

dsPIC33A DSCs: Real-Time Control with Precision and Performance



A Leading Provider of Smart, Connected and Secure Embedded Control Solutions

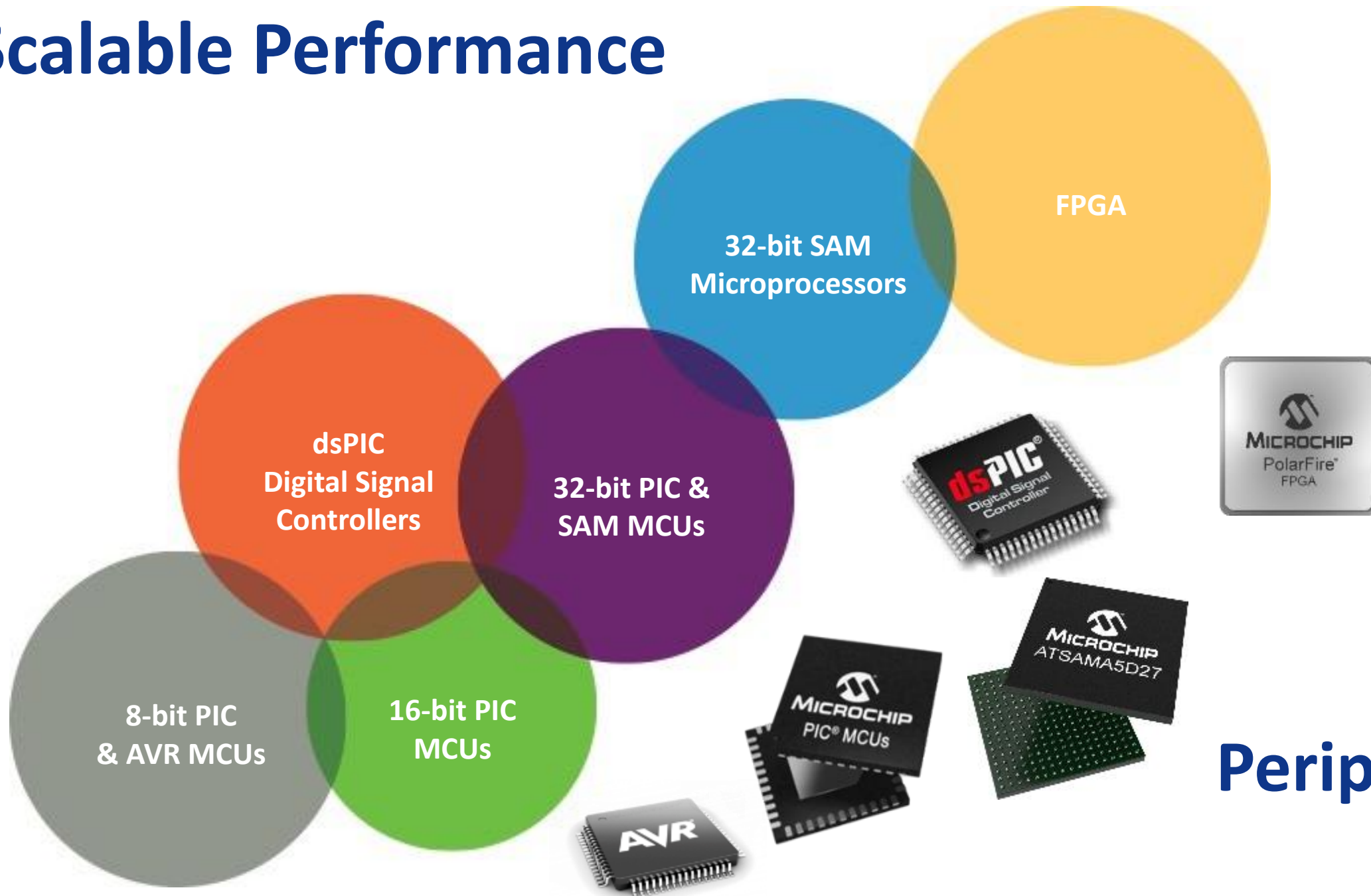
Driving Innovation and Precision Performance for Real-Time Control



