

Notification about the transfer of the semiconductor business

The semiconductor business of Panasonic Corporation was transferred on September 1, 2020 to Nuvoton Technology Corporation (hereinafter referred to as "Nuvoton"). Accordingly, Panasonic Semiconductor Solutions Co., Ltd. became under the umbrella of the Nuvoton Group, with the new name of Nuvoton Technology Corporation Japan (hereinafter referred to as "NTCJ").

In accordance with this transfer, semiconductor products will be handled as NTCJ-made products after September 1, 2020. However, such products will be continuously sold through Panasonic Corporation.

Publisher of this Document is NTCJ.

If you would find description "Panasonic" or "Panasonic semiconductor solutions", please replace it with NTCJ.

※ Except below description page

"Request for your special attention and precautions in using the technical information and semiconductors described in this book"

Nuvoton Technology Corporation Japan

□ MN103SE4 Series

Type	MN103SE4D	MN103SE4G	MN103SE4K	MN103SFE4G	MN103SFE4K
Internal ROM type	Mask ROM			FLASH	
ROM (byte)	64K	128K	256K	128K	256K
RAM (byte)	4K		8K	4K	8K
Package (Lead-free)	LQFP080-P-1414A				
Minimum Instruction Execution Time	16.7 ns (4.5 V to 5.5 V)				

■ Interrupts

9 external interrupts
 47 internal interrupts: Watchdog timer. Timer. Serial I/F. PWM. A/D conversion finish. System error

■ Timer Counter

8-bit timer × 12
 Timer 0 to 7, 14 to 17 Interval timer. Event count. Cascading connectable
 16-bit timer × 6
 Timer 8 to 10Interval timer. Event count. PWM output. Double buffer
 Timer 11Interval timer. Event count. PWM output (6 pins simultaneous output are available). Double buffer
 Timer 12, 13Interval timer. Double buffer. Start synchronized with 3-phase PWM are available
 Watchdog timer × 1

■ Serial interface

UART (full duplex) /Synchronous interfaces selective × 3
 Serial 0, 17-bit, 8-bit transmission
 Serial 21-bit to 8-bit transmission (synchronous). 2 and 3 channel type selectable (synchronous)

■ I/O Pins

I/O 61 : Common use × 61

■ A/D converter

10-bit × 3 unit. 16 channels
 Minimum conversion time: 1.0 μs
 Simultaneous conversion of 3 series are available
 Conversion start synchronized with 3-phase PWM or timer 12, 13 are available

■ Motor Control PWM

16-bit 3-phase PWM × 2
 Triangular waveform or jigsaw waveform. Dead time setup. Double buffer. Output polar switching is available. PWM output pin protect function

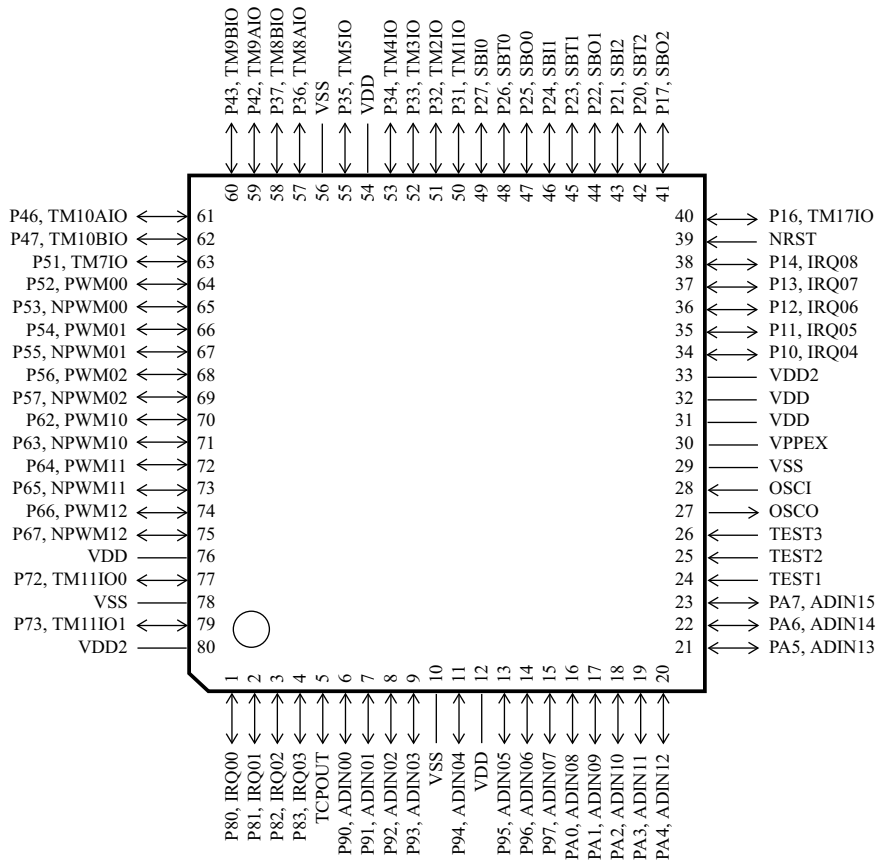
■ Electrical Characteristics (A/D converter characteristics)

Parameter	Symbol	Condition	Limit			Unit
			min	typ	max	
Non-linear error		10-bit			±3	LSB
A/D conversion time	TAD		1.0			μs
Analog input voltage	VIA		VSS		VDD	V

Ta = 25 °C. VDD = 5.0 V. VSS = 0 V

MN103SE4D, MN103SE4G, MN103SE4K, MN103SFE4G, MN103SFE4K □

■ Pin Assignment LQFP080-P-1414A



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