Digital Power Control with STM32

STM32G474 MCU
shaped for power control

Biricha Design Tools for STM32 MCUs

Biricha STM32
4 Day Workshop with hands-on

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STM32G474 mcu

STM32G474 MCU for efficient digital control

Connectivity
- 4x SPI, 4x I²C, 6x UxART
- 1x USB 2.0 FS, 1x USB-C PD3.0 (+PHY)
- 3x CAN-FD
- 2x I²S half duplex, SAI

External interface
- FSMC 8-/16-bit (TFT-LCD, SRAM, NOR, NAND)
- Quad SPI

Accelerators
- ART Accelerator™
- 32-Kbyte CCM-SRAM

Math Accelerators
- Cordic (trigo...) Filtering

Arm® Cortex®-M4
Up to 170 MHz
213 DMIPS

- Floating Point Unit
- Memory Protection Unit
- Embedded Trace Macrocell
- 16-channel DMA + MUX
- Up to 2x 256-Kbyte Flash memory / ECC Dual Bank
- 96-Kbyte SRAM

Timers
- 5x 16-bit timers
- 2x 16-bit basic timers
- 3x 16-bit advanced motor control timers
- 2x 32-bit timers
- 1x 16-bit LP timer
- 1x HR timer (D-Power) 12-channel w/ 184ps (A. delay line)

Analog
- 5x 12-bit ADC w/ HW overspl
- 7x Comparators
- 7x DAC (3x buff + 4x non-buff)
- 6x Op-Amp (PGA)
- 1x temperature sensor
- Internal voltage reference

170MHz Cortex-M4 with FPU and
High resolution timer (184ps) for precise control

Rich analog peripheral set for power conversion applications including fast ADCs, comparators, DACs and programmable gain op-amps

STM32G474 Digital Power Discovery Board
Demonstrating Buck-Boost PSU and LED dimming

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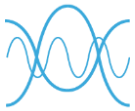
STM32G4 series – key messages

Performance

- Arm® Cortex®-M4 at 170 MHz
- 213 DMIPS and 550 CoreMark® results
- Better dynamic power consumption (163µA/MHz)
- ART Accelerator™ (dynamic cache)
- Mathematical accelerators
- CCM-SRAM Routine Booster (static cache)



Rich Integrated Analog and Digital

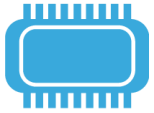
- Op-Amps (Built-in gain), DACs, Comparators
- 12-bit ADCs 4Msps with hardware oversampling
- CAN-FD (flexible data rate – 8Mbps bit rate)
- High resolution timer (184 ps)
- USB type-C Power Delivery3.0
- 1% RC accuracy [-5°..90°C], 2% full T° range

Safety and security focus

- Dual Bank Flash with ECC (error code correction)
- Securable Memory Area
- Hardware encryption AES-256
- SIL, Class-B
- SRAM with Parity bit

Secure Live Upgrade

Functional safety design packages



Complete portfolio

- Complements existing STM32F3 Series portfolio
- From -40°C up to 85 or 125°C devices
- From 32- up to 128-pin
- From 32KB to 512KB Flash

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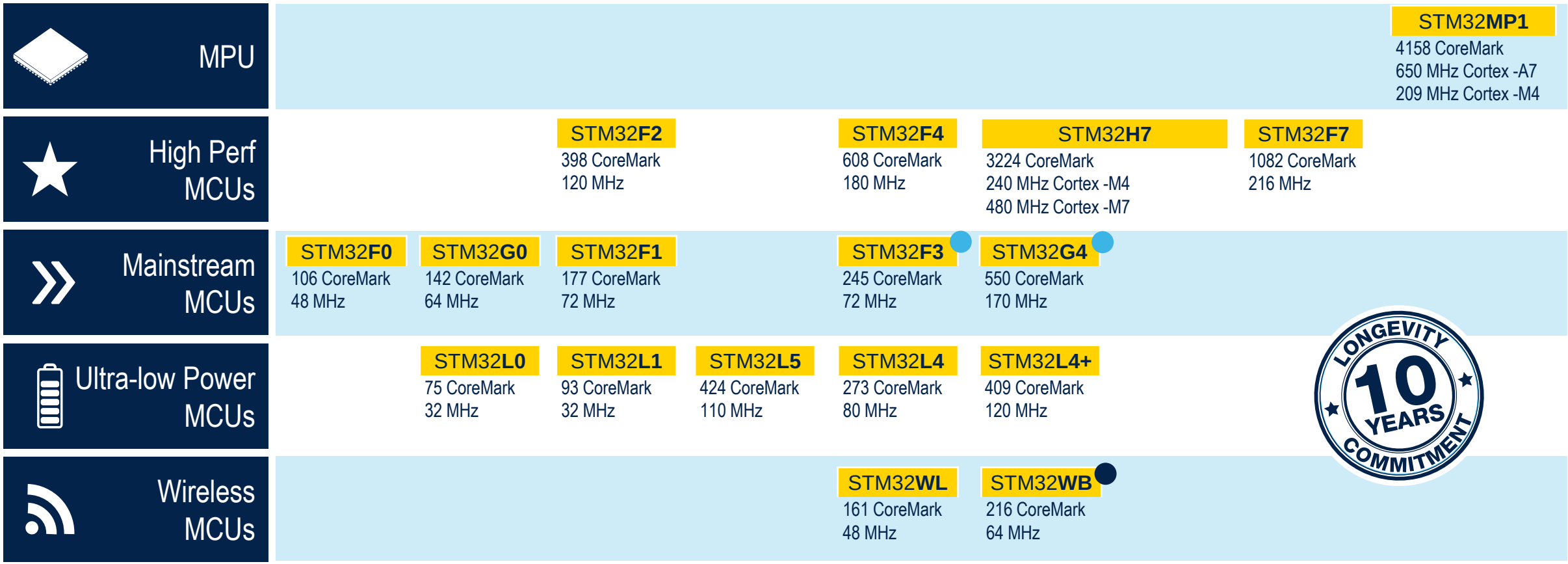
STM32 MCU & MPU roadmap