SMART | CONNECTED | SECURE

dsPIC BU
Sept 2026

Scalable Performance

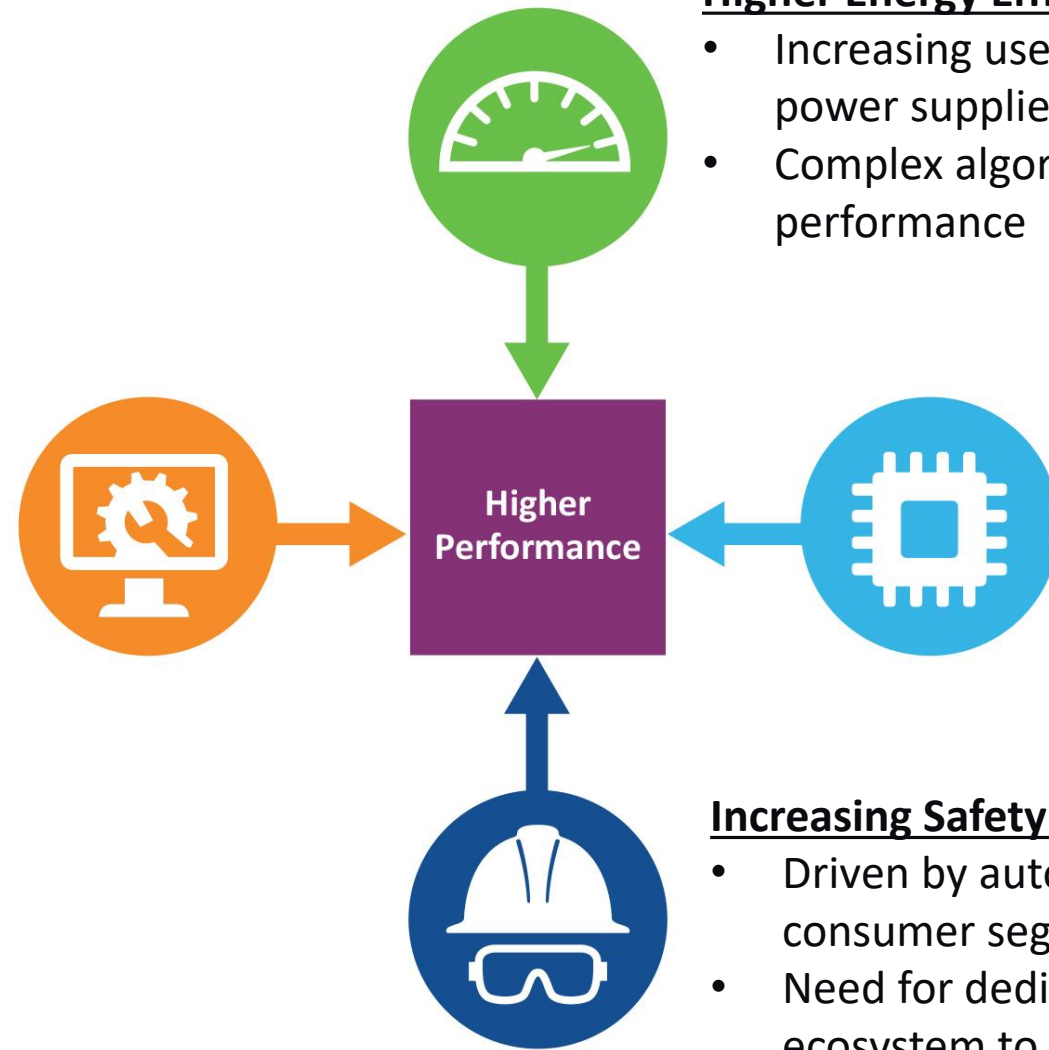


**Smart
Peripherals**

Embedded Systems Market Trends

Increased Software Complexities

- Use of model-based designs to simplify and accelerate development
- Complex ecosystem with higher levels of abstraction
- Driving more memory and performance



Higher Energy Efficiency

- Increasing use of efficient motors, power supplies and chargers
- Complex algorithms to optimize performance

