Ultra-Reliable MCUs

Automotive & Industrial Applications

S12 MagniV Mixed-Signal Microcontrollers

Agenda

- Introduction to S12 MagniV mixed-signal MCUs
- Value proposition
- Product offering
- Enablement
- Application examples and success stories

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Introduction to S12 MagniV Mixed-Signal MCU

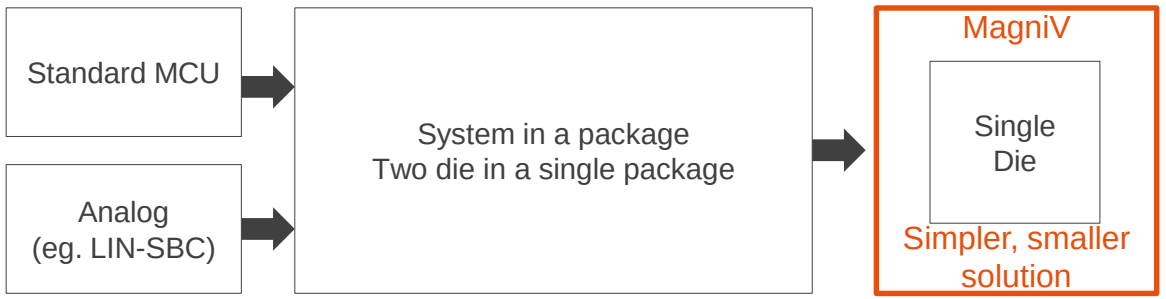
S12 MagniV: Ultra-Reliable Mixed-Signal MCUs

Safe operation in harsh environments up to 150 ˚C, all memories with ECC

Robust EMC/ESD up to 8 kV (HBM)

Simplify

S12 MagniV mixed-signal MCUs simplify design by integration of high-voltage analog features onto a reliable and robust MCU.



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Value Proposition

S12 MagniV mixed-signal MCU product highlights

Features	Benefits
Built-in voltage regulator operating between 3.5 V and 40 V	Operates directly from battery without the need for extra voltage regulator resulting in saving PCB board space. Handles automotive and industrial design issues such as double battery, crank voltage and load dump conditions.
Integrated CAN- or LIN-Physical Interface	No need for external LIN/CAN-PHY, saving space, design and test time. Meets automotive and industrial OEM specification for conformance and EMC.
Integrated low-side / high-side drivers	Directly drives up to 6 power-MOSFET (motor control), relays, or LEDs
S12Z core, 64–100 MHz bus, improved mathematic capabilities	Improved code efficiency and core performance enables sophisticated motor control algorithm such as sensorless Field Oriented Control
Flash, RAM, EEPROM, ECC; Designed for ISO 26262/ IEC 61508	Error code correction (ECC) provides high reliability; easing customers' certification by providing FMEDA & safety-guide

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Product Offering

S12 MagniV mixed-signal MCU product map

Motor Control	BLDC Motors		*S12ZVM* *S12ZVML* *S12ZVMC*	*CAN* *LIN*	Fan Blower Compressor Pumps
	DC Motors		*S12ZVR*	*LIN*	Window Lift Sliding Door and Roof
Instrument Clusters, LCD Displays			*S12ZVH* *S12ZVFP*	*CAN* *LIN*	Dashboard HMI panel
General Purpose	Small CAN Nodes		*S12ZVC*	*CAN*	Sensors Actuators User Interface
	LIN Nodes		*S12ZVL*	*CAN* *LIN*	

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Product Highlights

S12 MagniV mixed-signal MCU product summary

Product Family	SBC Function		Driver	Memory	Package
	Vreg	PHY			
S12ZVM	3.5–18 V	HV PWM	6 ch. N-MOSFET Gate Driver	16–32 KB	48/64 LQFP EP
S12ZVML		LIN PHY		32–128 KB	
S12ZVMC		-		64–128 KB	64 LQFP EP
S12ZVR	5.5–27 V	LIN PHY	2 LS Driver (relay) 2HS, 1 high current pin	16–64 KB	32/48 LQFP
S12ZVH		CAN PHY	4 x 40 LCD, 2–4ch Stepper Motor Driver	64–128 KB	100/144 LQFP
S12ZVHL		LIN PHY		32–64 KB	
S12ZVHY		LIN PHY		32–64 KB	
S12ZVFP		-	8 high current pins	64 KB	
S12ZVC		CAN PHY	5 high current pins	64–192 KB	48 LQFP, 64LQFP EP
S12ZVL		LIN PHY	4 high current pins	8–128 KB	38/48 LQFP, 32 QFN

