

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

□ MN103SE3 Series

Type	MN103SE3K	MN103SFE3K
Internal ROM type	Mask ROM	FLASH
ROM (byte)	256K	
RAM (byte)	8K	
Package (Lead-free)	QFP100-P-1818B	
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 81 : Common use × 81

■ A/D converter

- 10-bit × 3 unit. 20 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

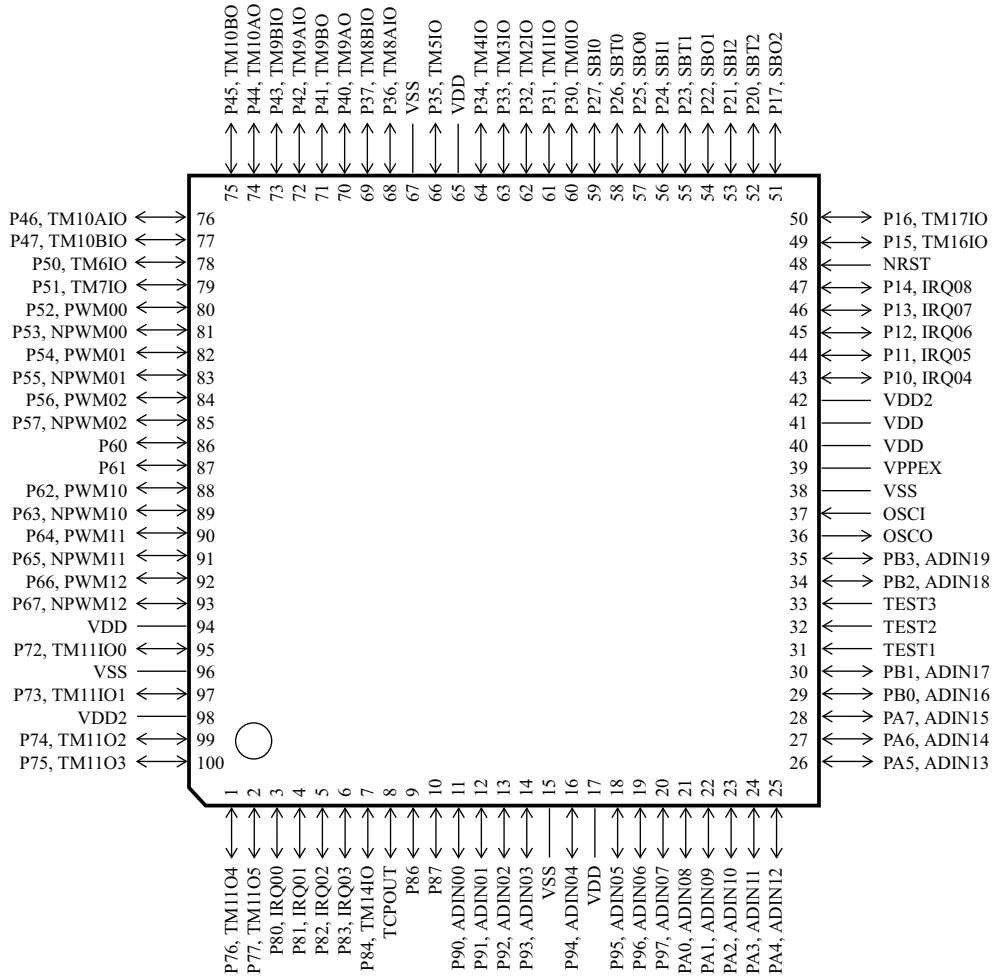
- 16-bit 3-phase PWM × 2
- Triangular waveform or jigsaw waveform. Dead time setup. Double buffer. Output polar switching is available. PWM output pin protect function

■ 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

■ Pin Assignment
QFP100-P-1818B



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