☐ MN101E30R

Type	MN101E30R	MN101EF30R
Internal ROM type	Mask ROM	FLASH
ROM (byte)	928K	
RAM (byte)	6K	
Package (Lead-free)	QFP100-P-1818B (Under development)	
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	50 ns (at 2.2 V to 5.5 V, 20 MHz)

■ Interrupts
  6 external interrupts, 30 internal interrupts
  RESET, Watchdog, 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), Serial1 (2 systems), Serial 2 (2 systems), Serial 3 (2 systems), Serial 4, Serial 5, A/ D conversion finish, Automatic transfer (2 systems), Key interrupts, end of single tone, end of phrase

■ Timer Counter
  Timer counter 0 : 8-bit × 1
    (timer pulse output, event count, added pulse (2-bit) system PWM output, generation of remote control carrier, simple pulse measurement, real time output control)

  Timer counter 1 : 8-bit × 1
    (timer pulse output, event count, 16-bit cascade connected (timer 0, 1) timer synchronous output event)

  Timer counter 2 : 8-bit × 1
    (timer pulse output, event count, added pulse (2-bit) system PWM output, simple pulse measurement, 24-bit cascade connected (timer 0, 1, 2), timer synchronous output event, real timer output control)

  Timer counter 3 : 8-bit × 1
    (timer pulse output, event count, generation of remote control carrier, 16-bit cascade connected (timer 2, 3), 32-bit cascade connected (timer 0, 1, 2, 3))

  Timer counter 4 : 8-bit × 1
    (timer pulse output, added pulse (2-bit) system PWM output, event count, serial transfer clock, simple pulse measurement)

  Timer counter 6 : 8-bit free run timer, time base timer

  Timer counter 7 : 16-bit × 1
    (timer pulse output, event count, High accuracy PWM, High performance IGBT output (cycle/duty continuous variable) timer synchronous output event, input capture (Both edge available), real timer output control), double buffer compare register

  Timer counter 8 : 16-bit × 1
    (timer 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-bitPWM output, synchronous output event), double buffer compare register

  Timer counter 9 : 16-bit × 1
    (timer pulse output, event count, High accuracy PWM output (cycle/duty continuous variable), pulse width measurement, input capture (Both edge available), real timer output control), double buffer compare register

  Timer counter A : 8-bit × 1 (event count, Serial transfer clock timer, clock for function (timer, serial, LCD))