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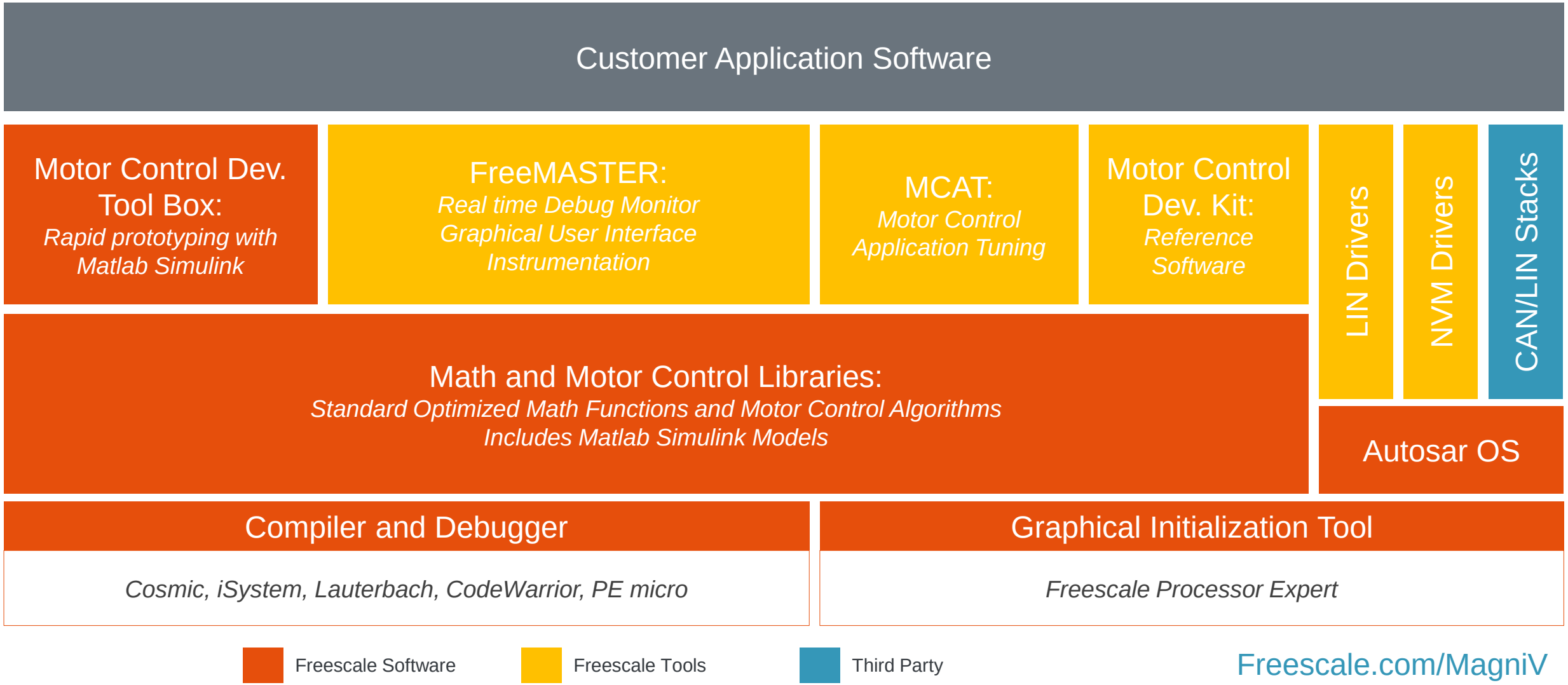
Enablement - Software Support



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Enablement - Hardware Support

- Evaluation Boards:
  - Low cost StarterTRAK
- Motor Control Development Kits:
  - 3 phases sensorless BLDC
- Reference Designs:
  - Ultrasonic distance measurement, RGB LED lighting, sensorless BLDC, window lift
- Demos:
  - Transportation cluster, anti-pinch window lift

