

The Core Difference in Your Design

# RX600 Microcontrollers



# Performance without Sacrifice

The RX architecture is future oriented and feature rich. It's driven by a Renesas technology roadmap that focuses on the global environment and anticipates the enormous gains in sophistication that microcontroller-based products are expected to achieve in the next 10 to 20 years. Thus, the RX family of microcontrollers (MCUs) delivers superior performance in terms of core processing performance, code efficiency, and power consumption. An extensive portfolio of on-chip mixed-signal peripherals is available, and fast 90 nm Flash memory is embedded. That Flash unleashes full CPU performance, feeding instructions to the 32-bit RX CPU with no delays – no waits, no stalls – maintaining the MCU's peak performance of 165 DMIPS. Memory acceleration isn't required, and the result is just pure, predictable performance.



*Today designers are confronted with many critical design and implementation issues. RX MCUs are designed to solve these issues and help them create new innovative end-products faster and more easily than in the past.*

## Superior Architecture

RX CPU Core: 1.65DMIPS/MHz with FPU and DSP

Fast Non-volatile Memory

Mixed Signal Integration

Cost

## Fast Flash

Industry's only 90nm 100MHz Embedded Flash



Compatibility and Migration

Advanced Analog

High-speed Connectivity

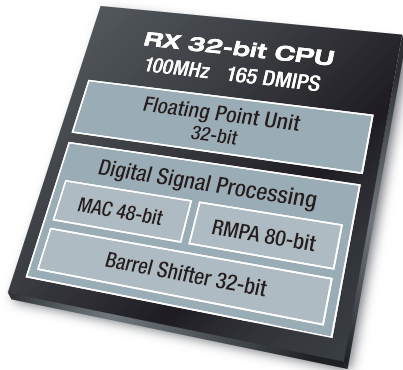
## Power Efficiency

500µA/MHz, 1.4µA RTC Standby

Long Product Lifetime

Support Services

Technology and



Memory
Zero-wait Flash up to 2MB
SRAM up to 128 KB
Data Flash up to 32 KB

System
DMA & Event System
Fast Interrupt Handler
Clock Generation
POR/LVD

Analog
12-bit ADC Prog Op Amps Multi-sample/Hold Comparators
10-bit ADC
10-bit DAC
Temp Sensor

Timers
Motor Control 3-phase PWM Dead-time Insertion Shunt Control PFC, QEI
Timer Pulse Unit
Compare/Match Timer
General Purpose Timer
Multi-function Timer
Prog Pulse Generator
PWM
Watchdog Timer
Real-time Clock

Communication
Ethernet 10/100 MAC with DMA
USB 12 Mbps Host/Device/OTG
CAN
LIN
I2C
SCI/UART
SPI
External Bus with SDRAM
TFT-LCD ExDMA
GPIO



> **Renesas is the number one MCU supplier world-wide<sup>1</sup>, with a 30% market share.**

- > RX MCUs leverage Renesas' mature 90 nm embedded Flash process, which is currently the fastest in the industry with a 10 ns maximum read access time and is designed for optimized power consumption all the way up to full 100 MHz operation.
- > Design solutions in the RX600 series are scalable. Over 200 products are available now offering Flash memory from 32 KB to 2 MB and packages with 48 to 177 pins.
- > The companion low-voltage RX200 series are available since Spring, 2011. These more economical MCUs operate down to lower voltages (as low as 1.62 V), consume less power, and come in smaller packages and memory sizes. The RX200 and RX600 share the same CPU core and integrate many of the same peripherals for easy migration between the two series.
- > RX MCUs come with comprehensive system development support, including a vast range of easy-to-use boards, tools, software, middleware, and RTOSs from Renesas and third-party suppliers, comprising a rich ecosystem of products for accelerating progress in design cycles and shrinking time to market.

### Superior Architecture

- > RX CPU Core with FPU and DSP: 165 DMIPS at 100 MHz
- > Enhanced Harvard architecture and 5-stage pipeline
- > More than six internal busses
- > Multiple Direct Memory Access control
- > Rapid interrupt response

### Fast Flash

- > Industry's only 90 nm 100 MHz embedded Flash
- > CPU receives instructions with no delays
- > Mature and reliable silicon process

### Power Efficiency

- > 500  $\mu$ A/MHz, with all peripherals active
- > 1.4  $\mu$ A RTC Deep Standby (RX631/63N)
- > 1 mW per DMIPS
- > Extends battery life in portable applications

### Code Efficiency

- > Up to 28% code size savings<sup>2</sup> compared to popular 32-bit RISC MCUs on the market
- > Variable-length CISC instructions
- > FPU, DSP and bit manipulation instructions

Effectiveness High Reliability  
**Code Efficiency**  
 Up to 28% Code Size Savings  
 Low-cost Development Tools Broad Ecosystem  
 Extensive Roadmaps Support Services

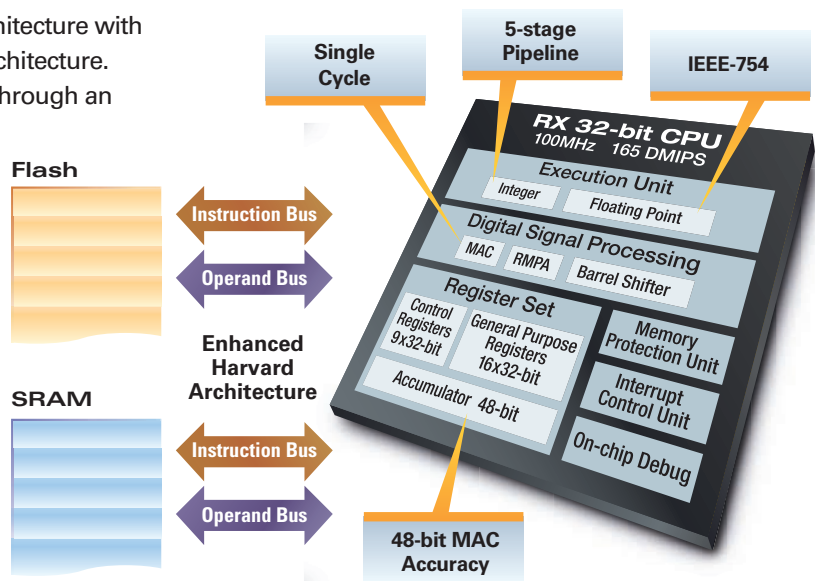
Footnotes:  
 1: Source: Gartner 2009 Worldwide Semiconductor Market Share Database, March 2010 results  
 2: Source: Renesas internal testing

