

## **RX231,230 handbook for engineers**

The information/materials required at the time of product development summarized and listed for each development phase.

Please use it as a handbook when developing.

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#### **Step1: MCU selection**

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1	Hardware information	Datasheet	<a href="#">Doc</a>
2	Products & Solutions	Video	<a href="#">231: Web site</a> <a href="#">230: Web site</a>
3		Blog	<a href="#">231: Web site</a> <a href="#">230: Web site</a>
4		Reference designs (Winning combination)	<a href="#">231: Web site</a> <a href="#">230: Web site</a>
5		Product longevity program (PLP)	<a href="#">Web site</a>
6		Product selection (product selector) Note: Refer to PLP column in the chart.	<a href="#">231: Web site</a> <a href="#">230: Web site</a>
7	Replacement information	Differences of specification among RX products	<a href="#">Doc</a>
8		[SH/H8/H8S/H8SX/M16C/V850] → RX microcontroller migration guide	<a href="#">Web site</a>
9		Design guide for migration between RX family differences in package external form	<a href="#">Doc</a>

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## Step2: Designing and evaluating

Item		Content	Link
<b>Common</b>			
1	Hardware information	User's manual: Hardware	<a href="#">Doc</a>
2		RX family hardware manual guidance (how to read user's manual: hardware)	<a href="#">Doc</a>
3		Technical update (errata information)	<a href="#">231: Web site</a> <a href="#">230: Web site</a>
4		Product change notice (PCN)	<a href="#">231: Web site</a> <a href="#">230: Web site</a>
5		Part number guide for RX family product (the meaning of character in part number)	<a href="#">231: Doc</a> <a href="#">230: Doc</a>
6		Semiconductor reliability handbook	<a href="#">Doc</a>
7		RELIABILITY REPORT	<a href="#">231: Doc</a> <a href="#">230: Doc</a>
8		RoHS Product Options → Part Number → Package information → RoHS Info	<a href="#">231: Web site</a> <a href="#">230: Web site</a>
9	Software information	Instruction set for RXv2 core architecture (user's manual)	<a href="#">Doc</a>
10	Evaluation board (for general purpose)	Renesas starter kit for RX231 (all functions could be evaluated, with built-in trusted secure IP)	<a href="#">Web site</a>
11		Renesas starter kit for RX231 (all functions could be evaluated, without built-in trusted secure IP)	<a href="#">Web site</a>
12		Target board for RX231 (low-cost model)	<a href="#">Web site</a>
13	Solution board	Industrial automation functional safety reference board	<a href="#">Web site</a>
14	Partner information	Partner products (system solutions provider)	<a href="#">Web site</a>
15		Partner products (trusted technology partners that deliver commercial-grade building blocks)	<a href="#">Web site</a>
<b>Hardware design</b>			
1	Design information	Hardware design guide	<a href="#">Web site</a>
2		Design guide for main clock circuit and Sub- Clock circuit	<a href="#">Doc</a>
3		Notes regarding high-temperature operation	<a href="#">Doc</a>
4		Guidelines for full-speed USB2.0 board design	<a href="#">231: Doc</a>
5	Board simulates	ECAD, board simulation model (IBIS) Note: ECAD can be found by clicking on the respective part number of the product options. 	<a href="#">231: Web site</a> <a href="#">230: Web site</a>

	Item		Content	Link	
<b>Hardware design</b>					
6	Other		Resonator and matching circuit information	<a href="#">231: Web site</a> <a href="#">230: Web site</a>	
7			Package information (package outline information, mount manual, etc.)	<a href="#">Web site</a>	
8	Development environment		Supplemental user's manual for E1/E20/E2 Lite/E2 emulator	<a href="#">Doc</a>	
<b>Software design</b>					
1	Software information		Getting started with the RX family development environment	<a href="#">Web site</a>	
2			Development tools for RX family	<a href="#">Web site</a>	
3			Software environment (OS, middleware, drivers)	<a href="#">Web site</a>	
4			RX smart configurator user's guide (tools for code generation)	<a href="#">Doc</a>	
5	Training information		Smart configurator tutorial - create a LED blinking program using RX family MCU	<a href="#">Web site</a>	
6			How to use tools and solutions (video clips)	<a href="#">Web site</a>	
7	System design		Examples of transitioning to low power consumption modes	<a href="#">Doc</a>   <a href="#">Sample</a>	
<b>Solution</b>					
1	GUI	Portal page	Graphical user interface (GUI) solutions	<a href="#">Web site</a>	
2		Support information	RX family LCD-related FAQ list	<a href="#">Web site</a>	
3		Application notes		QE for display GUI display application development guide using serial connection LCD	<a href="#">Doc</a>
4				GUI sample program using serial LCD and emWin library	<a href="#">Doc</a>   <a href="#">Sample</a>
5				Module for image rendering (emWin)	<a href="#">Doc</a>   <a href="#">Sample</a>
6	Security	Portal page	RX security solutions	<a href="#">Web site</a>	
7		Manual	Security key management tool manual	<a href="#">Doc</a>	
8		Application notes		TSIP (Trusted Secure IP) driver (binary version)	<a href="#">Doc</a>   <a href="#">Sample</a>
9				How to use AES cryptography with Trusted Secure IP(TSIP)	<a href="#">Doc</a>
10		Other information	Video	<a href="#">Web site</a>	
11	Capacitive touch	Portal page	Capacitive touch sensor solution	<a href="#">Web site</a>	
12		Design guide	First step guide (CTSU capacitive touch introduction guide)	<a href="#">Doc</a>	

Item		Content		Link
<b>Solution</b>				
13	Capacitive touch	Design guide	The electrode design guide for capacitive touch (CSTU)	<a href="#">Doc</a>
14			Capacitive touch noise immunity guide	<a href="#">Doc</a>
15			The development guide for capacitive touch applications using QE and FIT	<a href="#">Doc</a>
16		Application notes	The development guide for 3D gesture recognition application using QE for capacitive touch	<a href="#">Doc</a>
17			How to use QE for capacitive touch for Renesas RX family with IAR EWRX	<a href="#">Doc</a>
18			QE for capacitive touch advanced mode parameter guide	<a href="#">Doc</a>
19	Voice recognition	Portal page	Voice recognition solutions	<a href="#">Web site</a>
20		Application notes	Voice recognition demonstration (AmiVoice Micro)	<a href="#">Doc</a>
21	Functional safety	Portal page	IEC61508 functional safety solutions for industry	<a href="#">Web site</a>
22		Other information	Functional safety solution for industrial automation	<a href="#">Doc</a>
23			Introduction to Renesas functional safety (video)	<a href="#">Web site</a>
<b>Support</b>				
1	Support information	FAQ (frequently asked inquiries)		<a href="#">Web site</a>
2		RX forum (community)		<a href="#">Web site</a>
3		Ask to technical support		<a href="#">Web site</a>
		Note: Please click login in the upper right corner		

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### Step3: Mass production

Item		Content		Link
1	Writing a program	Programmer	PG-FP6	<a href="#">Web site</a>
2		Writing tool	Renesas flash programmer (GUI tool for PC)	<a href="#">Web site</a>
3	Firmware update	Application notes	Renesas MCU firmware update design policy	Coming soon
4			Firmware update module using firmware integration technology	<a href="#">Doc</a>   <a href="#">Sample</a>
5			How to manage the access control for flash memory	<a href="#">231: Doc</a>
6	Inspection	Design information	Boundary scan description language (BSDL) file	Not available

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