

## **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**

# □ MN103SD3 Series

Type	MN103SD3P	MN103SFD3R
Internal ROM type	Mask ROM	FLASH
ROM (byte)	640K	1024K
RAM (byte)	40K	64K
Package (Lead-free)	LQFP100-P-1414	
Minimum Instruction Execution Time	16.7 ns (at 2.7 V to 3.6 V, 60 MHz)	

## ■ Interrupts

RESET. IRQ × 8. NMI. Timer × 32. I<sup>2</sup>C × 3. SIF × 16. DMA × 12. WDT. A/D. Time base timer × 2. System error. Key input. Remote control × 4

## ■ Timer Counter

8-bit timer A × 10

Reload-down count. Cascade connection possible (usable as a 16-bit to 32-bit timer)

8-bit timer B × 3

Interval timer. Event count. Square-wave output. Simple pulse width measurement. PWM output

16-bit timer × 6

Up-down count. Input capture. PWM output. Compare/capture register 2 channels

Time base timer × 1

Watchdog timer × 1

## ■ Serial interface

UART/Synchronous/Multi-master I<sup>2</sup>C interface selective × 3

UART/Synchronous interface selective × 5

## ■ Remote Control Interface

Remote control reception: Correspondence with AEHA (Association for Electric Home Appliances) format. Queued reception by low speed clock

## ■ DMA controller

Number of channels: 4 channels

Unit of transfer: 8/16/32 bits

Maximum transfer cycles: 65535

Starting factor: External interrupt. Timer. Serial transmission/reception. A/D conversion finish. I<sup>2</sup>C transmission/reception. Software.

Remote control data reception

Transfer method: 2-bus cycle transfer

Addressing modes: Fixed. Increment. Decrement

Transfer mode: Word transfer. Burst transfer. Intermittent transfer

## ■ I/O Pins

I/O 81 : Common use

Input 1 : Common use

## ■ A/D converter

10-bit × 8 channels

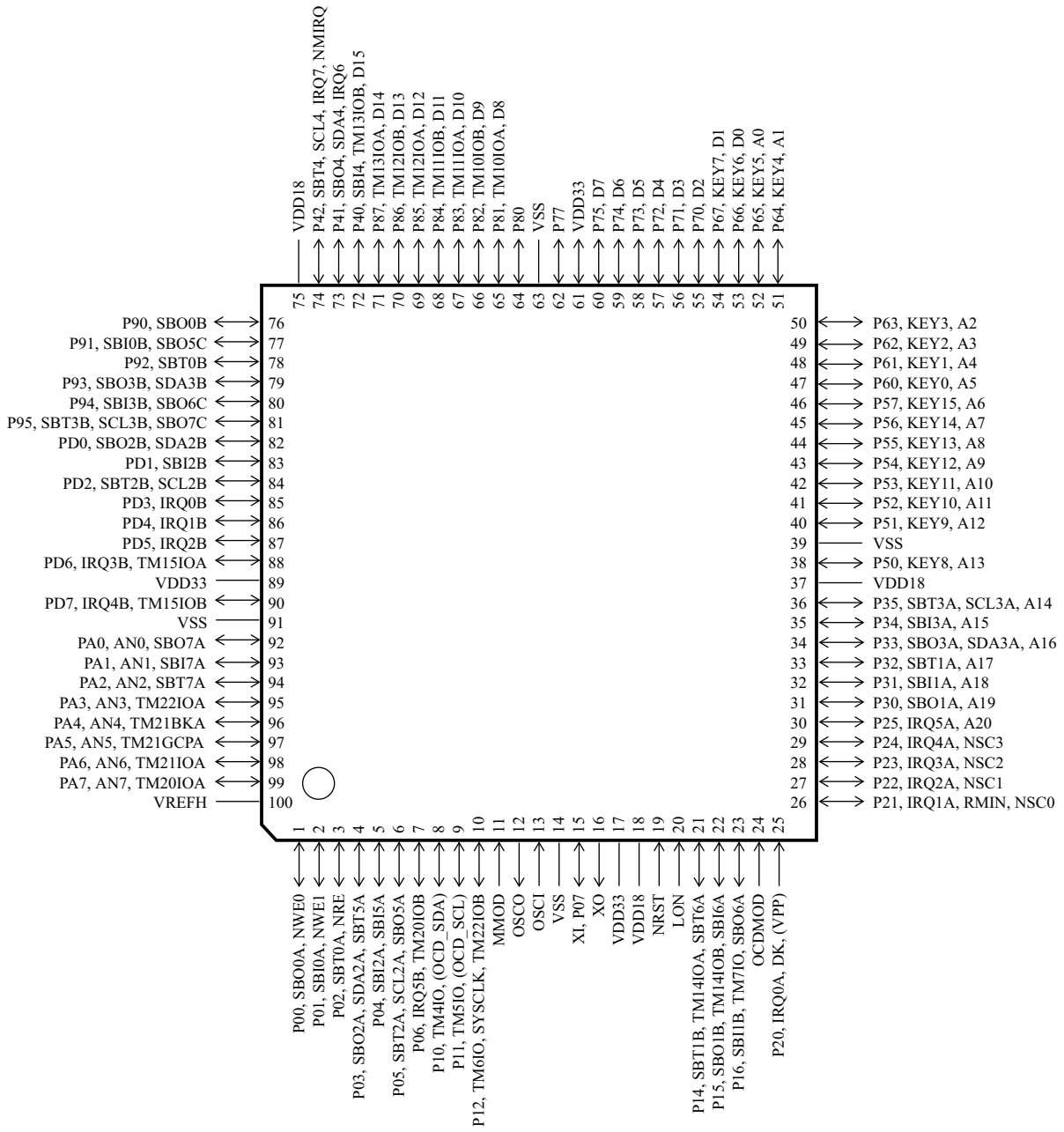
## ■ ROM Correction

8 channels

## ■ Electrical Characteristics (A/D converter characteristics)

Parameter	Symbol	Condition	Limit			Unit
			min	typ	max	
Resolution					10	Bits
Non-linear error		VDD33 = VREFH = 3.3 V. VSS = 0 V			±4	LSB
Differential non-linearity error					±4	LSB

■ Pin Assignment  
LQFP100-P-1414



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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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