# Advanced Design and Integration

## RX600 Key Benefits

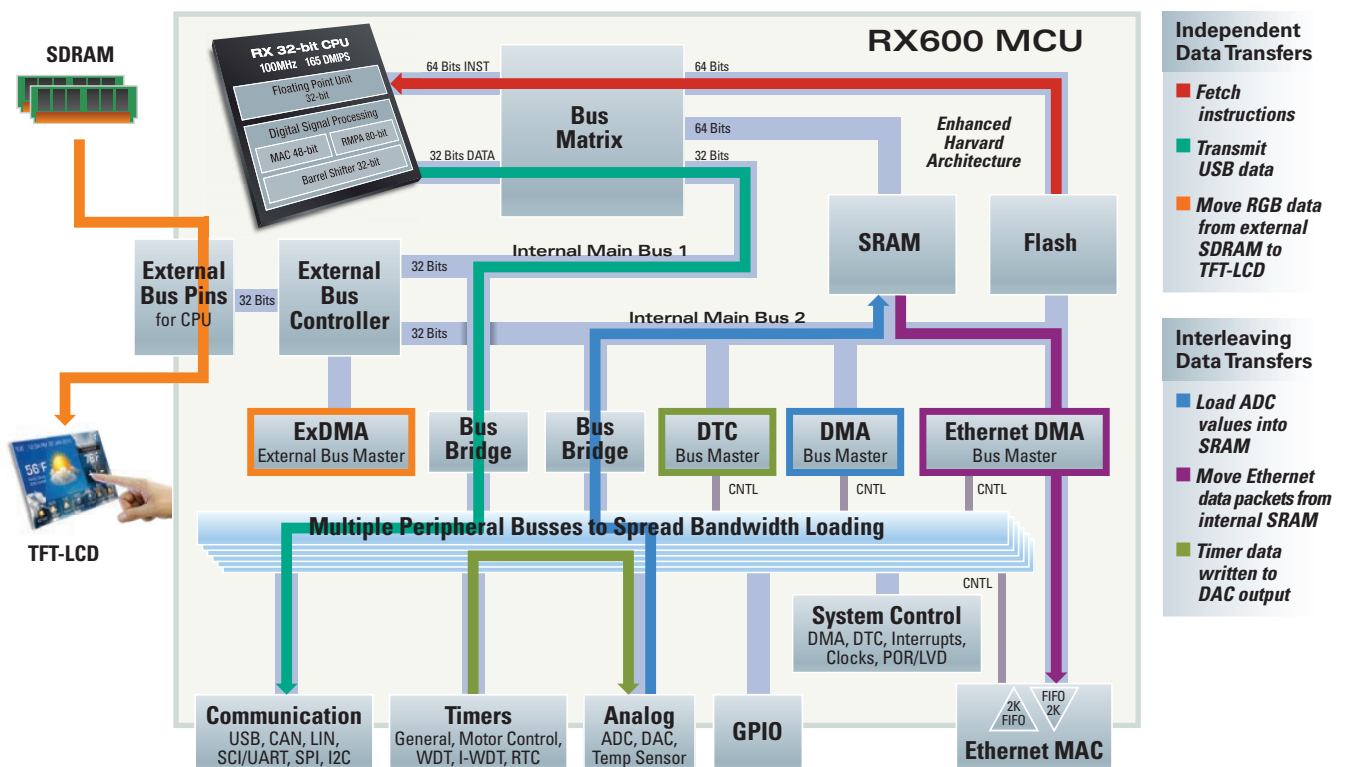
The RX Core marries the speed of a RISC architecture with the flexibility and code efficiency of a CISC architecture. The CPU interacts with the Flash and SRAM through an enhanced Harvard design. The RX Core leverages the industry's fastest Flash memory, delivering 1.65 DMIPS/MHz and 2.77 CoreMark/MHz without wait states.

Tightly coupled to the RX Core are the FPU, MAC, and RMPA (Repeat Multiply Accumulate), which are efficiently driven by DSP and floating point instructions to meet the growing demand of DSC (Digital Signal Controller) type applications.



## Simultaneous Data Transfers

The RX Core uses a large number of parallel busses to handle simultaneous movement of data between the CPU core, Flash, SRAM, and peripherals. Six different peripheral busses enable a flexible distribution of slow and fast peripherals for optimized throughput. An external bus with an independent DMA can move data directly from one external device to another external device, such as a graphic frame buffer to a TFT-LCD panel.



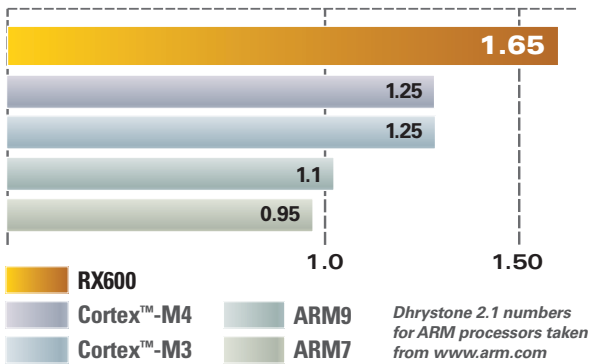


## Performance

The RX Core delivers 1.65 DMIPS per MHz, achieving 165 DMIPS when running at 100 MHz.

- > RX600 continues to perform very well in the CoreMark/MHz benchmarks with the results being continually improved with new compiler releases. At the time of printing, the IAR Systems EWRX delivers the best RX600 benchmarks, however please contact Renesas for updated performance figures.

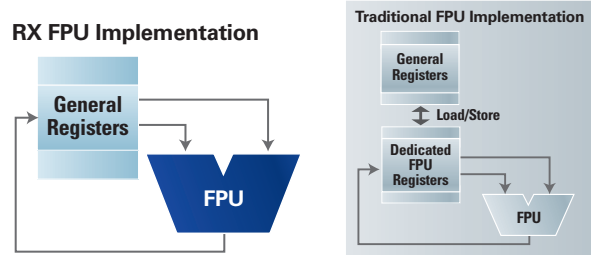
### Dhrystone MIPS per MHz with no wait-state memory access



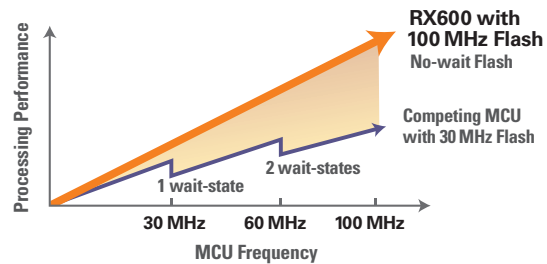
## Superior FPU Implementation

The RX FPU implementation allows direct access to general registers, resulting in faster execution and smaller code size.

- > RX eliminates the overhead of load/store operations
- > Results in higher performance and smaller code size



## Industry's only 100 MHz On-chip Flash

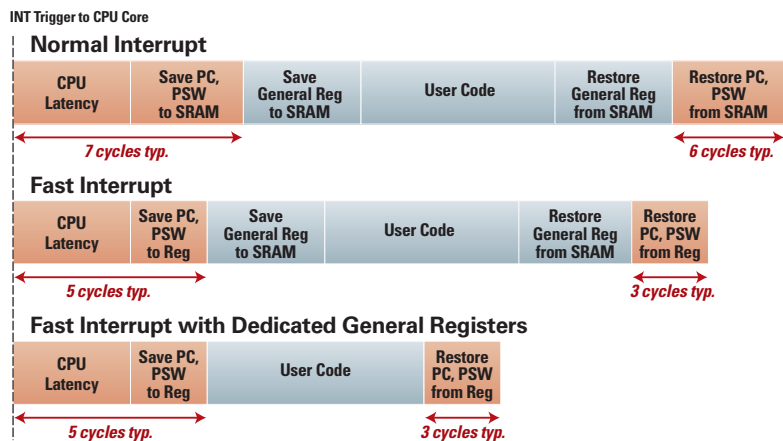


## Efficient Interrupt Handling

There are flexible options to achieve minimum latency for various scenarios:

- > Normal interrupt responds in as few as seven CPU clock cycles from the event until the firmware serves the interrupt.\*
- > Fast interrupt mode can be assigned dynamically to any interrupt source, responding in just five CPU clocks, using dedicated registers to save and restore the CPU state.
- > All interrupt service routines can be shortened by dedicating up to four RX CPU general registers for use only by interrupts, eliminating the need to push and pop the registers to and from the stack.

