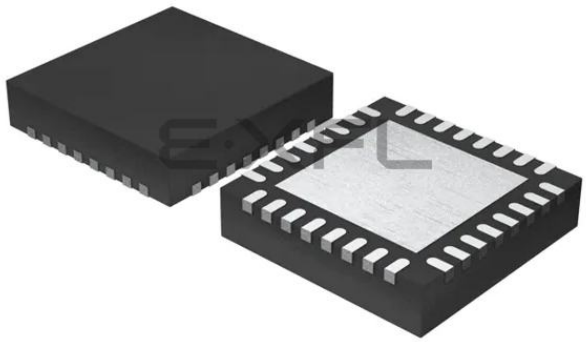


Welcome to E-XFL.COM

What is "Embedded - Microcontrollers"?

"Embedded - Microcontrollers" refer to small, integrated circuits designed to perform specific tasks within larger systems. These microcontrollers are essentially compact computers on a single chip, containing a processor core, memory, and programmable input/output peripherals. They are called "embedded" because they are embedded within electronic devices to control various functions, rather than serving as standalone computers. Microcontrollers are crucial in modern electronics, providing the intelligence and control needed for a wide range of applications.

Applications of "Embedded - Microcontrollers"

Details	
Product Status	Discontinued at Digi-Key
Core Processor	ARM® Cortex®-M0+
Core Size	32-Bit Single-Core
Speed	25MHz
Connectivity	I²C, IrDA, SmartCard, SPI, UART/USART
Peripherals	Brown-out Detect/Reset, DMA, I²S, POR, PWM, WDT
Number of I/O	24
Program Memory Size	64KB (64K x 8)
Program Memory Type	FLASH
EEPROM Size	-
RAM Size	8K x 8
Voltage - Supply (Vcc/Vdd)	1.98V ~ 3.8V
Data Converters	A/D 4x12b
Oscillator Type	Internal
Operating Temperature	-40°C ~ 85°C (TA)
Mounting Type	Surface Mount
Package / Case	32-VQFN Exposed Pad
Supplier Device Package	32-QFN (6x6)
Purchase URL	https://www.e-xfl.com/product-detail/silicon-labs/efm32hg210f64g-b-qfn32r

Lizard Labs

EFM32 Product Introduction

EFM32 – a truly unique microcontroller

CPU and Memory

- ARM Cortex-M processor
- Memory Protection Unit
- Embedded Trace Macrocell
- Flash Program Memory
- RAM Memory
- Debug Interface
- DMA

Clock Management

- High Freq Crystal Osc
- High Freq RC Osc
- Low Freq Crystal Osc
- Low Freq RC Osc
- Ultra Low Freq RC Osc
- Auxiliary RC Osc

Energy Management

- Voltage Regulator
- Voltage Comparator
- Brown-out Detector
- Power-on Reset
- Back-up Power Domain

32-bit bus

Peripheral Reflex System

Serial Interfaces

- USART
- UART
- Low Energy UART
- I2C
- USB

I/O Ports

- External Bus Interface
- TFT Driver
- External Interrupt
- General Purpose I/O
- Pin Reset
- GPIO Wake-up

Timers and Triggers

- Timer/ Counter
- Low Energy Sensor IF
- Low Energy Timer
- Real Time Counter
- Pulse Counter
- Watchdog Timer
- Backup RTC

Analog Modules

- ADC
- DAC
- LCD Controller
- Operational Amplifier
- Analog Comparator

Security

- AES Accelerator

Available down to:

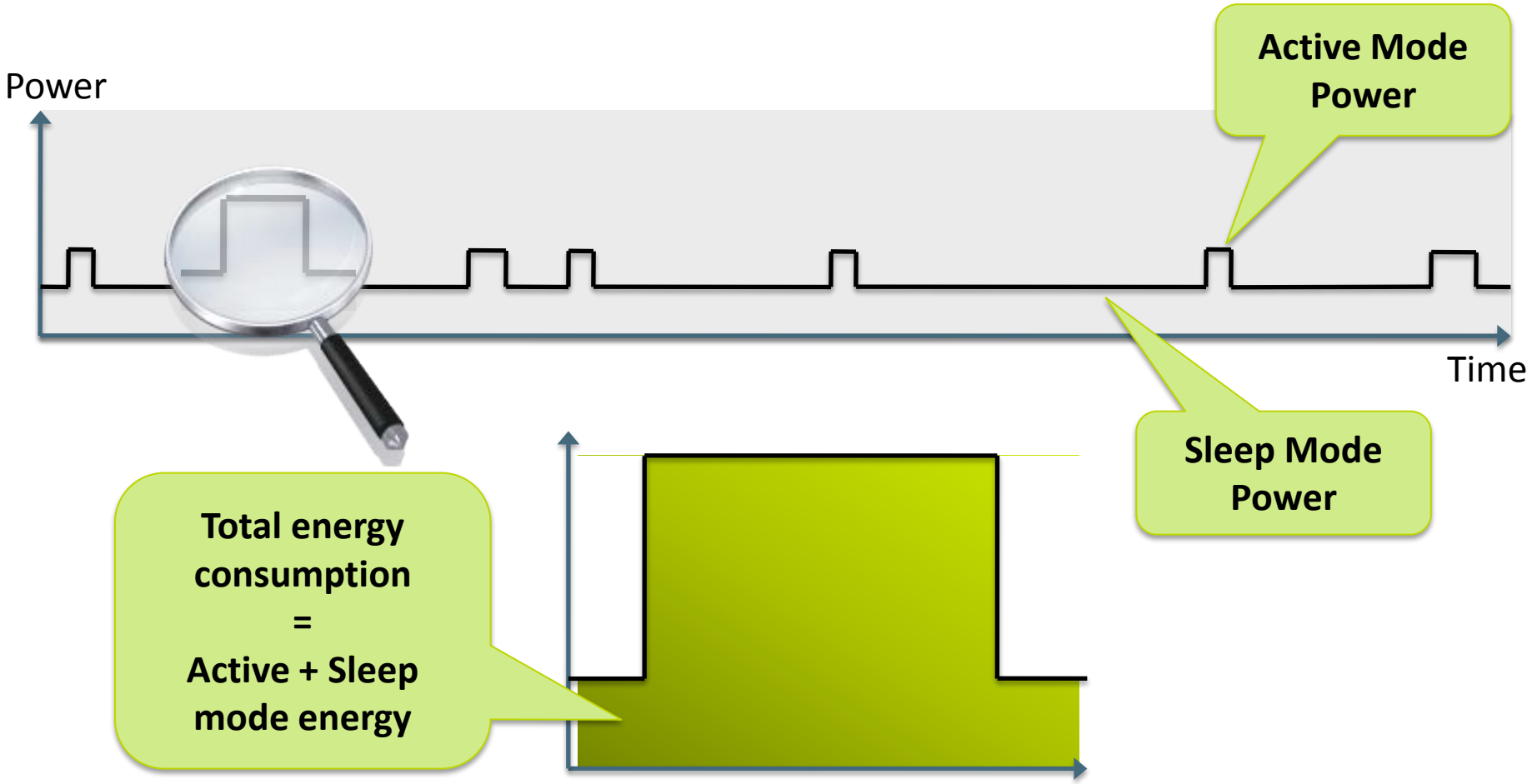
EM0 (Run Mode)	EM1 (Sleep)	EM2 (Deep Sleep)	EM3 (Stop Mode)	EM4 (Shutoff Mode)

