EMBEDDED PROCESSING
ANALOG & CONNECTIVITY

JUNE 26, 2025

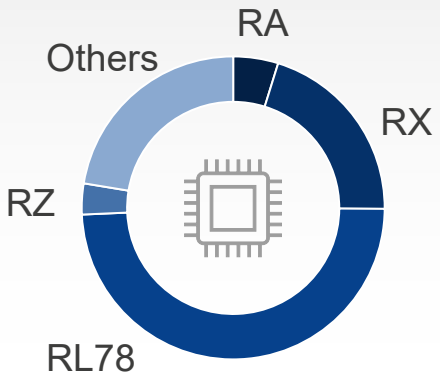
DAVIN LEE
SVP AND GM OF ANALOG & CONNECTIVITY AND EMBEDDED PROCESSING
RENESAS ELECTRONICS CORPORATION

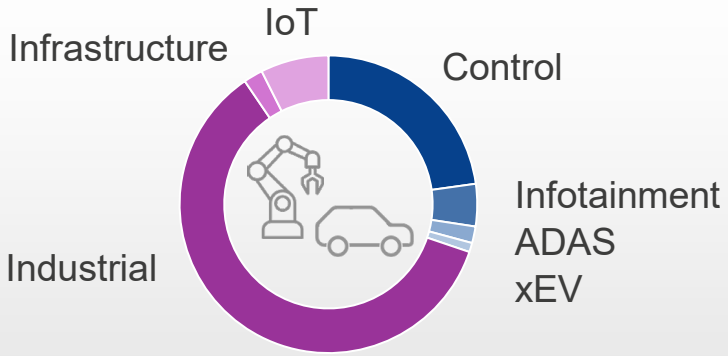
AT A GLANCE
EMBEDDED PROCESSING

Our products / technologies

- 32bit Arm Cortex-M based MCU for intelligent IoT
- 32bit high-performance, high-efficiency MCU
- 16bit low power consumption MCU
- 64bit MPU for HMI, e-AI, real-time control & industrial networking

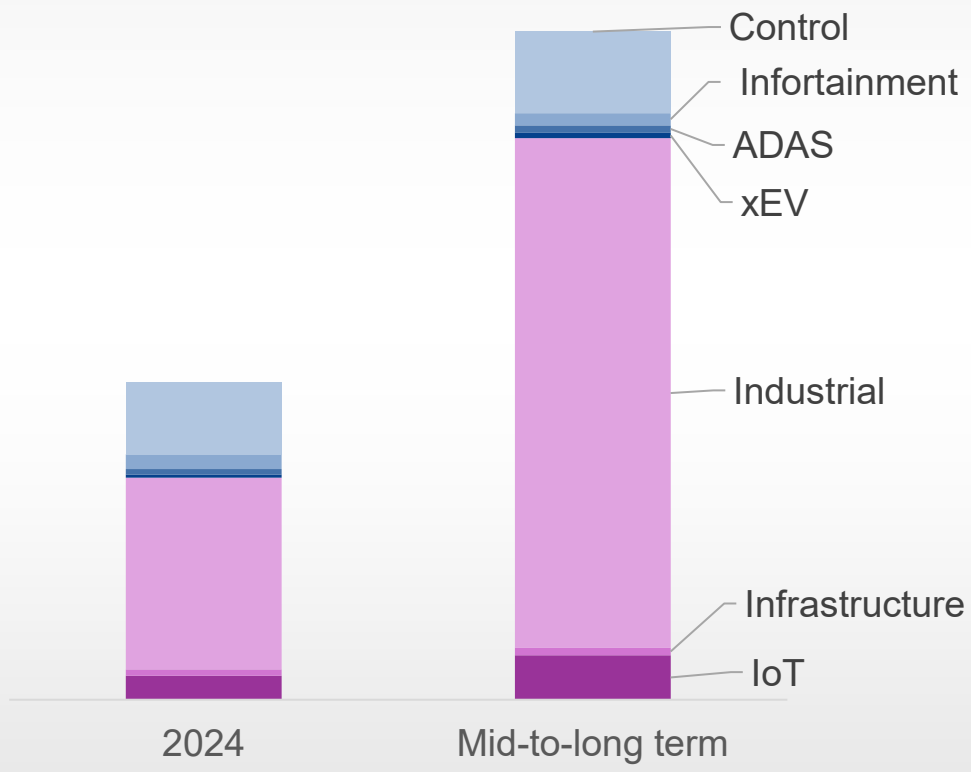
2024 Revenue





GROWTH DRIVERS
EMBEDDED PROCESSING

Revenue



Growth drivers

Industrial / Mass market

- Scalable embedded platform
- Enablement & ecosystem with digitalization / Renesas 365
- Core technologies to enable growing market, such as robotics