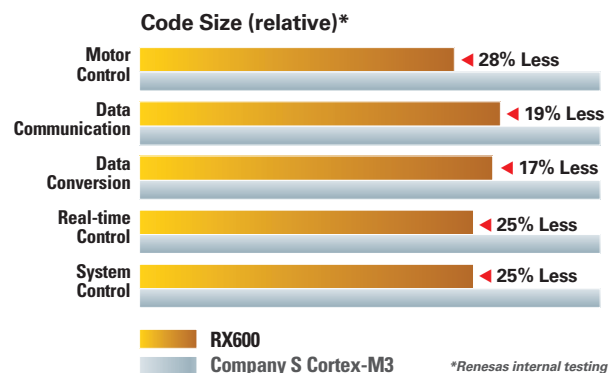
\*Interrupt priority judgement cycles not included.



## Substantial Code Size Reduction

The RX CISC CPU architecture has inherent advantages over RISC CPUs in terms of code size, with RX's variable length instructions ranging from 8 bits to 64 bits, allowing the compiler to select just the right instruction to do the job.

- > Many RISC MCUs have only two instruction lengths, 16 bits and 32 bits, so the compiler must make compromises.
- > RX CPU supports 10 addressing modes, which optimize manipulation and movement of data.
- > Compiled RX code has been measured as much as 28% smaller than the same code compiled on a popular RISC MCU.

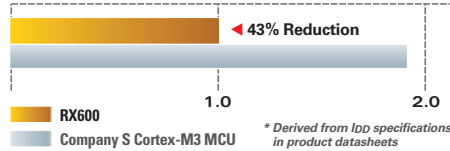


## Highly Effective Power Management

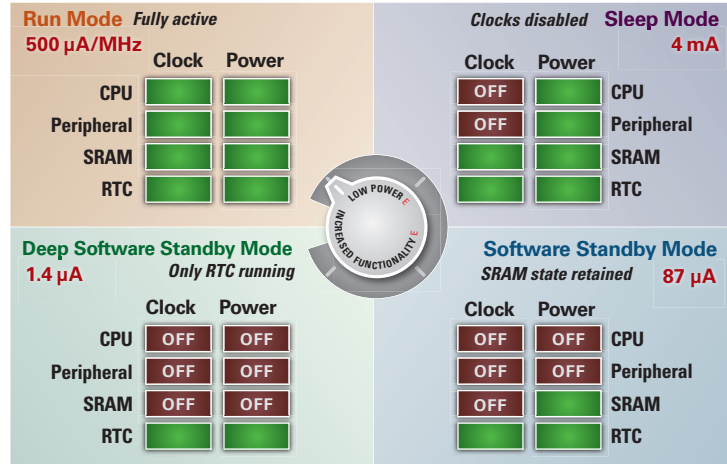
Strike an optimized balance of performance and power consumption with many low-power modes of operation enabled by these design techniques:

- > Flexible system clocking and gating for each peripheral
- > Selective power domain gating for unused sections of the device
- > Low-power, high-voltage threshold transistors minimize leakage

Milliwatts per DMIPS\*



- > Compared to a Cortex-M3 based MCU, an RX600 chip enables up to a 43% power reduction – consuming only 1 mW per DMIPS

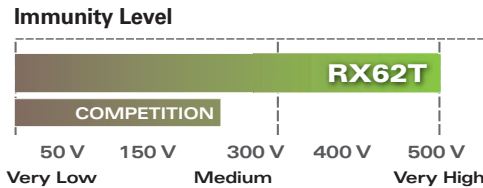


- > The RX Series has four power modes to manage precious battery energy consumption without compromising performance

## EMC Advantages – Built-in to Eliminate Add-Ons

Outstanding EMC performance of RX600 MCUs reduces system-integration problems, lowers development costs, and shortens design cycles. BOM costs drop, too, because external components can be eliminated

- > Strong electromagnetic immunity boosts system reliability
- > Careful VCC and VSS layout
- > Noise filters on input signals
- > Advanced chip layout techniques



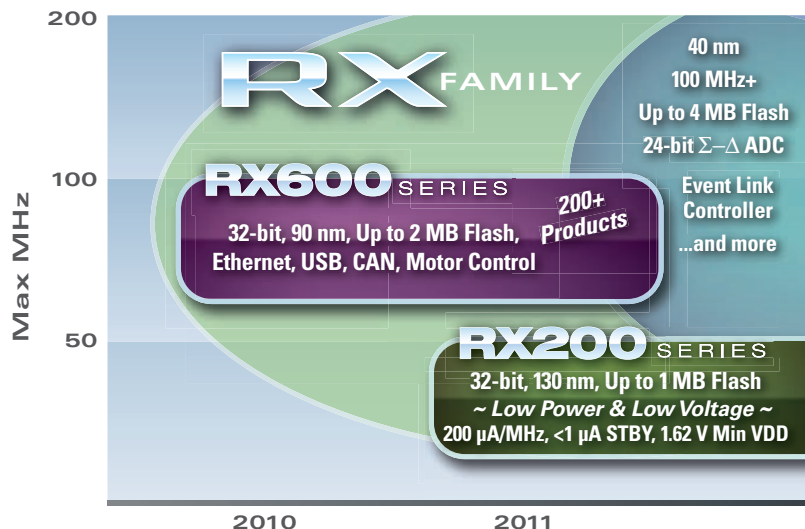
“Langer EMV and Renesas Electronics today announced that the RX600 microcontroller (MCU) family is the most robust MCU Langer EMV has ever tested against environmental noise”

