



Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



Contact us

Tel: +86-755-8981 8866 Fax: +86-755-8427 6832

Email & Skype: info@chipsmall.com Web: www.chipsmall.com

Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China



NXP S12 MAGNIV OVERVIEW

TONY ZHANG / 张剑龙
FILED APPLICATION ENGINEER
MAY. 04, 2017



EXTERNAL USE

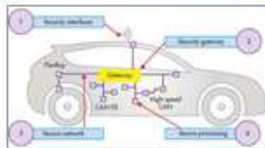


SECURE CONNECTIONS
FOR A SMARTER WORLD

NXP AMP Product Lines

C&S

(Connectivity & Security)



Gateway

- #1 in Vehicle Networking with leading networking and security IP
- #1 in Automotive HW Security with Strong IP and broad portfolio
- End to end portfolio of networking devices (MCU/MPU, TX/RX)

Products:
MPC564xB/C
MPC574xG

ADAS

(Advanced Driver Assistance Systems)



Radar, LIDAR Vision Sensor Fusion

- #1 in Radar with strong IP and system knowledge
- High performance low power accelerators
- Scalable high performance roadmap for central processing

Products:
• S32R - Radar
• S32V - Vision

VDS

(Vehicle Dynamics & Safety)



Chassis & Safety Powertrain & Hybrid/EV

- Long term Innovator in Chassis and Powertrain Control.
- Significant Growth in Safety as Autonomous Control Drives Robust Fault Tolerant Systems

Products:
MPC56xx
MPC57xx

GPIS

(General Purpose & Integrated Solutions)



Body Electronics Edge Nodes

- 500+ customers
- Broadest portfolio of integrated MCU+HV mixed-signal solutions
- Complete Tools & Software enablement

Products:
S08/S12/PPC → ARM
KEA - S32K
S12 MagniV - S32M

General Purpose and Integrated Solutions

Target Markets

General Purpose

Body Electronics
Lighting



HVAC



Other



Integrated Solutions

Motor Control
Window Lift



Pumps, Fans



Sensor Interfaces



Products

ARM

KEA - S32K

The First Automotive MCU
Designed for Software Engineers

S08 - S12 - MPC56xxB/C(Bolero)

- Shipping ~500Mu in 2016
- 8/16/32bit proven architectures

S12 MagniV

Shrink your application with MCU
+ HV analog integration

General Purpose
Integrated

Technology

Software and
Tools

Moving to ARM
Cortex Architecture

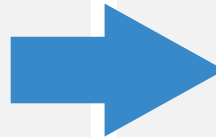
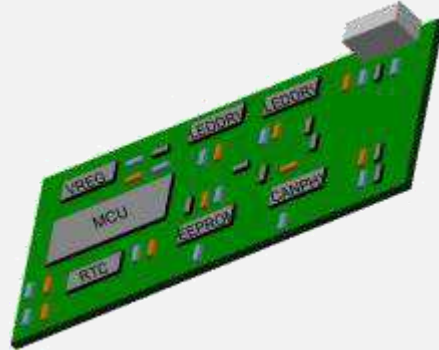
HV Analog
integration
ASSP

MagniV Concept: Shrink Your Application

Integration of High-Voltage (HV) Analog Features into a Standard Automotive MCU

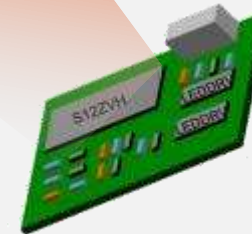
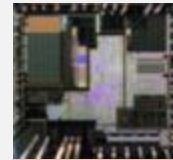
Traditional Solution

