

## **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**

# □ MN101E35 Series

Type	MN101E35A	MN101E35D	MN101EF35A	MN101EF35D	MN101EF35G
Internal ROM type	Mask ROM		FLASH		
ROM (byte)	32K	68K	32K	64K+4K	128K+4K
RAM (byte)	4K				8K
Package (Lead-free)	TQFP048-P-0707B			HQFP048-P-0707B, TQFP048-P-0707B	HQFP048-P-0707B
Minimum Instruction Execution Time	0.042 μs (at 2.2 V to 3.6 V, 24 MHz, When USB unused) 0.0625 μs (at 3.0 V to 3.6 V, 16 MHz, When USB used) 62.5 μs (at 2.2 V to 3.6 V, 32 kHz)				

## ■ Interrupts

RESET. Watchdog. External 0 to 4. External 5 (key interrupt dedicated). External 6. Timer 0 to 4. Timer 6. Timer 7 (2 systems). Timer 8 (2 systems). Timer 9 (2 systems). Time base. Serial 1 (2 systems). Serial 2 (2 systems). Serial 4 (2 systems). A/D conversion finish. USB interrupts

## ■ Timer Counter

8-bit timer × 6

Timer 0 .....Square-wave output. PWM output. Event count. Simple pulse width measurement. Square-wave/PWM output to large current terminal P03 (TM0IOB) possible

Timer 1 .....Square-wave output. Event count

Timer 2 .....Square-wave output. PWM output. Event count. Simple pulse width measurement. Square-wave/PWM output to large current terminal P03 (TM2IOB) possible

Timer 3 .....Square-wave output. Event count

Timer 4 .....Square-wave output. PWM output. Event count. Simple pulse width measurement. Square-wave/PWM output to large current terminal P02 (TM4IOC) possible

Timer 6 .....8-bit freerun timer

Timer 0, 1 can be cascade-connected

Timer 2, 3 can be cascade-connected

Timer 0, 1, 2 can be cascade-connected

Timer 0, 1, 2, 3 can be cascade-connected

16-bit timer × 3

Timer 7 .....Square-wave output. PWM output (cycle/duty continuous variable). Event count. Pulse width measurement. Input capture. Square-wave/PWM output to large current terminal P00 (TM7IOB) possible

Timer 8 .....Square-wave output. PWM output (cycle/duty continuous variable). Event count. Pulse width measurement. Input capture. Square-wave/PWM output to large current terminal P01 (TM8IOB) possible

Timer 9 .....Square-wave output. PWM output (cycle/duty continuous variable). Event count. Pulse width measurement. Input capture

Time base timer: One-minute count setting

Watchdog timer × 1

## ■ Serial interface

Synchronous type/UART (full-duplex) × 2: Serial 1, 2

Synchronous type/Multi-master I<sup>2</sup>C × 1: Serial 4

Serial 4.....7-bit/10-bit address setting. General call

## ■ USB Functions

Conforms to USB 2.0: Full-speed (12 Mbps) supported

USB transceiver built-in. 3 end points (FIFO built-in independently)

FIFO size: EP0 = 16 bytes. EP1 = 128 bytes. EP2 = 128 bytes

EP0: Control transfer. IN/OUT (two ways)

EP1 to EP2: Interrupt/Bulk/Isochronous transfer supported. Settable to IN or OUT. Double Buffering function supported

When the MAXP size is set to a half or less of the MAXFIFO size for each EP, the Double Buffering function is made valid automatically

## ■ I/O Pins

I/O 37: Common use. Specified pull-up resistor available. Input/output selectable (bit unit)

## ■ A/D converter

10-bit × 8 channels (with S/H)