Renesas press release, October 21, 2010

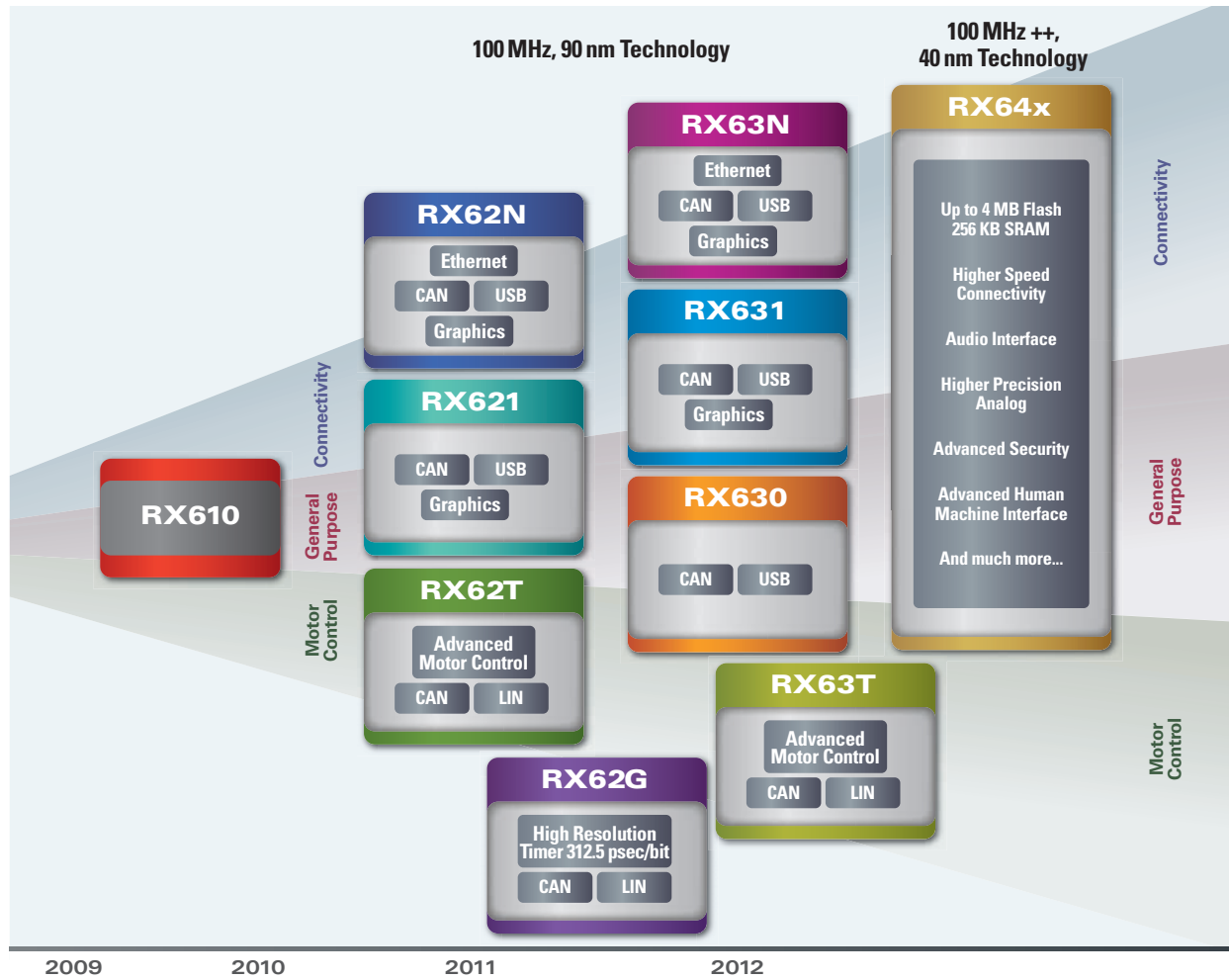
# RX Family Product Portfolio

The RX family currently consists of two extensive product series. MCUs in the RX600 series are optimized for applications requiring high-performance, high-efficiency processors. Devices in the RX200 series introduced in 2011 have expanded the range of compatible system-design choices, adding smaller, lower power devices with fewer pins.

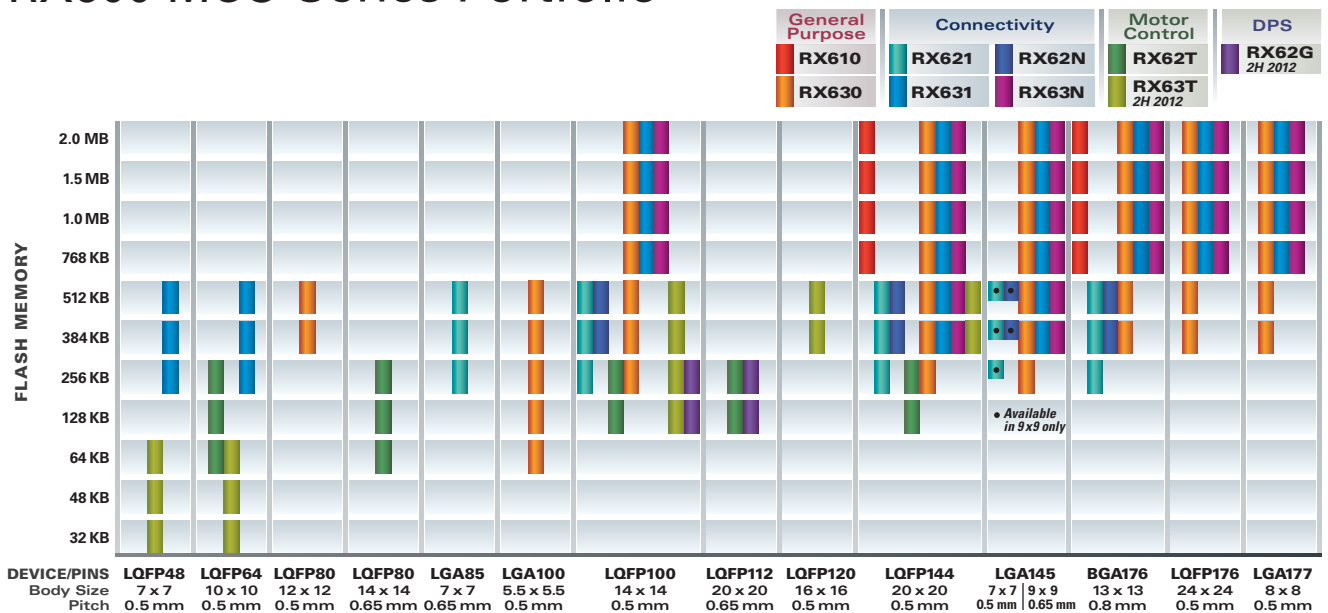
Migration from existing Renesas architectures to RX solutions is easy. And, of course, moving designs among RX family members is very easy, since RX600 and RX200 MCUs share the same CPU architecture and peripherals. This gives system engineers valuable design flexibility and provides substantial head starts on reusing software assets. New products for niche markets can be created quickly and efficiently, as can upgraded or simplified versions of existing products for addressing changes in customer preferences.



# RX600 MCU Series Roadmap



# RX600 MCU Series Portfolio



# Comprehensive On-chip Peripherals

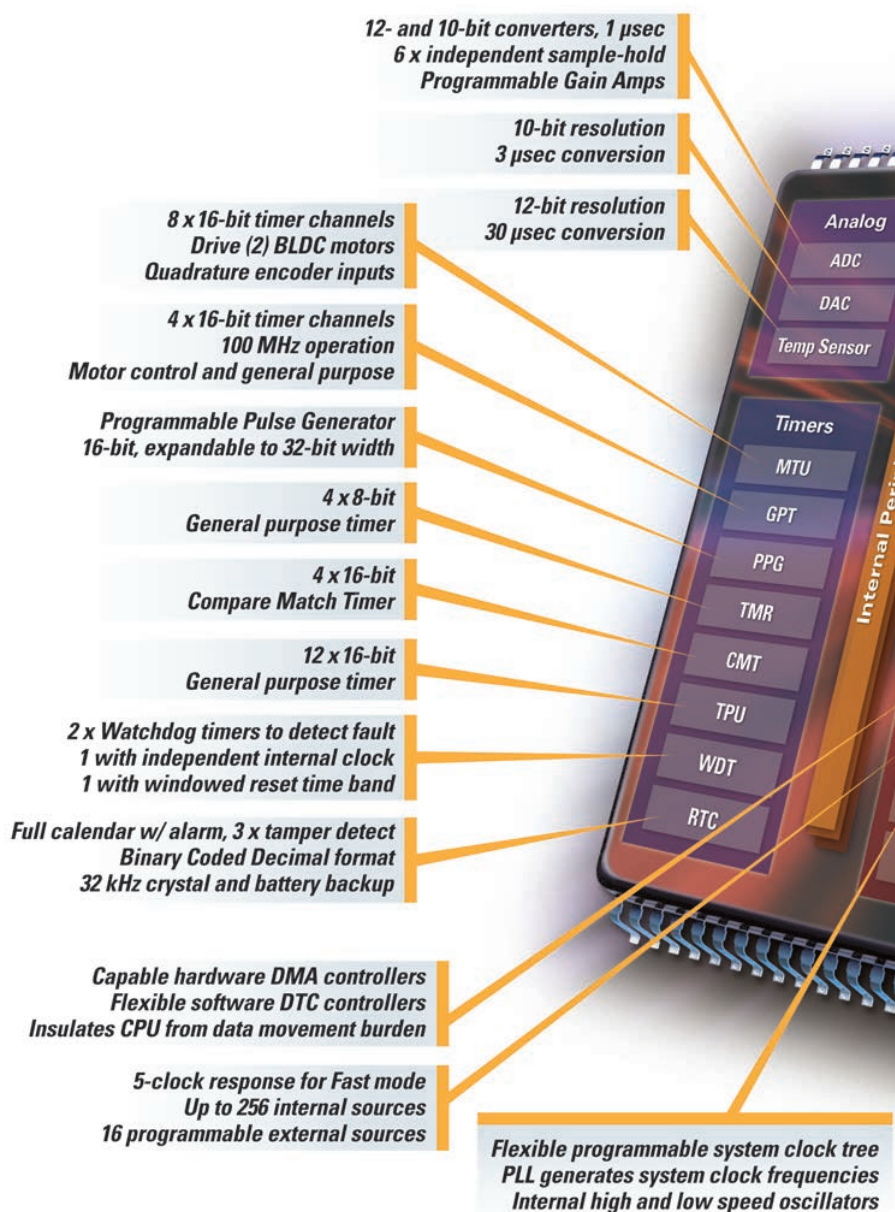
To save cost, simplify system designs, reduce total system power consumption, and enable the implementation of value-added features, a wide range of on-chip peripheral functions is clustered around the powerful CPU core of RX MCUs. Broadly categorized into analog, timer, communication and system functions, these numerous peripherals are proven designs delivering impressive performance. The many different types of RX MCUs offer diverse sets of functions, so chip capabilities and cost can be matched to application needs. The devices in the RX621/62N/630/631/63N and RX62T/63T/62G product groups exemplify this diversity and optimization.