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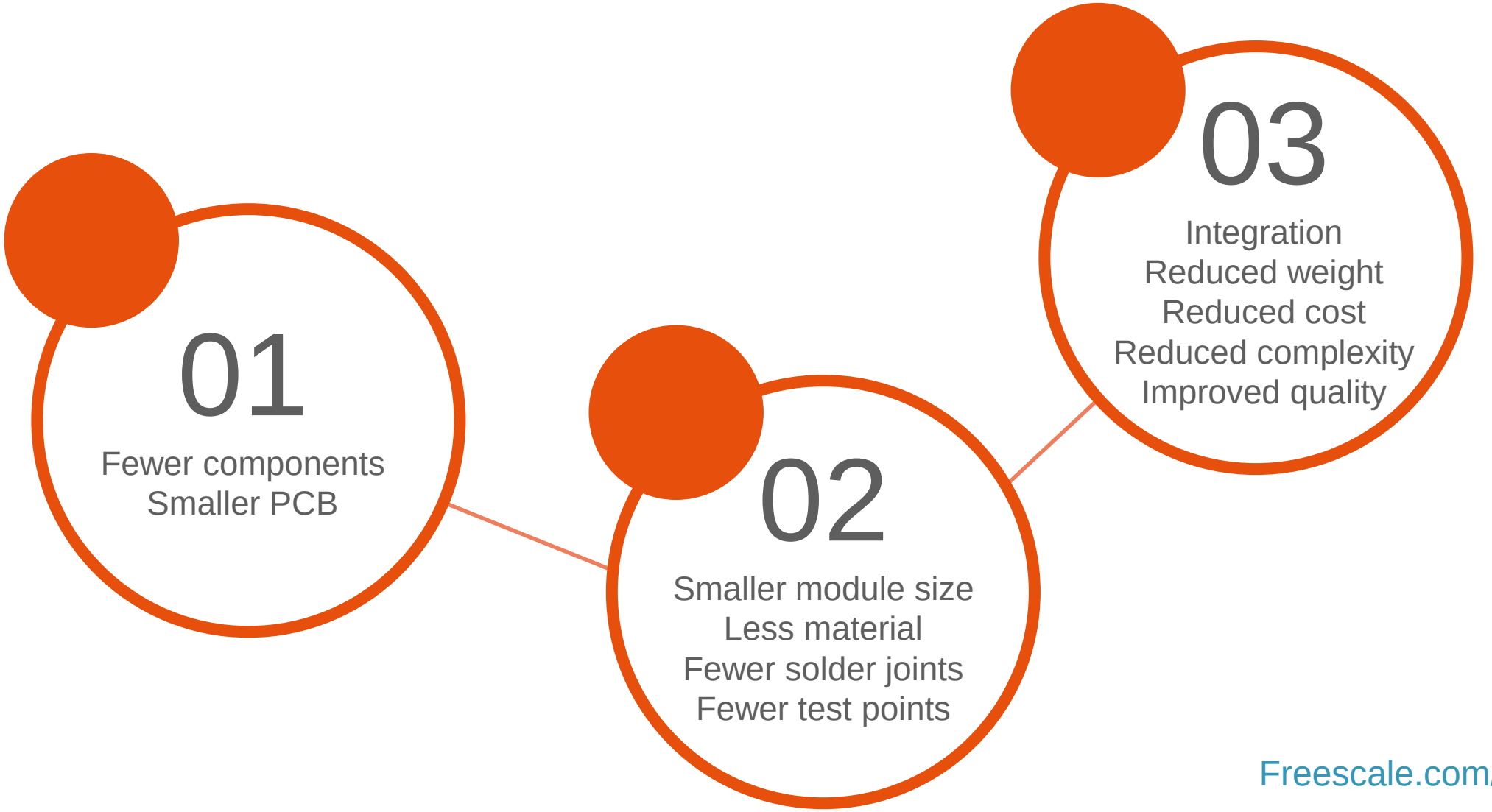
Application and Success Stories

