To our customers,

Old Company Name in Catalogs and Other Documents

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Renesas Electronics website: http://www.renesas.com

April 1st, 2010
Renesas Electronics Corporation

Issued by: Renesas Electronics Corporation (http://www.renesas.com)

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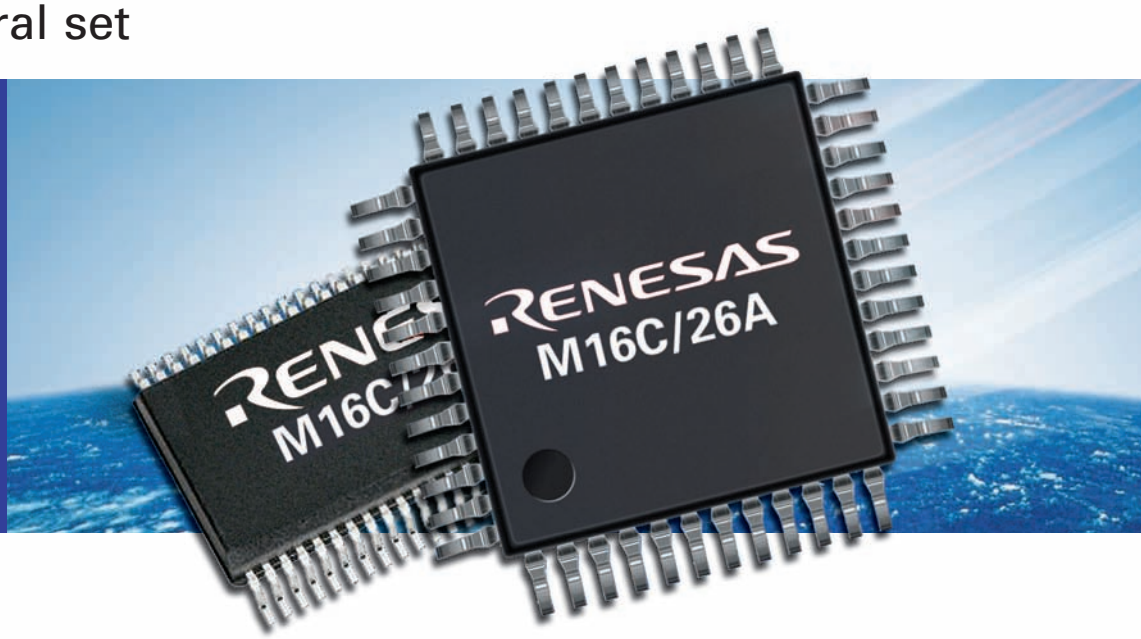
M16C/Tiny – Low-cost, Low-power-consumption, Large peripheral set

M16C/26A



Description

The M16C/Tiny Series with a wide range of memory and package types is subdivided into the M16C/26A, M16C/28 and M16C/29 device groups. These application optimised general purpose MCUs combine small foot print with high CPU performance, thus providing an excellent solution for cost sensitive applications in home appliances and industrial applications. The M16C/Tiny Series is an ideal fit for home appliances and industrial applications, which require high computing power in a small package.

With six different Flash and Mask Type MCUs available the M16C/26A is an ideal solution for a powerful flexible 16-bit design with a line-up of 42-pin SSOP and 48-pin LQFP packages with up to 64KB Flash, making it especially suitable for any motor control application.

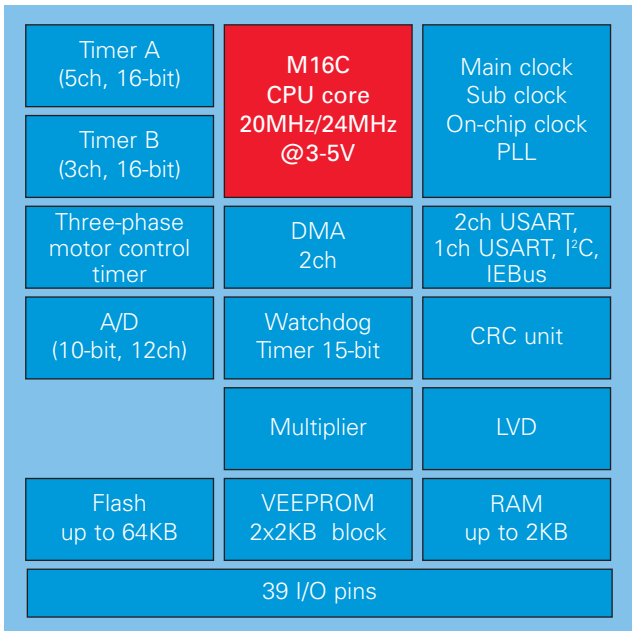
M16C/26A provides a high level of performance, combined with internal peripherals, which reduces the need for external components. The M16C core has been designed to take advantage of the best features of both accumulator and register based architectures. The CPU has a total of thirteen 16-bit registers, seven of which come in two sets of register banks. The architecture makes it fast with efficient code execution. A hardware multiplier circuit and two direct memory access controller channels (DMAC) are implemented to speed up the processing. The M16C platform utilizes several design techniques aimed at providing excellent EMI/EMS performance without the need for external components, making it the best solution for effective designs for electrically noisy environments. Using the M16C Platform makes the CE marking for your end product to an easy task.