> RX621/62N/631/63N MCUs provide extensive communication peripherals with options for Ethernet, up to three CAN, and up to two USB-FS 2.0 channels, each operating as USB Host, USB Device, or USB OTG (On the Go). Additionally, they offer up to thirteen SCI, three SPI, and four I<sup>2</sup>C serial channels. Among their other peripherals are analog interfaces; timers; RTC and POR/LVD functions; and more.

> RX62T/63T MCUs provide improved motor/inverter control timers and enhanced analog peripherals for implementing very precise motor control and positioning applications. The MTU3 and GPT timer peripherals enable one MCU to control three motors simultaneously. An FPU and improved analog functions make these MCUs ideal for use with three-shunt or single-shunt vector-type motor control methods.

> RX630 MCU provides an fantastic General Purpose feature set making it suitable for many different applications. Communication peripherals with up to 3ch CAN, and USB-FS 2.0 channel operating as USB Device. Additionally, they offer up to thirteen SCI, three SPI and four I<sup>2</sup>C serial channels. Among their other peripherals are analog interfaces; timers; RTC and POR/LVD functions; and more.

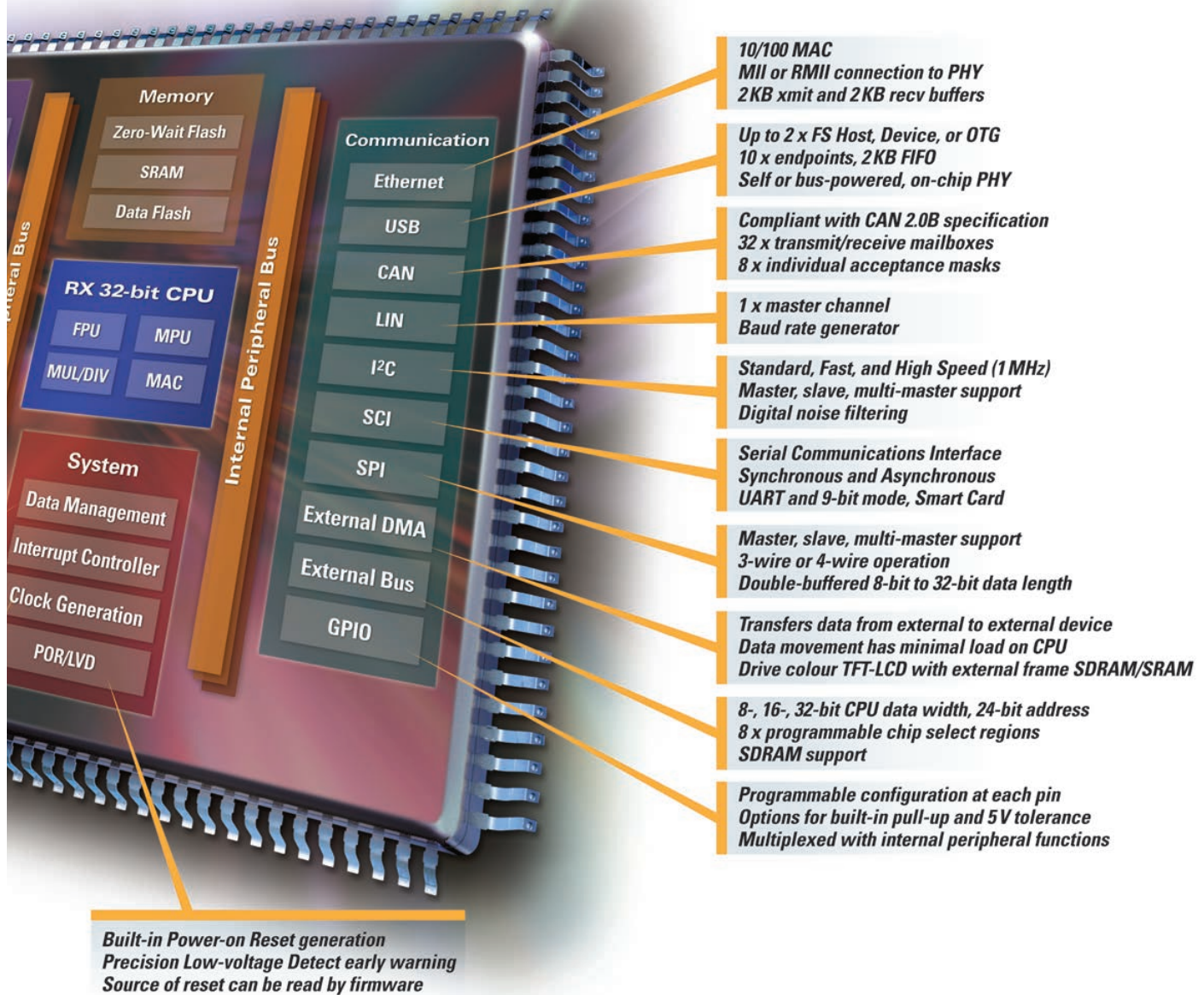
> RX62G MCU provides improved high resolution timer functionality base on the GPT Timer unit, enable to generate a PWM signal with 312.5 psec/bit. An FPU and improved analog functions make these MCUs ideal solution for Digital Power Supply designs, where a High Resolution timer is essential to bring the system design cost down.





Group		Advanced Peripherals							Basic Peripheral Set																		
		Connectivity			Advanced Motor				Memory			Analog			Timers						Communication						
		Ethernet 10/100/MAC	USB 2.0 Host/Device/OTG	CAN 2.0B	Graphics ExDMA	Advanced ADC 12-bit	MTU3	GPT	Flash (max)	SRAM (max)	Data Flash	ADC 10-bit	DAC 10-bit	ADC 12-bit	Temp Sensor	MTU2	TPU	PPG	TMR	CMT	W/Q/T	I-WDT	RTC	I <sup>2</sup> C	SCI	ExBus	SPI
Connectivity	<b>RX621</b>	-	2	1	1	-	-	512 KB	96 KB	32 KB	-	2	8	-	12	-	8	4	4	1	1	1	2	6	8/16/32	2	-
	<b>RX631</b>	-	2	3	1	-	-	2 MB	128 KB	32 KB	8	2	21	1	6	12	8	4	4	1	1	1	4	13	8/16/32	3	-
	<b>RX62N</b>	1	2	1	1	-	-	512 KB	96 KB	32 KB	-	2	8	-	12	-	8	4	4	1	1	1	2	6	8/16/32	2	-
	<b>RX63N</b>	1	2	3	1	-	-	2 MB	128 KB	32 KB	8	2	21	1	6	12	8	4	4	1	1	1	4	13	8/16/32	3	-
General Purpose	<b>RX610</b>	-	-	-	-	-	-	2 MB	128 KB	32 KB	16	2	-	-	-	12	8	4	4	1	-	-	2	7	8/16	-	-
	<b>RX630</b>	-	1*	3	-	-	-	2 MB	128 KB	32 KB	8	2	21	1	6	12	8	4	4	1	1	1	4	13	8/16/32	3	-
Motor Control	<b>RX62T</b>	-	-	1	-	8	8	4	256 KB	16 KB	8 KB	12	-	-	-	-	-	4	1	1	-	1	3	-	1	1	
	<b>RX63T</b>	-	-	-	-	8	8	4	64 KB	8 KB	8 KB	-	-	-	-	-	-	4	1	1	-	1	3	-	1	1	
DPS**	<b>RX62G</b>	-	-	1	-	8	8	4***	256 KB	16 KB	8 KB	-	-	-	-	-	-	4	1	1	-	1	3	-	1	1	