Why Use S12 MagniV mixed-signal MCUs in your Application



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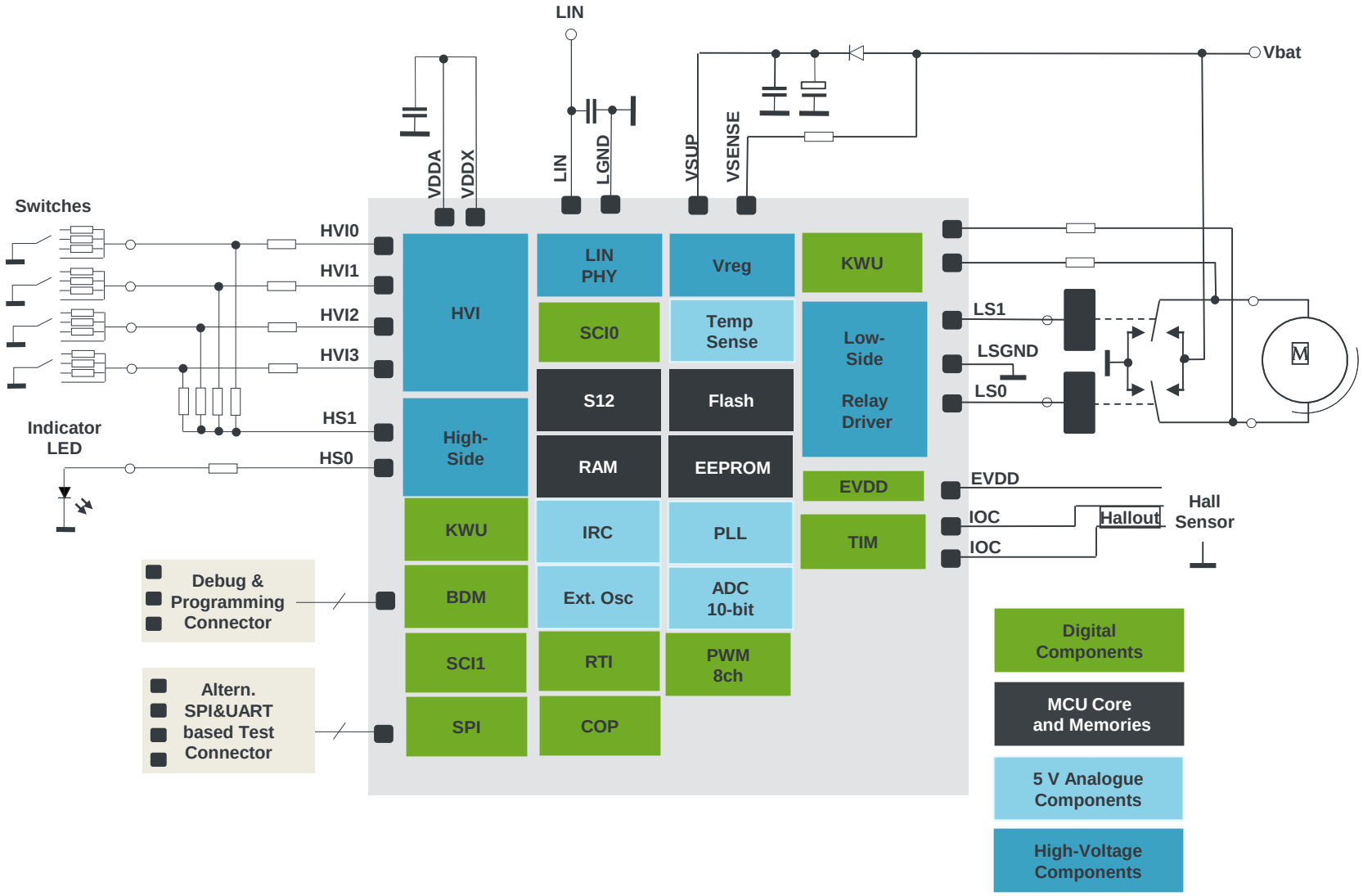
S12VR - Integrated Relay Driving MCU



Application

Window Lift
Sliding Doors
Smart Junction Box
LIN Nodes
LIN-based Relay Controller
LIN-based Actuator

Success Factor

Mooser, Zwickau, C&S Certified
12 V Vreg, LIN Phy
Low-side and High-side Pre-drivers
EVDD for Powering Sensor