IoT

- Edge and endpoint intelligence

EMBEDDED PROCESSING STRATEGY

Scalable embedded processing


Industrial

RENESAS RZ


Infrastructure

RENESAS RA

RENESAS RX


IoT

RENESAS RL78

Core technology innovation


Motor control


HMI


Security & Safety


AI / ML

Enablement & Ecosystem


Unified digital experience

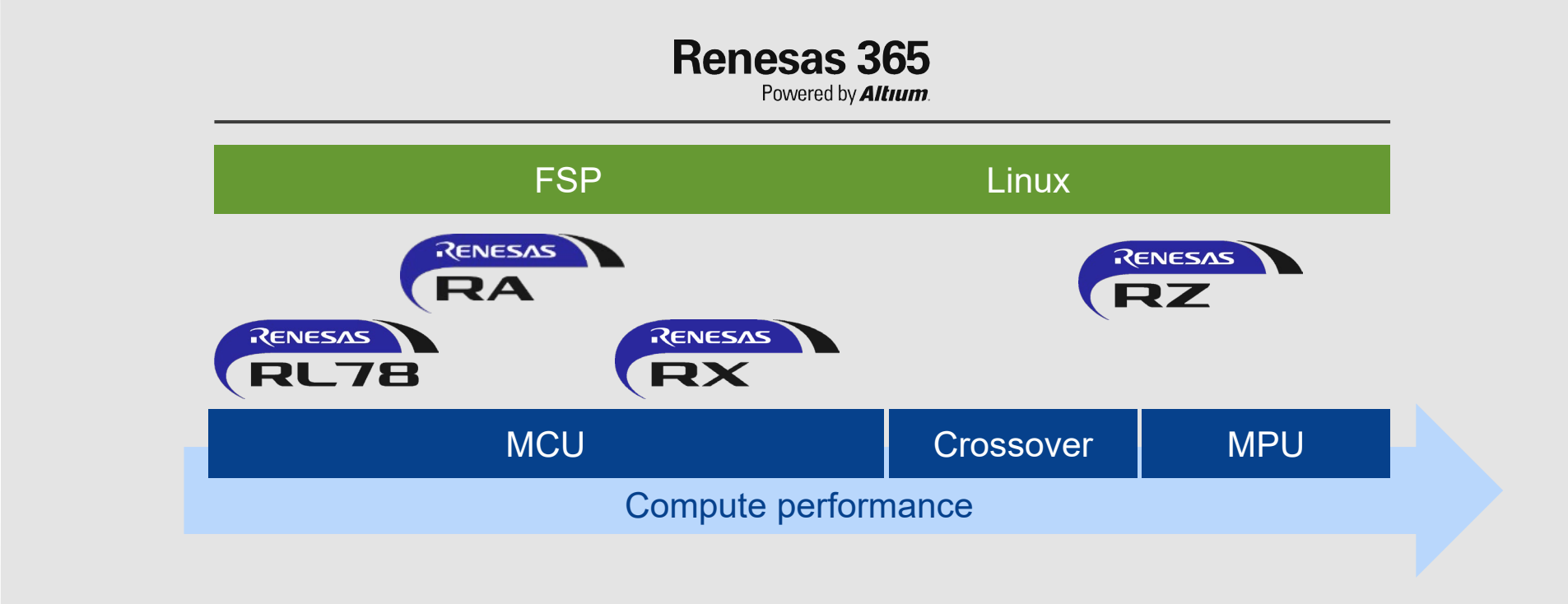

Rich product enablement & ecosystem


UX: Easy find, buy & develop


Multi-layer developer stack

RENESAS

SCALABLE EMBEDDED PROCESSING PLATFORM



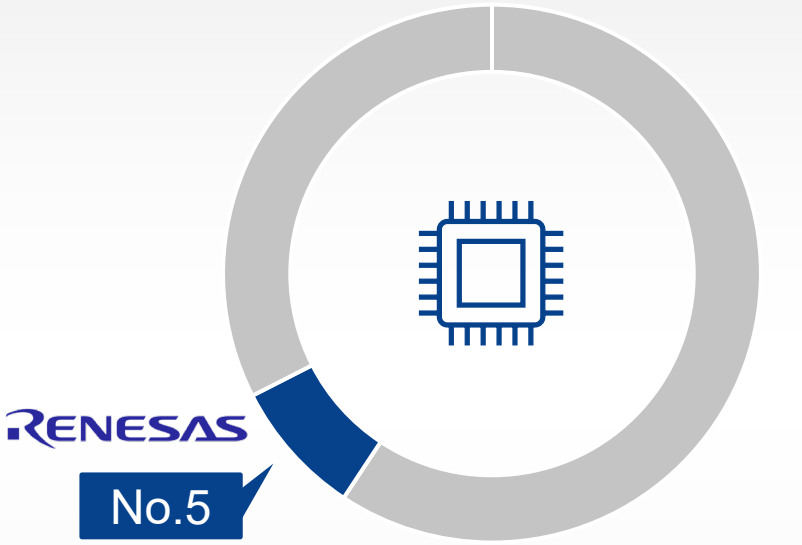
Streamlined **Software, Development Tools and Solutions** for easy migration