One Controller-Multiple Functions

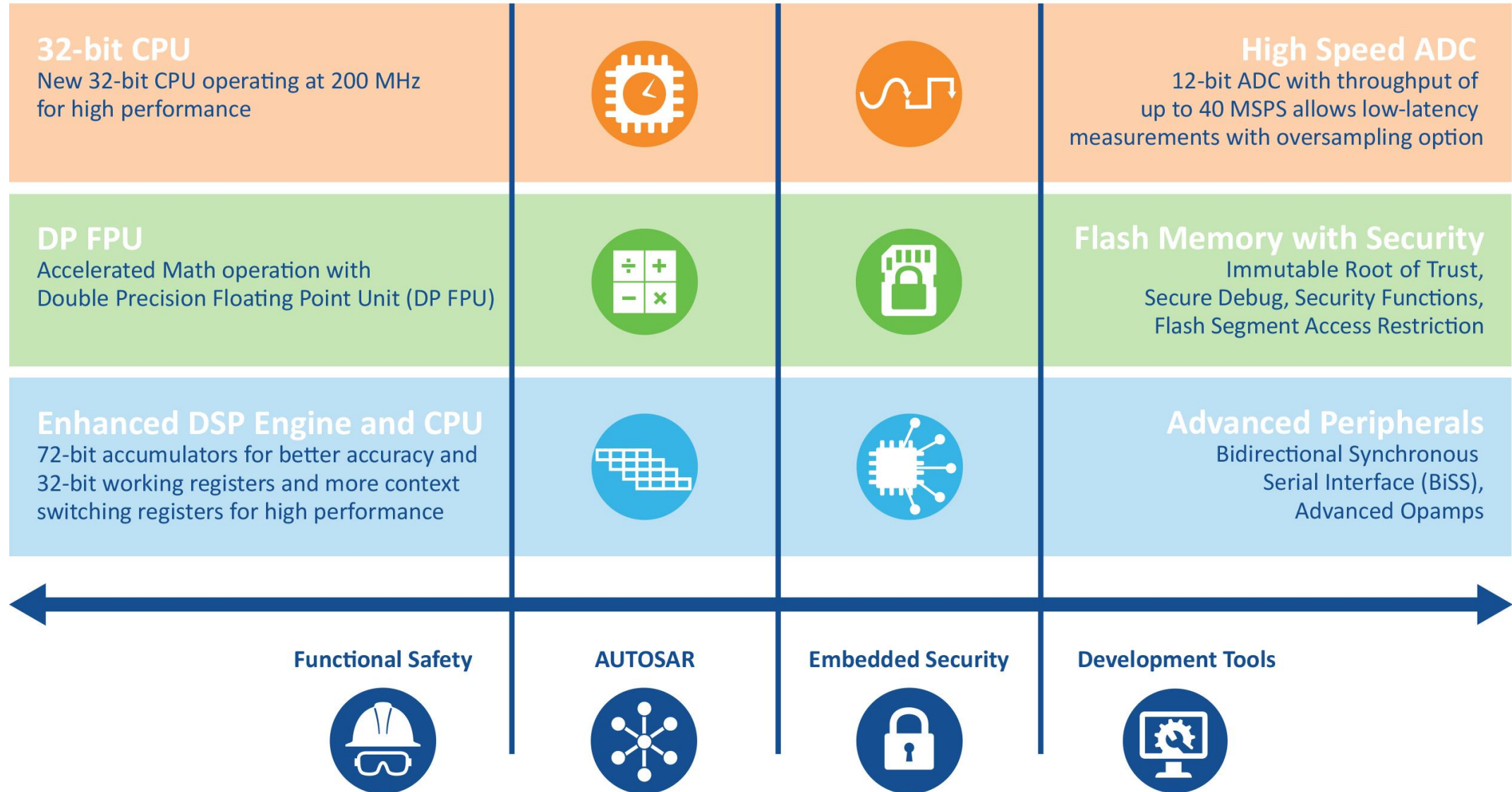
- More coordinated control loop
- Optimized system architecture
- More integrated peripherals to save board space and cost
- High speed peripherals for enhanced performance

Increasing Safety and Security Requirements

- Driven by automotive, industrial and consumer segments
- Need for dedicated safety features and ecosystem to meet safety goals
- Protect system with robust security features

