

2006.04

Everywhere you imagine. **RENESAS**

M16C
PLATFORM

M32C

Renesas MCU
M16C Family
(M16C / M32C)



Powerful Processor
Easy to Use

Renesas Technology
www.renesas.com

The M16C/M32C solve all the problems related to MCUs, and contribute to a real reduction in cost, and they are useful over a wide range of applications.

F-ZTAT
Flash & Flexible

"F-ZTAT" is a general term for the flash memory built into RENESAS MCUs

RENESAS is constantly developing new solutions based on "Flash & Flexible" using F-ZTAT memory.

F-ZTAT
Flash & Flexible

Complete set of security functions

High stability/safety features

Low power consumption

Excellent EMI and EMS characteristics

Wide compatibility

High-speed processing in actual use

Many types of peripheral functions



M16C/M32C, have reached the highest levels of MCU performance. These MCUs offer full support to our customers.

Low radiated noise (EMI)

M16C/M32C MCUs reduce switching noise to a minimum. They achieve reductions of more than 20dB. Therefore, your PC board can be designed with only minimal noise suppression measures.

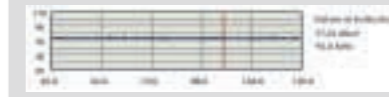
■ EM Scan
Measuring Method: EM scan measurement using electromagnetic field probe
Measuring Condition: Measurement frequency range: 40 to 120MHz



Facility used to measure electrical noise: EPS-M1 EM scanner made by Noise Laboratory Co., Ltd.
Place measured: Kansai Electronic Industry Development Center
Frequency range measured: 30 to 110 MHz
Area measured: 2 mm square

M16C/62P

Power: 5V
Clock: 24 MHz (PLL)



RISC-A made by another company

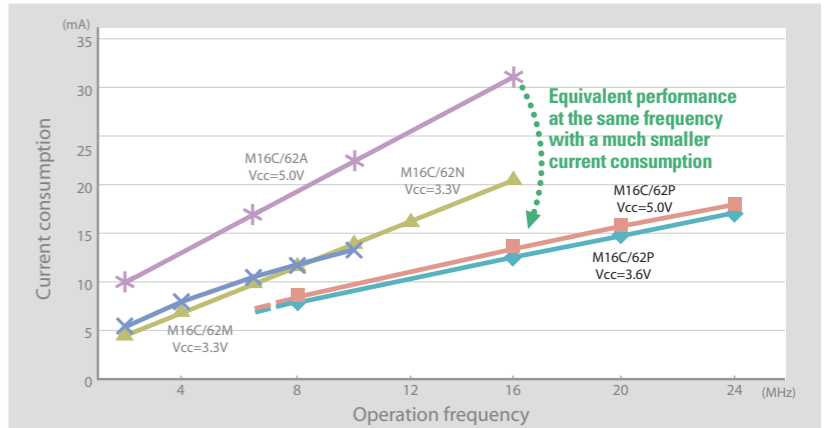
Power: 5V
Clock: 20 MHz (PLL)



Note: In addition to the above, we evaluate electrical noise using the VDE method and TEMCELL method, and only ship products that have passed certain standards.

Evolving current consumption characteristic (Reference)

Advances in processing techniques are used to decrease power consumption. Tasks are processed with greatly reduced current. Therefore, a smaller external power supply can be used.



M16C/M32C Roadmap

Extensive lineup within series



The CPU cores are compatible with higher and lower models, allowing you to change models to match the desired performance and cost.

Compatible at the binary level because the same CPU is used.

Pin compatible

The M16C/M32C are pin compatible, so you do not need to change the circuit on a PC board when changing models. In addition to "pin-compatibility," these MCUs offer compatibility with peripheral functions. Therefore, if you need to change to a higher level MCU model in order to increase capacity, you can do so with few or no design changes to your PC board.

Additional functions of the M32C/85 group (they inherit all standard functions)

