Qorvo Power Application Controllers® (PAC)

PAC expands portfolio to include battery management

PAC5xxx

Motor Control Solutions

Digital MCU	Motor Control Analog
Serial Interface UART, SPI, I2C, CAN	**PWM Engine** 4x 16-bit timers, up to 32 channels HW dead-time control, 3.3 ns resolution	**Configurable Power Manager** 40-600 V DC/DC controllers Linear regulators
Arm® Cortex®-M0/M4F + Memory 50-150 MHz 32-128 kB flash 8-32 kB SRAM HW Multiplier/divider 24-bit RTC & WDT 24-bit SysTick, NVIC	**Application Specific Drivers** High-side gate drivers Low-side gate drivers Open drain drivers
Data Acquisition & Sequencer 10-bit 1 MSPS to 12-bit 2.5 MSPS ADC (Voltage & temp) Auto-sampling sequencer	**Configurable Analog Front-End** 3 differential PGAs 4 single-ended PGAs 10 comparators 2 DACs (8 to 10-bit) Temperature monitor

PAC2xxx

Battery Management Solutions

Digital MCU	BMS Analog
Serial Interface UART, SPI, I2C, CAN	**PWM Engine** 4x 16-bit timers, up to 32 channels HW dead-time control, 3.3 ns resolution	**Configurable Power Manager** 145 V DC/DC Buck HV gate drive charge pump 5 V/200 mA regulator LDOs & Vref
Arm Cortex-M0/M4F + Memory 50-150 MHz 32-128kB flash 8-32 kB SRAM HW Multiplier/divider 24-bit RTC & WDT 24-bit SysTick, NVIC	**Application Specific Drivers** CHG/DSG FET drivers External FUSE FET driver 10-20s cell balancing (50 mA)
Data Acquisition & Sequencer 10-bit 1 MSPS to 12-bit 2.5 MSPS ADC (Voltage & temp) Auto-sampling sequencer	**Configurable Analog Front-End** 16-bit SD ADC with differential PGA (current sensing) 16-bit SD ADC (cell balancing) PWR monitoring & 2-level OCP

Optimized for Intelligent Motor & BMS Applications

- Motor optimized, configurable PWM engine with fine resolution
- Configurable for 5-600 V DC/DC applications (120-240 V AC)
- Highly configurable BMS analog front-end (AFE)
- 10-20s cell balancing (50 mA)

Best-In-Class Analog Integration

- Fully integrated 3 HS/3 LS gate drivers (up to 600 V)
- Up to 12-bit 2.5 MSPS ADC & sequencer
- Integrated 16-bit Sigma delta ADCs for current sensing and cell balancing
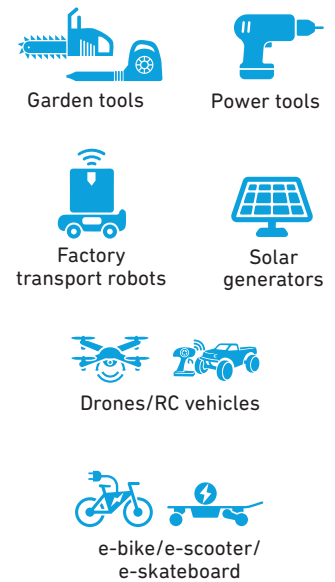- Integrated power regulators

Best-In-Class Digital Integration

- Industry-leading Arm Cortex MCU: 50 MHz Arm Cortex-M0 or 150 MHz Arm Cortex-M4F
- Up to 128 kB flash and 32 kB SRAM
- CAN, UART, SPI, 12C

AC Powered

Refrigerator & compressor sub-sys

Range hood

Ceiling/floor fans

Hairdryer

Washing machine

Server/telcom fan

Motor with integrated control

Hand dryer

Water & medical pumps

Battery Powered

Garden tools

Power tools

Factory transport robots

Solar generators

Drones/RC vehicles

e-bike/e-scooter/ e-skateboard

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PAC Family Road Map

Motor Control Solutions

600 V Motor Controllers (BLDC/PMSM/AC Induction)	M0 qorvo PAC5210 IPM Control	M0 qorvo PAC5250 Flyback 5253/5255	M4F qorvo PAC5556A Buck	M0 qorvo PAC5256 Buck
160 V Motor Controllers (BLDC/PMSM)		M0 qorvo PAC5232 Buck	M4F qorvo PAC5532 Buck	
70 V Motor Controllers (BLDC/PMSM)	CB M0 qorvo PAC5223/5 Buck/Sepic	IO M4F qorvo PAC5524 Buck/Sepic	M4F qorvo PAC5523A Buck/Sepic	
40-52 V Motor Controllers (BLDC/PMSM)	M0 qorvo PAC5222 Buck/Sepic		M4F qorvo PAC5526/7 Charge Pump	M0 qorvo PAC5285 20 W Int. FETS

New BMS Products
SAMPLING NOW!

qorvo
PAC22140 — 10-20s Cortex-M0 (50 MHz) with 32 k flash & 8 k SRAM

qorvo
PAC25140 — 10-20s Cortex-M4F (150 MHz) with 128 k flash & 32 k SRAM

For more information
MOTOR CONTROL

www.qorvo.com/go/motor-control

For more information
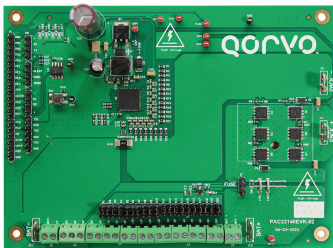BATTERY MANAGEMENT SOLUTIONS

www.qorvo.com/go/BMS

BMS Tools and Resources
Full system and development support

Hardware Support

- BMS EVK module
- Application expertise design

Advanced Algorithms

- Cell balancing
- Coulomb counting/gas gauging

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IDE/Programmer

- IAR/Keil/Eclipse
- J-link/IAR I-jet

Battery Management Algorithms

- Software development kit
- Peripheral examples
- BMS application example

Miscellaneous Tools

- UART boot leader
- UL/IEC 60730 class B safety
- LIN master/slave driver
- CAN controller/driver
- Gang programmers

qorvo®