\* USB device only    \*\*Digital Power Supply    \*\*\*Incl. High Res. Timer



# RX600 MCU Series Devices 1/4

Device		Memory	Operation		Interfaces							Timers				Clock	Parallel I/F		Analog				Miscellaneous Information																																																																																																																																																																																							
Group	Part Number	Flash [Byte]	RAM [Byte]	Max. Clock Speed [MHz]	Supply Voltage [V]	I/O	SPI	SCI	I <sup>2</sup> C	LIN	CAN	USB (Host/Device/DTG)	Ethernet	Timer 8-bit	Timer 16-bit	Motor	IWDT	WDT	RTC	LOCO	HOCO	32.768 kHz	TFT LCD	External Data Bus	10-bit ADC	12-bit ADC	10-bit DAC	Prog Op Amp	POB & LVD	DMA	DTC	Packages	Qualification	Others features																																																																																																																																																																												
RX610	R5F56108WDBG	2048k + 32k	128k	100	3.0 – 3.6V	7	7	2	-	-	-	-	4	22	-	-	1	-	-	-	-	-	-	Yes	4x 4ch	-	2ch	-	-	4	Yes	BGA 176-pin 13x13mm 0.8mm pitch	Industrial -40°C to 85°C	FPU; DSP RMPA; Barrel Shifter; Programmable Pattern Generator (PPG)																																																																																																																																																																												
	R5F56107WDBG	1536k + 32k																																																																																																																																																																																																												
	R5F56106WDBG	1024k + 32k																																																																																																																																																																																																												
	R5F56104WDBG	768k + 32k																																																																																																																																																																																																												
	R5F56108VDFP	2048k + 32k																																																																																																																																																																																																												
	R5F56107VDFP	1536k + 32k																																																																																																																																																																																																												
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	R5F56104VDFP	768k + 32k																																																																																																																																																																																																												
RX621	R5F56218BDBG	512k + 32k	96k	100	2.7 – 3.6V	105	2	6	2	-	1	-	-	4	16	MTU2	1	1	1	1	-	Yes	-	SDRAM	2x 4ch or 8ch	2ch	-	Yes	4	Yes	BGA 176-pin 13x13mm 0.8mm pitch	Industrial -40°C to 85°C	FPU; DSP RMPA; Barrel Shifter; SDRAM Interface; Programmable Pattern Generator (PPG), RTC, CRC Unit																																																																																																																																																																													
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R5F56216BDLD	256k + 32k	64k	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	LQFP 100-pin 14x14mm 0.5mm pitch																																																																																																																																															Industrial -40°C to 85°C			FPU; DSP RMPA; Barrel Shifter; Programmable Pattern Generator (PPG), RTC, CRC Unit																														
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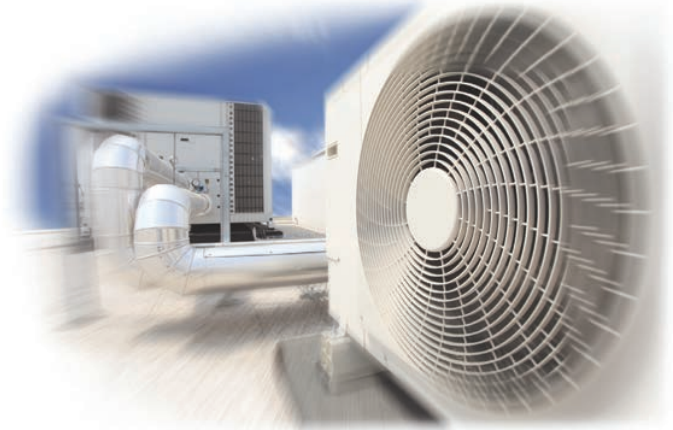


# Design Potential and Versatility of the RX

System design versatility, application capability, and economic sensibility are built into the many microcontrollers in the RX family. Driven by a technology roadmap that anticipates more sophisticated applications in the next decade that demand cost effectiveness, RX devices offer abundant core performance and extensive peripheral functions.

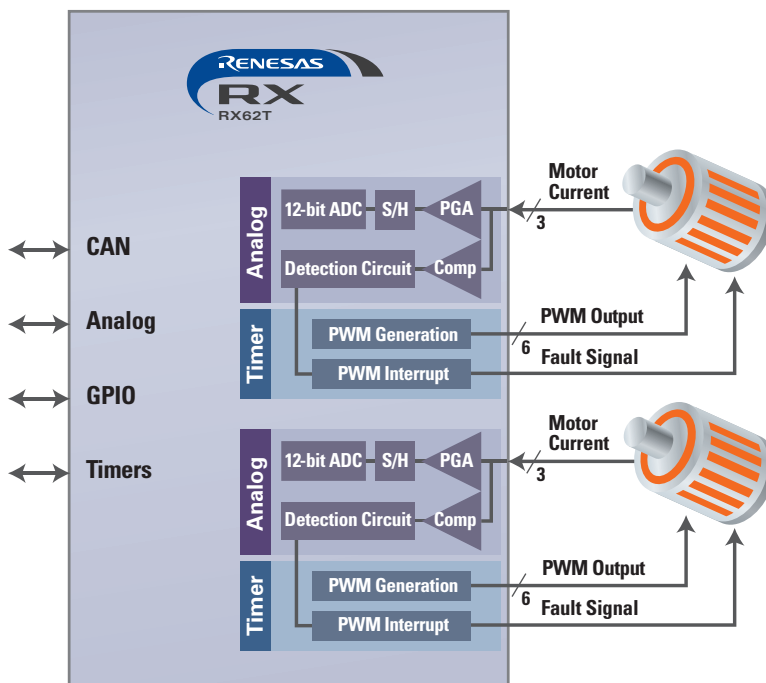
## RX62T/RX63T for Motor Control

High-performance CPU and FPU capability, and advanced analog and timer peripherals, make the RX62T an ideal solution for inverter and motor control applications. Renesas can help you develop your motor control solution with kits and firmware that support many kinds of motor control, including ultra-quiet, energy-efficient, and high-precision three-phase sensorless vector control.



In the home appliance example shown here, the RX62T is driving two three-phase motors simultaneously using its advanced PWM timers. These timers are well suited for Brushless DC three-phase motors by having complimentary PWM outputs with automatic dead-time insertion, an emergency “Shut-down” (stop) input, and quadrature encoder inputs for speed and direction feedback.

