

Optimized to Drive Vector Control for Brushless DC Motor

RX13T MCU GROUP



Renesas RX13T MCU is an optimized single motor control solution to drive vector control/field oriented control (FOC) of the Permanent Magnet Synchronous Motor (Brushless DC Motor). RX13T has best-in-class built-in FPU (Floating Point Unit) at 32MHz and various built-in peripheral functions, such as the Programmable Gain Amp (PGA) with 6 level adjustable gain and Data Flash to help reduce board space and overall components needed. RX13T is available in small 32pin and 48pin QFP/QFN packages.

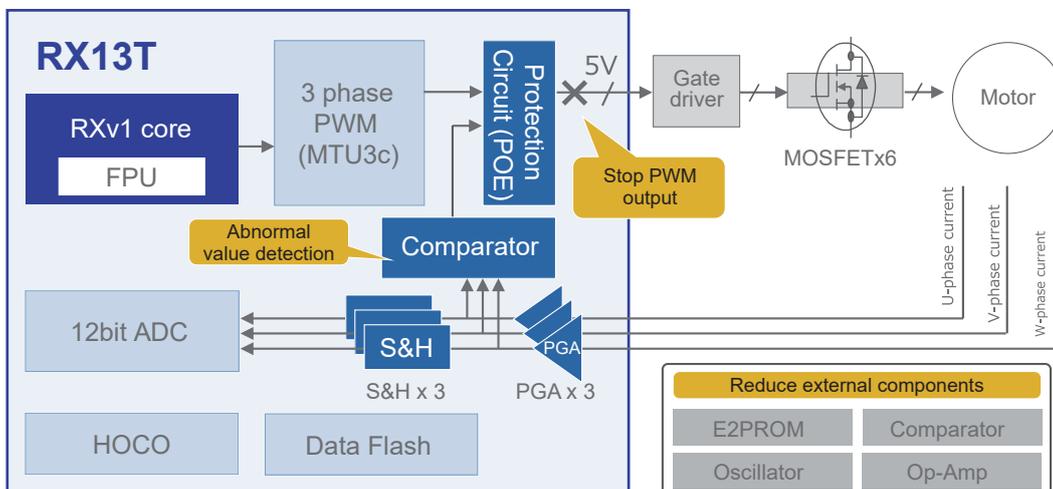
Features

- 32-bit RX MCUs, 32MHz, RXv1 core, up to 128KB Flash
- Low Power RXv1 Signature Core at 107.96 CoreMark
- Built in functions
 - FPU
 - PGA 3 channels with 6 level adjustable gain
 - Inverter Control Timer MTU3 operating at the same high-speed frequency as the CPU
- Vcc: 2.7 ~ 5.5V, High noise immunity at 5V

Benefits

- Reduce external components with On-chip peripheral functions
 - Data Flash up to 4KB
 - 3 channel PGA
 - 3 channel comparator
 - High speed on-chip oscillator (HOCO, accuracy of $\pm 1.0\%$)
- Built-in FPU improve software readability and reduce code size
- Robust Protection Circuit stops the motor upon abnormal voltage detection
- Jump-start evaluation with CPU card consisting onboard emulators
- Evaluate motor-related application simply with CPU card and Motor RSSK (RTK0EMX270S00020B)
- Low pin count & small packages available
 - 32 pin LQFP/HWQFN, and 48 pin LFQFP/HWQFN

Motor Control by RX13T

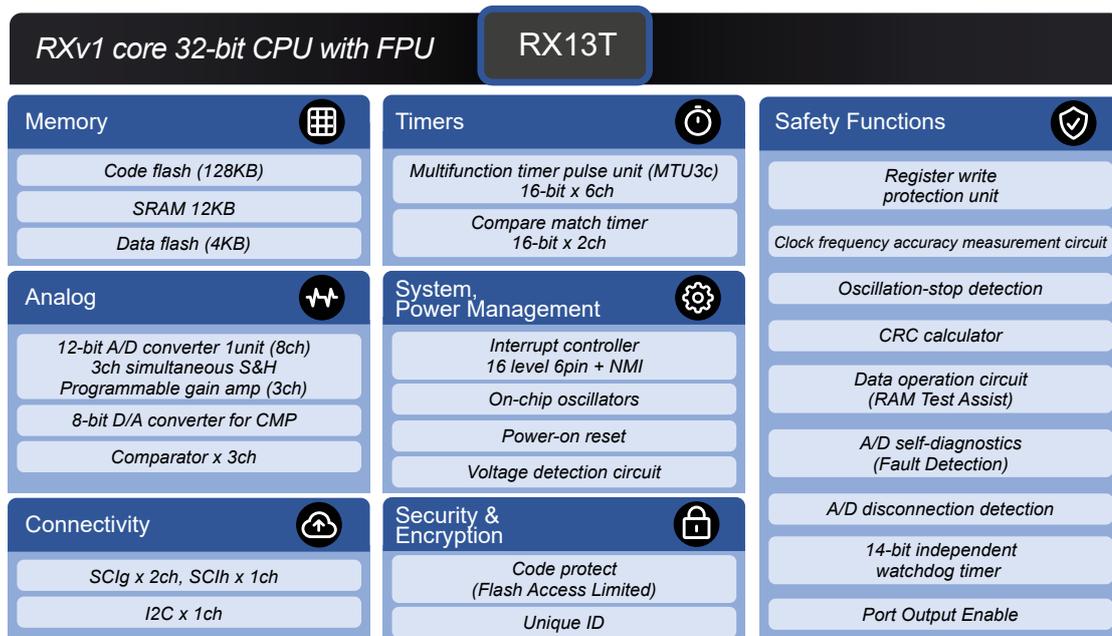


Applications

- Pump
- Fan Motor
- Small Motor in Robotics
- Low-end Motor Control
- Home Appliances
 - Refrigerator
 - Vacuum Cleaner

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Block Diagram



Development Environment

Evaluation System for BLDC Motor

- Start Motor Control Development easily with the Evaluation System for BLDC Motor and RX13T CPU Card

Tools Part Number	Description	Status	
RTK0EMXA10C00000BJ	RX13T CPU Card	MP	
RTK0EMX270S00020B	Evaluation System for BLDC Motor	MP	

Renesas Motor Workbench 2.0

- Renesas Motor Workbench can display the waveform of internal microcomputer variables in real time and can automatically extract vector control parameters.



Ordering References

Part Number for -40 to +85°C Temp	R5F513T5ADFJ	R5F513T5ADFL	R5F513T5ADNH	R5F513T5ADNE	R5F513T3ADFJ	R5F513T3ADFL	R5F513T3ADNH	R5F513T3ADNE
Part Number for -40 to +105°C Temp	R5F513T5AGFJ	R5F513T5AGFL	R5F513T5AGNH	R5F513T5AGNE	R5F513T3AGFJ	R5F513T3AGFL	R5F513T3AGNH	R5F513T3AGNE
Code Flash	128KB	128KB	128KB	128KB	64KB	64KB	64KB	64KB
RAM	12KB							
Pin Count	32pin	48pin	32pin	48pin	32pin	48pin	32pin	48pin
Package*	LQFP	LFQFP	HWQFN	HWQFN	LQFP	LFQFP	HWQFN	HWQFN
Package Size	7mm x 7mm	7mm x 7mm	5mm x 5mm	7mm x 7mm	7mm x 7mm	7mm x 7mm	5mm x 5mm	7mm x 7mm

For more information about the Renesas RX MCU family, please visit: www.renesas.com/RX



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