# MN101E35A, MN101E35D, MN101EF35A, MN101EF35D, MN101EF35G □

## Extended Calculation

16-bit × 16-bit multiplication. 32-bit / 16-bit division

## Special Ports

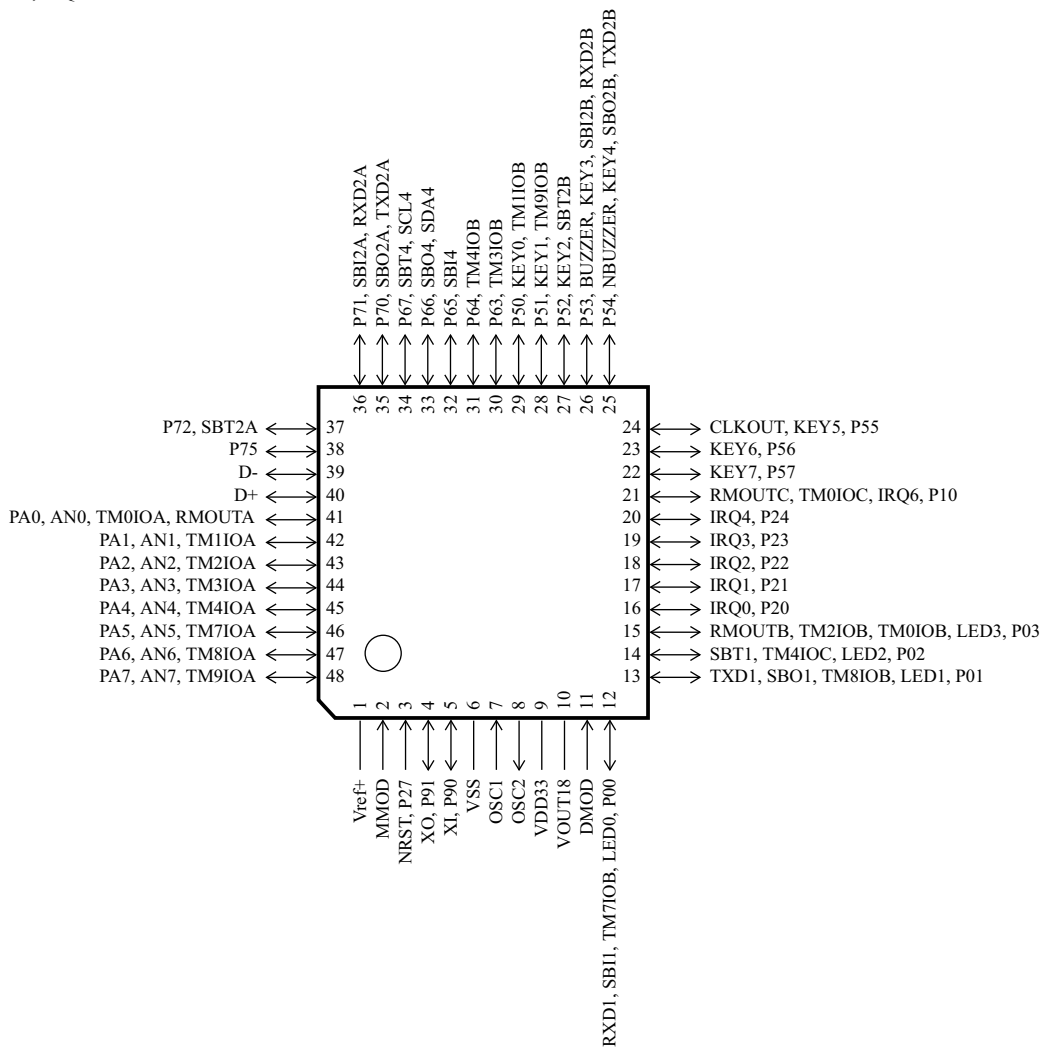
USB ports (D+, D-). Buzzer output. Remote control carrier output. High-current drive port. Clock output

## ROM Correction

Correcting address designation: Up to 7 addresses possible

## Pin Assignment

HQFP048-P-0707B, TQFP048-P-0707B



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Even when the products are used within the guaranteed values, take into the consideration of incidence of break down and failure mode, possible to occur to semiconductor products. Measures on the systems such as redundant design, arresting the spread of fire or preventing glitch are recommended in order to prevent physical injury, fire, social damages, for example, by using the products.
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