2-Oct-13

10 Factors That Make EFM32 The World's Most Energy Friendly Microcontroller

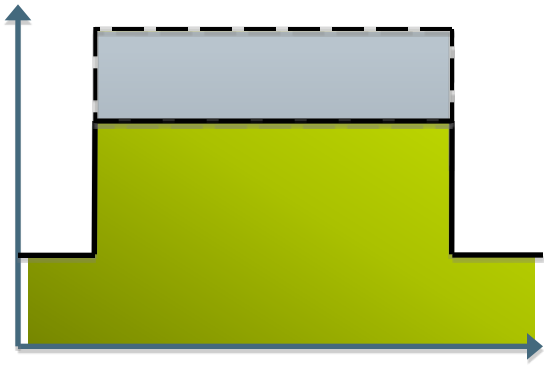
Battery life vs energy consumption

Energy = Power × Time



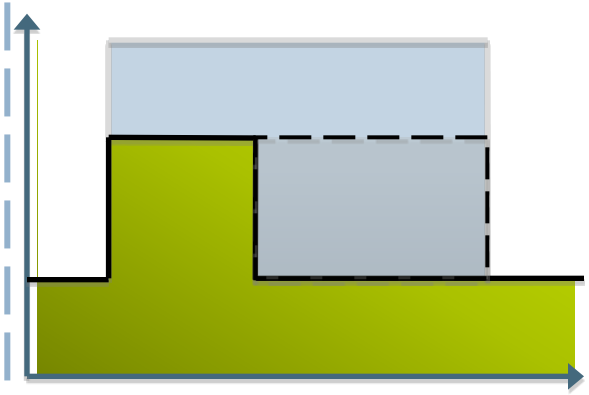
Very low active power consumption 1

µA/MHz @3V @1 MHz	µA/MHz @3V @25 MHz	µA/MHz @3V @32 MHz
210	*150*	*150*



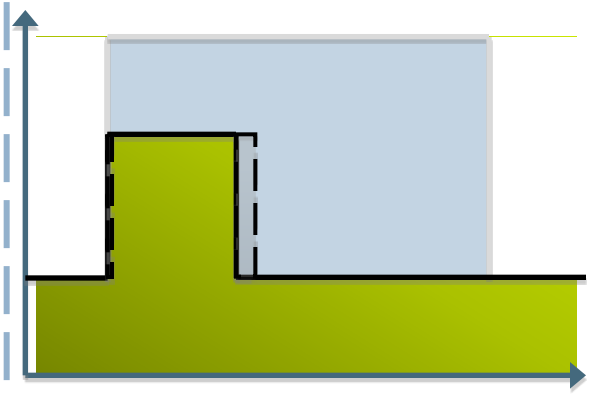
Reduced processing time 2

Cortex-M3 DMIPS/MHz	Cortex-M3 CoreMark/MHz
1.25	*2.17*



Very fast wake-up time 3

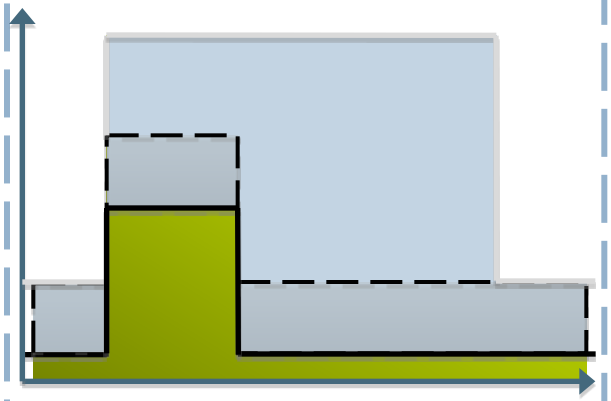
Wake-up time from sleep modes
2 µs



Ultra-low standby current

4

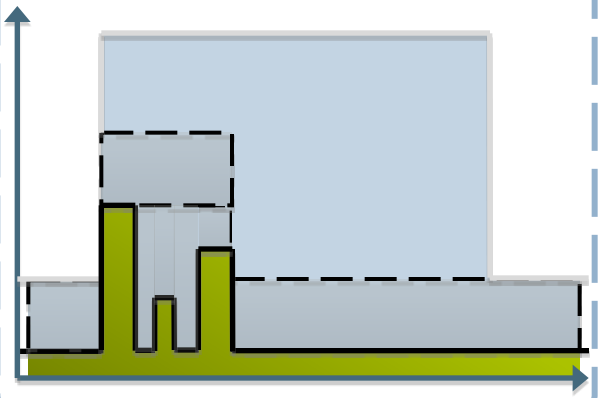
Shutoff current @ 3V	Deep Sleep @ 3V *incl. POR, BOD, RTC, RAM and CPU retained*
20 nA	*900 nA*



Autonomous peripherals

5

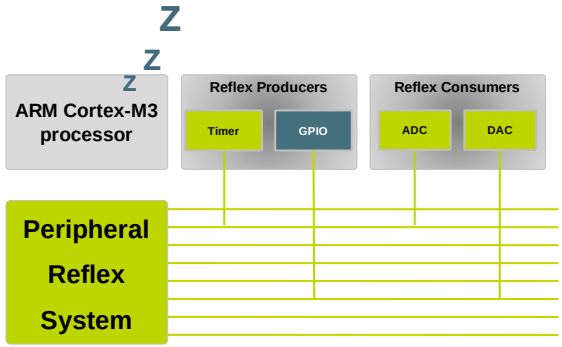
- Operation while CPU sleeps
- Extensive DMA Support
- All peripherals can operate autonomously