- Standard MCU
- Multiple analog ICs

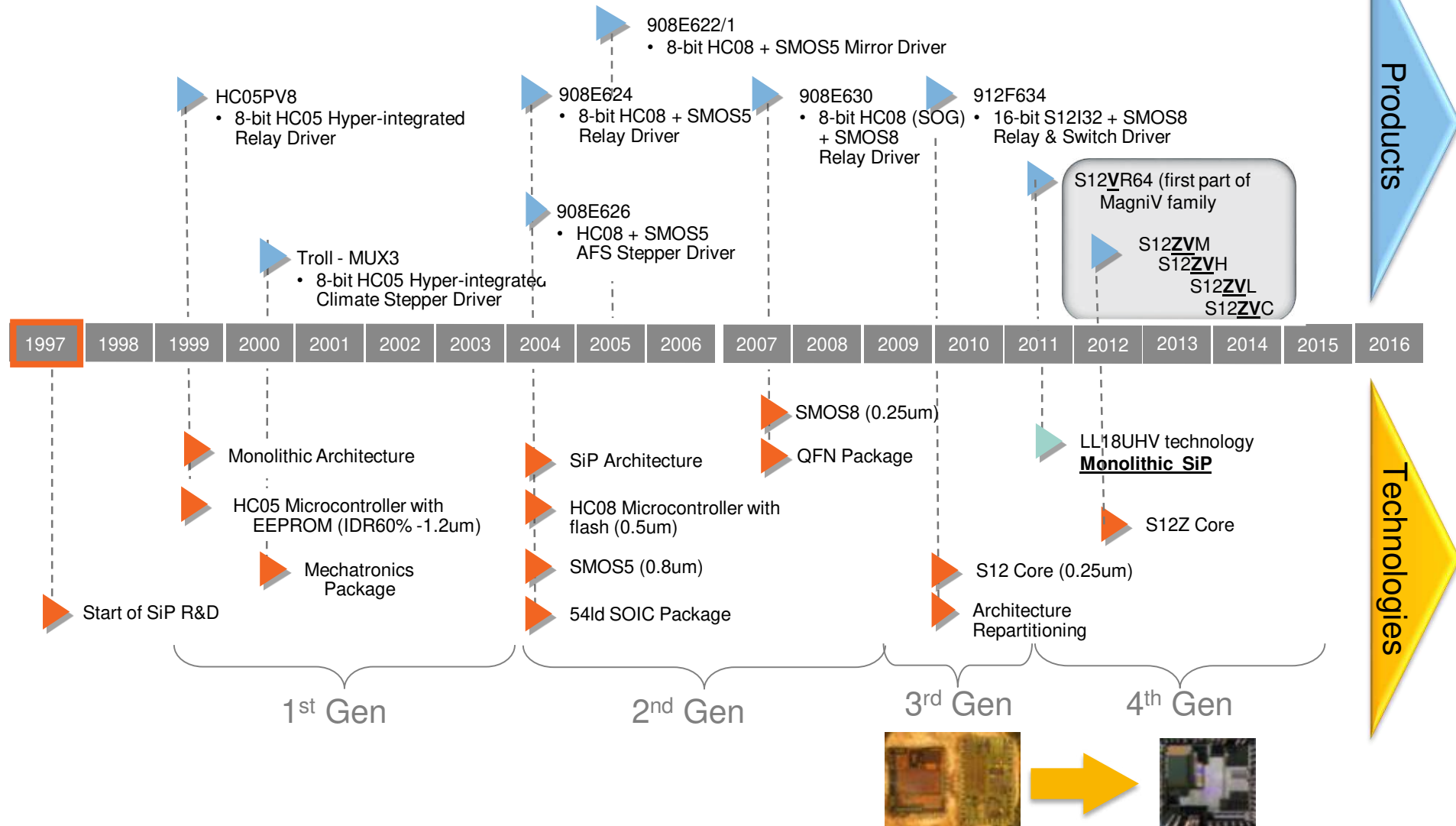


MagniV

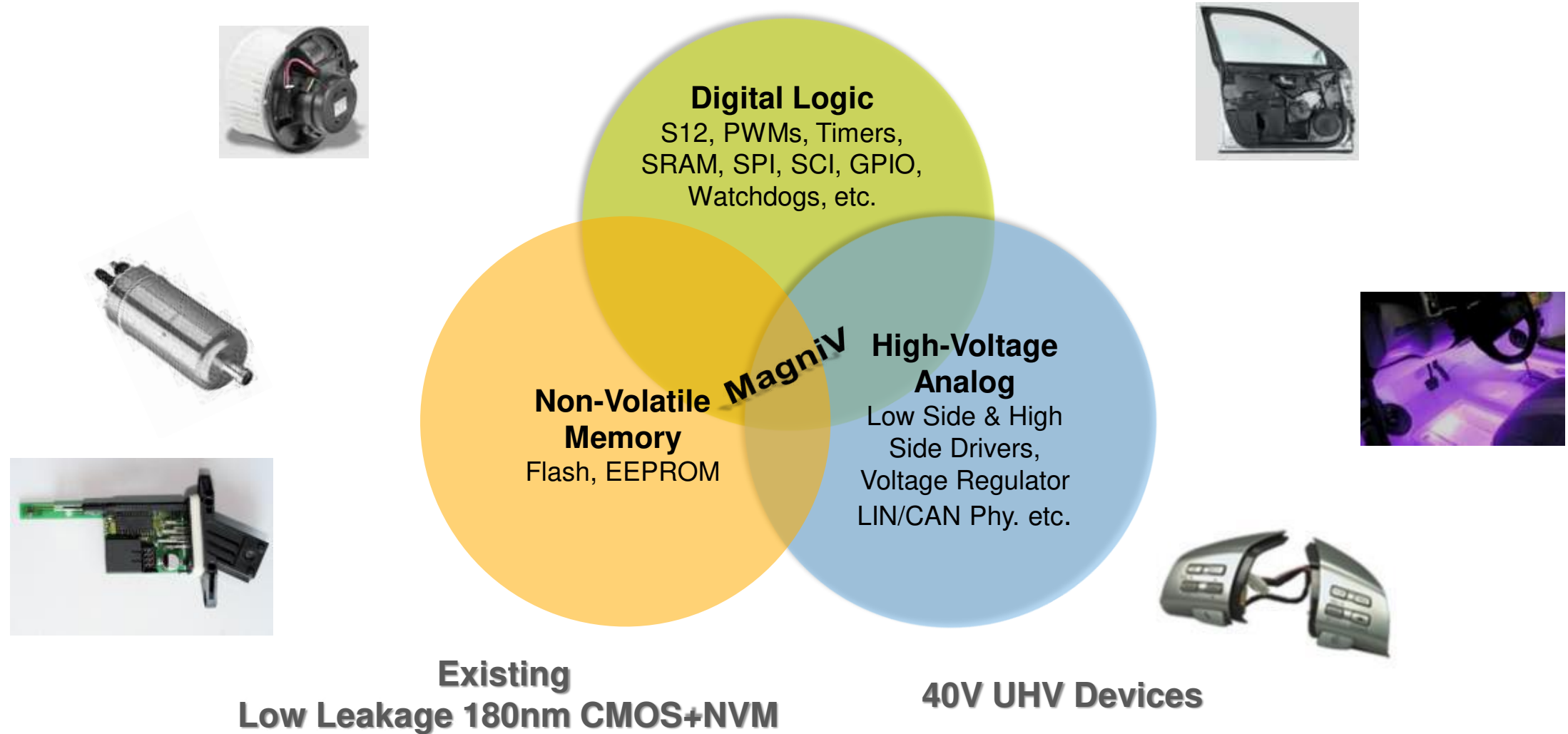
- Single device
- Reduced space



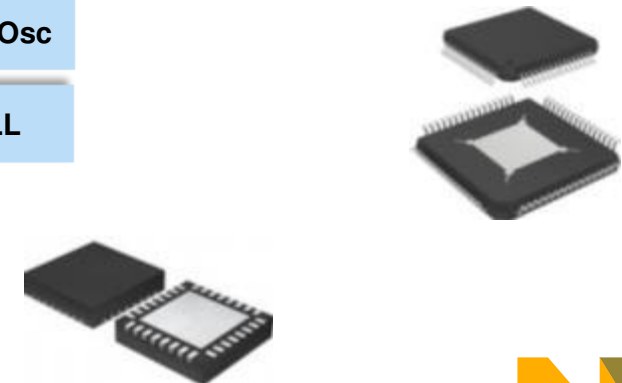
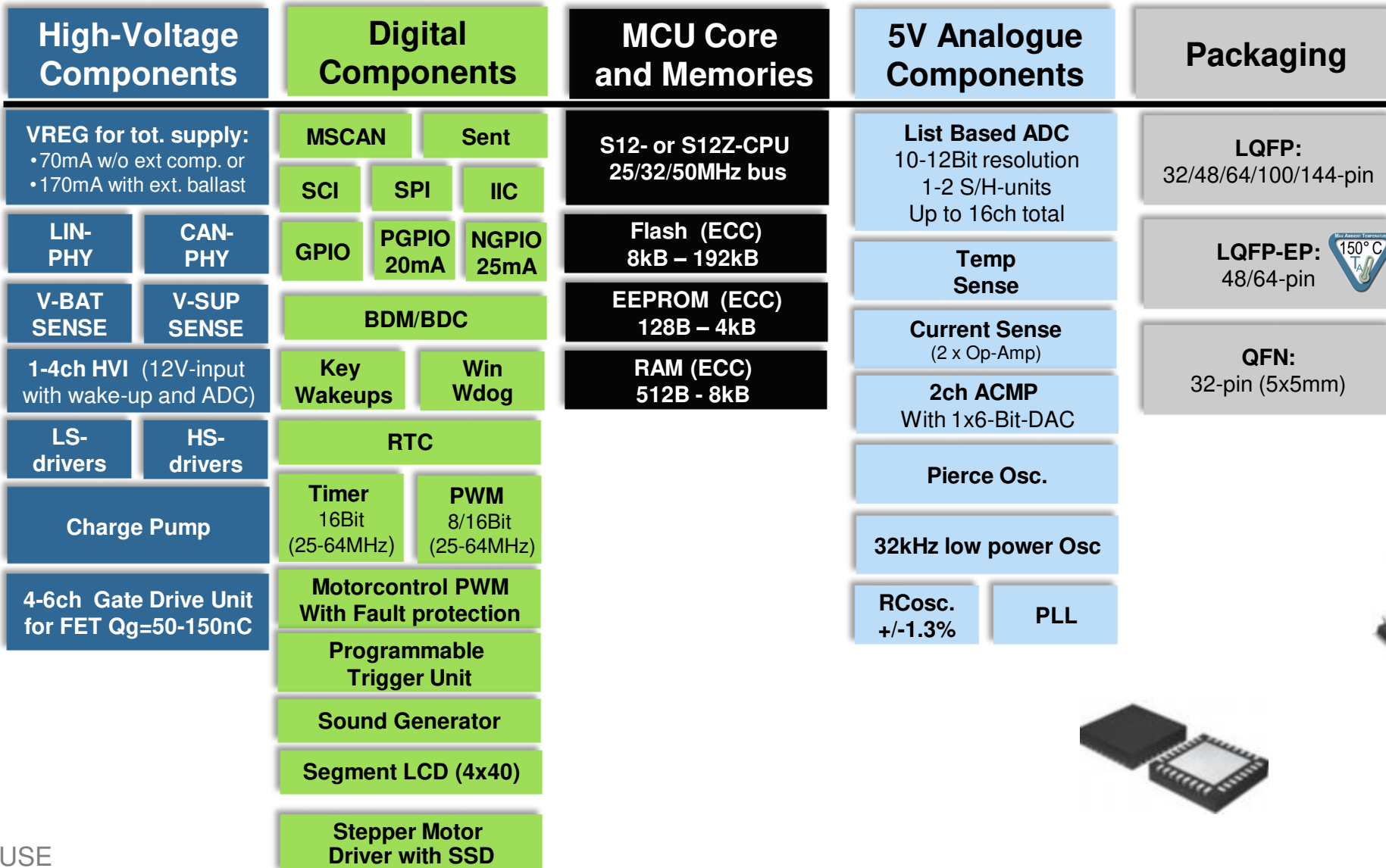
15+ Years of System in Package (SiP) Experience



A Technology Sweet-spot for Sensor and Actuators



MagniV building blocks



MagniV: Integration Benefits

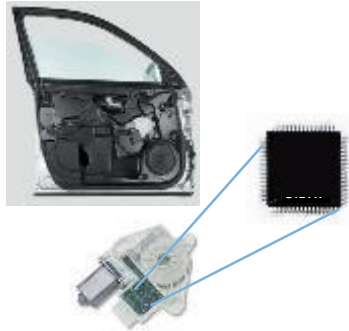
- **Reduced size**
 - Smaller PCB
 - Smaller housing
 - Increased design flexibility
- **Fewer components**
 - Fewer devices to pick and place
 - Fewer solder joints
- **Fewer test points**
 - Integration offers a pre-tested subsystem
- **Quality**
 - Fewer points of failure
- **Simplified Logistics**
 - Fewer parts to qualify, source, store, track



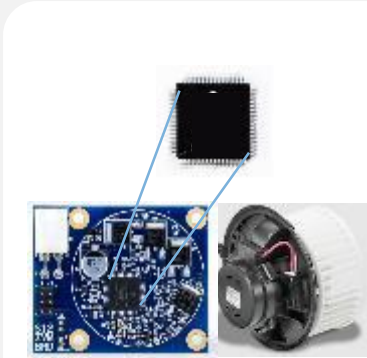
S12 MagniV: A Way To Shrink Your Automotive Application