Common IPs & Compute Cores used across MCU and MPU families

FSP: Flexible Software Package

MCU SHARE GROWTH

MCU share for Industrial & IoT



2-Phase approach to increasing market share

Phase 1

Phase 2

Growing MCU share

Focus on **high-growth regions and markets**

- China and India
- Motor control in appliance and industrial automation

Focus on **Renesas 365, Powered by Altium**

- Access to mass market customers
- Enablement & ecosystem with digitalization

Graphs created by Renesas based on Gartner Research. Calculations performed by Renesas Source: Gartner®, Market Share: Semiconductors by End Market, Worldwide, 2024, Rajeev Rajput et al., 2 April 2025, MCU for Industrial & IoT = Total Microcontroller excluded Automotive application GARTNER is a registered trademark and service mark of Gartner, Inc. and/or its affiliates in the U.S. and internationally and is used herein with permission. All rights reserved. Gartner does not endorse any vendor, product or service depicted in its research publications, and does not advise technology users to select only those vendors with the highest ratings or other designation. Gartner research publications consist of the opinions of Gartner's research organization and should not be construed as statements of fact. Gartner disclaims all warranties, expressed or implied, with respect to this research, including any warranties of merchantability or fitness for a particular purpose.

PHASE 1: ACCELERATING GROWTH IN CHINA & INDIA

Current presence

Leading market share
at segment leaders*1

Air conditioner

Washer

Refrigerator

Smart
power meter

Electronic
voting machine

AADHAR NID

Growth vectors

Complete SW stacks to
enable robust solutions

- Industrial automation
- Robotics
  (Industrial, Enterprise, Cooperative robots)
- Green energy applications
- Security / Access control systems
- Two and three wheelers

Growth strategy

Enhance local presence

Localization

Developer ecosystem

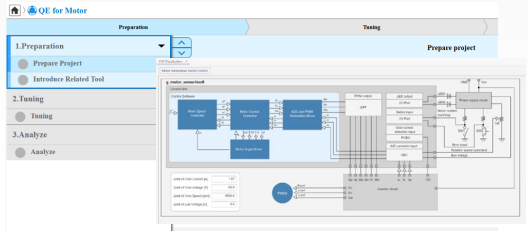
University program

*1: Renesas internal analysis + external market data

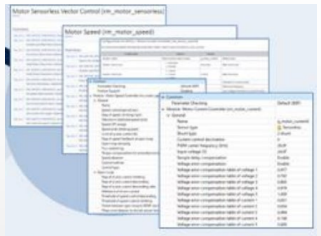
LEVERAGING CORE TECHNOLOGIES – MOTOR CONTROL

Renesas 365
Powered by Altium

Design & Configure



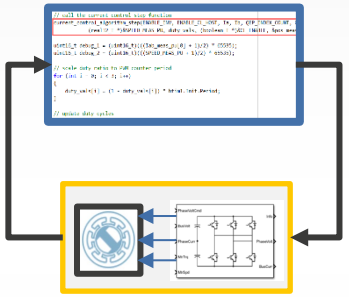
QE for Motor - Next



Renesas advanced motor control platform (FSP based)