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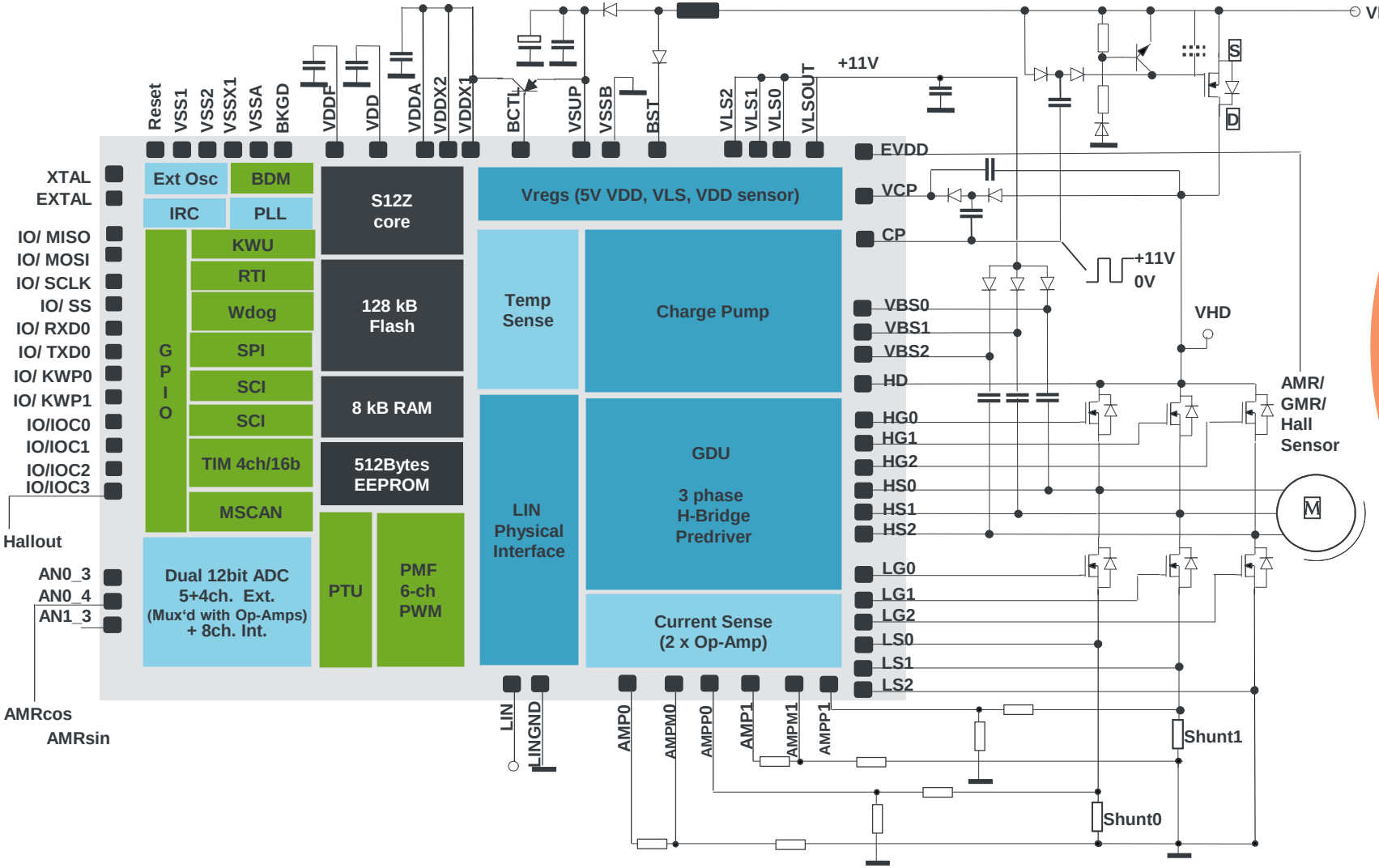
S12ZVM - Space Constrained BLDC Application



Application

Sensorless BLDC, PMSM Motors
Bidirectional DC Motors (H-Bridge)
Pumps (oil, fuel, water, vacuum)
Cooling Fan
HVAC Blower