Peripheral Reflex System

6

- Direct peripheral interconnection system
- Boosting the value of autonomous operation
- Highly configurable



Well designed Energy Modes 7

EM0 "Run Mode": 150 µA/MHz

EM1 "Sleep Mode": 45 µA/MHz

EM2 "Deep Sleep Mode": 900 nA
RTC, Brown-Out Detection,
RAM and CPU retained

EM3 "Stop Mode": 590 nA
Brown-Out Detection,
RAM & CPU retained

EM4"Shutoff Mode": 20 nA
Pin/GPIO Reset
RTC + 512-byte backup memory : ***400 nA***

Ultra energy efficient peripherals 8

Analog to Digital Converter
12-bit @ 1 MSamples/s: 350 µA

Low Energy UART
Full UART with 32 kHz clock
150 nA @ 9600 baud/s

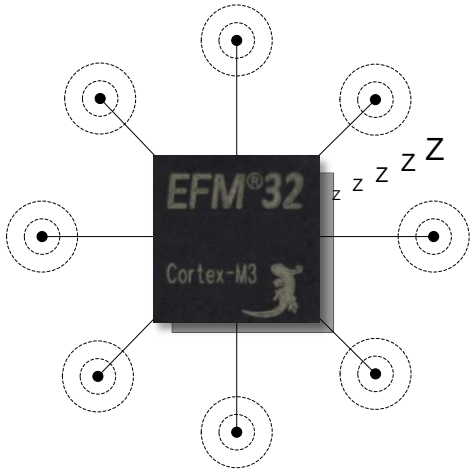
LCD Controller
Directly driving up to 8x36 segment LCDs
Boost/Contrast/Animation/Blink
550 nA for 4x40