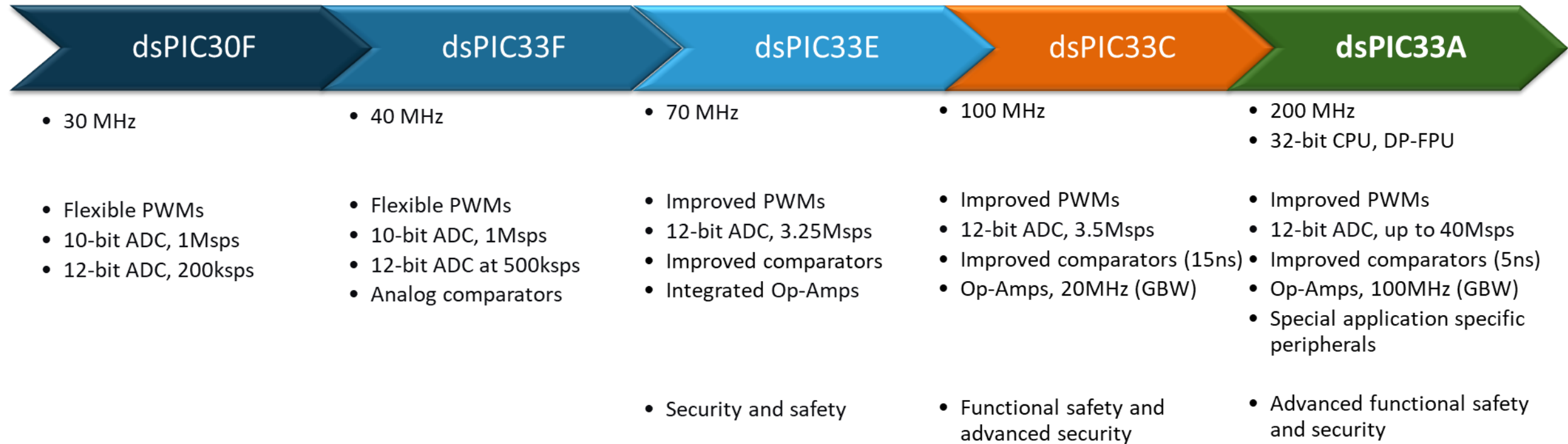
dsPIC33A Platform Key Features and Enhancements