Optimized for mixed-signal applications

Cortex-M0+ Radio co-processor

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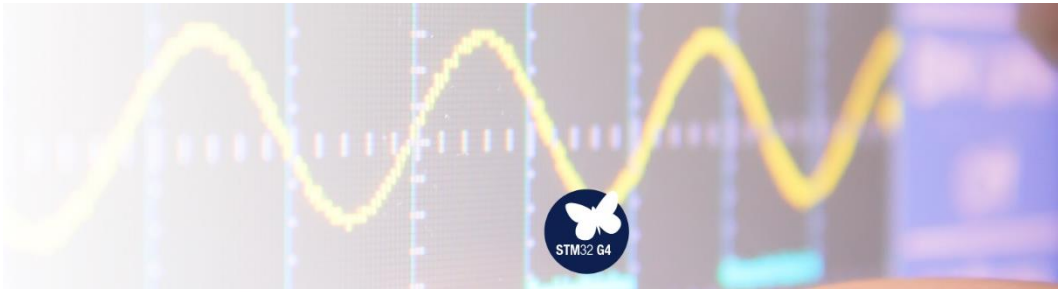
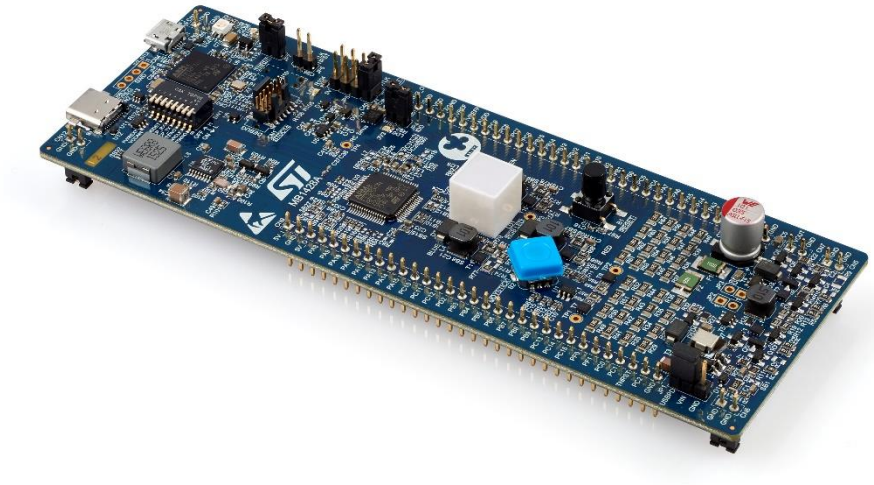
Biricha design tools for STM32

Biricha design tools are now free for STM32





ST WDS digital power supply design tool from Biricha now available free for STM32

ST PLD digital power faction correction design tool from Biricha now available for free for STM32

Examples provided for use with the STM32G474 Digital Power Discovery kit (B-G474E-DPOW1)

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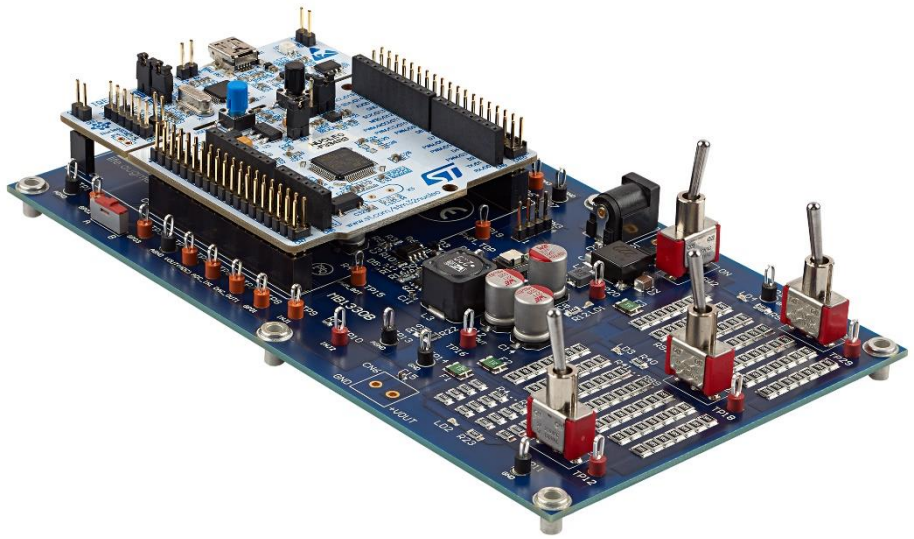
BIRICHA DIGITAL