M16C/62P	
CTS4 / RTS4 / SS4	DA1 / TB4IN / P9_4
CTS3 / RTS3 / SS3	DA0 / TB3IN / P9_3
IEOUT / OUTC2_0 / SDA3 / SRXD3	SOUT3 / TB2IN / P9_2
IEIN / SCL3 / STXD3	SIN3 / TB1IN / P9_1
	TB0IN / CLK3 / P9_0
	BYTE
	CNVSS
	XCIN / P8_7
	XCOUT / P8_6
	RESET
	VSS
	XIN
	VCC
	NMI / P8_5
	INT2 / P8_4
	INT1 / P8_3
	INT0 / P8_2
CANOUT / CANIOUT	TA4IN / U / P8_1
HDTXD / OUTC1_5 / INPC1_4	TA4OUT / U / P8_0
ISRXD0	TA3IN / P7_7
CANIN / ISCLK0 / OUTC1_4 / INPC1_4	TA3OUT / P7_6
CANOUT / ISTXD0 / OUTC1_3 / INPC1_3	ISRD1 / W / P7_5
ISRD1 / OUTC1_2 / INPC1_2	TA2IN / W / P7_4
ISCLK1 / OUTC1_1 / INPC1_1	TA2OUT / W / P7_3
INPC1_0 / SS2 / ISTXD1 / OUTC1_0	TA1IN / V / CTS2 / RTS2 / P7_3

List of Part Numbers



M16C/26A, 28 and 29 Group

Group	Memory type	Internal memory (Byte)			Type name	Operating frequency (MHz)	Shottest instruction execution time (ns)	Operating temperature (°C)	Supply voltage (V)	Input port	I/O port	Function	Package			
		ROM	Data Flash	RAM												
M16C/26A	Mask ROM	24K		1K	M30260M3A-XXXGP						39		48P6Q-A PLQP0048KB-A			
					M30263M3A-XXXFP				33	42P2R PLS0042GA-B						
					M30260M6A-XXXGP				39	48P6Q-A PLQP0048KB-A						
		48K	-	2K	M30263M6A-XXXFP				33	• Input timer : 3	42P2R PLS0042GA-B					
					M30260M8A-XXXGP				39	• Output timer : 5	48P6Q-A PLQP0048KB-A					
					M30263M8A-XXXFP				33	• 10-bit A/D converter : 12ch (48pin)	42P2R PLS0042GA-B					
	Flash ROM	24K		1K	M30260F3AGP							39	• Serial Interface : 3 (48pin)	48P6Q-A PLQP0048KB-A		
					M30263F3AFP				33	• Watchdog timer : 1	42P2R PLS0042GA-B					
					M30260F6AGP				39	• 3-Phase Inverter control : 6	48P6Q-A PLQP0048KB-A					
		48K	4K	2K	M30263F6AFP								33	• PLL	42P2R PLS0042GA-B	
					M30260F8AGP				39		48P6Q-A PLQP0048KB-A					
					M30263F8AFP				33		42P2R PLS0042GA-B					
M16C/28	Mask ROM	64K		4K	M30280M8-XXXHP**						71		80P6Q-A PLQP0080KB-A			
					M30281M8-XXXHP**				55		64P6Q-A PLQP0064KB-A					
					M30280MA-XXXHP**				71		80P6Q-A PLQP0080KB-A					
		96K	-	8K	M30281MA-XXXHP**								55	• Input timer : 3	64P6Q-A PLQP0064KB-A	
					M30280MC-XXXHP				71	• Output timer : 5	80P6Q-A PLQP0080KB-A					
					M30281MC-XXXHP				55	• Input capture : 8	64P6Q-A PLQP0064KB-A					
	Flash ROM	48K		4K	M30280F6HP							71	• Output compare : 8	80P6Q-A PLQP0080KB-A		
					M30281F6HP				55	• 10-bit A/D converter : 24ch (80pin)	64P6Q-A PLQP0064KB-A					
					M30280F6WG**	20	50	-20 to 85 or -40 to 85	2.7 to 5.5 [10MHz]		71	• Serial I/O : 5	85FOG PTLG0085JB-A			
		64K	4K	4K	M30280F8HP								71	• Watchdog timer : 1	80P6Q-A PLQP0080KB-A	
					M30281F8HP				55	• 3-Phase Inverter control : 6	64P6Q-A PLQP0064KB-A					
					M30280F8WG**				71	• Multi master I2C-bus	85FOG PTLG0085JB-A					
	M16C/29	Mask ROM	64K		4K	M30290M8-XXXHP**						71		80P6Q-A PLQP0080KB-A		
						M30291M8-XXXHP**				55	• Input timer : 3	64P6Q-A PLQP0064KB-A				
						M30290MA-XXXHP**				71	• Output timer : 5	80P6Q-A PLQP0080KB-A				
			96K	-	8K	M30291MA-XXXHP**								55	• Input capture : 8	64P6Q-A PLQP0064KB-A
						M30290MC-XXXHP**				71	• Output compare : 8	80P6Q-A PLQP0080KB-A				
						M30291MC-XXXHP**				55	• 10-bit A/D converter : 24ch (80pin)	64P6Q-A PLQP0064KB-A				
Flash ROM	96K	4K	8K	M30290FAHP**							71	• Serial I/O : 5	80P6Q-A PLQP0080KB-A			
				M30291FAHP**				55	• Watchdog timer : 1	64P6Q-A PLQP0064KB-A						
				M30290FCHP**				71	• 3-Phase Inverter control : 6	80P6Q-A PLQP0080KB-A						
	128K	4K	12K	M30291FCHP**								55	• Multi master I2C-bus	64P6Q-A PLQP0064KB-A		
								71	• CRC calculation circuit	80P6Q-A PLQP0080KB-A						
								55	• PLL	64P6Q-A PLQP0064KB-A						