S12 MagniV simplifies system design with the integration on High-Voltage (HV) analog features onto MCUs for automotive applications

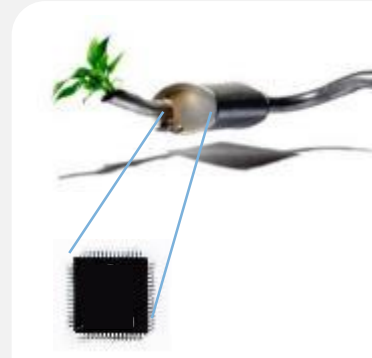
S12VR
Relay driven motors



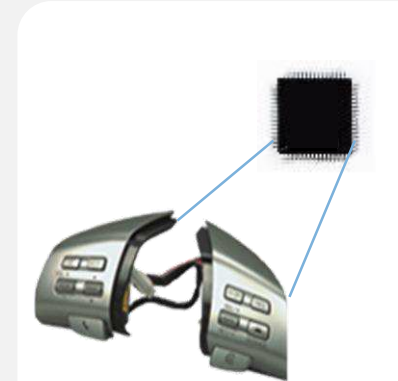
S12ZVM
BLDC/DC motors



S12ZVC
Small CAN nodes



S12ZVL
LIN Nodes



- ✓ Reduced PCB Space
- ✓ Reduced Bill of Material
- ✓ Improved manufacturing efficiency and quality
- ✓ Simplified development

SafeAssure™ Program: MagniV

Safety Hardware

Common safe hardware platform for application software:

- Voltage/clocks monitoring
- Memories w/ error correction
- Window Watchdog...

Safety Process

- ISO26262 development process for most products
- Safety-Element-Out-Of-Context



Safety Support

- FIT rates
- Dynamic FMEDA
- Safety manual
- Technical support as required

Safety Software

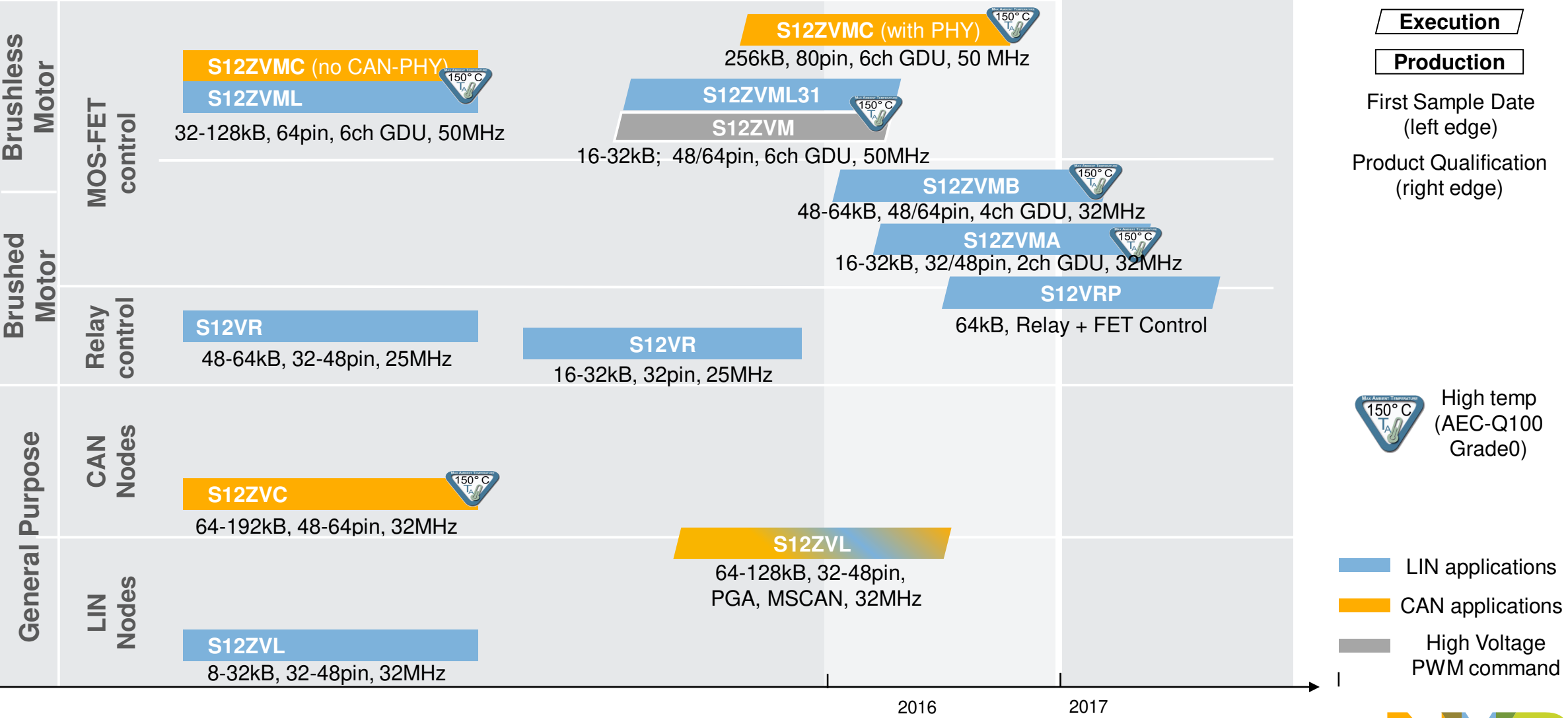
S12Z core self-test available to complement the built-in hardware safety features

| Product families | Development Process | FMEDA Report Availability | Dependant Failure Analysis | Safety Manual | Core Self test and User Guide |
|------------------|---------------------|---------------------------|----------------------------|--------------------------------|-------------------------------|
| S12VR | Standard | Upon request | Yes | No | No |
| S12VR | Standard | Upon request | | | |
| S12ZVM | Standard | yes | | | |
| S12ZVM | ISO 26262 | Q4 2014 | | Yes (www) | Yes |
| S12ZVL | ISO 26262 | yes | | | |
| S12ZVC | ISO 26262 | yes | | | |

