series MCU

- Member of Kinetis K series
- Initiated from China market demand, designed & manufactured locally
- Same quality standard as NXP Kinetis MCU
- Longevity Program to ensure a minimum of 10 years supply
- Both English and Chinese language technical support (websites, documents, community) provided by China team

Cost Effective with Optimized Performance

- ARM Cortex-M4 @120MHz
- DSP and Floating point unit (FPU)

Power Efficiency

- Leverages the ultra low power technology of Kinetis L series MCUs
- Integration of low-power peripherals
- Run mode power consumption is as low as 158 μ A / MHz

Smart Integration

- Reduce BOM & system cost: Crystal-less USB device
- Various communication interfaces: CAN, I2S, UART, SPI, LPI2C
- Flexible Communication Interface: FlexIO

KS22 Target Applications



KS22_128/256 Block Diagram

Key Features:

Core/System

- Cortex-M4 @ 120MHz / FPU / DSP

Memory

- 128KB/256KB Flash
- 64KB SRAM

Communications

- USB OTG FS/LS
- 2* + 3x UART, 1x LPUART
- 2* + 2x SPI
- 2* + 2x LPI2C
- 2* + 2x I2S (SAI)
- 2x CAN
- FlexIO*

Analog

- 1x 16-bit ADC, 1x 12-bit DAC
- 1x ACMP

Timers

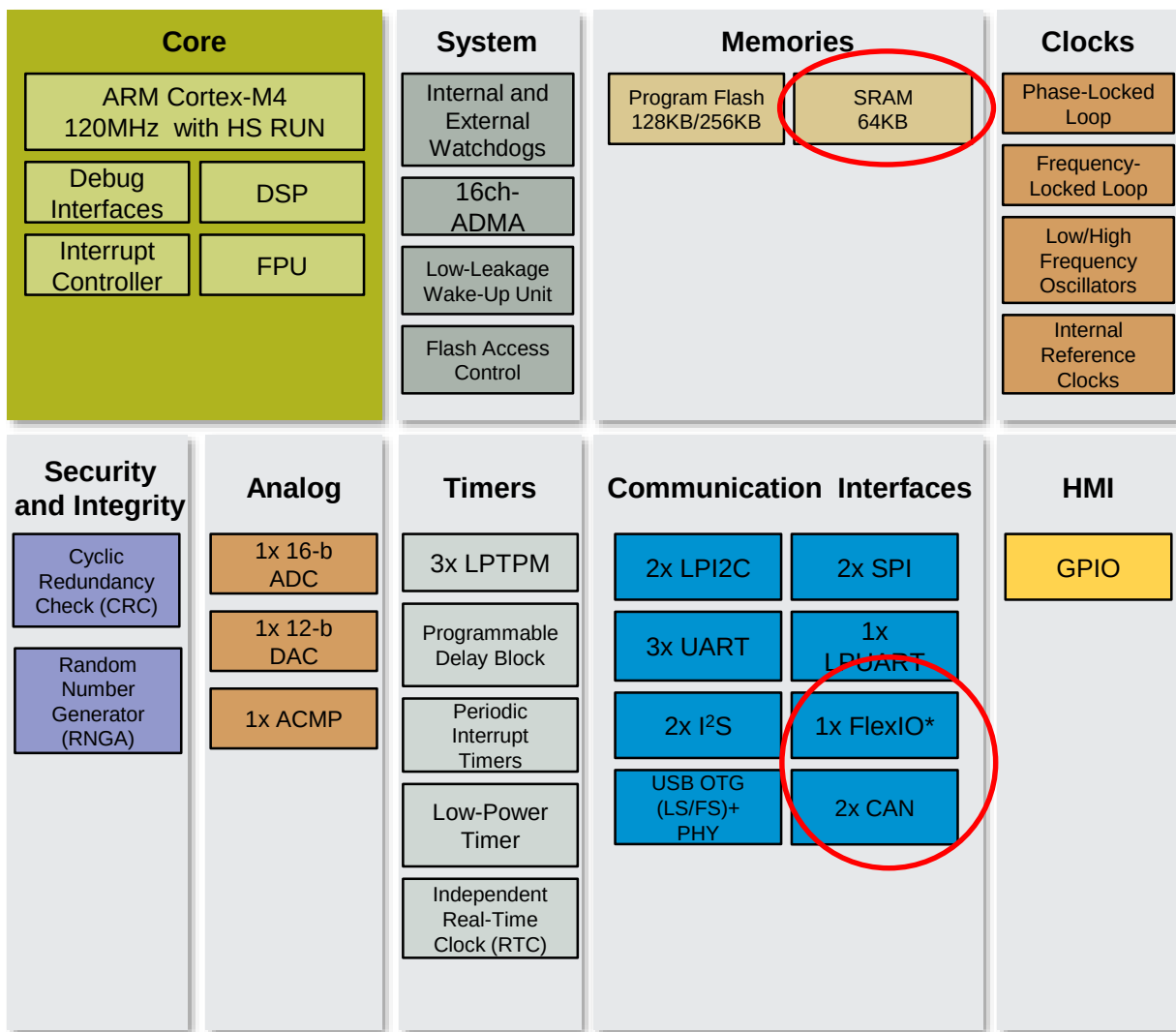
- 1x 6ch LPTPM, 2x 2ch LPTPM
- Low Power Timer
- Periodic Interrupt Timers (PIT)
- RTC with independent Vbat. Supply

