RENESAS
BIG IDEAS FOR EVERY SPACE

RENESAS RA

32-BIT MCU FAMILY

RENESAS RA6T1 GROUP

ASSP of RA6 Series for Motor Control

The Renesas RA6T1 Group, as part of the wide scalable RA6 Series, is optimized for enhanced Motor control. The RA6T1 is built on a highly efficient 40nm process and equipped various peripherals and memory suitable for motor control application. To make engineers application design easy, RA6T1 is supported by the Flexible Software package (FSP) including motor control specific control code algorithm, which make the RA6T1 to a perfect choice for Quick Time to market.

Renesas RA6 Series

RA6M4	**200MHz, Arm® Cortex®-M33** **512kB-1MB Flash, 256kB RAM** 64-144pin, USB, CAN, Ethernet, Security and TrustZone
RA6M1 RA6M2 RA6M3	**120MHz, Arm® Cortex®-M4** **512kB-2MB Flash, 256kB-640kB RAM** 64-176pin, USB, CAN, Ethernet, TFT, Security
RA6T1	**120MHz, Arm® Cortex®-M4** **256kB-512kB Flash, 64kB RAM** 64-100pin, GPT, ADC, PGA, CMP

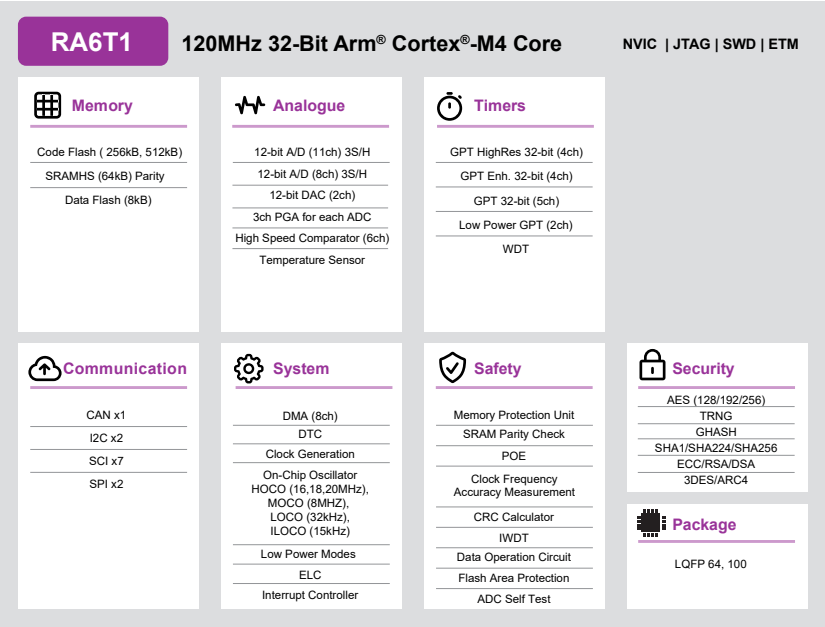
Target Applications

- Motor Control Applications
  - Smart Home (Air Conditioner, Refrigerator, Washing Machine, Dishwasher, IH Cooker)
  - Industrial Automation / Building Automation (AC Drive, Pump, Compressor, Fan, Solar Inverter, HVAC, Line conveyor, Digital Power Supply)

Key Features

- 120MHz Arm® Cortex®-M4
- 256kB-512kB Flash and 64kB SRAM Memory
- 8kB Data Flash to store data as in EEPROM
- Scalable from 64pin to 100pin packages
- General PWM Timer
  - Enhanced High Resolution
- 12-bit A/D Converter
- High-Speed Analog Comparator
- Programmable Gain Amplifier
- CAN 2.0B
- SCI (UART, Simple SPI, Simple I²C)
- SPI/I²C Multimaster Interface

Block Diagram



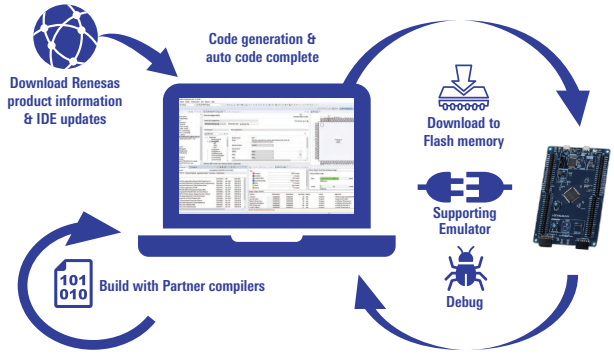
RENESAS RA6T1 GROUP

Benefits

- Ready to use motor control software as part of the Flexible Software package offer
- Motor control peripheral integration like PWM timer and advanced analog realize high-precision and safe motor control
- Open Arm Ecosystem and Motor Evaluation Kit to enable easy development of an powerful RA6T1 based motor control solution

Tools and Support

IDE	Renesas e²studio	Keil MDK	IAR EWARM
Compiler	■ GCC ■ Arm Compiler	■ Arm Compiler	■ IAR Arm Compiler
Debugger	■ Renesas E2/E2 Lite ■ SEGGER J-Link	■ SEGGER J-Link	■ IAR I-Jet ■ SEGGER J-Link
Programmer	■ Renesas PG-FP6 ■ SEGGER J-Flash ■ Third party solutions		



Evaluation Kit

- Motor Control Evaluation System for RA Family - RA6T1 Group
  - RA6T1 CPU card including On-Chip debugger
  - 48V Inverter Board
  - Permanent magnet synchronous motor
  - Part name: RTK0EMA170S00020BJ
- Renesas Motor Workbench(Motor control development tool)
- Sample Code & Application Note

Ordering References

Part name	Flash	RAM	DataFlash	Operating Temperature	Package	Package dimensions	Pin Pitch
R7FA6T1AD3CFP	512kB	64kB	8kB	-40 to +105°C	LQFP 100pin	14x14mm body; (16x16mm)	0.5mm
R7FA6T1AD3CFM	512kB	64kB	8kB	-40 to +105°C	LQFP 64pin	10x10mm body; (12x12mm)	0.5mm
R7FA6T1AB3CFP	256kB	64kB	8kB	-40 to +105°C	LQFP 100pin	14x14mm body; (16x16mm)	0.5mm
R7FA6T1AB3CFM	256kB	64kB	8kB	-40 to +105°C	LQFP 64pin	10x10mm body; (12x12mm)	0.5mm

For more details, please visit www.renesas.com/RA

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