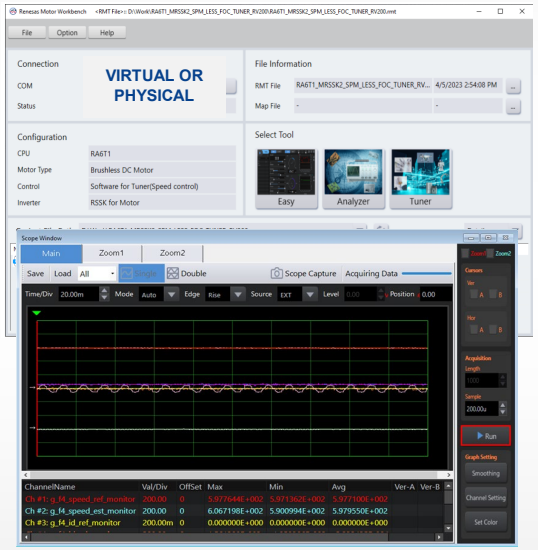
QE: Quick and Effective tool solution

Explore, Test & Learn



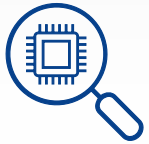
Simulation engine

Smart documentation browser



Renesas Motor Workbench - Next

Deploy on real hardware



MCU selection assistance

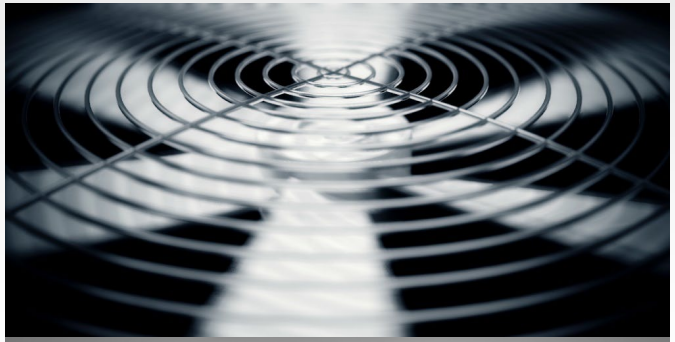
Smart downloader

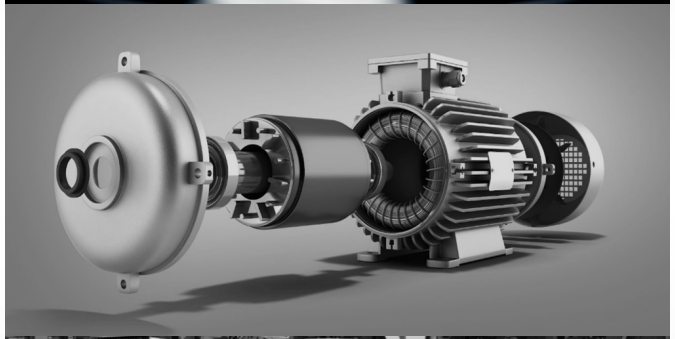
RENESAS REALITY AI PLATFORM
HIGHLY EFFICIENT AI FOR ANY EDGE APPLICATION

Reality AI Tools®

Leading developer platform powering edge AI
in industrial IoT & automotive applications

- Auto machine learning model development
- Explainable AI + hardware analytics
- Ultra-low power inferences





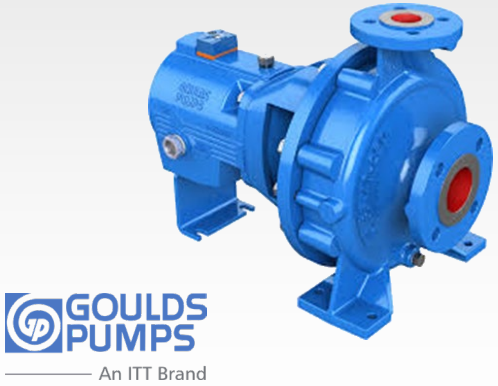
Seamless developer experience

Bridging together AI and embedded domains

REALITY AI - DIVERSE MARKET SUCCESS

Remote livestock management & virtual fencing

- Ultra-low power for extended battery life (Solar powered wearable)
- High precision behavior monitoring across entire herds
- BOM reduction (sensor components optimization)



Pump health monitoring

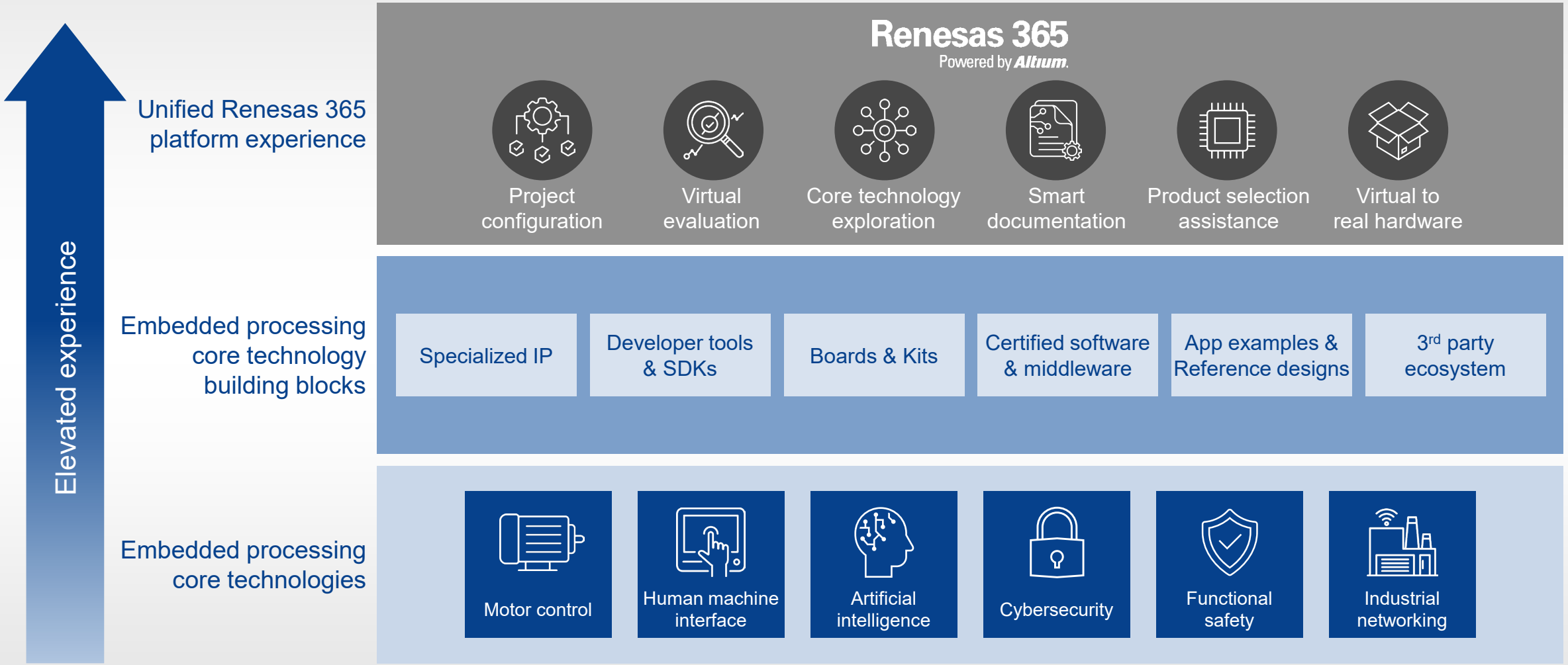
- Prevent costly equipment failure before they occur
- Reduce maintenance costs through precise fault detection in cost-effective hardware
- Improve equipment reliability & uptime