Low Energy Sensor Interface 9

Autonomous sensor monitoring in deep sleep

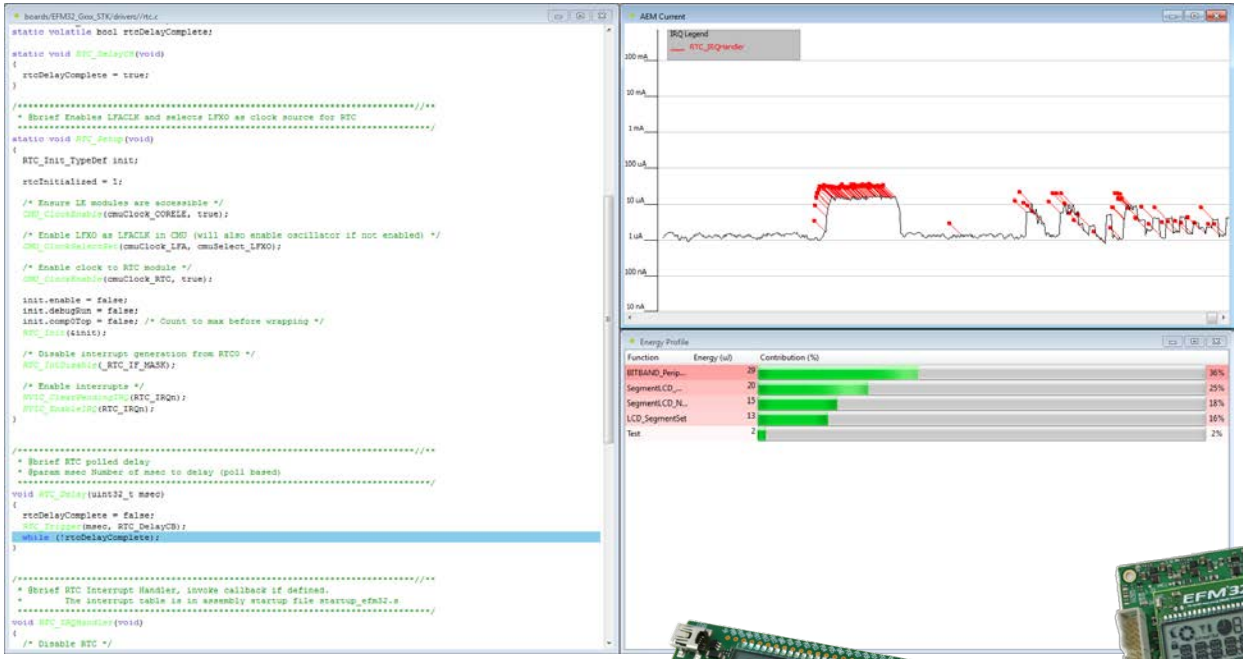
Up to 16 sensors simultaneously

Highly configurable
Resistive, Capacitive, Inductive

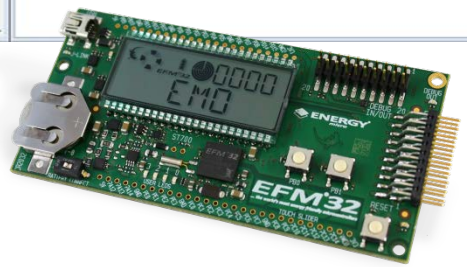


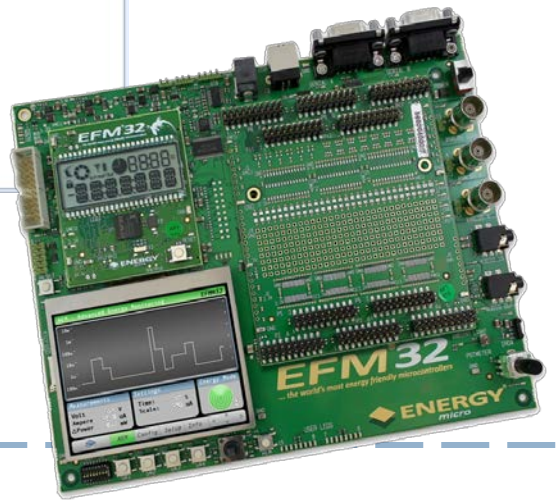
AEM - Advanced Energy Monitoring and the energyAware Profiler

10



The energyAware Profiler is an energy debugging tool that use Advanced Energy Monitoring (AEM) data available from the development tools to perform real-time profiling and debugging of the associated object code.





Simplicity Studio

- Easily access all free software tools
- Always the latest updates and news

Full featured hardware tools

	$69	$69	$79	$299	$309	$349
	Gecko Starter Kit	**Tiny Gecko Starter Kit**	**Leopard Gecko/ Giant Gecko Starter Kit**	**Gecko Development Kit**	**Gecko Development Kit**	**Leopard Gecko/ Giant Gecko Development Kit**
						
Device	EFM32G890F128	EFM32TG840F32	EFM32LG990F256 EFM32GG990F1024	EFM32G890F128 EFM32G290F128	EFM32G890F128	EFM32LG990F256 EFM32GG990F1024
Advanced Energy Monitoring	Yes	Yes	Yes	Yes	Yes	Yes
USB J-Link Debugger	Yes	Yes	Yes	Yes	Yes	Yes
Plug-in MCU and prototyping board	-	-		Yes	Yes	Yes
Onboard J-Trace	-	-		-	-	Yes
Screen	4x40 segment LCD	8x20 segment LCD	8x20 segment LCD	4x40 segment LCD (EFM32G890-DK only) 320x240 RGB TFT	4x40 segment LCD 320x240 RGB TFT w/touch	320x240 RGB TFT w/touch