STM32 digital PSU and PFC workshop

STM32 Digital Power Supply and PFC hands on 4 day workshop



Biricha Digital Power:
World leading expertise and training in Digital Power

Biricha Digital Power Supply Workshop using STM32 provides theory and practical power supply and PFC design over 4 days with hands on exercises

Workshops are offered regionally and based on the STM32G474 Nucleo and power supply expansion board

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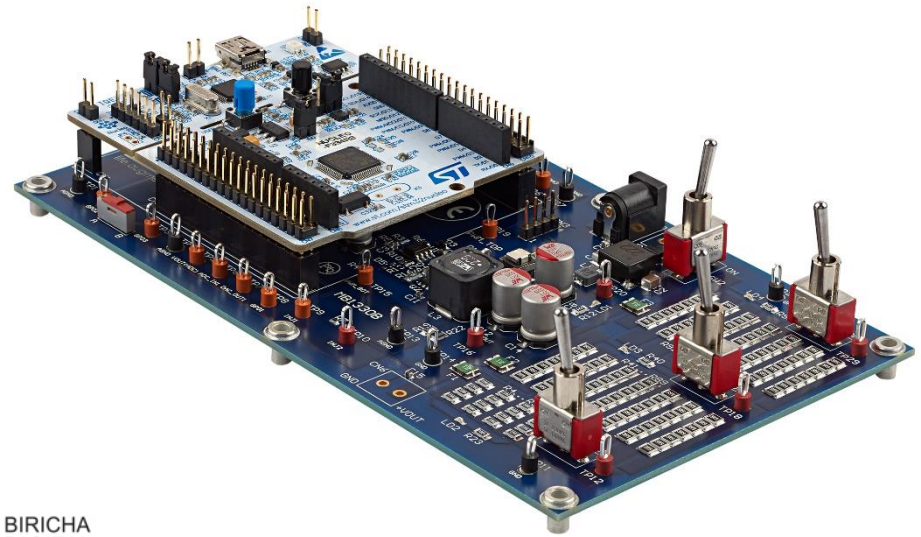
BIRICHA DIGITAL

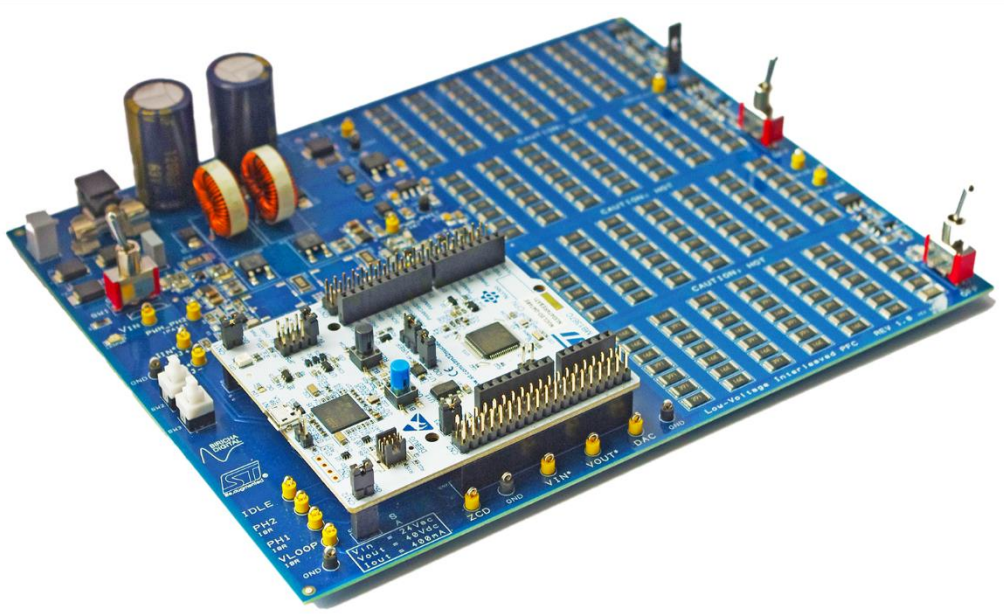
STM32 digital PSU and PFC workshop

Biricha workshop kits based on STM32G4 Series

Biricha Power Supply Unit (PSU) kit:
Nucleo-G474 control board with customer expansion buck-boost board



Biricha Power Factor Correction (PFC) kit:
Nucleo-G474 control board with custom expansion PFC board



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