Hisense | HITACHI

Adaptive energy efficient HVAC systems

- Smart climate control, automatically fine tunes indoor conditions for comfort
- Remarkable energy efficiency and reduced carbon footprint
- Extended system life through optimized operation

PHASE 2: ENABLEMENT WITH DIGITALIZATION



AT A GLANCE
ANALOG & CONNECTIVITY

Core technologies

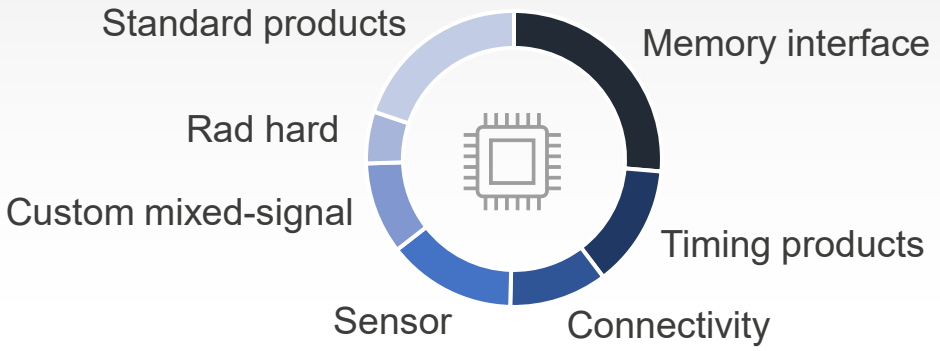
Sense, Control, Actuate
- Sensors
- Custom mixed-signal
- Timing & Standard products
- Rad hard

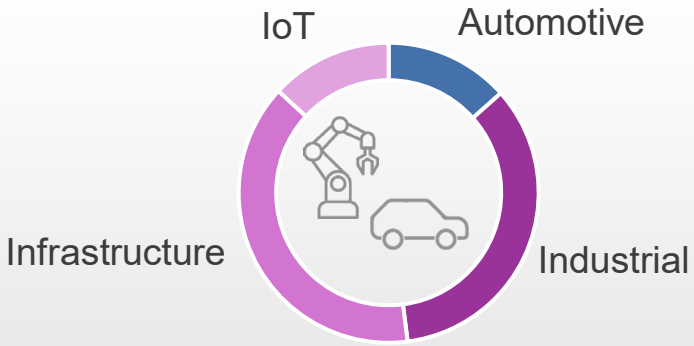
Compute & Connect
- Connectivity (BLE, Wi-Fi, NFC...)