The RX62T’s advanced analog subsystem with multiple sample-hold circuits enables sampling of three simultaneous current measurements. It also offers programmable operational amplifiers and integrated window comparators to eliminate external components. The 12-bit ADCs have a fast 1µsec conversion time, can be triggered by the PWM timers, and provide self-diagnostic capability.



### Advanced Analog

- > Two 12-bit ADC units, each with 4 input channels, 1 µsec conversion time and self-diagnostic capability
- > Each 12-bit ADC unit has
  - 3 x independent sample-hold circuits
  - 3 x programmable op amps
  - 3 x analog window comparators
  - 3 trigger sources (PWM timers, external and software)

### Advanced Timers

- > 100 MHz, 16-bit Multifunction Timer unit (MTU3)
- > 100 MHz, 16-bit General Purpose Timer unit (GPT)
- > Complimentary PWM and Reset-Synchronous outputs
- > Dead-time insertion
- > Quadrature encoder inputs
- > Emergency motor “Shut-down” (stop) input

## RX for Connectivity

RX MCUs provide built-in hardware for implementing efficient communications with external peripherals, systems, test equipment and networks such as the Internet. The Ethernet, USB and CAN connectivity modules are well-proven, reliable designs.



### Ethernet MAC

- > 10/100 Mbps
- > 2 KB TX FIFO
- > 2 KB RX FIFO
- > MII, RMIIL connection to PHY
- > Wake on LAN

### USB

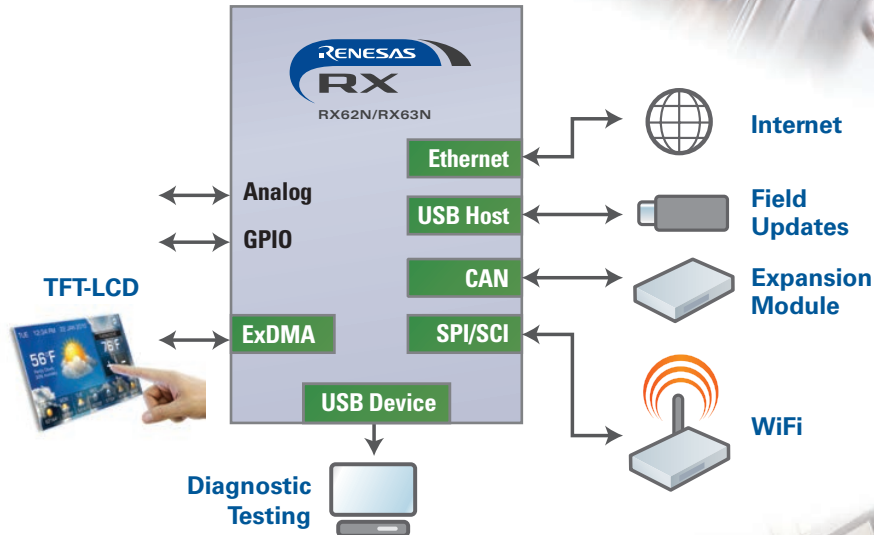
- > Host/Device/OTG
- > 12 Mbps
- > Up to 2 ports
- > 10 Endpoints
- > 2 KB FIFO

### CAN

- > ISO11898-1
- > 1 Mbps
- > 32 Mailboxes

### SPI/SCI

- > Up to 18 MHz (SPI Master)
- > Flexible configurations



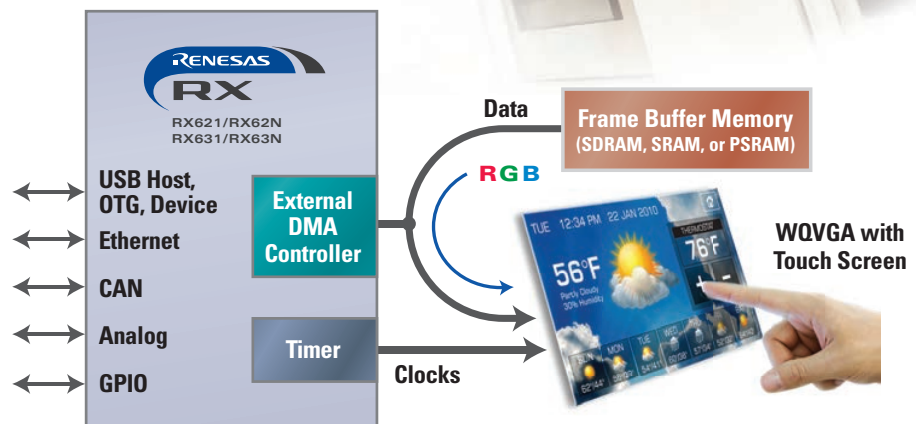
## RX for TFT-LCD Applications

The external DMA controller integrated into RX devices can drive a TFT-LCD panel directly, greatly reducing the load on the MCU's CPU; thus, maximizing the performance of application software



### External DMA Controller

- > Directly drive a TFT-LCD panel
- > RGB pixel data moves directly from frame buffer to the TFT-LCD and never enters the RX MCU
- > RX CPU is loaded only 5%, while refreshing at 60 Hz
- > Plenty of CPU bandwidth remains to run the application, communication channels, and create moderate animation on the TFT-LCD



# Get up and running with the RX Ecosystem

Renesas makes it easy to launch new system designs. And our comprehensive range of hardware and software tools – including very low cost and free products – helps swiftly advance the product development process from concept stage to final RX-based design.

## System Development Kits

> The Renesas Starter Kit (RSK) facilitates in-depth MCU experimentation and allows system design development

### Renesas RX Starter Kit (RSK)

- > This complete RX600-based hardware/software platform for in-depth application design includes the E1 Debugger, a trial version of the HEW/e<sup>2</sup>studio IDE, and demonstration firmware.
- > The RSKs are specifically designed to be both an evaluation and development system. The kit includes everything that an engineer needs to be up and running within only a few minutes.
- > The single installer prepares the target PC with a comprehensive development environment including trial C/C++ compiler, editor, build manager and full source level debugger. A full set of peripheral sample code gives the user an excellent kick start to their project development

- > Where necessary (for example RSK RX62N) the kit includes open source communication stacks such as USB host / function as well as Ethernet.
- > Many third part OS vendors, such as Micrium, Segger and FreeRTOS have ported their software to the RSKs. Trial BSPs are generally available for their web sites.

Processor	RSK Part Number
RX610	ROK556100S000BE
RX62N	ROK5562N0S000BE
RX62T	ROK5562T0S000BE
RX630	ROK505630S000BE
RX63N	ROK50563NS000BE
RX63T	ROK50563TS000BE



## Application Development Tools

RX MCUs are supported by a comprehensive set of popular Renesas hardware and software tools that have been widely praised for their capabilities and ease of use. Additional support is provided by a dedicated community of third-party experts offering many helpful, time-saving products and services, including the development environments and optimized compilers from KPIT Cummins (GNURX) and IAR.



### HEW: A Complete Integrated Development Environment (IDE)

HEW accelerates progress on the full range of system design tasks, from editing, to peripheral driver generation, to compilation, to debugging, and to Flash programming. HEW works with the Renesas compiler or Open Source GNURX compiler. HEW and the GNURX compiler are both free. The free Renesas C++ compiler allows unlimited binary output size for 60 days; thereafter, restricting compile size to 128 KB.

HEW Part Number: **YS32HEWRX-1-6**

- > Project Manager
- > Output Window
- > Built-in Editor
- > Full Bus Trace
- > Peripheral Driver Generator
- > Virtual Desktop
- > Local Variable Watch
- > C/C++ Variable Watch
- > Stack Trace
- > Memory Views
- > Debug Control (E1, E20, J-Link)

### Complete Debugging, Emulation, and Programming

On-chip debugging of an RX-based application is performed via JTAG connection to the target and USB connection to the Windows-based IDE. E1 and J-Link offer thorough CPU control and visibility. E20 adds high-speed tracing.