Others

- 8 high-drive I/Os (20mA) – SPI / LPI2C
- 1.71V-3.6V; -40C to 105C

Packages

100LQFP, 64LQFP, 48QFN



* FlexIO can emulate 2x UART, or 2x SPI, or 2x I2C, or 2x I2S, or PWM, etc

KS22 Orderable Part Numbers

GIBC is open for registration

Features	MKS22FN256			MKS22FN128			MKS20FN256			MKS20FN128		
	VLL12	VLH12	VFT12*	VLL12	VLH12	VFT12*	VLL12	VLH12	VFT12*	VLL12	VLH12	VFT12*
Performance	ARM Cortex-M4, up to 120MHz											
Flash	256K			128K			256K			128K		
SRAM	64K											
UART	4 (3x UART + 1x LPUART)											
SPI	2											
I2C	2 (LPI2C)											
I2S	2											
CAN	2 (FlexCAN)						1 (FlexCAN)					
FlexIO	FlexIO can emulate 2x I2C, 2x SPI, 2x UART, 2x I2S or 4x PWM											
USB	Yes (USB FS OTG + PHY)											
Temperature	-40 ~ 105C											
GIBC	Yes											
Package	LQFP-100, 14x14	LQFP-64, 10x10	QFN-48, 7x7	LQFP-100, 14x14	LQFP-64, 10x10	QFN-48, 7x7	LQFP-100, 14x14	LQFP-64, 10x10	QFN-48, 7x7	LQFP-100, 14x14	LQFP-64, 10x10	QFN-48, 7x7
10K #SRP	\$2.58	\$2.39	\$2.34	\$2.09	\$1.92	\$1.88	\$2.46	\$2.27	\$2.26	\$1.99	\$1.82	\$1.80

* PK Sample is now available. Mass production on July 2016 for 48QFN.





NXP MICROCONTROLLER ECOSYSTEM & ENABLEMENT



NXP Microcontroller Enablement Consolidation

Hardware Development Tools

Baseline Evaluation Kits



LPC Xpresso



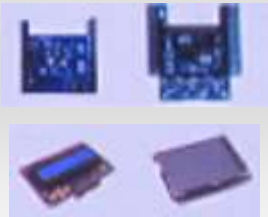
Freedom Development Platform



Tower System

Expansion & Partner Solutions

MCU Expansion boards from NXP & 3rd Parties



Low cost hardware platforms for evaluation and application development. Partner solutions for hardware debugging solutions

Runtime Software

Baseline

Kinetis SDK/LPCOpen

- Drivers
- System Services
- FreeRTOS
- USB
- emWIN
- TCP/IP
- Filesystem



ARMmbed

Micrium

expresslogic



Comprehensive frameworks and solutions for low-power, connected, and secure embedded systems

Expansion – Connect, Control, Graphics



- HomeKit SDK
- Motor Control
- Wireless Charging
- Sensor Fusion
- MFi
- Graphics Partners
- POS / EMV
- Connectivity Solutions



Software frameworks and development tools for targeted applications and certified connectivity solutions