Remember
- Memory interface

Scalable portfolio for global megatrends

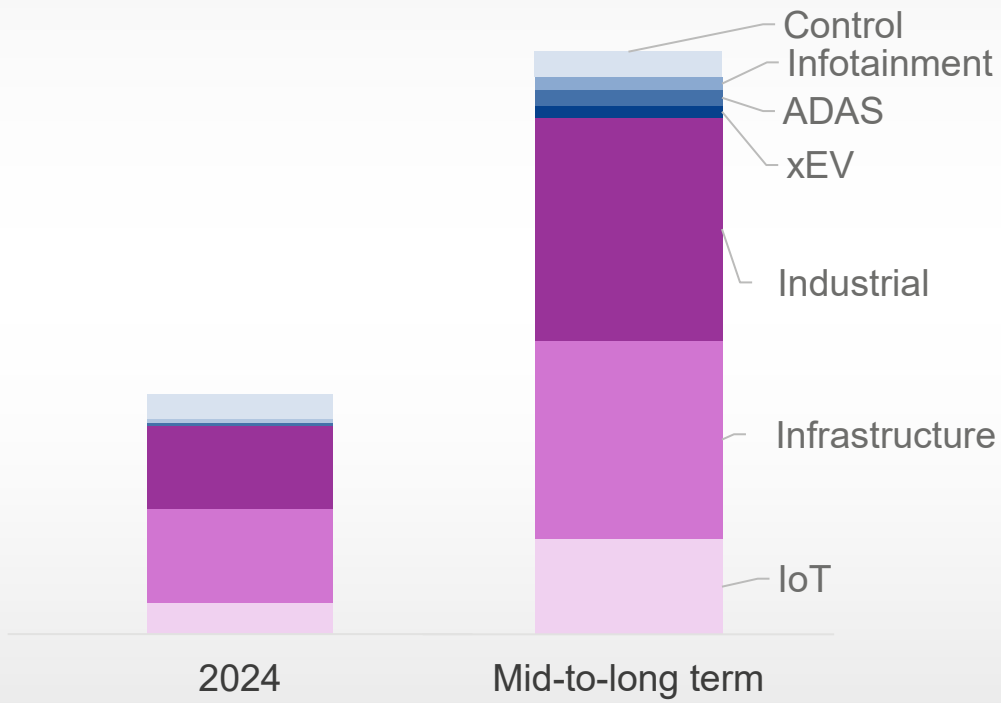
2024 Revenue





GROWTH DRIVERS
ANALOG & CONNECTIVITY

Revenue



Growth drivers

Infrastructure
Market leadership and content expansion in **DDR5, MRDIMM, and Precision Timing**

Industrial
End-to-end solutions with ultra-low power **Connectivity** and advanced **Analog Solutions**

Automotive
Commanding the scalable portfolio for next-gen vehicles with **Sensors** + AFE **ASSPs**

Note: MRDIMM (Multiplexed Rank DIMM): Highest performance and lowest latency main memory to accelerate data center workloads

