

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

□ MN101E59 Series

Type	MN101E59R	MN101EF59R
Internal ROM type	Mask ROM	FLASH
ROM (byte)	928K	
RAM (byte)	8K	
Package (Lead-free)	QFP100-P-1818B	
Minimum Instruction Execution Time	50 ns (at 2.2 V to 5.5 V, 20 MHz) *: at internal 2, 3, 4, 5, 6, 8, 10 times oscillation used	

■ Interrupts

6 external interrupts. 30 internal interrupts

RESET. NMI. External 0 to 4. Timer 0 to 4. Timer 6. Timer 7 (2 systems). Timer 8 (2 systems). Timer 9 (2 systems). Time base. Serial 0 (2 systems). Serial 1 (2 systems). Serial 2 (2 systems). Serial 3 (2 systems). Serial 4. Serial 5. A/D conversion. Automatic transfer (2 systems). Key interrupt. End of single tone. End of phrase

■ Timer Counter

8-bit timer × 7

Timer 0Timer pulse output. Event count. Added pulse (2-bit) type PWM output. Remote control carrier output. Simple pulse width measurement. Real time output control

Timer 1Timer pulse output. Event count. 16-bit cascade connected (timer 0, 1). Timer synchronous output

Timer 2Timer pulse output. Event count. Added pulse (2-bit) type PWM output. Simple pulse width measurement. 24-bit cascade connected (timer 0, 1, 2). Timer synchronous output. Real time output control

Timer 3Timer pulse output. Event count. Remote control carrier output. 16-bit cascade connected (timer 2, 3). 32-bit cascade connected (timer 0, 1, 2, 3)

Timer 4Timer pulse output. Added pulse (2-bit) type PWM output. Event count. Serial transfer clock output. Simple pulse width measurement

Timer 68-bit freerun timer. Time base timer

Timer A.....Event count. Baud rate timer. Clock output for peripheral function

16-bit timer × 3

Timer 7Timer pulse output. Event count. High accuracy PWM. High performance IGBT output (cycle/duty continuous variable). Timer synchronous output. Input capture (both edge available). Real time output control. Double buffer compare register

Timer 8Timer pulse output. Event count. High accuracy PWM output (cycle/duty continuous variable). Pulse width measurement. Input capture (both edge available). 32-bit cascade connected (timer 7, 8). 32-bit PWM output. Synchronous output event. Double buffer compare register

Timer 9Timer pulse output. Event count. High accuracy PWM output (cycle/duty continuous variable). Pulse width measurement. Input capture (both edge available). Real time output control. Double buffer compare register

Watchdog timer × 1

■ Serial interface

Synchronous type/UART (full-duplex) × 4: Serial 0 to 3

Synchronous type/Multi-master I²C × 1: Serial 4

I²C slave × 1: Serial 5

■ DMA controller

2 systems. Maximum transfer cycles are 255

Starting factor: External request. Internal event. Software

■ I/O Pins

I/O 85 : Common use. Specified pull-up/pull-down resistor available. Input/output selectable (bit unit)

■ A/D converter

10-bit × 12 channels

■ D/A converter

8-bit × 4 channels. 20-bit × 2 channels. (Sound reproduction:digital output, analog output)

■ Display control function

LCD: 55 segments × 4 commons (Static, 1/2, 1/3, or 1/4 duty) 1/3 bias
 Usable if $V_{LC1} \leq V_{DD}$

■ Special Ports

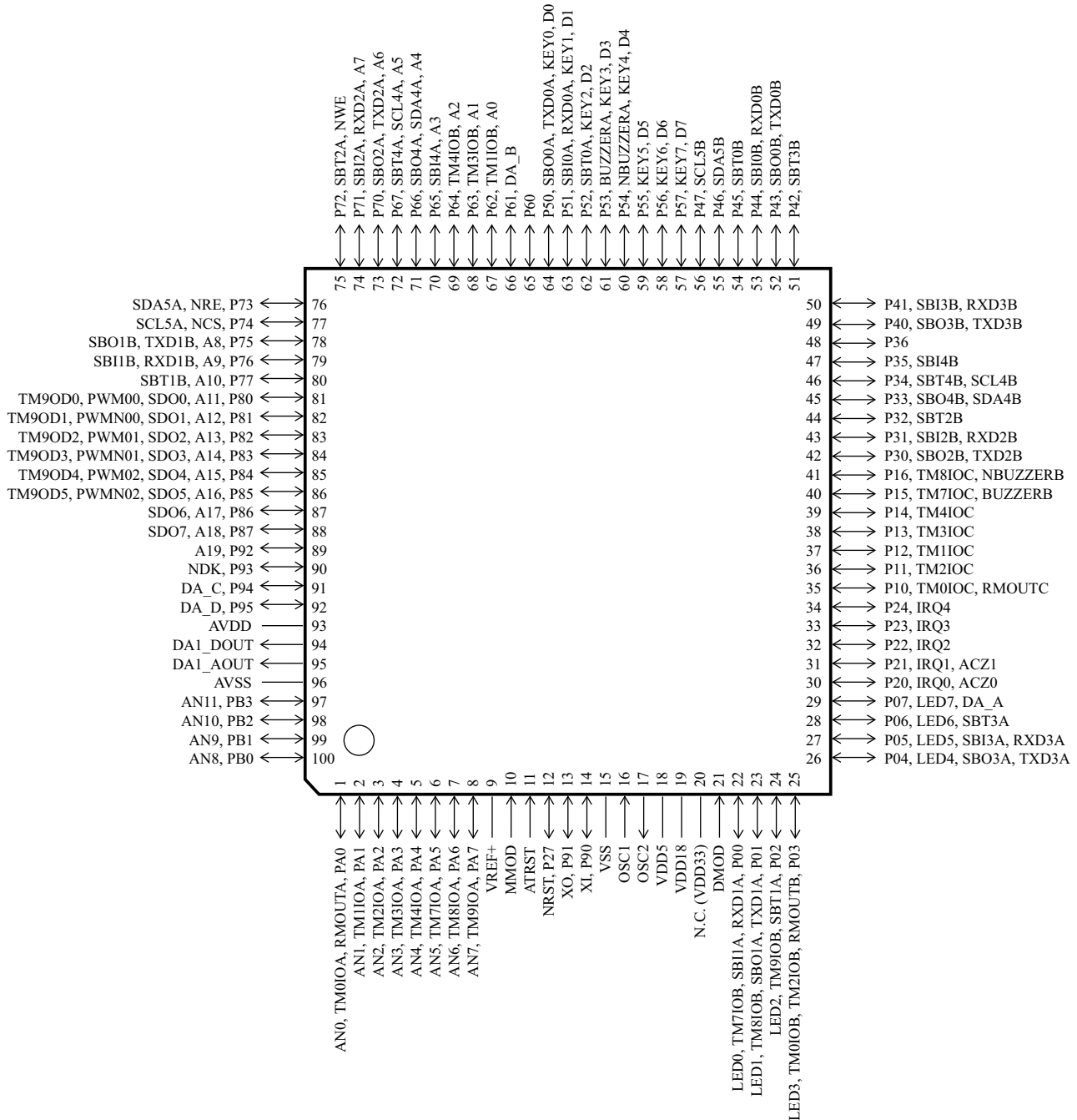
Buzzer output. Inverted buzzer output. Remote control carrier output. High-current drive port

■ ROM Correction

Correcting address designation: Up to 7 addresses possible

■ Pin Assignment

QFP100-P-1818B



Note) (): Flash memory built-in type

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