Success Factor

Motor Control IPs
CAN and LIN Phy
High Temperature

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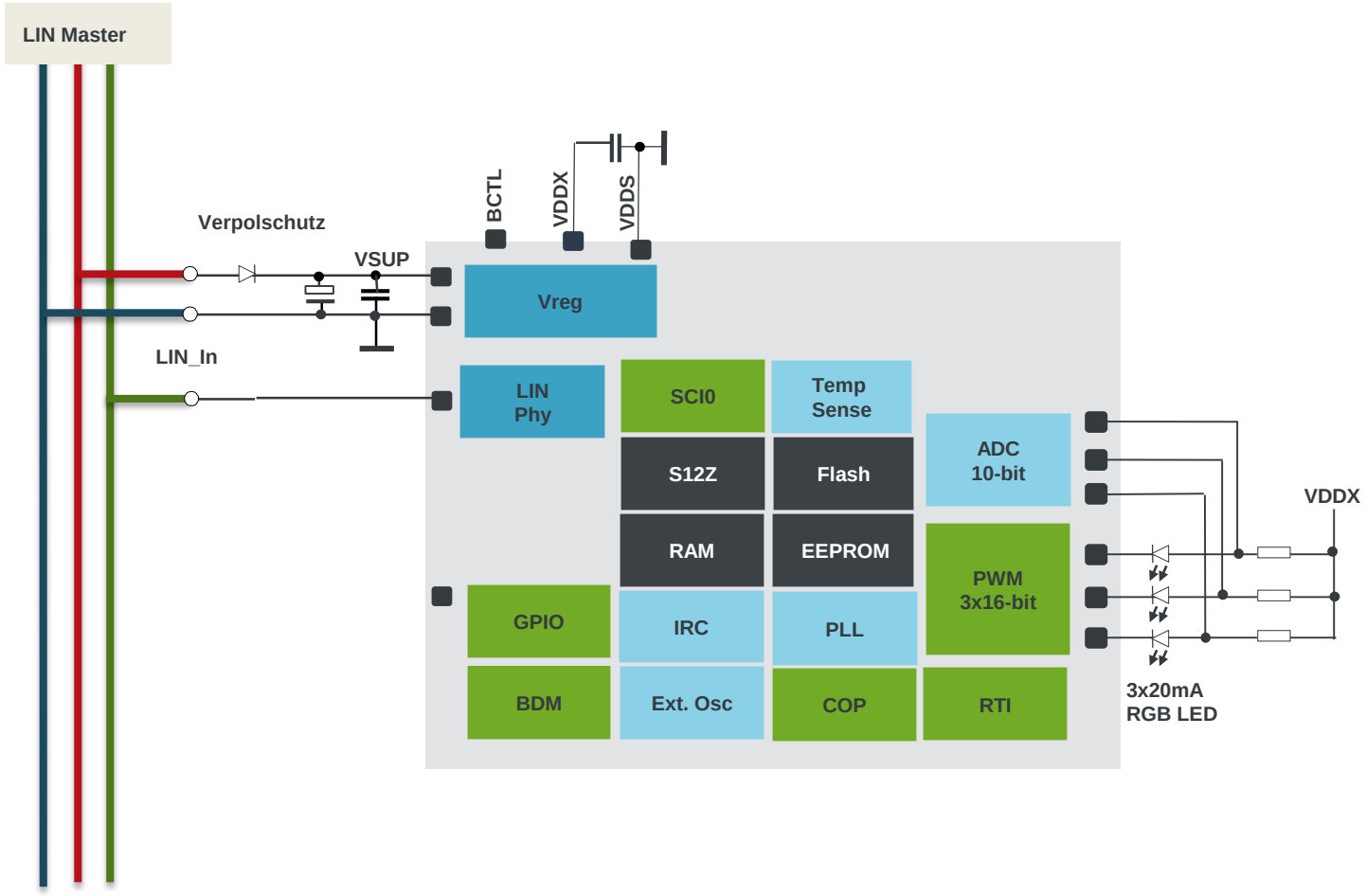
S12ZVL – LIN Phy Integrated MCU