VERTICAL STRATEGY

INCREASING HIGH VALUE ANALOG CONTENT IN CLOUD AND DATACENTER SERVER MARKET GROWTH

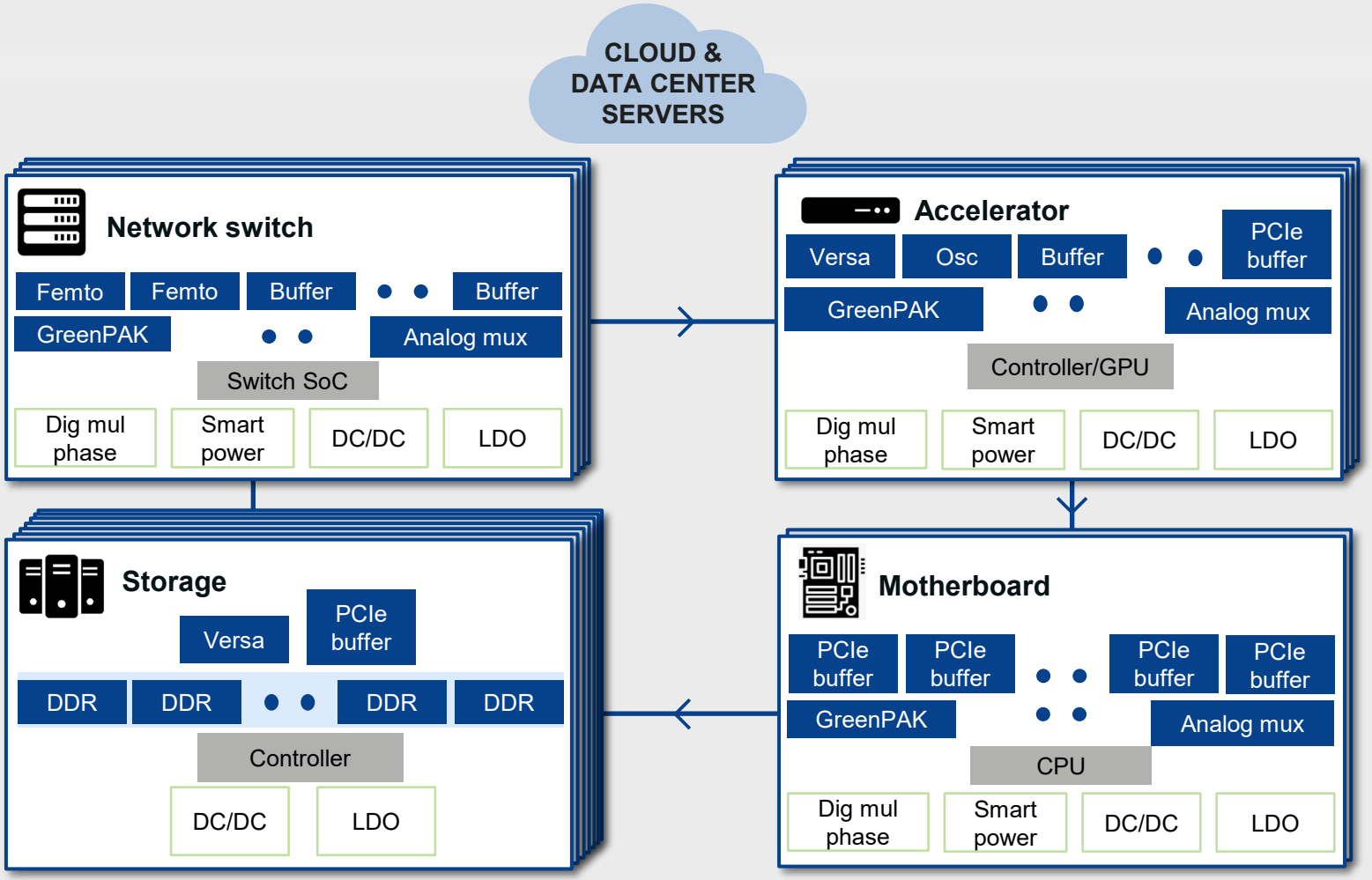
Renesas products

Memory interface:
DDR5 data buffer,
PMIC, Temp sensor

Timing:
FemtoClock, VersaClock,
PCIe, Buffers, Osc

Programmable analog:
GreenPAK, Analog mux

Up to 1K parts / system*1

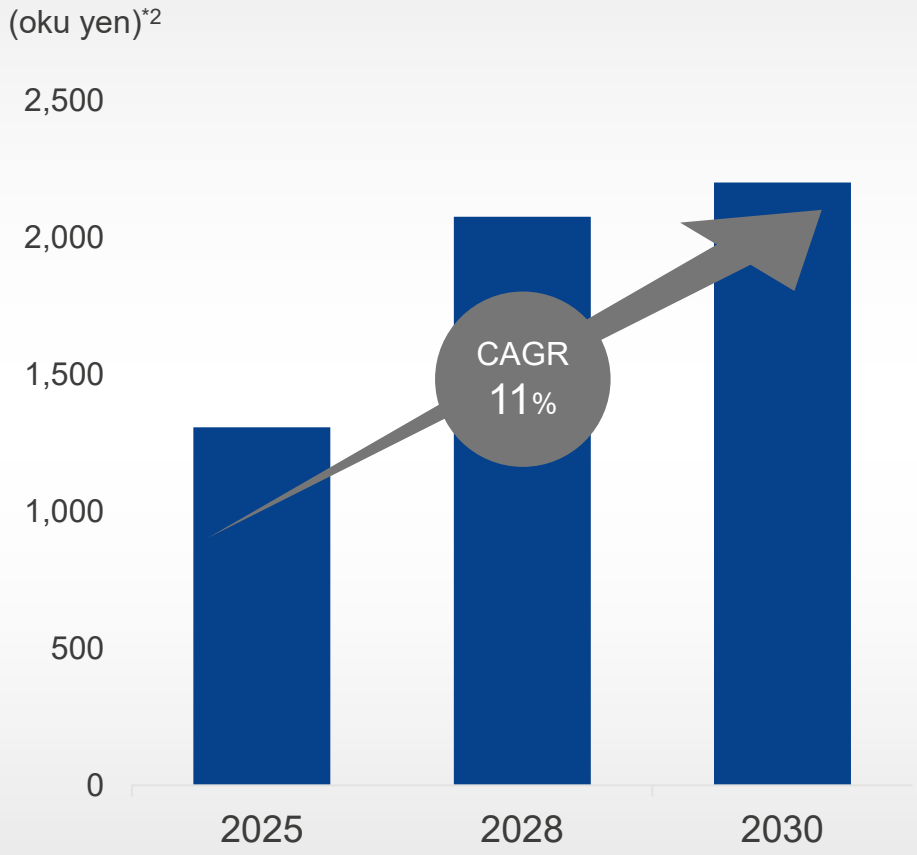


*1 System: Ultra-high throughput of 102.4 Tbps for next-gen data center and AI networking GPAK: GreenPAK Programmable Logic.

VERTICAL STRATEGY - MEMORY INTERFACE

MARKET GROWTH AND DDR5 TRANSITION AS AN OPPORTUNITY

Market growth*1



- **Complete DDR5 chipset** with PMIC, TS, SPD Hub, RCD, DB
- **DDR5 adoption to reach 90% in 2025**
  - Gen3 ramp begins 2H 2025
  - Multi-gen support sustains ASPs
  - AI server growth drives DDR5 demand for higher bandwidth
  - Technical leadership in Gen4 and Gen5
- **MRDIMMs to boost chipset content**
  - Adoption accelerates in 2025
  - Positioned to lead with 6400 MT/s
  - Leader in Gen1 and Gen2 MRDIMMs
- **DDR6 expected by 2031; DDR5 MRDIMMs bridge the gap**

*1: Source: Renesas estimates based on Industry reports and Partner information *2: FX $1 = 100yen, €1 = 120yen TS: Temperature Sensor SPD: Serial Presence Detect RCD: Register Clock Driver DB: Data Buffer

HORIZONTAL STRATEGY

SCALABLE PORTFOLIO AS BEDROCK OF EDGE-CENTRIC PLATFORMS

Core technologies: Innovative, Low power

SW & Tools

Sensor

- Inductive,
- Impedance
- Strain gauge
- Lidar

ICOT

Control, Actuate / Memory

- Programmable analog
- VersaClock 3S, 6E
- RS485
- EEPROM, NOR FLASH.

