

# □ MN103S83D

<b>Type</b>	MN103S83D		
<b>Internal ROM</b>	64K-byte		
<b>Internal RAM</b>	2K-byte		
<b>Package</b>	QFP084-P-1818E *Lead-free, LQFP080-P-1414A *Lead-free (under development)		
<b>Minimum Instruction Execution Time</b>	25 ns (at 4.3 V to 5.5 V, 10 MHz internal regulator used) 25 ns (at 3.0 V to 3.6 V, 10 MHz) *at internal 4 times oscillation used		
<b>Interrupts</b>	<ul style="list-style-type: none"> <li>• 9 external interrupts</li> <li>• 40 internal interrupts (watch dog timer, timer, serial I/F, PWM, A/D, system error)</li> </ul>		
<b>Timer Counter</b>	8-bit timer × 8 Timer 0 to 7: Interval timer, Event counter, Cascading connectable  16-bit timer × 4 Timer 8: Interval timer, Event counter, PWM output (6 pins simultaneous output are available), Double buffer Timer 9, 10: Interval timer, Event counter, PWM output, Double buffer Timer 11: Interval timer, Double buffer, Start synchronized with 3-phase PWM are available  Watch dog timer		
<b>Serial Interface</b>	UART (full duplex) / synchronous interfaces selective × 2 Serial 1: 7-bit, 8-bit transmission Serial 2: 1-bit to 8-bit transmission (synchronous), 2 and 3 channel type selectable (synchronous)		
<b>I/O Pins</b>	<b>I/O</b>	50	Exclusive × 5, selective × 45
	<b>Input</b>	10	Selective × 10
<b>A/D Inputs</b>	10-bit × 2 unit, 2 inputs × 2, 6 inputs × 1 Simultaneous conversion of 3 series are available, With S/H, Conversion start synchronized with 3-phase PWM or timer 11 are available		
<b>Motor Control PWM</b>	16-bit 3-phase PWM × 1 Minimum resolution: 50 ns Triangular waveform or jigsaw waveform dead time setup, Double buffer, Output polar switching is available, PWM output pin protect function		
<b>Notes</b>	5 V single power supply (Internal regulator)		

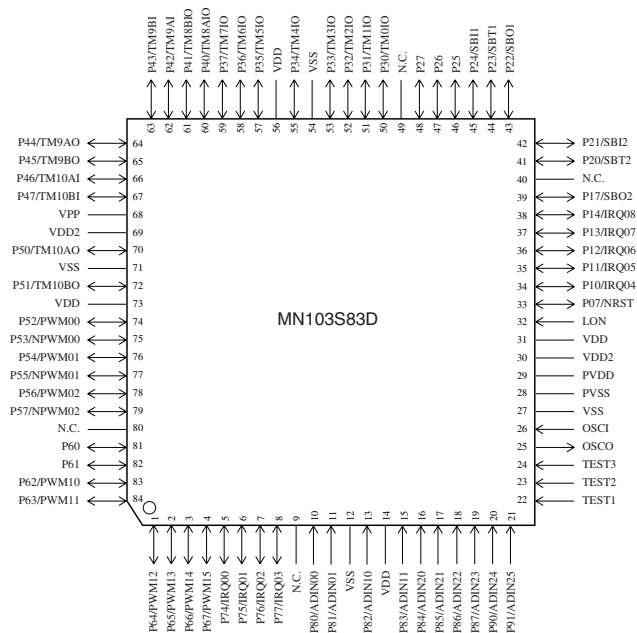
## Electrical Characteristics

### A/D converter characteristics

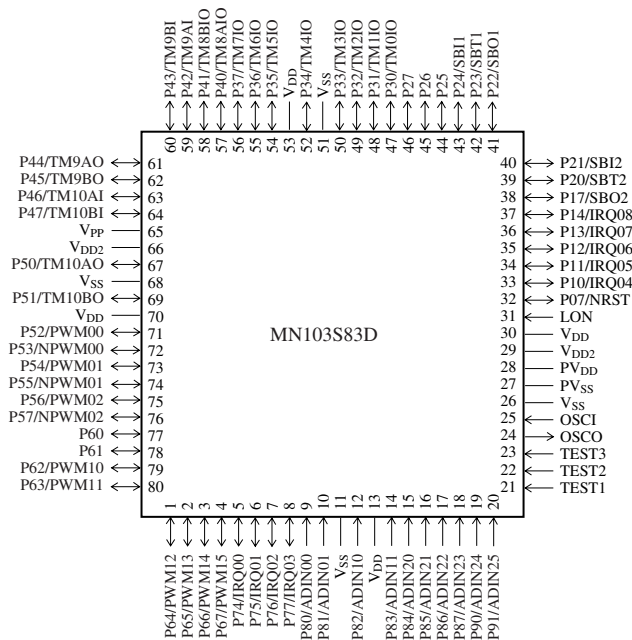
Parameter	Symbol	Condition	Limit			Unit
			min	typ	max	
Non-linear error		10-bit			±3	LSB
A/D conversion time	tAD		1.5			μs
Analog input voltage	VIA		VSS		VDD	V

(Ta = 25°C, VDD = 5.0 V, VSS = 0 V)

Pin Assignment



QFP084-P-1818E \*Lead-free



LQFP080-P-1414A \*Lead-free (under development)

Support Tool

<b>In-circuit Emulator</b>	PX-ICE-103S65	
<b>Flash Memory Built-in Type</b>	Type	MN103SF65GBF, MN103SF65GAL
	ROM	128K-byte
	RAM	4K-byte
	Minimum instruction execution time	25 ns (at 4.3 V to 5.5 V, 10 MHz internal regulator used) 25 ns (at 3.0 V to 3.6 V, 10 MHz)
Package	QFP084-P-1818I *Lead-free, LQFP080-P-1414B *Lead-free	

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