Application

Any Kind of LIN-node
LIN-sensors / Actuators
LIN Switch Panel / User Interface
LIN RGB LED lighting
Ultrasonic Sensors

Success Factor

Mooser, Zwickau, C&S Certified
Small Size LIN Node
Functional Safety

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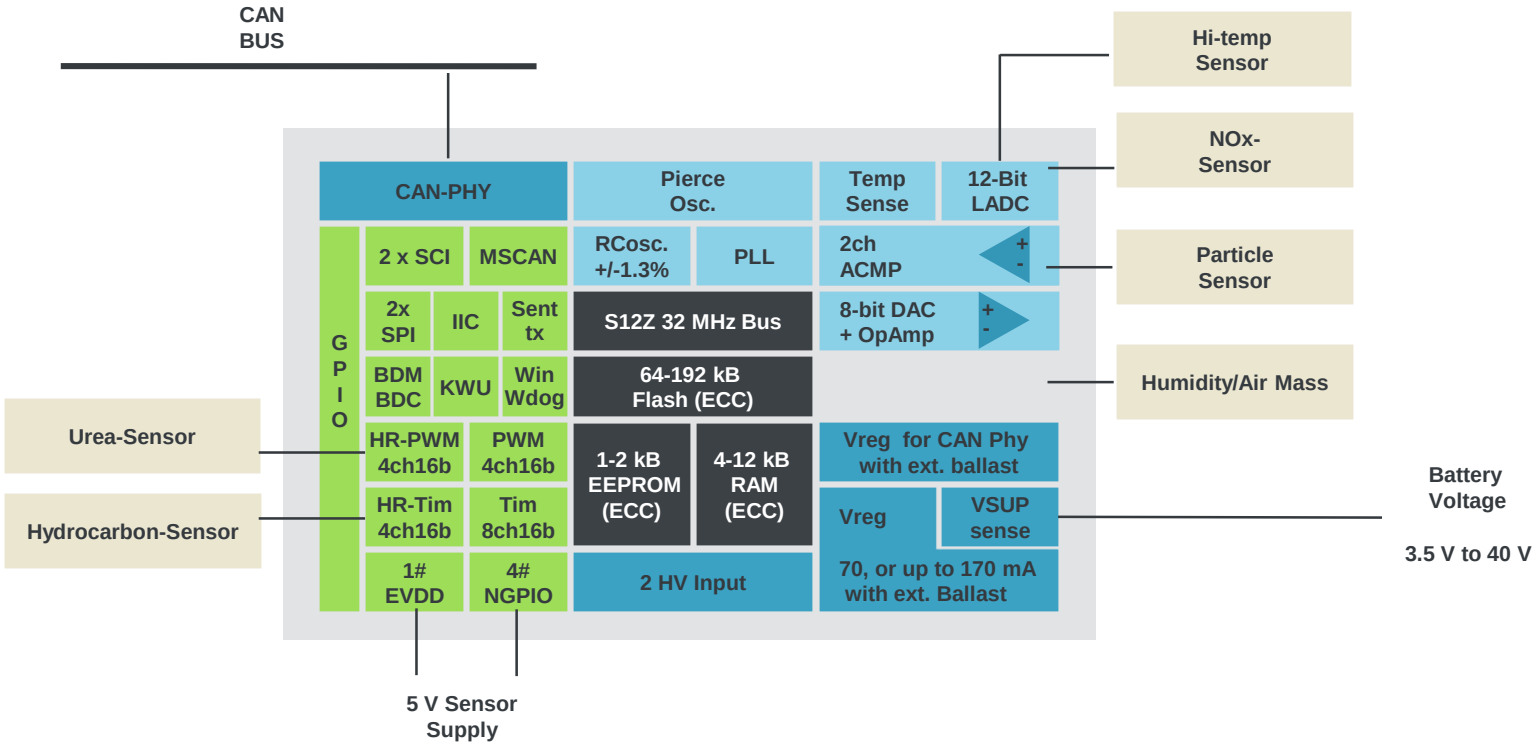
S12ZVC - High Temperature CAN Controller



Application

Any kind of CAN-node
Engine Sensors & Actuators
CAN-based User-interfaces
CAN-based Exhaust Sensor