Driving Innovation and Precision Performance



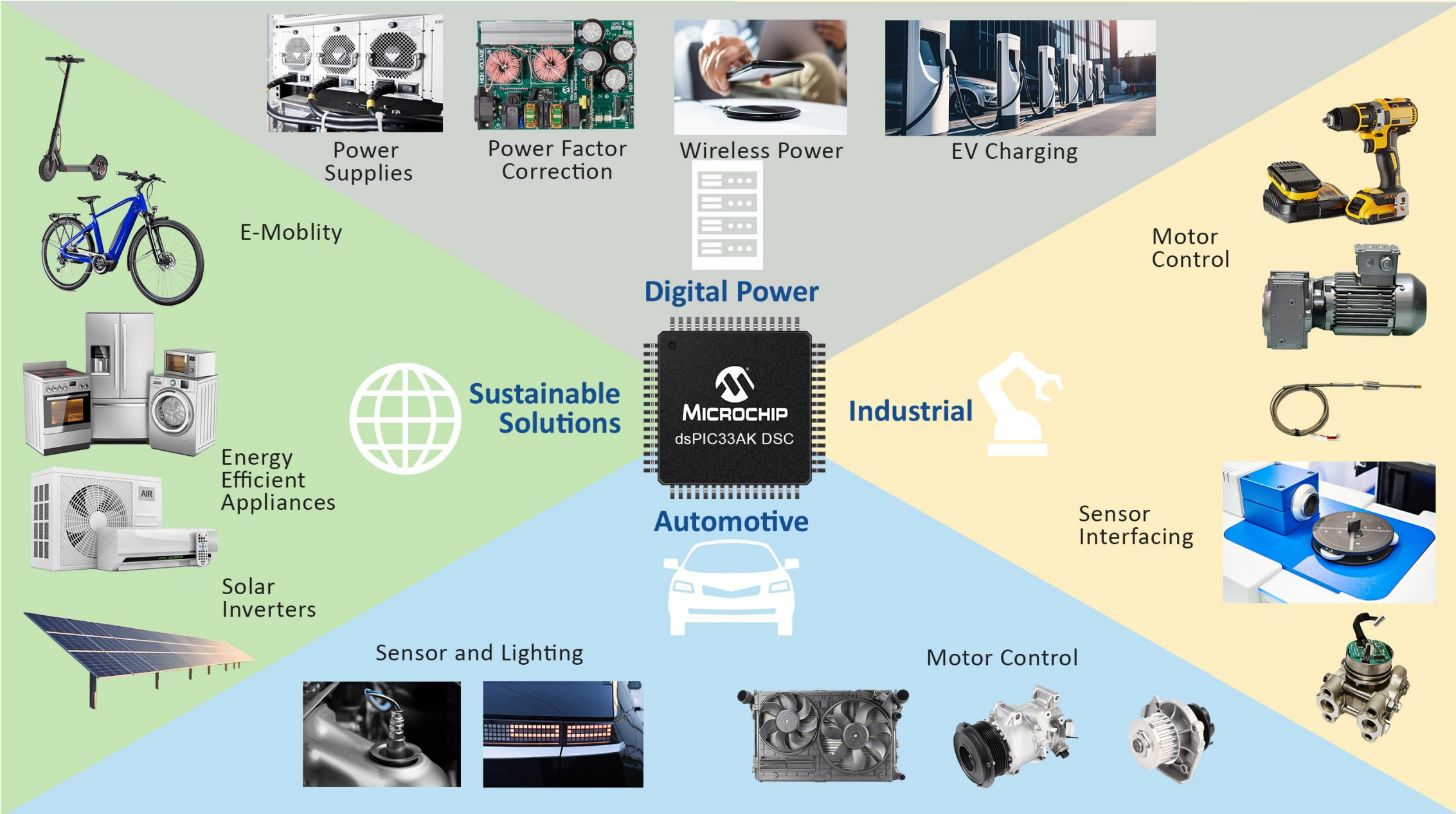
dsPIC33 DSC Core Evolution

Increasing Performance and Integration with each generation



As performance requirements increase, dsPIC33A DSCs provide a next step up in performance while preserving legacy code and ecosystem. The dsPIC33A DSCs offer common peripherals and look and feel to the older dsPIC33 generations and provide an easy migration path forward and still maintain low latency real-time control.