2-Oct-13

Simplicity Ecosystem

Simplicity Studio

DEBUG ADAPTERS

ABATRON
COOCOX
HITEX
KEIL
OLIMEX
SEGGER
IAR SYSTEMS
LAUTERBACH

PARTNERS

ARM
CALIMA
HITEX
KEIL
LIVETEC
MICRIUM
NEO BLUE
TALON
SEGGER
PENGUTRONIX

IDE/COMPILER

ATOLLIC
COOCOX
IAR
CROSSWARE
HITEX
KEIL
CODE SOURCERY
ROWLEY ASSOCIATES

Middleware

AVIX-RT
CMX
COOCOOX
FREERTOS
JUNGO
WICENTRIC
uC/OS-II
uc/OS-III
RT-LABS
SEGGER
SMX RTOS
THREAD X

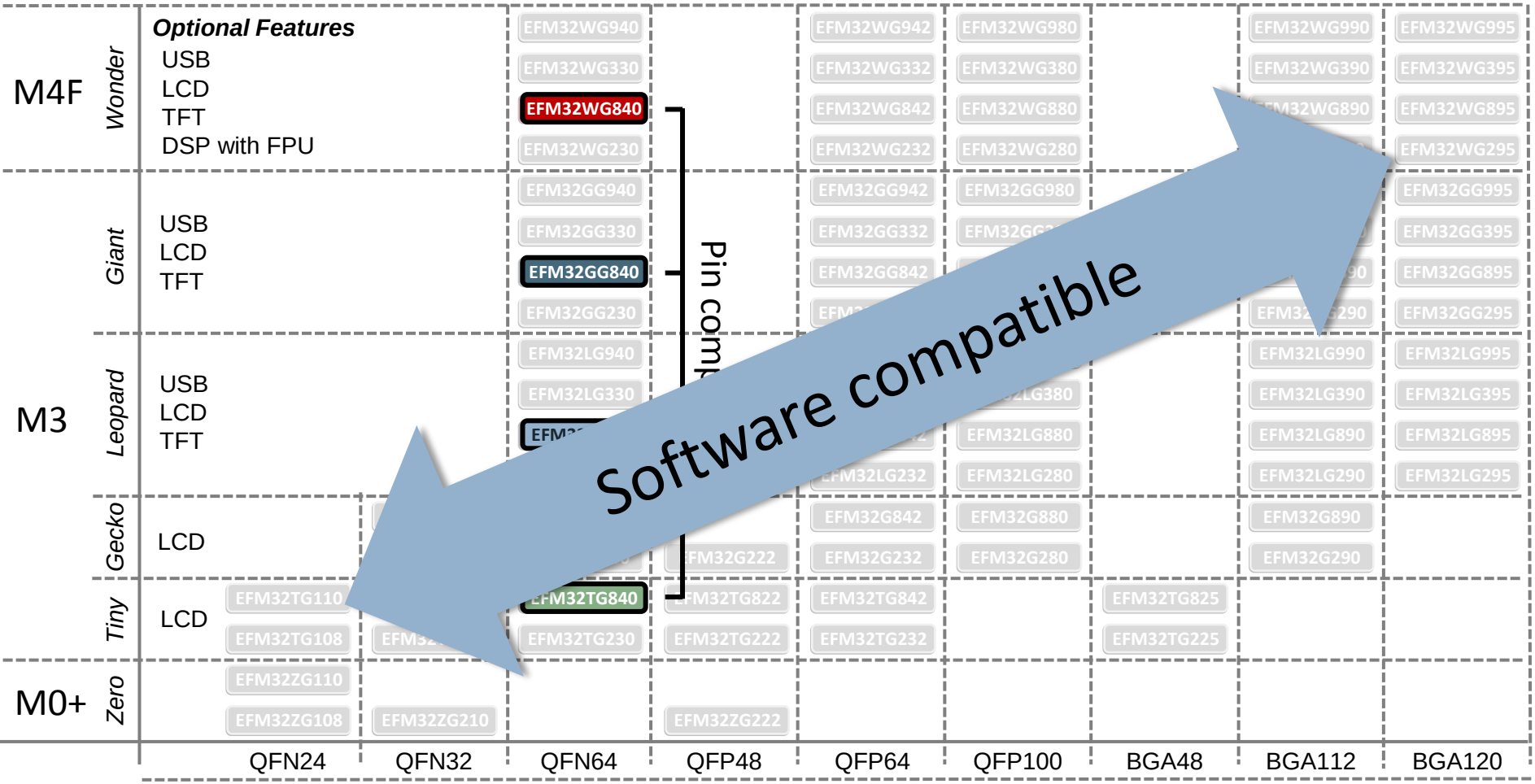
Development Kits

PROGRAMMERS

ELNEC
GOEPEL
PHYTON
RK-SYSTEM
SEGGER

240+ Scalable Low Energy EFM32s

- Software compatible
- Pin compatibility within each package



ZERO — Up to 32 MHz, Flash: 4 - 32, RAM: 2 - 4

TINY — Up to 32 MHz, Flash: 4 - 32, RAM: 2 - 4

GECKO — Up to 32 MHz, Flash: 16 – 128, RAM: 8 - 16

LEOPARD — Up to 48 MHz, Flash: 64 - 256, RAM: 32

GIANT — Up to 48 MHz, Flash: 512 - 1024, RAM: 128

WONDER — Up to 48 MHz, Flash: 64 - 256, RAM: 32

www.silabs.com