Key Features:

- High CPU performance 20MHz/24MHz@ 5V and 3V
- Up to 64KB Flash with 2KB RAM
- 4KB embedded VirtualEEPROM
- Two DMA channels
- 8ch 16-bit Timer
- Three Phase Motor control unit
- PLL, Main-, Sub- and On-chip oscillator
- Up to three serial ports USART including IIC
- 12ch 10-bit ADC (two S/H circuits)
- Up to 39 available I/O pins
- High efficient M16C family low power modes
- Best EMI/EMS performance

Group	Device	Package Type	Memory Type	Memory Size	
				ROM + VEE	RAM
M16C/26A	M30263F3AFP	42-pin 450mil SSOP 0.8mm pitch	Flash	24K + 4K	1K
	M30263F6AFP			48K + 4K	2K
	M30263F8AFP			64K + 4K	2K
	M30263M3A-xxxFP		Mask	24K	1K
	M30263M6A-xxxFP			48K	2K
	M30263M8A-xxxFP			64K	2K
	M30260F3AGP	48-pin 7x7mm LQFP 0.5mm pitch	Flash	24K + 4K	1K
	M30260F6AGP			48K + 4K	2K
	M30260F8AGP			64K + 4K	2K
	M30260M3A-xxxGP		Mask	24K	1K
	M30260M6A-xxxGP			48K	2K
	M30260M8A-xxxGP			64K	2K

M16C/26A – 48-pin Block Diagram



M16C CPU Core (16-bit)
- 20MHz/24MHz @3V and 5V, Single chip mode

Clock generation circuit
- Main clock with Xin/Xout
- Sub clock with Xcin/Xcout
- On-chip oscillator 500KHz,1or 8MHz
- PLL frequency synthesizer
- Main clock stop/Re-oscillation detection

Pin count	42-pin	48-pin
Peripherals		
• **Timers**		
– Timer A 16-bit	5ch	5ch
– Timer B 16-bit	3ch	3ch
– Three-phase motor control	1ch	1ch
• **Serial I/O**		
– USART	1ch	2ch
– USART, I²C, IEBus	1ch	1ch
• **DMA**	2ch	2ch
• **Watchdog Timer**	1ch	1ch
• **A/D Converter** (10-bit)	10ch	12ch
• **I/O ports**	33-pins	39-pins
• **Interrupts** (7 priority levels)		
– Internal sources	18	20
– External sources	8	8
– Software sources	4	4
• **CRC** (CRC-CCITT or CRC-16)	1ch	1ch

M16C/26A Develoment Tools

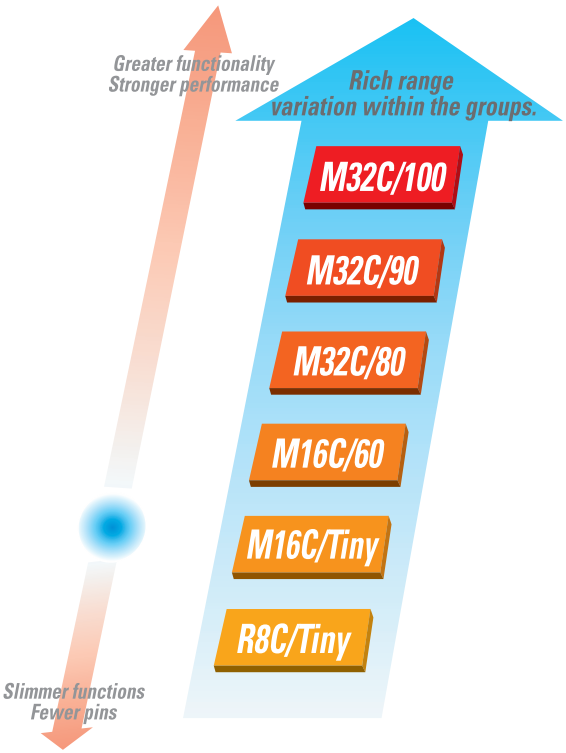
M16C/26A Starter Kit (RSK)
The kit includes:
- CPU board with target microcontroller M16C/26A
- LCD panel for user/diagnostic interaction
- E8 on-chip debugger
- Trial C compiler and IDE
- Tutorial session
- Sample peripheral driver code
- (Part: R0K33026AS000BE)

E8 On-chip Debugger (OCD)
- Low cost OCD
- (Part: R0E000080KCE00)

Compact Emulator
- Low cost emulator with limited trace and breakpoint
- (Part: M30263T2-CPE-FP for 42-pin package)
- (Part: M30260T2-CPE-GP for 48-pin package)

Full Specification Emulator
- Full Trace, breakpoint and performance analysis
- (Part: PC7501 + M30263T-EPB-FP for 42-pin package)
- (Part: PC7501 + M30260T-EPB-GP for 48-pin package)

Compiler
- Renesas Embedded Workbench HEW4.0, C-Compiler
- IAR
- Tasking
- GNU



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