Target Applications



dsPIC33A DSCs in Electric Vehicles



Advanced Sensing and Touch

- Hands-on/off detection
- Steering controls



Electric Motor

- Motor control
- Motor position sensing
- Temp sensing



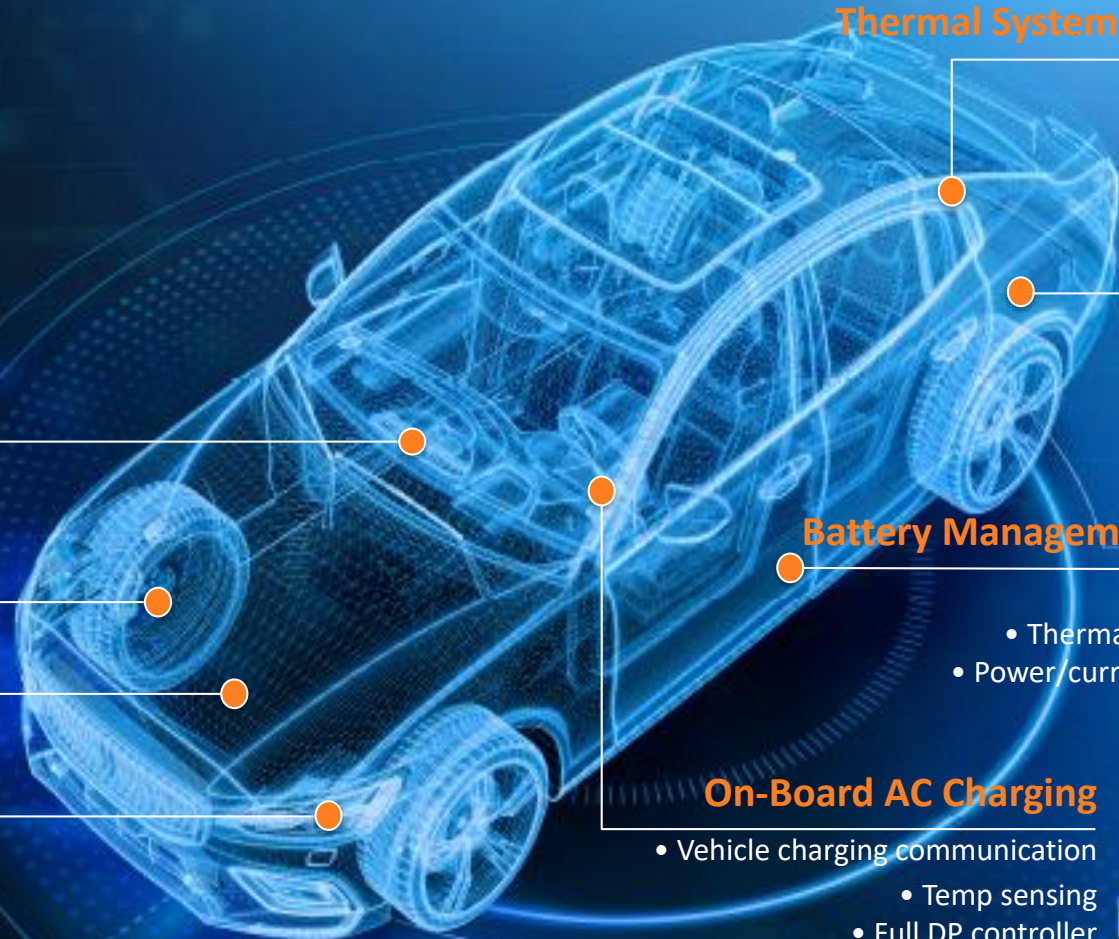
Regenerative Braking System

- Inverter
- Pedal inductive sensing



DC/DC Converter

- Full DP controller
- Temp sensing
- Current sensor



