

# MN103002A

<b>Type</b>	<b>MN103002A</b>
<b>Command Cache</b>	4 KB (2-Way)
<b>Data Cache</b>	4 KB (2-Way)
<b>Minimum Instruction Execution Time</b>	<b>15 ns (3.3 V, 66.6 MHz)</b>
<b>Interrupts</b>	• RESET • IRQ0 to 7 • NMI • Timer 0 to 6 • SIO0 to 2 • DMAC0 to 3 • WDT • System error
<b>Timer Counter</b>	<p><b>Timer Counter 0: 8-Bit × 1</b> (Timer Output, 16-Bit Timer Clock Source, Interval Timer, Event Count, Clock Source for Serial I/F0)</p> <p>Clock Source . . . 1/(1, 8, 32) of I/O Clock, External Clock Input, Underflow of Timer 1, 2</p> <p>Interrupt Source . . . Underflow of Timer Counter</p> <p><b>Timer Counter 1: 8-Bit × 1</b> (Timer Output, 16-Bit Timer Clock Source, Interval Timer, Event Count, Clock Source for Serial I/F1)</p> <p>Clock Source . . . 1/(1, 8, 32) of I/O Clock, External Clock Input, Output of Timer Counter 0, Underflow of Timer 0, 2</p> <p>Interrupt Source . . . Underflow of Timer Counter</p> <p><b>Timer Counter 2: 8-Bit × 1</b> (Timer Output, Interval Timer, Event Count, Clock Source for Serial I/F 0, 2, DMA Start)</p> <p>Clock Source . . . 1/(1, 8, 32) of I/O Clock, External Clock Input, Output of Timer Counter 1, Underflow of Timer 0, 1</p> <p>Interrupt Source . . . Underflow of Timer Counter</p> <p><b>Timer Counter 3: 8-Bit × 1</b> (Timer Output, Interval Timer, Event Count, Clock Source for Serial I/F 1, 2, DMA Start)</p> <p>Clock Source . . . 1/(1, 8, 32) of I/O Clock, External Clock Input, Output of Timer Counter 2, Underflow of Timer 0, 1, 2</p> <p>Interrupt Source . . . Underflow of Timer Counter</p> <p><b>Timer Counter 4: 16-Bit × 1</b> (Timer Output, Down Count, Interval Timer, Event Count)</p> <p>Clock Source . . . 1/(1, 8, 32) of I/O Clock, External Clock Input, Underflow of Timer 0, 1, 2</p> <p>Interrupt Source . . . Underflow of Timer Counter</p> <p><b>Timer Counter 5: 16-Bit × 1</b> (Timer Output, Down Count, Interval Timer, Event Count)</p> <p>Clock Source . . . 1/(1, 8, 32) of I/O Clock, External Clock Input, Output of Timer Counter 4, Underflow of Timer 0, 1, 2</p> <p>Interrupt Source . . . Underflow of Timer Counter</p> <p><b>Timer Counter 6: 16-Bit × 1</b> (Event Count, Input Capture, Toggle Output, PWM Output, High-Speed PWM Output, Up Count, Interval Timer, One-Shot Output)</p> <p>Clock Source . . . 1/(1, 8, 32) of I/O Clock, External Clock Input, Underflow of Timer 0, 1, 2</p> <p>Interrupt Source . . . Overflow of Timer Counter, Compare Capture A, B</p> <p><b>Watchdog Timer × 1</b> (Watchdog Overflow Output)</p> <p>Clock Source . . . . . System Clock</p> <p>Interrupt Source . . . . . Overflow of Watchdog Timer</p>
<b>DMA Controller</b>	<p>Number of Channels 4</p> <p>Unit of Transfer 8/16/32 bits</p> <p>Max Transfer Cycles 65536</p> <p>Starting Factor External Request, Various Types of Interrupt, Software</p> <p>Transfer Method. 2-Bus Cycle Transfer, 1-Bus Cycle Transfer</p> <p>Transfer Modes. Word Transfer, Burst Transfer, Intermittent Transfer</p>

**Serial Interface**

**Serial 0: 8-Bit × 1** (Start-Stop Synchronous Mode, Clock Synchronous Mode, I<sup>2</sup>C Mode)

Clock Source . . . . . I/O Clock, Timer Counter 0, 2, External Clock

**Serial 1: 8-Bit × 1** (Start-Stop Synchronous Mode, Clock Synchronous Mode, I<sup>2</sup>C Mode)

Clock Source . . . . . I/O Clock, Timer Counter 1, 3, External Clock

**Serial 2: 8-Bit × 1** (Start-Stop Synchronous Mode with CTS Control)

Clock Source . . . . . I/O Clock, Timer Counter 2, 3, External Clock

<b>I/O Pins</b>	<b>I/O</b>	<b>26</b>	• Common use 26
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<b>Package</b>	QFP160-P-2828B
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**Electrical Characteristics**

**Supply Current**

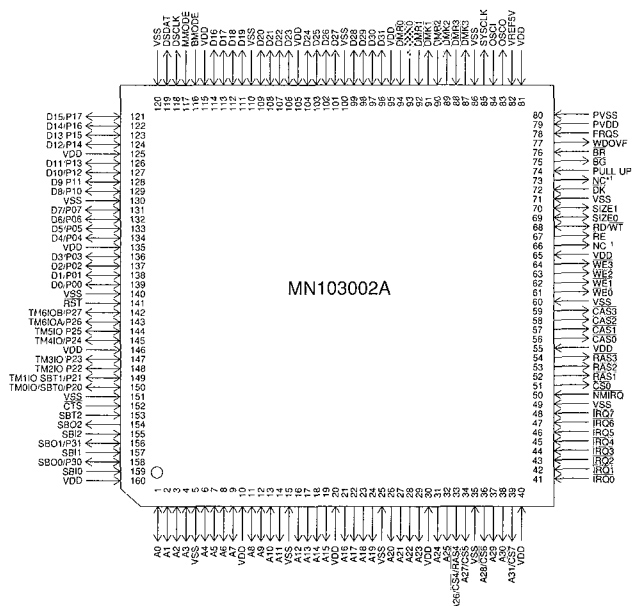
Parameter	Symbol	Condition	Limit			Unit
			min	typ	max	
Operating Supply Current	IDD1	Fosc = 16.6 MHz FRQS pin = Hi level Output released			250	mA
Supply current at SLEEP	IDD2	Fosc = 16.6 MHz FRQS pin = Hi level Output released			50	mA
Supply current at HALT	IDD3	Fosc = 16.6 MHz FRQS pin = Hi level Output released			6	mA
Supply current at stopping	IDD4	Fosc = Stopped Output released			1.25	mA

(Ta = -20 °C to +70 °C, VDD = 3.3 V, VSS = 0 V)

**Support Tool**

<b>In-Circuit Emulator</b>	PX-ICE103002
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**Pin Assignment**



\*1 Set to open  
\*2 Pull up via the resistor