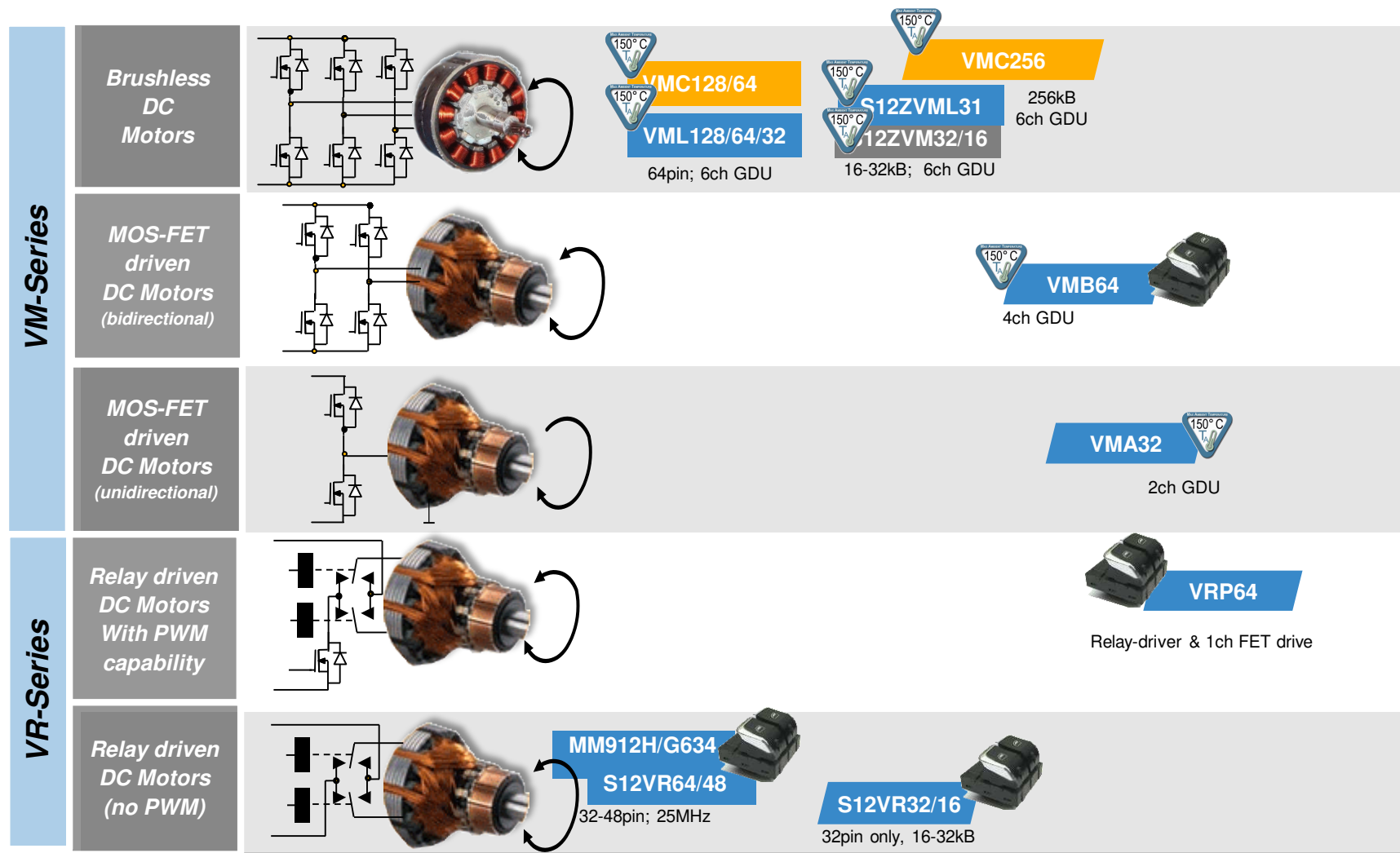
MagniV Conformance Testing

| Device | S12VRxx | S12ZVMxx | S12ZVLxx | S12ZVCxx |
|---|------------------------------------|------------------------------------|------------------------------------|--------------|
| Interface | LIN | LIN | LIN | CAN |
| CAN / LIN conformance C&S | LIN 2.2: PASS SAE J2602-2: PASS | LIN 2.2: PASS SAE J2602-2: PASS | LIN 2.2: PASS SAE J2602-2: PASS | CAN PL: PASS |
| EMC/ESD IBEE Zwickau German OEMs | PASS | PASS | PASS | PASS |
| EMC/ESD ULLabs / Mooser US OEMs | PASS | PASS | PASS | PASS |
| CAN Conformance Velio Japanese OEMs | n/a | | | PASS |

MagniV Integrated Solutions Roadmap



S12 MagniV: Motor Control / Actuator Lineup




Proposal


Planning


Execution

Production


 LIN applications

 CAN applications

 High voltage PWM controlled applications

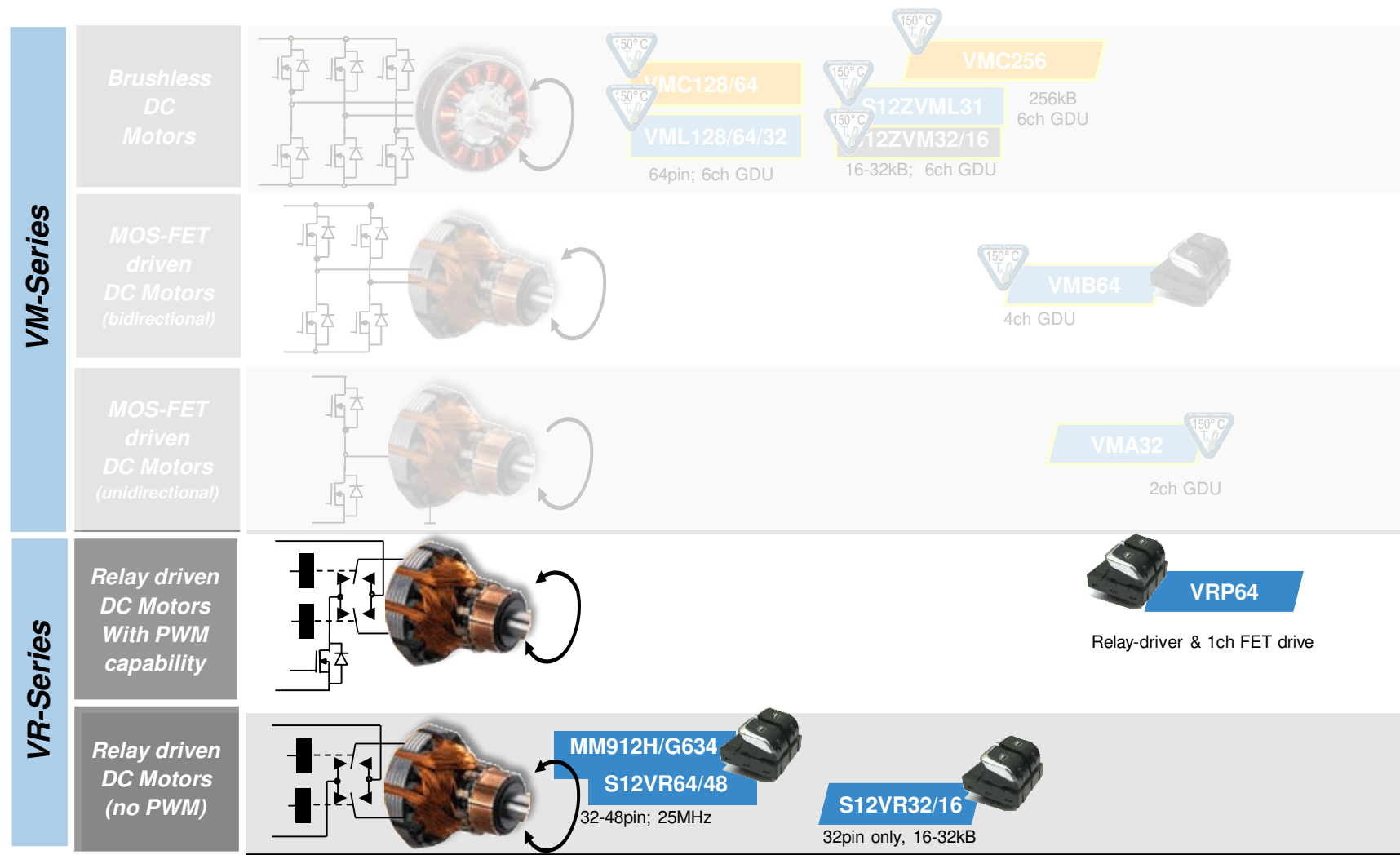
 High temp option (AEC Grade 0)

Switch panel interface (HS-drivers & HVIs)

 Main usecase:
- window lift
- sun roof



S12 MagniV: Motor Control / Actuator Lineup



Proposal


Planning


Execution

Production

 LIN applications

 CAN applications

 High voltage PWM controlled applications

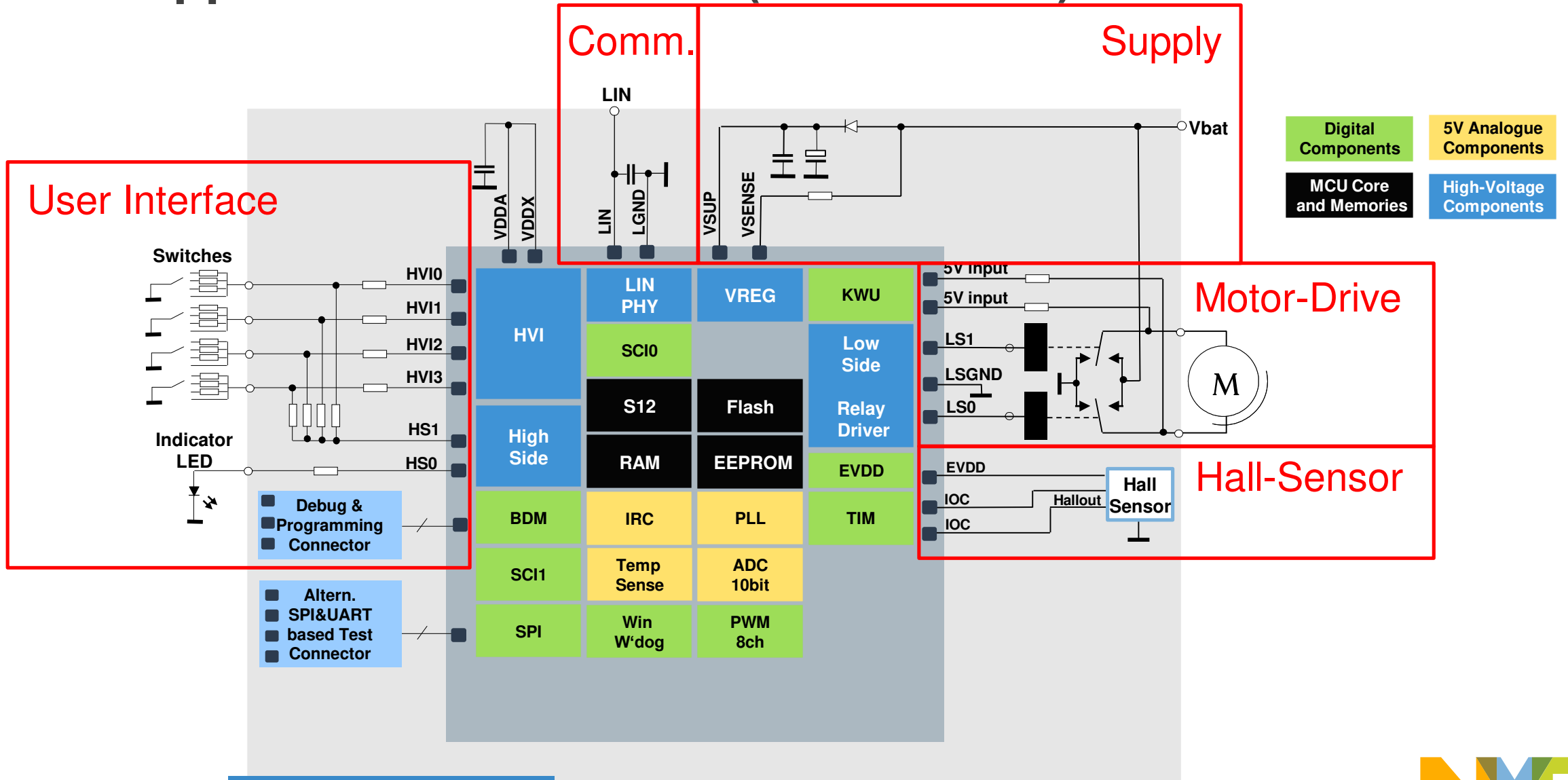
 High temp option (AEC Grade 0)