Thermal System/ Compressor

- Motor control
- Temp sensing
- Networking



EV Charging

- Digital control
- Analog sensing
- Current sensing



Battery Management System

- Networking
- Thermal management
- Power/current monitoring

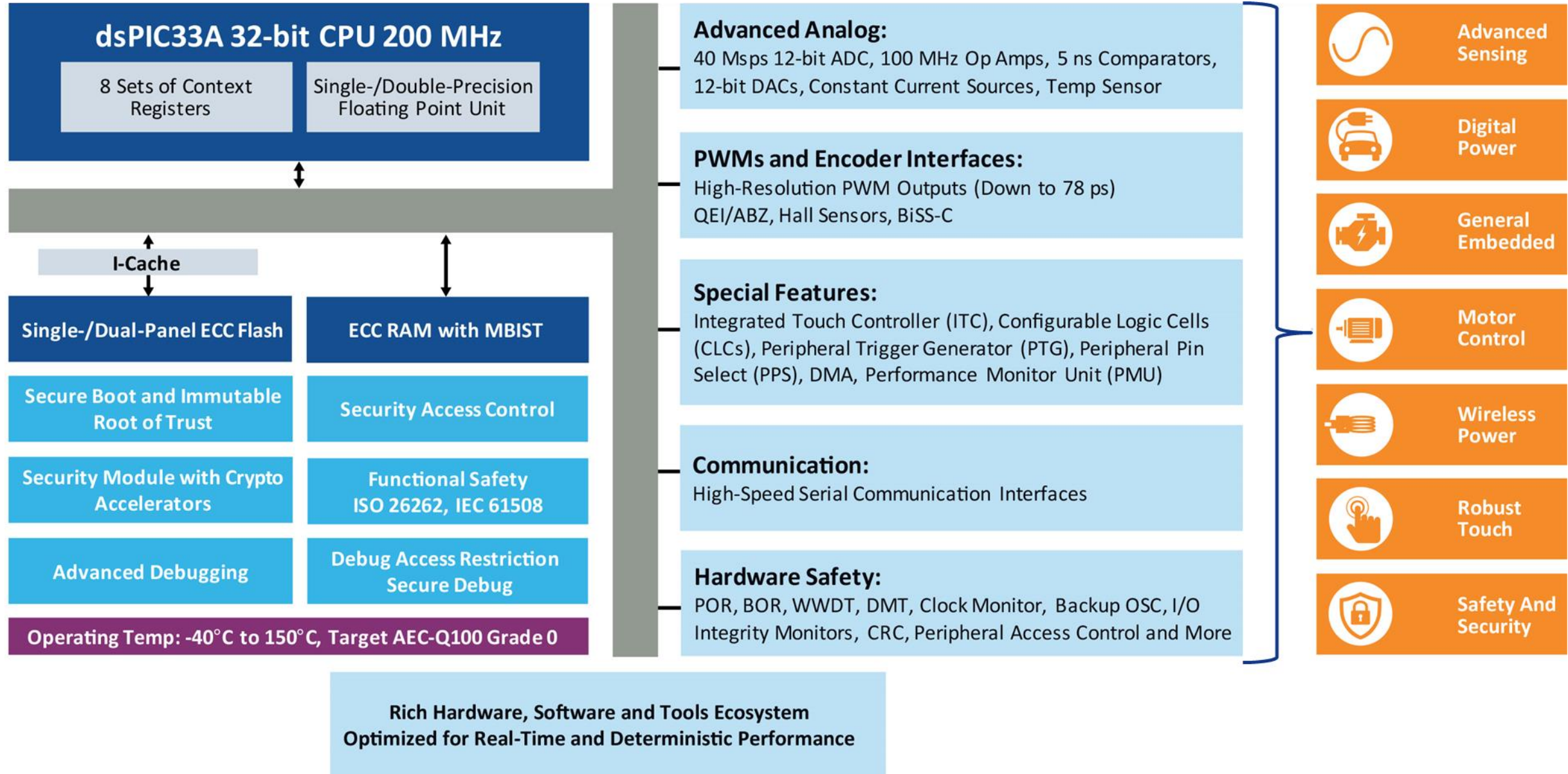


On-Board AC Charging

- Vehicle charging communication
 - Temp sensing
 - Full DP controller
 - Current sensor