GO CONFIGURE

Connect & Compute

- BLE SoC
- Low power Wi-Fi

ZEPHYR

FSP

Cross sell

- MCU, MPU
- Power

MCU / MPU | Power

Robotics

Sense & motion control @ Edge

Motion control	SLAM	HMI/E-SKIN	Gripper CTRL
Position sensor	Lidar	Impedance sensing	Strain gauge 10x
MCU	MPU		MPU

Communication module @ Core

- Timing
- AnalogPAK
- BLE
- LP Wi-Fi
- Wireless connectivity IF
- LVDS
- Ethernet
- RS485
- CAN
- Wired connectivity IF (backplane)
- MPU RZ/V2H
- DC/DC
- LDO
- Protection
- NOR flash
- Memory

Cognitive robot (Humanoid AGI)

SLAM modules 1-2

Gripper control 2-4

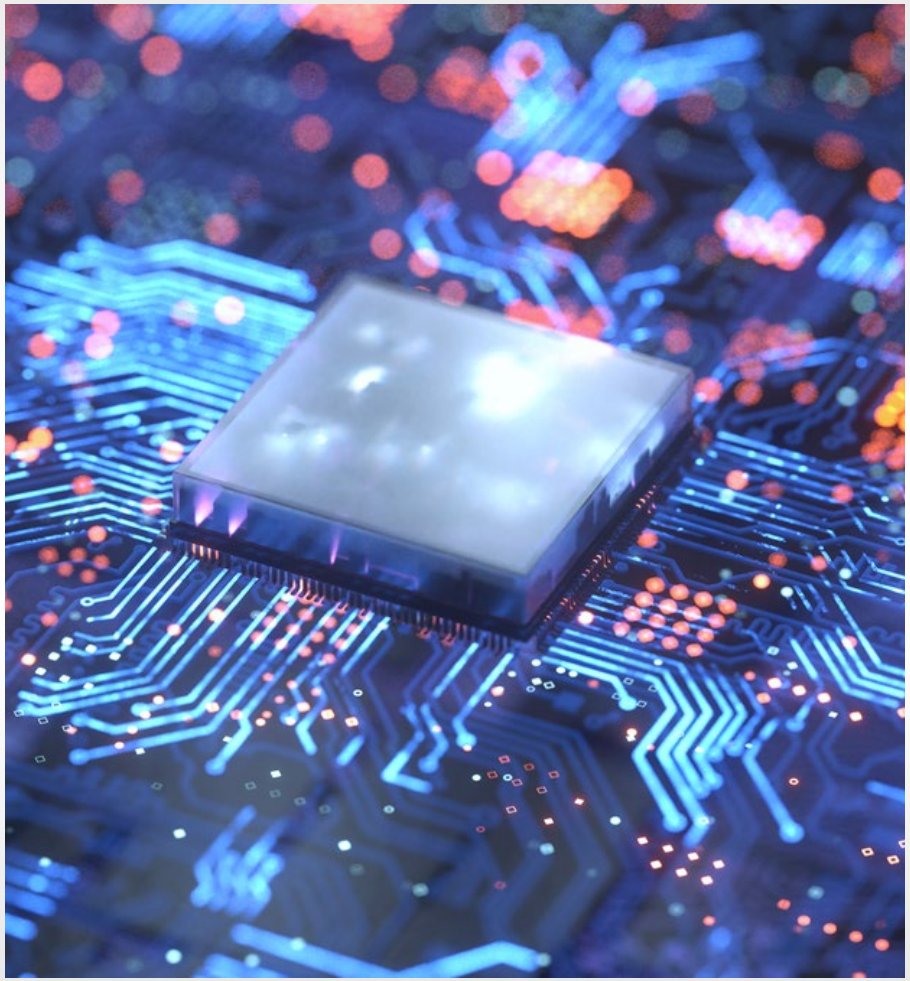
Motor control units 28-40+

Comms. modules 1-2

A&C content
Up to 64 parts / Robot

SLAM: Simultaneous Localization And Mapping HMI: Human Machine Interface e-SKIN: Electronic Skin IPS: Inductive Position Sensing HOD/Impedance Sensing: Hands On Detection

SUMMARY



Grow MCU share in 2-Phase approach
- Focus on growth regions and markets
- Renesas 365 & core technologies keys to mass market

Total solution set built on our high-value analog strengths and leading MCU portfolio

Continued infrastructure investments leading to DDR5 / MCR & timing growth along with content increases

High performance analog, sensors & connectivity products ideally suited to address market demands as edge expands

THANK YOU