SW Development Tools

IDE Toolchain

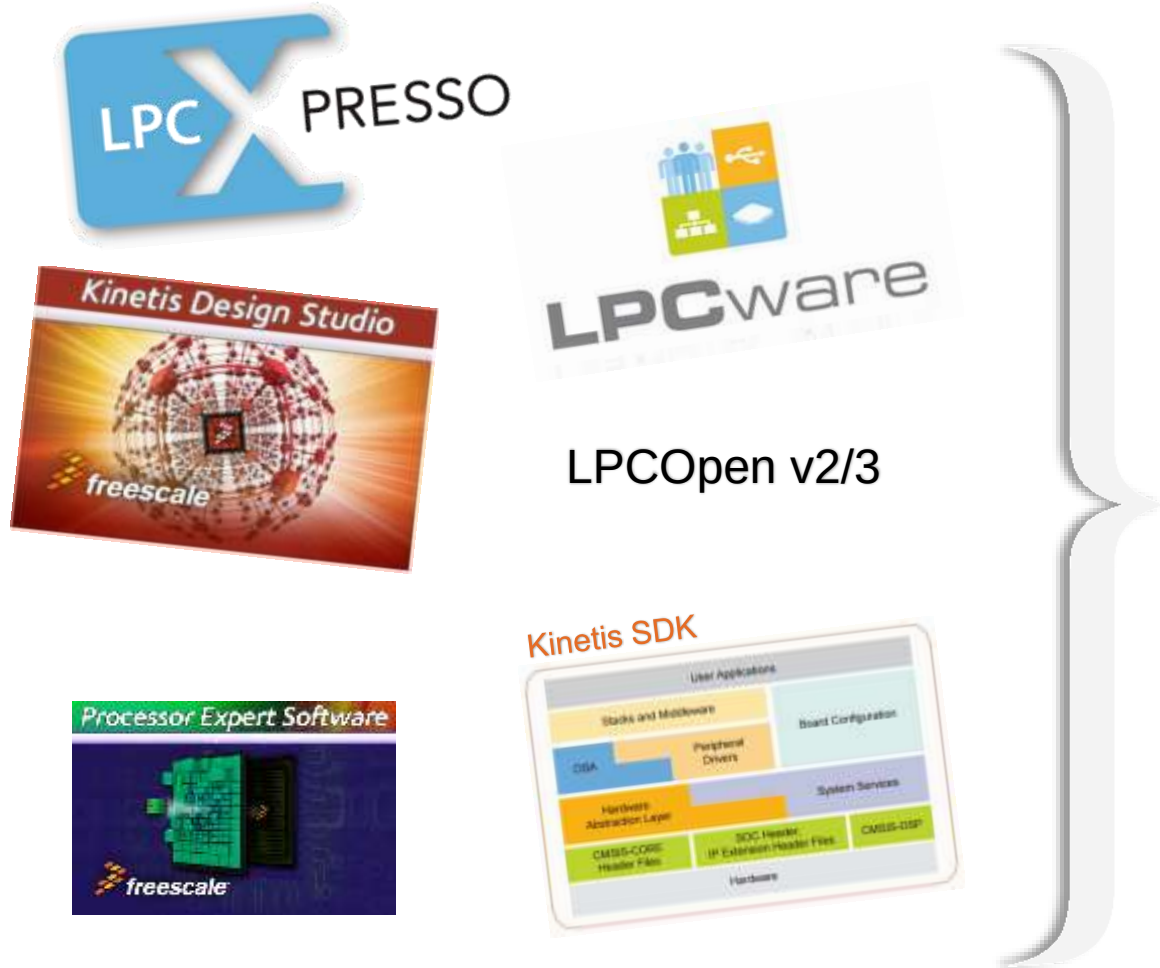


Configuration Tools

- Power Estimation
- BSP Tools
- Project Generator
- Power Analyzer

Industry leading IDE support and intuitive software configuration tools to accelerate application development

NXP Microcontroller Enablement Consolidation



NXP Cortex-M
Microcontrollers

- LPC + Kinetis

MCUXpresso
Software and Tools

- IDE
- SDK
- Config Tools



MCUXpresso Software and Tools

for LPC & Kinetis Microcontrollers



MCUXpresso Software and Tools

- IDE
- SDK
- Config Tools

**NXP Cortex-M
Microcontrollers**

- LPC + Kinetis



MCUXpresso IDE

Edit, compile, debug and optimize in an intuitive and powerful IDE



MCUXpresso SDK

Runtime software including peripheral drivers, middleware, RTOS, demos and more



MCUXpresso Config Tools

Online and desktop tool suite for system configuration and optimization

NXP Designs

- A one-stop-website to help customers develop their embedded design using complete NXP technology with,
- Projects, solutions and reference designs using NXP technology
- Access to information such as software, schematics and user documentation for quick use and customization
- Designed by NXP technical experts and third party partners

www.nxp.com/nxpdesigns

NXP Designs

Technical content and expertise to help jump start your design and get you to production faster.