Note : These products are in planning or under development, specifications may be changed.

★★ : Under development



M16C/30P Group

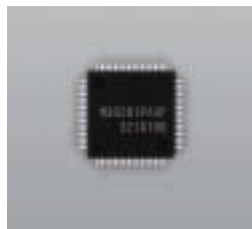
Group	Memory type	Internal memory (Byte)			Type name	Operating frequency (MHz)	Shottest instruction execution time (ns)	Operating temperature (°C)	Supply voltage (V)	Input port	I/O port	Function	Package			
		ROM	Data Flash	RAM												
M16C/30P	Mask ROM	96K		5K	M30302MAP-XXXFP**								100P6S-A PRQP0100JB-A			
					M30302MAP-XXXGP**									100P6Q-A PLQP0100KB-A		
					M30302MCP-XXXFP										100P6S-A PRQP0100JB-A	
		128K	-	6K	M30302MCP-XXXGP									• Input timer : 3	100P6Q-A PLQP0100KB-A	
					M30302MDP-XXXFP									100P6S-A PLQP0100JB-A		
					M30302MDP-XXXGP										• Output timer : 3	100P6Q-A PLQP0100KB-A
	Flash ROM	160K	4K	6K	M30302MEP-XXXFP	16	62.5	-20 to 85 or -40 to 85	2.7 to 5.5 [10MHz, 1 wait]			1	87	• 10-bit A/D converter : 12ch	100P6Q-A PLQP0100KB-A	
					M30302MEP-XXXGP										• DMAC:1ch	100P6S-A PLQP0100JB-A
					M30302MFP-XXXFP											• Serial I/O : 3
		192K	4K	6K	M30302FEP-XXXFP										• Watchdog timer : 1	100P6S-A PRQP0100JB-A
					M30302FEP-XXXGP											100P6Q-A PLQP0100KB-A
					M30302FEPGP**											100P6S-A PRQP0100JB-A
ROM less				M30302SPFP										100P6Q-A PLQP0100KB-A		
				M30302SPGP											100P6Q-A PLQP0100KB-A	

★★ : Under development

Packages



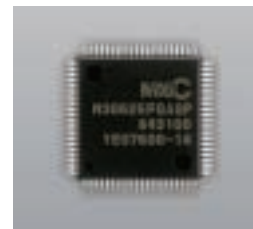
48P6Q-A/PLQP0048KB-A (0.5mm pitch)



64P6Q-A/PLQP0064KB-A (0.5mm pitch)



80P6Q-A/PLQP0080KB-A (0.5mm pitch)



80P6S-A/PRQP0080JA-A (0.65mm pitch)



