## ■ MN101E30 Series

Туре	MN101E30N	MN101E30R	MN101EF30R	
Internal ROM type	Mask ROM FLASH		FLASH	
ROM (byte)	508K	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	X	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 AEvent count. Baud rate timer. Clock output for peripheral function
16-bit timer $\times$ 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)  $\times$  4: Serial 0 to 3 Synchronous type/Multi-master I<sup>2</sup>C  $\times$  1: Serial 4 I<sup>2</sup>C slave  $\times$  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

 $8\text{-bit} \times 4 \text{ channels. } 20\text{-bit} \times 2 \text{ channels. } (Sound \ reproduction: digital \ output, \ analog \ output)$ 

## ■ Display control function

LCD: 55 segments  $\times$  4 commons (Static, 1/2, 1/3, or 1/4 duty) 1/3 bias Usable if VLC1  $\leq$  VDD

Panasonic MAD00063DEM

## ■ 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

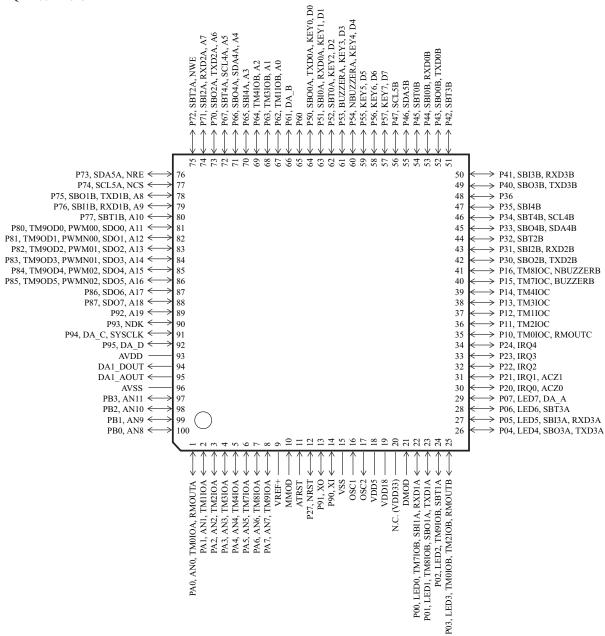
#### Development tools

In-circuit Emulator

PX-ICE101E + PRBV101E30-QFP100-P-1818B

## ■ Pin Assignment

QFP100-P-1818B



Note) (): Flash memory built-in type

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