Switch panel interface (HS-drivers & HVIs)

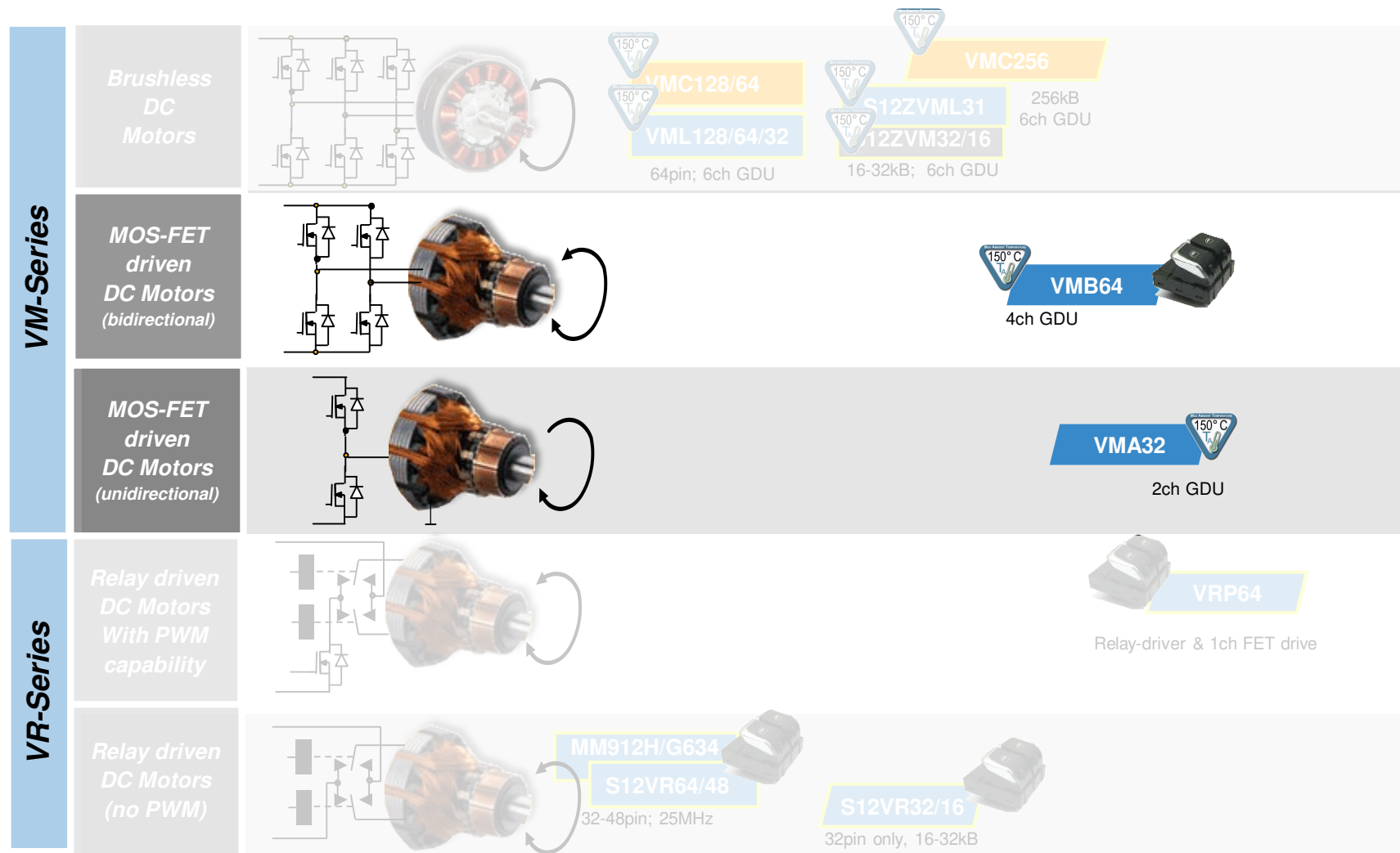
Main usecase:
- window lift
- sun roof



S12VR Application Schematics (Window Lift)



S12 MagniV : Motor Control / Actuator Lineup







Proposal

Planning

Execution

Production

-  LIN applications
-  CAN applications
-  High voltage PWM controlled applications

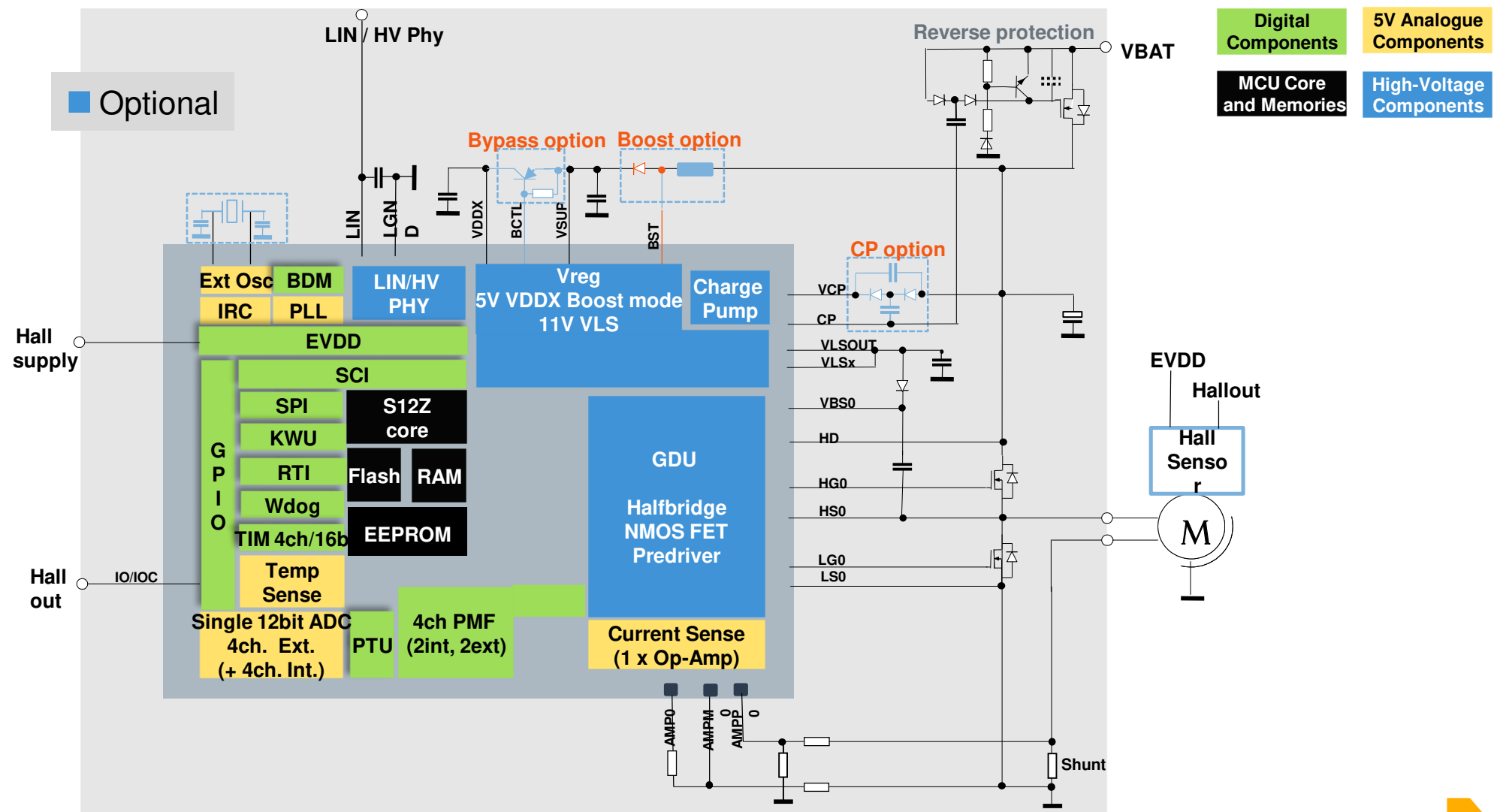
 High temp option (AEC Grade 0)