Renesas E1  
YR0E00010KCE00-EE

Renesas E20  
ROE000200KCT00

SEGGER  
J-Link





## e<sup>2</sup>studio

Based on the popular open source Eclipse environment, e<sup>2</sup>studio offers a complete integrated development environment based on the free of charge GNU, IAR or Renesas RX compilers. When the powerful project management and editor features of the Eclipse environment are used with the integrated debugging interface e<sup>2</sup>studio becomes everything you need for embedded RX development.

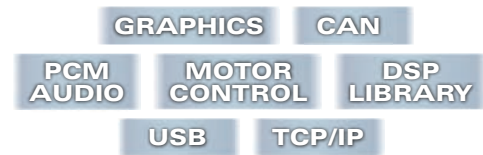
Can be downloaded free of charge or purchased as part of a compiler package.

Part Number: **YRX-E2STUDIO-1U**

## Support Software

### Renesas Software Library

Renesas offers a wide variety of free sample code and libraries supporting applications using Ethernet, USB, CAN, DSP, Motor Control, PCM Audio and Graphics. Renesas also provides the Renesas Peripheral Driver Library (RPDL) and the Peripheral Driver Generator (PDG) free of charge.



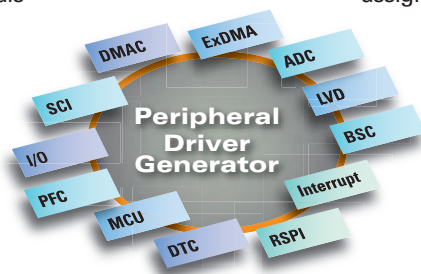
### Renesas Peripheral Driver Library (RPDL)

Low-level firmware drivers for all basic RX peripherals are free, source code included. RPDL eliminates the need for creating your drivers, saving time and reducing errors. RPDL functions are easily integrated into HEW projects, and PDG can be used to generate initialization code and calls to RDPL functions based on your own specified configuration.

Timers		RPDL Drivers					
TMR	MTU						
PPG	PWM	Interrupt	DMAC	ExDMA	LVD		
CMT	TPU	MCU	RSPI	I/O	SCI	CGC	DTC
GPT	WDT	CRC	ADC	DAC	I2C	PFC	BSC

### Renesas Peripheral Device Generator (PDG)

- > A Windows user interface for configuring RX peripherals and pins
- > Generates C code calls to RPDL driver functions
- > Menus to select/initialize peripherals
- > Select and manage pin assignments



### Third-party RTOS and Middleware

RX600 devices are well suited for embedded real time tasks, high computation, as well as simultaneous data transfers on many high-speed communication channels. Because of this, communication middleware and Real Time Operating Systems (RTOS) are commonly needed. Renesas has established technology partnerships with many leading independent suppliers to provide high-quality, cost-effective solutions.

	RTOS	USB Stack	TCP/IP Stack	File System	Graphic Software	Wi-Fi	BlueTooth	CANopen
iAnywhere							✓	
CMX Systems	✓	✓	✓	✓				
Micrium	✓	✓	✓	✓	✓			✓
Redpine Signals						✓		
SEGGER	✓	✓	✓	✓	✓			
FreeRTOS	✓		✓					
Express Logic	✓	✓	✓	✓				
Sciopta	✓							
PORT								✓
Thesycon		✓						
IXXAT								✓

# Solution Kits for RX

## RX Direct-drive Solutions for TFT-LCD

*A quick and easy solution to add colour TFT-LCD to your design*



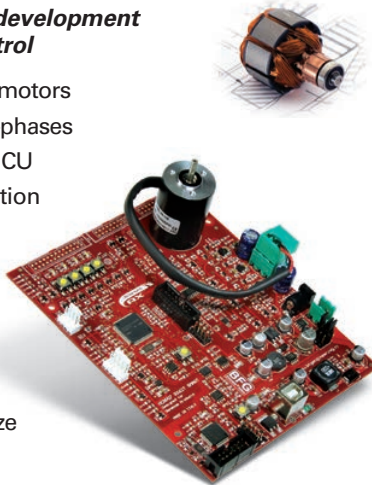
- > Low-cost 32-bit MCU solution to drive colour TFT-LCD panels up to WQVGA resolution
- > Only 5% loading on CPU when refreshing the TFT-LCD panel at 60 Hz, with ample bandwidth left for running the rest of the application
- > Free graphics API library and examples for evaluating graphics
- > Third-party support for additional graphics requirements

Part Number:  
**YLCDRSKRX62NS**

## Motor Control Solutions Using the RX MCU

*A solid evaluation and development platform for motor control*

- > Drive sensorless PMAC motors
- > Field oriented control, 3-phases
- > Single PCB: inverter + MCU
- > High-frequency modulation >20 kHz
- > Demo code and library
- > Compact and small board USB powered
- > E1, HEW, Renesas compiler unlimited for 60 days, 128 KB code size limit after



Part Number:  
**YRMCKITRX62T**

## Renesas RX62N RPB Board

*RX62N Webserver Demo kit with outstanding test routines you could do via network*

- > HTML file hosting
- > FPU function test by bouncing ball and Mandelbrot calculation
- > DMIPS MCU benchmark
- > "Pong" Mini game

### Features

- > Real-Time IEEE-1588 Ethernet PHY
- > USB device port
- > Mini Joystick
- > Connection port for fast prototyping

### Development Environment

- > Renesas HEW IDE
- > Built-in SEGGER J-Link Lite debugger
- > Demo Source code and libraries



Part Number:  
**YRPBRX62N**  
(Contact your sales channel for availability)

## Renesas Demonstration Board (RDK) for Seminar purpose

*This board plugs into a PC's USB port to showcase the features and capabilities of RX600 MCUs*

- > RX MCU board with J-Link integrated debugger and huge peripheral set, including Ethernet, CAN and USB
- > Graphic display
- > 3-axis accelerometer
- > Audio in/out
- > Board will be supplied during hands-on sessions seminars
- > Installation CD containing:
  - High-performance Embedded Workshop (HEW)
  - RX Family C/C++ toolchains (Renesas 128 KB evaluation version, full GNU version)
  - Quick-start guide, sample projects



Part Numbers:  
**YRDKRX62N** (Processor RX62N)  
**YRDKRX63N** (Processor RX63N)  
(Contact your sales channel for the next seminar in your area)

# RX is Online – www.renesas.eu/rx

Renesas makes product data, design and application information, and much more available 24/7 in the RX area of our website. Bookmark it and visit it often to get the latest data on the newest and previously released devices, learn details about (and download free versions of) system development tools, use time-saving MCU-selection aids, participate in discussion forums, find out about upcoming events, take advantage of special promotions, and more.



## Additional Renesas MCU Support



- > The Alliance Partner Program allows you to connect instantly with hundreds of qualified design consulting and contracting professionals.
- > [www.renesas.eu/alliance](http://www.renesas.eu/alliance)



- > For educators and students. Teach with professional grade tools. Learn MCUs with a modern architecture.
- > [www.renesasuniversity.com](http://www.renesasuniversity.com)



- > Gain the technical knowledge you need. Research and learn at your own pace, where you want, when you want, for free.
- > [www.renesas.interactive.com](http://www.renesas.interactive.com)



- > **MyRenesas**
- > Gathering place for technical information on Renesas MCUs and MPUs.
- > [www.renesasrulz.com](http://www.renesasrulz.com)

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Before purchasing or using any Renesas Electronics products listed herein, please refer to the latest product manual and/or data sheet in advance.

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