85FOG/PTLG0085JB-A

List of Part Numbers



M16C/62P Group

Group	Memory type	Internal memory (Byte)			Type name	Operating frequency (MHz)	Shotest instruction execution time (ns)	Operating temperature (°C)	Supply voltage (V)	Input port	I/O port	Function	Package	
		ROM	Data Flash	RAM										
M16C/62P	Mask ROM	48K			M30622M6P-XXXFP	24	41.7	-20 to 85 or -40 to 85	2.7 to 5.5 [10MHz] 3.0 to 5.5 [24MHz]	1	87	<ul style="list-style-type: none"> • Input timer : 6 • Output timer : 5 • 10-bit A/D converter : (24+2)ch • 8-bit D/A converter : 2ch • DMAC : 2ch • Serial I/O : 5 • Watchdog timer : 1 • CRC calculation circuit • 3-Phase Inverter control : 6 	100P6S-A	PRQP0100JB-A
					M30622M6P-XXXGP								100P6Q-A	PLQP0100KB-A
					M30622M8P-XXXFP								100P6S-A	PRQP0100JB-A
		M30622M8P-XXXGP	100P6Q-A	PLQP0100KB-A										
		M30623M8P-XXXGP	80P6S-A	PRQP0080JA-A										
		M30622MAP-XXXFP	100P6S-A	PRQP0100JB-A										
		M30622MAP-XXXGP	100P6Q-A	PLQP0100KB-A										
		M30623MAP-XXXGP	80P6S-A	PRQP0080JA-A										
		M30620MCP-XXXFP	100P6S-A	PRQP0100JB-A										
		M30620MCP-XXXGP	100P6Q-A	PLQP0100KB-A										
		M30621MCP-XXXGP	80P6S-A	PRQP0080JA-A										
		M30622MEP-XXXFP	100P6S-A	PRQP0100JB-A										
		M30622MEP-XXXGP	100P6Q-A	PLQP0100KB-A										
		M30623MEP-XXXGP	113	128P6Q-A	PLQP0128KB-A									
		M30622MGP-XXXFP	87	100P6S-A	PRQP0100JB-A									
		M30622MGP-XXXGP	87	100P6Q-A	PLQP0100KB-A									
		M30623MGP-XXXGP	113	128P6Q-A	PLQP0128KB-A									
		M30624MGP-XXXFP	87	100P6S-A	PRQP0100JB-A									
		M30624MGP-XXXGP	113	128P6Q-A	PLQP0128KB-A									
		M30625MGP-XXXGP	87	100P6S-A	PRQP0100JB-A									
		M30622MWP-XXXFP	87	100P6S-A	PRQP0100JB-A									
		M30622MWP-XXXGP	100P6Q-A	PLQP0100KB-A										
		M30623MWP-XXXGP	113	128P6Q-A	PLQP0128KB-A									
		M30624MWP-XXXFP	87	100P6S-A	PRQP0100JB-A									
		M30624MWP-XXXGP	87	100P6Q-A	PLQP0100KB-A									
		M30625MWP-XXXGP	113	128P6Q-A	PLQP0128KB-A									
		M30626MWP-XXXFP	87	100P6S-A	PRQP0100JB-A									
		M30626MWP-XXXGP	113	128P6Q-A	PLQP0128KB-A									
		M30627MWP-XXXGP	87	100P6S-A	PRQP0100JB-A									
		M30622MHP-XXXFP	87	100P6S-A	PRQP0100JB-A									
	M30622MHP-XXXGP	113	128P6Q-A	PLQP0128KB-A										
	M30623MHP-XXXGP	87	100P6S-A	PRQP0100JB-A										
	M30624MHP-XXXFP	87	100P6Q-A	PLQP0100KB-A										
	M30624MHP-XXXGP	87	100P6S-A	PRQP0100JB-A										
	M30625MHP-XXXGP	113	128P6Q-A	PLQP0128KB-A										
	M30626MHP-XXXFP	87	100P6S-A	PRQP0100JB-A										
	M30626MHP-XXXGP	87	100P6Q-A	PLQP0100KB-A										
	M30627MHP-XXXGP	113	128P6Q-A	PLQP0128KB-A										
	M30626MJP-XXXFP	87	100P6S-A	PRQP0100JB-A										
	M30626MJP-XXXGP	113	128P6Q-A	PLQP0128KB-A										
	M30627MJP-XXXGP	87	100P6Q-A	PLQP0100KB-A										
	M30627MJP-XXXGP	113	128P6Q-A	PLQP0128KB-A										
	M30622F8PFP	87	100P6S-A	PRQP0100JB-A										
	M30622F8PFP	87	100P6Q-A	PLQP0100KB-A										
	M30623F8PFP	70	80P6S-A	PRQP0080JA-A										
	M30620FCPPF	87	100P6S-A	PRQP0100JB-A										
	M30620FCPPF	87	100P6Q-A	PLQP0100KB-A										
	M30621FCPPF	70	80P6S-A	PRQP0080JA-A										
	M30624FGPPF	87	100P6S-A	PRQP0100JB-A										
	M30624FGPPF	87	100P6Q-A	PLQP0100KB-A										
	M30625FGPPF	113	128P6Q-A	PLQP0128KB-A										
	M30626FHPPF	87	100P6S-A	PRQP0100JB-A										
	M30626FHPPF	87	100P6Q-A	PLQP0100KB-A										
	M30627FHPPF	113	128P6Q-A	PLQP0128KB-A										
	M30626FJFPF	87	100P6S-A	PRQP0100JB-A										
	M30626FJFPF	87	100P6Q-A	PLQP0100KB-A										
	M30627FJFPF	113	128P6Q-A	PLQP0128KB-A										
	M30622SPFP	87	100P6S-A	PRQP0100JB-A										
	M30622SPFP	87	100P6Q-A	PLQP0100KB-A										
	M30620SPFP	87	100P6S-A	PRQP0100JB-A										
M30620SPFP	87	100P6Q-A	PLQP0100KB-A											
M30624SPFP	87	100P6S-A	PRQP0100JB-A											
M30624SPFP	87	100P6Q-A	PLQP0100KB-A											
M30626SPFP	87	100P6S-A	PRQP0100JB-A											
M30626SPFP	87	100P6Q-A	PLQP0100KB-A											
M30626SPFP	87	100P6S-A	PRQP0100JB-A											
M30626SPFP	87	100P6Q-A	PLQP0100KB-A											