Switch panel interface (HS-drivers & HVIs)

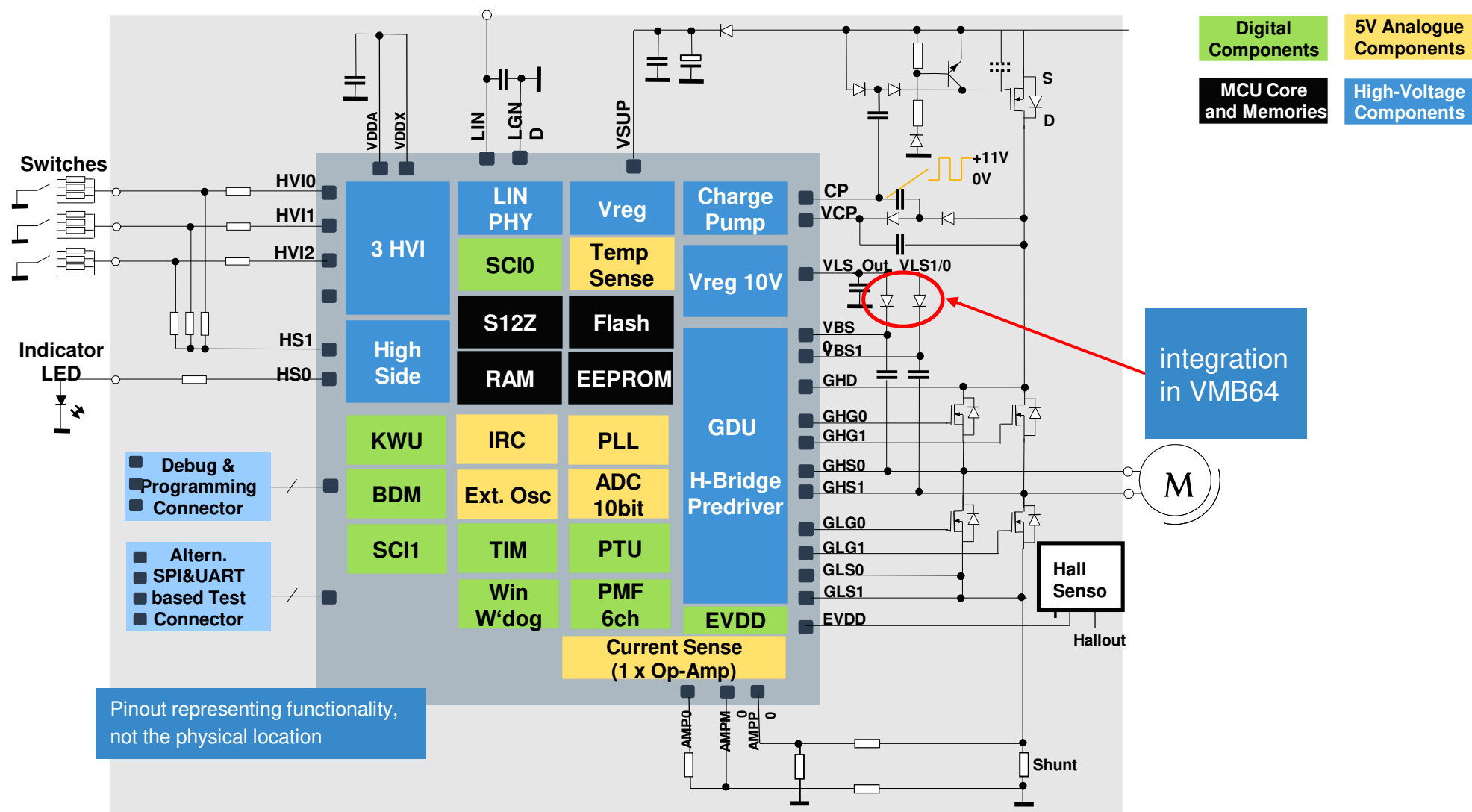


Main usecase:
- window lift
- sun roof

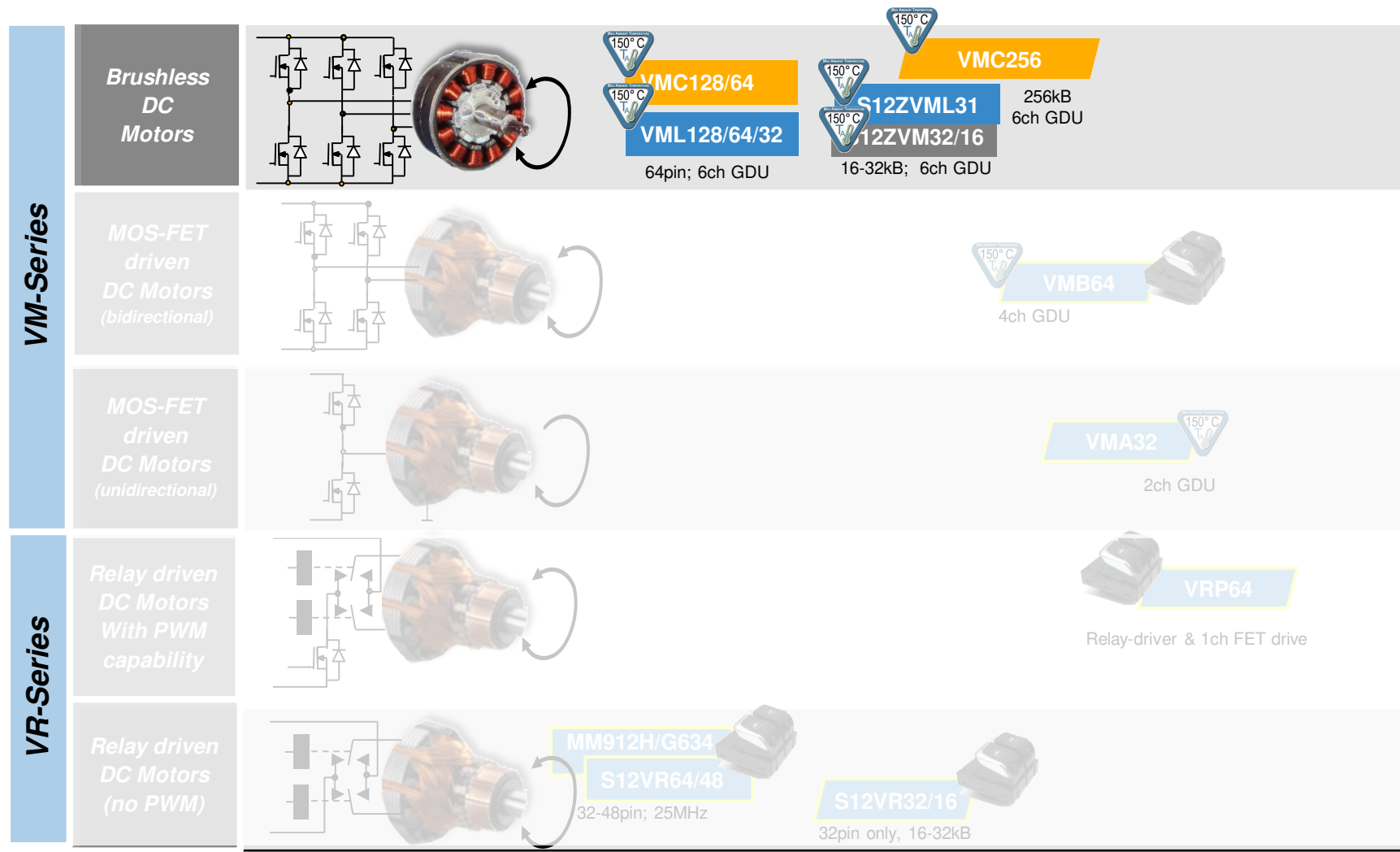
S12ZVMA Application Schematic



S12ZVMB Application Schematic (Window Lift)