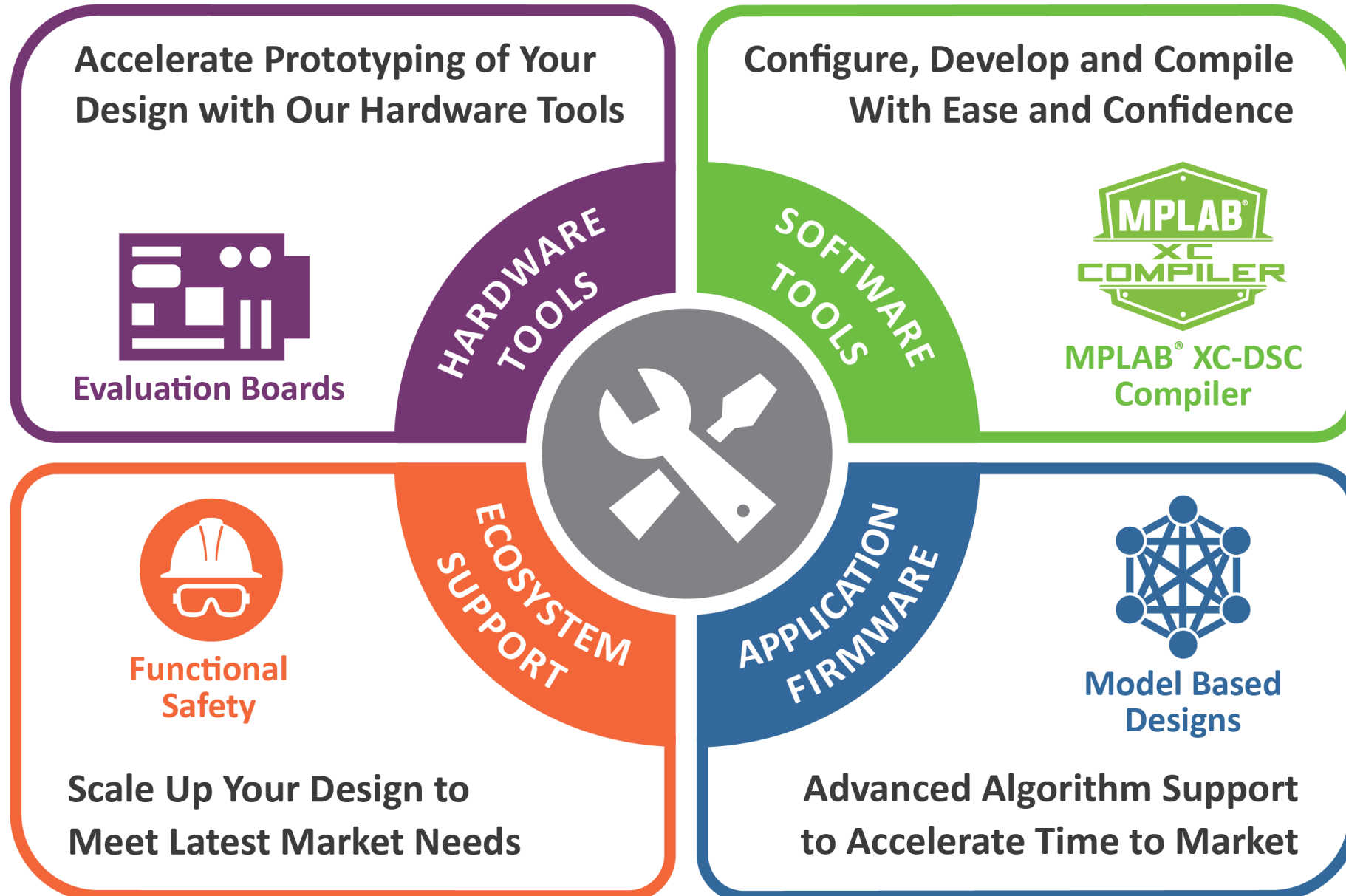
dsPIC33A DSC Family Block Diagram



dsPIC33A Families

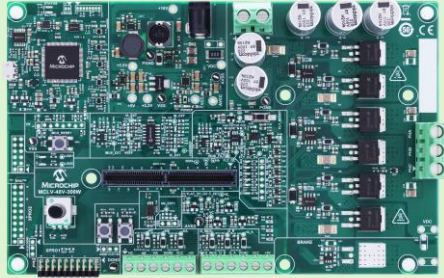
Feature	dsPIC33AK128MC106	dsPIC33AK256MPS306	dsPIC33AK512MC510	dsPIC33AK512MPS512
Flash (KB)	32KB – 128KB	128KB - 256KB	256KB - 512KB	256KB - 512KB
RAM (KB)	8KB – 16KB	64KB	64KB	64KB
12-bit 40Msps ADCs	2	3	5	5
High-Res PWMs (pairs)	4 (2.5ns)	4 (78ps)	12 (2.5ns)	12 (78ps)
ACMP (5nS) / 12-bit DACs / DAC Out	3 / 3 / 1	5 / 5 / 1	4 / 4 / 2	8 / 8 / 2
100MHz Op Amps	3	3	3	3
UART / SPI / I2C / SENT / I3C	3 / 3 / 2 / 2	4 / 3 / 2 / 2 / 1	3 / 4 / 3 / 2	3 / 4 / 3 / 2
QEI / BiSS / Resolver	1 / 1 / 0	1 / 1 / 1	4 / 1 / 0	4 / 1 / 0
SCCP / MCCP / Timer	4 / 0 / 1	4 / 1 / 3	8 / 1 / 3	8 / 1 / 3
Integrated Touch	No	Yes	No	Yes
Crypto Accelerator	No	CAM IP V3	No	CAM IP V2
CAN-FDs	-	1	2	2
ENet MAC with OA-3P	-	-	-	-
ISO 26262 / IEC 61508	Ready	Compliant	Compliant	Compliant
Pins	28/36/48/64	36/48/64	48/64/80/ 100	48/64/80/ 100/128

Simplifying Designs With dsPIC33A Ecosystem



Development Boards With dsPIC33A DIMs

Motor Control

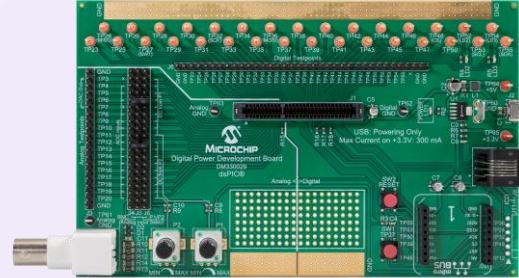


EV18H47A



EV68M17A

Digital Power



DM330029



EV67K87A

General Purpose



EV74H48A



EV02G02A

Summary



High-Performance Core

- 32-bit CPU Running at 200 MHz
- Fast Math Operation with Double Precision Floating Point Unit (DP FPU)



Precise Real-Time Control

- Advanced Peripherals for High-Speed, Precision and Accuracy
- Low Latency Enabling Fast Response Time



Ecosystem Simplifying Development

- Architecture Enables Easy Use of 3rd Party Tools
- Seamless Adoption of Model-Based Designs

Thank You

www.microchip.com/dsPIC33A