100PFB/PTQP100LB-A
(0.4mm pitch)



100P6Q-A/PLQP0100KB-A
(0.5mm pitch)



100P6S-A/PRQP0100JB-A
(0.65mm pitch)



128P6Q-A/PLQP0128KB-A
(0.5mm pitch)



144P6Q-A/PLQP0144KA-A
(0.5mm pitch)

List of Part Numbers



M32C/84 Group

Group	Memory type	Internal memory (Byte)			Type name	Operating frequency (MHz)	Shotest instruction execution time (ns)	Operating temperature (°C)	Supply voltage (V)	Input port	I/O port	Function	Package		
		ROM	Data Flash	RAM											
M32C/84	Mask ROM	128K		10K	M30840MC-XXXFP	32	31.2	-20 to 85 or -40 to 85	3.0 to 5.5 [24MHz] 4.2 to 5.5 [32MHz]	1	87	• Input timer : 6 • Output timer : 5 • 10-bit A/D converter : 100pin:26ch,144pin:34ch • 8-bit D/A converter : 2ch • DMAC : 4ch • DMAC II : Activated by an interrupt from any peripheral function. • Intelligent I/O : 1 groups • Serial I/O : 5 • Watchdog timer : 1 • CAN:2ch • CRC calculation circuit • X-Y conversion circuit • PLL	100P65-A	PRQP0100JB-A	
					M30840MC-XXXGP								100P6Q-A	PLQP0100KB-A	
					M30842MC-XXXGP								144P6Q-A	PLQP0144KA-A	
		M30840ME-XXXFP	100P65-A	PRQP0100JB-A											
		M30840ME-XXXGP	100P6Q-A	PLQP0100KB-A											
		M30842ME-XXXGP	144P6Q-A	PLQP0144KA-A											
	Flash ROM	320K		24K	M30843MW-XXXFP	32	31.2	-20 to 85 or -40 to 85	3.0 to 5.5 [24MHz] 4.2 to 5.5 [32MHz]	1	87	123	• Input timer : 6 • Output timer : 5 • 10-bit A/D converter : 100pin:26ch,144pin:34ch • 8-bit D/A converter : 2ch • DMAC : 4ch • DMAC II : Activated by an interrupt from any peripheral function. • Intelligent I/O : 1 groups • Serial I/O : 5 • Watchdog timer : 1 • CAN:2ch • CRC calculation circuit • X-Y conversion circuit • PLL	100P65-A	PRQP0100JB-A
					M30843MW-XXXGP									100P6Q-A	PLQP0100KB-A
					M30845MW-XXXGP									144P6Q-A	PLQP0144KA-A
		M30843FHGP	100P65-A	PRQP0100JB-A											
		M30843FHGP	100P6Q-A	PLQP0100KB-A											
		M30845FHGP	144P6Q-A	PLQP0144KA-A											
	ROM less	384K	4K	24K	M30843FJFP	32	31.2	-20 to 85 or -40 to 85	3.0 to 5.5 [24MHz] 4.2 to 5.5 [32MHz]	1	87	123	• Input timer : 6 • Output timer : 5 • 10-bit A/D converter : 100pin:26ch,144pin:34ch • 8-bit D/A converter : 2ch • DMAC : 4ch • DMAC II : Activated by an interrupt from any peripheral function. • Intelligent I/O : 1 groups • Serial I/O : 5 • Watchdog timer : 1 • CAN:2ch • CRC calculation circuit • X-Y conversion circuit • PLL	100P65-A	PRQP0100JB-A
					M30843FJGP									100P6Q-A	PLQP0100KB-A
					M30845FJGP									144P6Q-A	PLQP0144KA-A
		M30840SFP	100P65-A	PRQP0100JB-A											
		M30840SGP	100P6Q-A	PLQP0100KB-A											
		M30842SGP	144P6Q-A	PLQP0144KA-A											