S12 MagniV: Motor Control / Actuator Lineup







Proposal


Planning


Execution

Production

-  LIN applications
-  CAN applications
-  High voltage PWM controlled applications

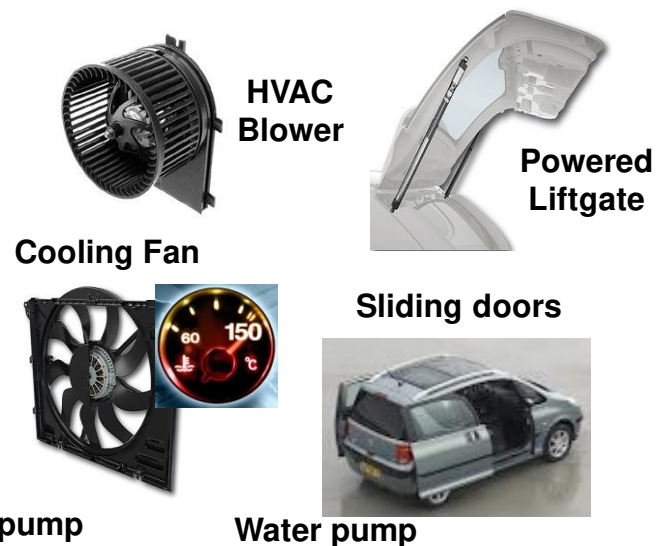
 High temp option (AEC Grade 0)

 Switch panel interface (HS-drivers & HVIs)

 Main usecase:
- window lift
- sun roof

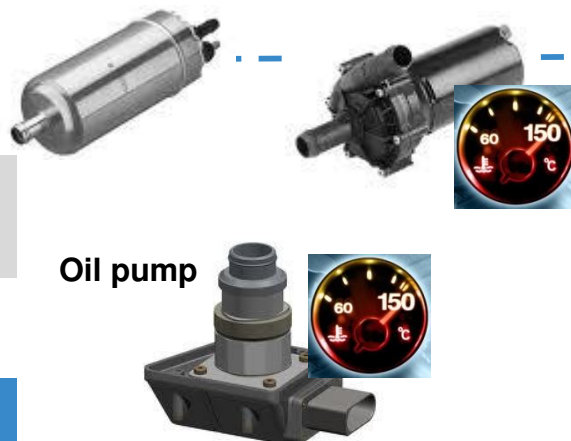
3-Phase BLDC / PMSM Motors – Market Segmentation