Explore NXP Designs

[+ NXP Designs by Application](#)

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	NXP Design	Description	Quick Links
	Hexiwear - Complete IoT Development Solution	Next generation IoT development platform designed to reduce time to market. Comes in compact form factor with on-boards MCUs, BLE Connectivity, sensors, OLED display, battery. Open source software package includes embedded software, cellphone apps and cloud connectivity. Expandable with 200 additional click boards™	■ Fact Sheet ■ Buy ■ Software ■ Schematic ■ Design Files ■ Bill of Material (BOM) ■ iOS App ■ Android App
	Quadcopter Drone	The powerful Electronic Speed Controller (ESC) solution combines four separate ESC boards into one and controlled by with a single Kinetis KV4x or Kinetis KV5x MCU.	■ Software ■ Schematic ■ Design Files ■ Bill of Material (BOM) ■ Application Notes
	Internet Radio Audio Streaming	Demonstrate an easy-to-use internet-radio application.	■ Software ■ Application Note ■ Brochure
	BLE Controlled Robot	The Bluetooth® Low Energy (BLE) controlled robot brings the robot control to your cellphone. Develop your own smart robot using FRDM-KW40 board and Pololu Zumo Robot.	■ Software ■ Schematic ■ Design Files ■ Bill of Material (BOM) ■ Application Notes and

Hexiwear Next Gen IoT Solution for Innovators

Value Proposition

Fastest Time to Market

Versatile solution created to reduce development and design time for IoT applications

Path to Manufacturing

Designed to accelerate the customer's time to manufacturing. The BOM is readily available in the market and the design files/schematic is open source.

Optimized Hardware Design

The hardware design is optimized and includes several best practices suggested for designing low power IoT applications

Robust Software

The software includes everything from the embedded drivers to the cloud connectivity - all open source, easy to use and optimized

Community Supported

Hexiwear is a true community based solution and enables customers to access the rich pool of resources created by community

Target Applications

IoT end nodes & Wearables



Key Components

Total NXP BOM

\$16 - 7 NXP components: MCUs, connectivity, sensors and battery charger - Kinetis K64 MCU based on ARM Cortex-M4 core

Kinetis KW40Z multimode BLE and 802.15.4 radio SoC

Color OLED Display, Rechargeable battery, External flash

Design Resources Available

Software

Schematic, Design Files, Bill of Material (BOM)

iOS and Android App

Software Development Environment

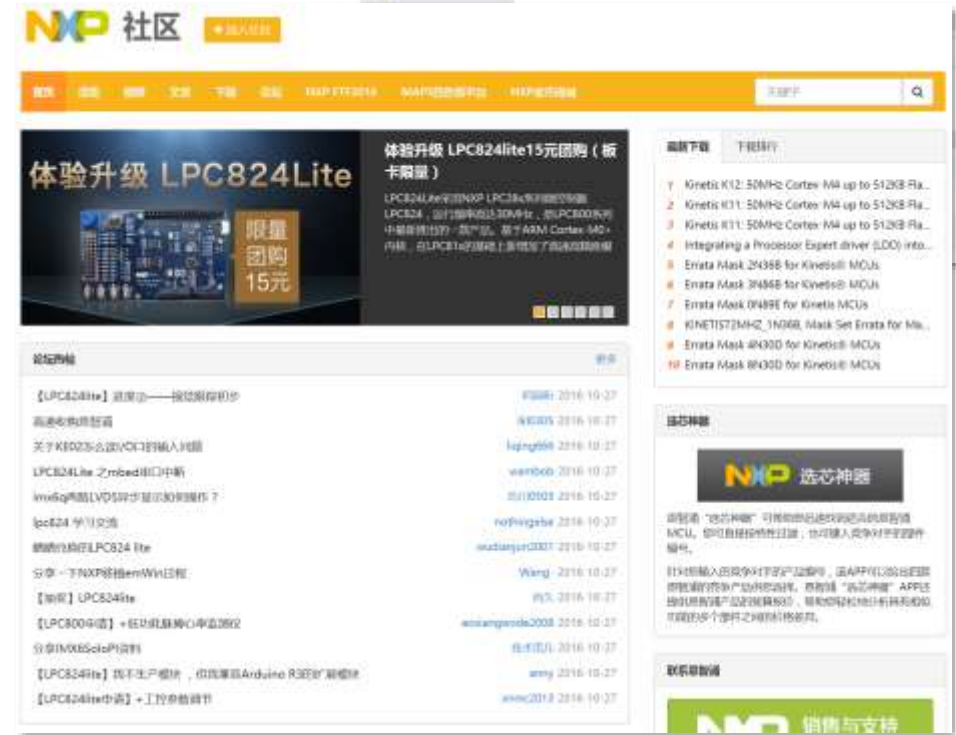
Kinetis SDK (*Open-source and Free*)

Kinetis Design Studio (*Open-source and Free*)

FreeRTOS (*Open-source and Free*)

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SECURE CONNECTIONS
FOR A SMARTER WORLD