M32C/85 Group

Group	Memory type	Internal memory (Byte)			Type name	Operating frequency (MHz)	Shotest instruction execution time (ns)	Operating temperature (°C)	Supply voltage (V)	Input port	I/O port	Function	Package		
		ROM	Data Flash	RAM											
M32C/85	Mask ROM	320K		24K	M30853MW-XXXFP	32	31.2	-20 to 85 or -40 to 85	3.0 to 5.5 [24MHz] 4.2 to 5.5 [32MHz]	1	87	• Input timer : 6 • Output timer : 5 • 10-bit A/D converter : 100pin:26ch,144pin:34ch • 8-bit D/A converter : 2ch • DMAC : 4ch • DMAC II : Activated by an interrupt from any peripheral function.(except FWT,FHT,FGT) • Intelligent I/O : 1 group • Serial I/O : 5 • Watchdog timer : 1 • CAN:2ch • CRC calculation circuit • X-Y conversion circuit • PLL	100P65-A	PRQP0100JB-A	
					M30853MW-XXXGP								100P6Q-A	PLQP0100KB-A	
					M30855MW-XXXGP								144P6Q-A	PLQP0144KA-A	
		M30853FWFP	100P65-A	PRQP0100JB-A											
		M30853FWGP	100P6Q-A	PLQP0100KB-A											
		M30855FWGP	144P6Q-A	PLQP0144KA-A											
	Flash ROM	384K	4K	24K	M30853FHGP	32	31.2	-20 to 85 or -40 to 85	3.0 to 5.5 [24MHz] 4.2 to 5.5 [32MHz]	1	87	123	• Input timer : 6 • Output timer : 5 • 10-bit A/D converter : 100pin:26ch,144pin:34ch • 8-bit D/A converter : 2ch • DMAC : 4ch • DMAC II : Activated by an interrupt from any peripheral function.(except FWT,FHT,FGT) • Intelligent I/O : 1 group • Serial I/O : 5 • Watchdog timer : 1 • CAN:2ch • CRC calculation circuit • X-Y conversion circuit • PLL	100P65-A	PRQP0100JB-A
					M30853FHGP									100P6Q-A	PLQP0100KB-A
					M30855FHGP									144P6Q-A	PLQP0144KA-A
		M30853FJFP	100P65-A	PRQP0100JB-A											
		M30853FJGP	100P6Q-A	PLQP0100KB-A											
		M30855FJGP	144P6Q-A	PLQP0144KA-A											