200+W
motors

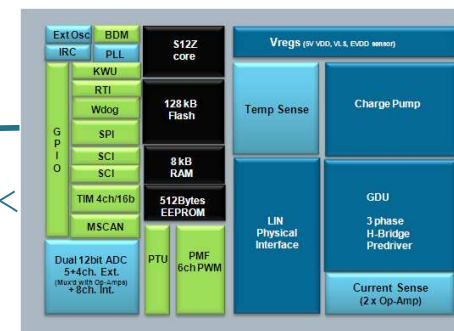


50-200W
motors

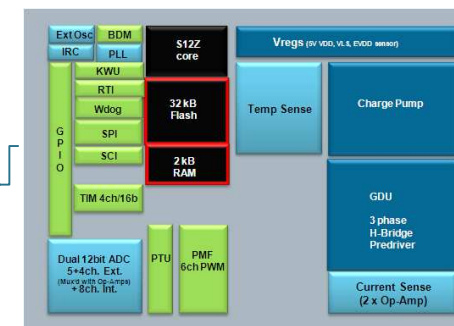
Reduced
GDU drive



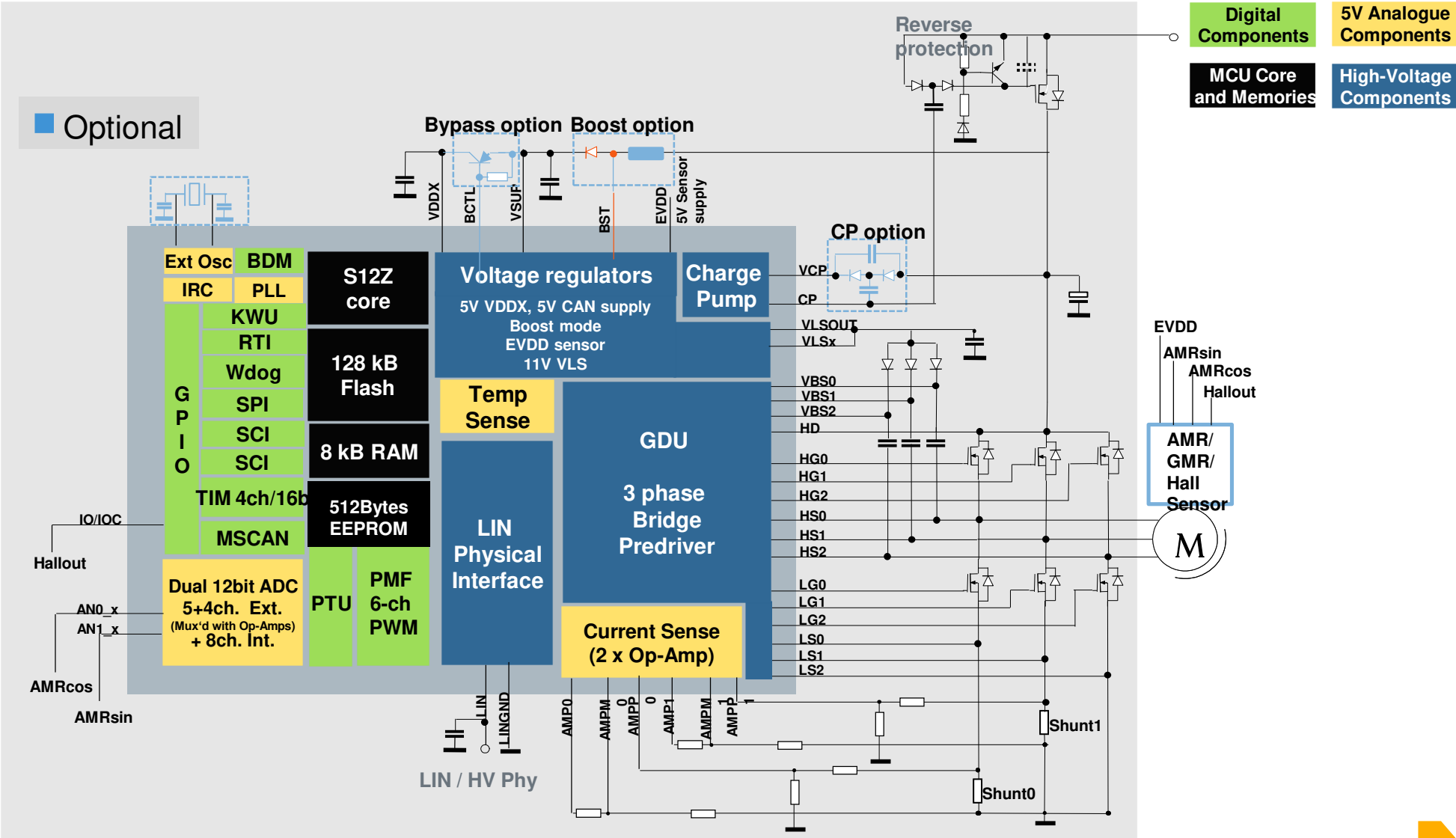
S12ZVML/C (64/128/256kB)
Carcassonne



S12ZVM (32kB)
Obidos



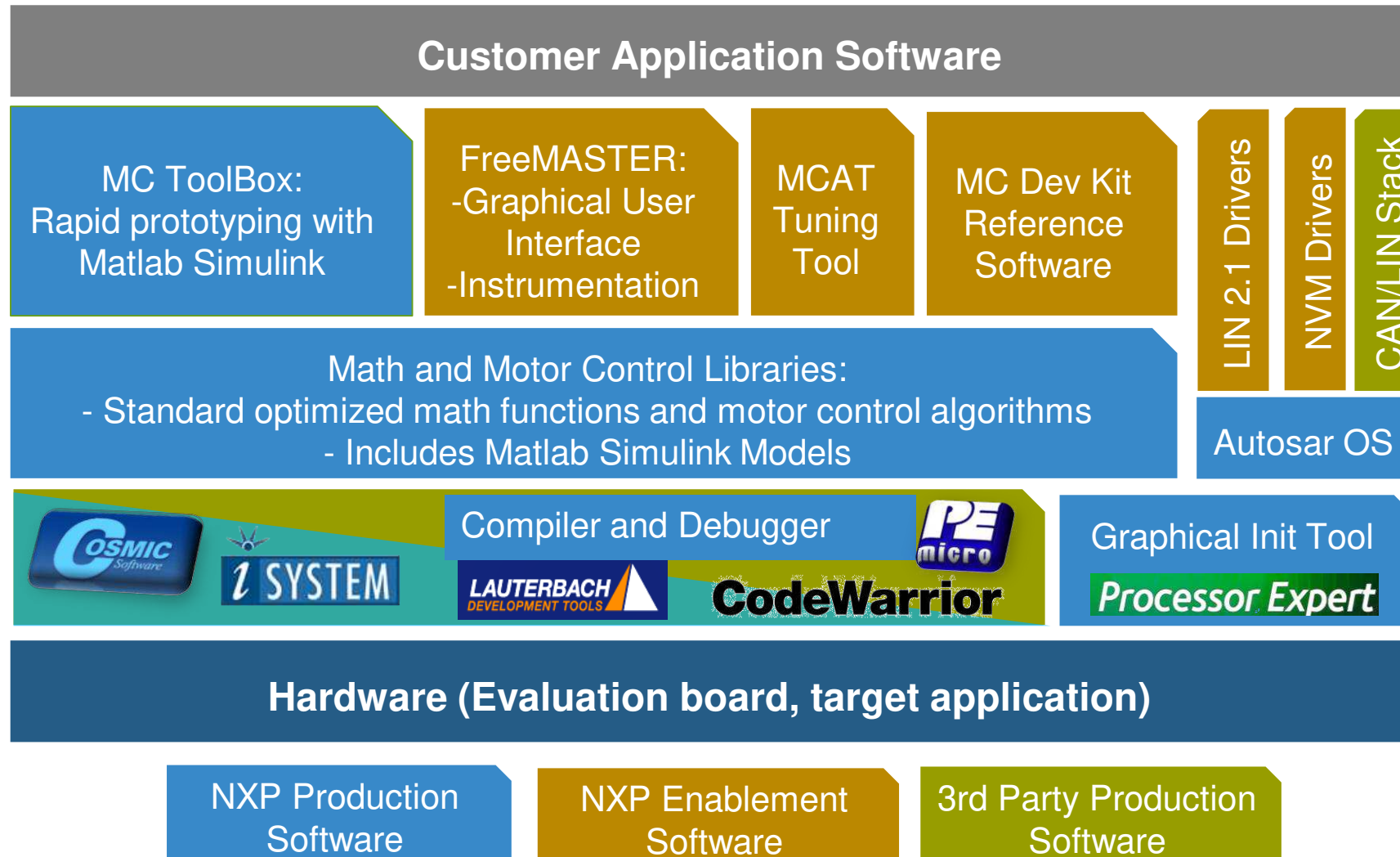
S12ZVML Application Schematic



MOTOR CONTROL SOLUTIONS OFFERING

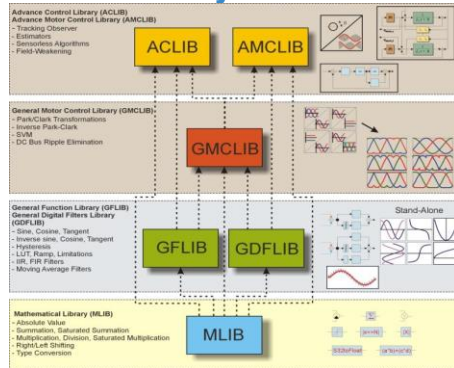


S12ZVM Development Ecosystem



The Complete Solutions Offering For Motor Control

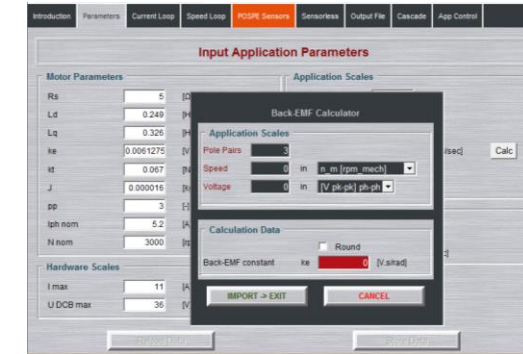
Automotive Math & Motor Control Library Set



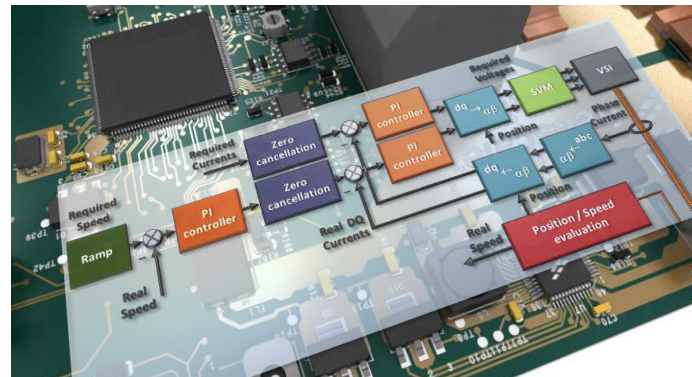
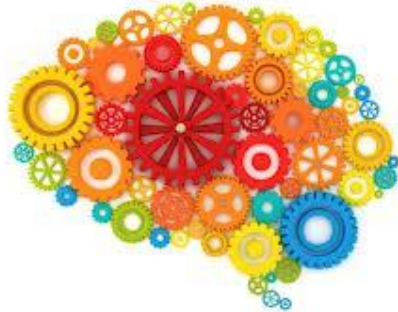
Automotive Motor Control Development Kit Series



FreeMASTER & Motor Control Application Tuning (MCAT) Tools



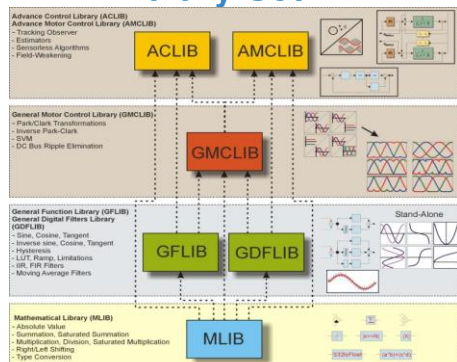
NXP Electric Motor Control Know-how



Final customer applications, based on S12 MagniV / MPC / S32K MCU

The Complete Solutions Offering For Motor Control

Automotive Math & Motor Control Library Set



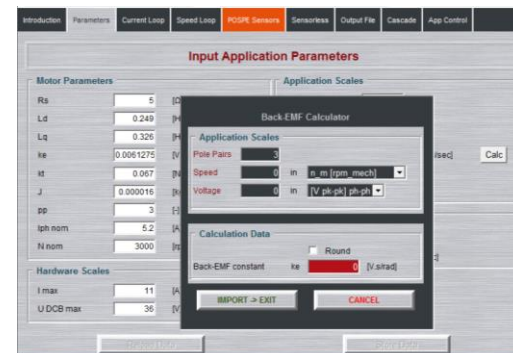
www.nxp.com/AutoMCLib

Automotive Motor Control Development Kit Series



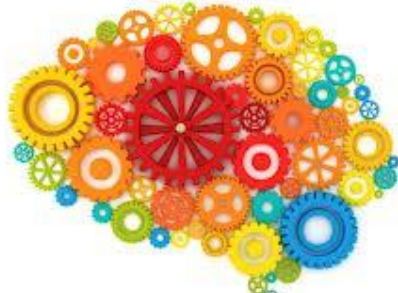
www.nxp.com/AutoMCDevKits

FreeMASTER & Motor Control Application Tuning (MCAT) Tools

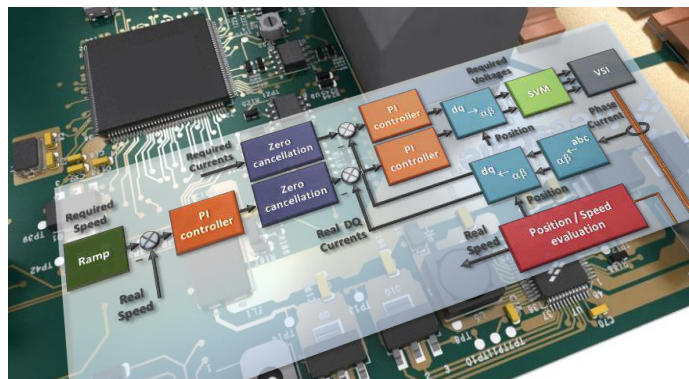


www.nxp.com//FreeMASTER, MCAT

NXP Electric Motor Control Know-how



www.nxp.com/MotorControl



Final customer applications, based on S12 MagniV / MPC / S32K MCU