Success Factor

Mooser, Zwickau, C&S Certified
High Performance Analog & Digital
CAN Phy
High Temperature
Functional Safety

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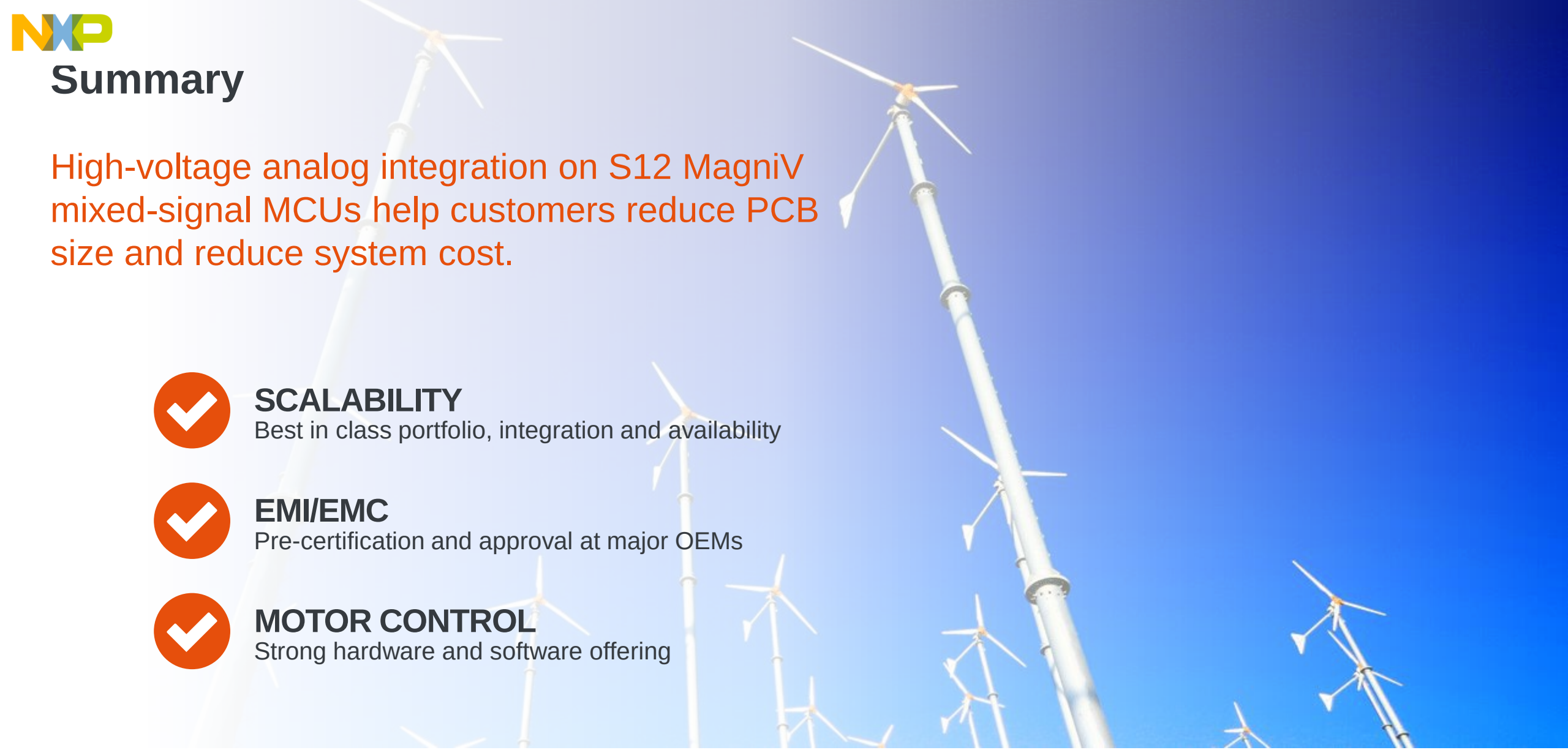
Summary



High-voltage analog integration on S12 MagniV mixed-signal MCUs help customers reduce PCB size and reduce system cost.

SCALABILITY
Best in class portfolio, integration and availability

EMI/EMC
Pre-certification and approval at major OEMs

MOTOR CONTROL
Strong hardware and software offering

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