M32C/87 Group

Group	Memory type	Internal memory (Byte)			Type name	Operating frequency (MHz)	Shotest instruction execution time (ns)	Operating temperature (°C)	Supply voltage (V)	Input port	I/O port	Function	CAN	Package											
		ROM	Data Flash	RAM																					
M32C/87	Mask ROM	384K		24K	M30873MH-XXXGP	32	31.3	-20 to 85 or -40 to 85	3.0 to 5.5 [24MHz] 4.2 to 5.5 [32MHz]	1	87	• Input timer : 6 • Output timer : 5 • 10-bit A/D converter : 100pin:26ch,144pin:34ch • 8-bit D/A converter : 2ch • DMAC : 4ch • DMAC II : Activated by an interrupt from any peripheral function. • Intelligent I/O : 2 groups • Serial I/O : 100pin:6,144pin:7 • Watchdog timer : 1 • CRC calculation circuit • X-Y conversion circuit • PLL	2ch	100P6Q-A	PLQP0100KB-A										
					M30873MHA-XXXGP								1ch												
					M30873MHB-XXXGP								-												
					M30875MH-XXXGP								2ch												
					M30875MHA-XXXGP								1ch												
					M30875MHB-XXXGP								-												
		Flash ROM	512K		31K								M30876MJ-XXXFP	32	31.3	-20 to 85 or -40 to 85	3.0 to 5.5 [24MHz] 4.2 to 5.5 [32MHz]	1	87	123	• Input timer : 6 • Output timer : 5 • 10-bit A/D converter : 100pin:26ch,144pin:34ch • 8-bit D/A converter : 2ch • DMAC : 4ch • DMAC II : Activated by an interrupt from any peripheral function. • Intelligent I/O : 2 groups • Serial I/O : 100pin:6,144pin:7 • Watchdog timer : 1 • CRC calculation circuit • X-Y conversion circuit • PLL	2ch	100P6Q-A	PLQP0100KB-A	
													M30876MJ-XXXGP									1ch			
													M30876MJA-XXXFP									-			
			M30876MJA-XXXGP	1ch																					
			M30876MJB-XXXFP	-																					
			M30876MJB-XXXGP	2ch																					
	Flash ROM	384K		24K	M30873FHGP**	32	31.3	-20 to 85 or -40 to 85	3.0 to 5.5 [24MHz] 4.2 to 5.5 [32MHz]	1	87	123	• Input timer : 6 • Output timer : 5 • 10-bit A/D converter : 100pin:26ch,144pin:34ch • 8-bit D/A converter : 2ch • DMAC : 4ch • DMAC II : Activated by an interrupt from any peripheral function. • Intelligent I/O : 2 groups • Serial I/O : 100pin:6,144pin:7 • Watchdog timer : 1 • CRC calculation circuit • X-Y conversion circuit • PLL	2ch	100P6Q-A	PLQP0100KB-A									
					M30873FHAGP**									1ch											
					M30873FHBGP**									-											
					M30875FHGP**									2ch											
					M30875FHAGP**									1ch											
					M30875FHBGP**									-											
		Flash ROM	512K		31K									M30876FJAGP**	32	31.3	-20 to 85 or -40 to 85	3.0 to 5.5 [24MHz] 4.2 to 5.5 [32MHz]	1	87	123	• Input timer : 6 • Output timer : 5 • 10-bit A/D converter : 100pin:26ch,144pin:34ch • 8-bit D/A converter : 2ch • DMAC : 4ch • DMAC II : Activated by an interrupt from any peripheral function. • Intelligent I/O : 2 groups • Serial I/O : 100pin:6,144pin:7 • Watchdog timer : 1 • CRC calculation circuit • X-Y conversion circuit • PLL	2ch	100P6Q-A	PLQP0100KB-A
														M30876FJAGP**									1ch		
														M30876FJAGP**									-		
			M30876FJAGP**	2ch																					
			M30876FJAGP**	1ch																					
			M30876FJAGP**	-																					
	Flash ROM	768K		48K	M30879FKGP	32	31.3	-20 to 85 or -40 to 85	3.0 to 5.5 [24MHz] 4.2 to 5.5 [32MHz]	1	87	123	• Input timer : 6 • Output timer : 5 • 10-bit A/D converter : 100pin:26ch,144pin:34ch • 8-bit D/A converter : 2ch • DMAC : 4ch • DMAC II : Activated by an interrupt from any peripheral function. • Intelligent I/O : 2 groups • Serial I/O : 100pin:6,144pin:7 • Watchdog timer : 1 • CRC calculation circuit • X-Y conversion circuit • PLL	2ch	100P6Q-A	PLQP0100KB-A									
					M30879FKAGP									1ch											
					M30879FKBGP									-											
					M30879FLFP									2ch											
					M30879FLGP									1ch											
					M30879FLAGP									-											
Flash ROM		1M		48K	M30879FLBFP									32	31.3	-20 to 85 or -40 to 85	3.0 to 5.5 [24MHz] 4.2 to 5.5 [32MHz]	1	87	123	• Input timer : 6 • Output timer : 5 • 10-bit A/D converter : 100pin:26ch,144pin:34ch • 8-bit D/A converter : 2ch • DMAC : 4ch • DMAC II : Activated by an interrupt from any peripheral function. • Intelligent I/O : 2 groups • Serial I/O : 100pin:6,144pin:7 • Watchdog timer : 1 • CRC calculation circuit • X-Y conversion circuit • PLL	2ch	100P6Q-A	PLQP0100KB-A	
					M30879FLBGP																	1ch			
					M30879FLBGP																	-			
		M30879FLBGP	2ch																						
		M30879FLBGP	1ch																						
		M30879FLBGP	-																						

List of Renesas Development Tools

Development Tools

Series	Group	MCU	Software tools			Emulator *7		
			RTOS	C compiler package (with simulator debugger)	IDE	Onchip debugging emulator	Full spec emulator	
							Emulator	Emulation probe
M16C/Tiny	M16C/26A	M30260	M3T-MR30/4 *1	M3T-NC30WA *3 (MISRA C *4)	High-performance Embedded Workshop *6	E8 *8	PC7501	M30290T-EPB *11
		M30263						
	M16C/28	M30280						
		M30281						
	M16C/29	M30290						
M30291								
M16C/60	M16C/62P						M3062PT2-EPB *9	
M16C/30	M16C/30P	M30302					PC7501 *10	M3062PT2-EPB *10
						PC4701U *10	M3062PT3-RPD-E *10	
M32C/80	M32C/84	M32C/87	M3T-MR308/4 *2	M3T-NC308WA *5 (MISRA C *4)		E8 *8	PC7501	M30850T-EPB
								M30870T-EPB

- *1: M3T-MR30/4 is the generic name for real-time OS development kit (M3T-MR30K/4) and mass production contract (M3T-MR30S/4).
- *2: M3T-MR308/4 is the generic name for real-time OS development kit (M3T-MR308K/4) and mass production contract (M3T-MR308S/4).
- *3: M3T-NC30WA (type name: ROC30600CLW05R) includes integrated development environment, C compiler, assembler and simulator debugger.
- *4: MISRA C rule checker SQMint (type name: ROC00000SCW01R) is an optional product for the Renesas C compiler.
- *5: M3T-NC308WA (type name: ROC30800CLW05R) includes integrated development environment (High-performance Embedded workshop), C compiler, assembler and simulator debugger.
- *6: High-performance Embedded Workshop is included with C compiler package or emulator debugger.
- *7: You can download the latest version of the following debuggers.
- *8: The E8 emulator comes with an emulator program (integrated development environment: High-performance Embedded Workshop, E8 emulation debugger, free C compiler evaluation version, and a free Flash Development Toolkit evaluation version). The packed programs versions may vary, depending on when they are shipped.
- *9: When the operating frequency is 16 MHz or less, you can use the combination of emulator, PC4701U and emulation pod M3062PT3-RPD-E.
- *10: MCU operating frequency is 24 MHz for PC7501 and M3062PT-EPB (under development), 16 MHz for PC4701U and M3062PT3-RPD-E.
- *11: The conversion board for the target connection is necessary for M30290T-EPB. The set sales of the emulator and the conversion board are also available.





Compact Emulators

Series	Group	MCU	Compact emulator	
M16C/Tiny	M16C/26A	M30260	M30290T2-CPE	
		M30263		
	M16C/28	M30280		
		M30281		
	M16C/29	M30290		
M30291				
M16C/60	M16C/62P		M3062PT3-CPE	
M16C/30	M16C/30P	M30302		
M32C/80	M32C/84	M32C/87		M30850T2-CPE
				M30870T2-CPE

Starter Kits

Series	MCU		Starter kits
	Group		
M16C/Tiny	M16C/26A		Renesas Starter Kit for M16C/26A (ROK33026AS000BR)
		M16C/28	Renesas Starter Kit for M16C/28, 29 (ROK330290S000BE)
	M16C/29		
M16C/60	M16C/62P		Renesas Starter Kit for M16C/62P (ROK33062PS000BE)
M32C/80	M32C/84	M32C/87	Renesas Starter Kit for M32C/84, 87 (ROK330879S000BE)

Development Tools Product Appearances

<h3>Emulator PC7501</h3> <p>New emulator for high-speed M16C platform processors</p> 	<h3>Compact Emulators</h3> <p>Low-Cost, All-in-One Compact Emulators</p> 	<h3>Starter Kits</h3> <p>Introductory tools supporting basic functions at a low cost</p> 	<h3>Emulator E8</h3> <p>High-performance on-chip debugger with flash programmer function</p> 
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RENESAS website M16C family URL: <http://www.renesas.com/homepage.jsp>



The screenshot shows the Renesas website's M16C family page. It features a navigation menu with 'PRODUCTS', 'APPLICATIONS', and 'SUPPORT'. The main content area includes a 'WHAT'S NEW' section with dates and product updates, an 'Overview' section describing the M16C family as a 'breakout multi-purpose MCU platform', and a 'Key Applications' list including Embedded TV, FPD, POS, projector, home electronics, mobile phone, and various industrial and automotive applications. A 'Why M16C?' section highlights features like high peripheral integration, advanced flash memory, and low power consumption.

The website includes the state-of-the-art technical information that is needed for system development and various other information is also available.

Inquiries

Ask technical questions at this site. We also accept questions sent via e-mail. Email: csc@renesas.com

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Learn precautions for use and additional information in various document PDF files.

Documents

Download manuals, datasheets, and other material in PDF format.

Application notes

Obtain notes that explain how to use the embedded peripheral functions and discuss other design issues are available in PDF format.

Development environment

Get data on hardware/software tool products, as well as information on starter kits and flash memory programmers.

Often asked questions

Get key facts in a Q-and-A format.

Renesas MCU M16C Family (M16C / M32C)

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