  Watchdog timer

■ Serial interface
  Serial 0 ~ 3 : UART (full duplex) / synchronous × 1
  Serial 4 : multi master I²C / synchronous × 1
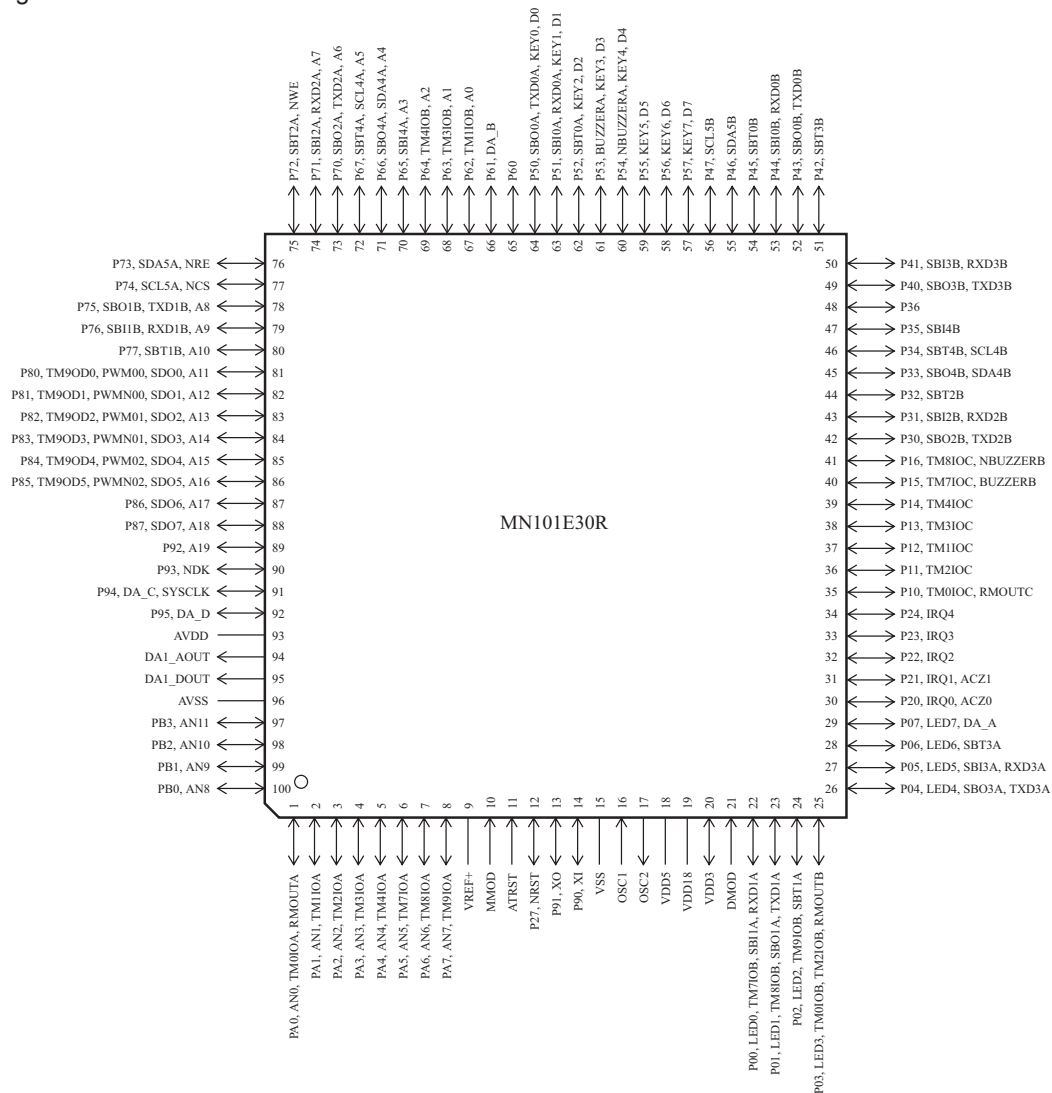 Serial 5 : I²C slave × 1

■ DMA controller
  2 systems (External request/internal event request/software request maximum transfer cycles are 255)

■ I/O Pins

I/O	86	common use, Specified pull-up/pull-down resistor available, Input/output selectable (bit-unit)

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MAD00063AEM

■ A/D converter
10-bit × 12-ch.

■ D/A converter
8-bit × 4-ch.
20-bit × 1-ch.

■ Display control function
LCD
55 segments × 4 commons (static, 1/2, 1/3, 1/4 duty) 1/3 bias, Usable if VLC1 ≤ VDD

■ Special Ports
Buzzer output, remote control carrier signal 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 (Under development)

■ Pin Assignment

Top pins (75–51):
- 75 P72, SBT2A, NWE
- 74 P71, SBI2A, RXD2A, A7
- 73 P70, SBO2A, TXD2A, A6
- 72 P67, SBT4A, SCL4A, A5
- 71 P66, SBO4A, SDA4A, A4
- 70 P65, SBI4A, A3
- 69 P64, TM4IOB, A2
- 68 P63, TM3IOB, A1
- 67 P62, TM1IOB, A0
- 66 P61, DA_B
- 65 P60
- 64 P50, SBO0A, TXD0A, KEY0, D0
- 63 P51, SBI0A, RXD0A, KEY1, D1
- 62 P52, SBT0A, KEY2, D2
- 61 P53, BUZZERA, KEY3, D3
- 60 P54, NBUZZERA, KEY4, D4
- 59 P55, KEY5, D5
- 58 P56, KEY6, D6
- 57 P57, KEY7, D7
- 56 P47, SCL5B
- 55 P46, SDA5B
- 54 P45, SBT0B
- 53 P44, SBI0B, RXD0B
- 52 P43, SBO0B, TXD0B
- 51 P42, SBT3B

Left pins (76–100):
- 76 P73, SDA5A, NRE
- 77 P74, SCL5A, NCS
- 78 P75, SBO1B, TXD1B, A8
- 79 P76, SBI1B, RXD1B, A9
- 80 P77, SBT1B, A10
- 81 P80, TM9OD0, PWM00, SDO0, A11
- 82 P81, TM9OD1, PWMN00, SDO1, A12
- 83 P82, TM9OD2, PWM01, SDO2, A13
- 84 P83, TM9OD3, PWMN01, SDO3, A14
- 85 P84, TM9OD4, PWM02, SDO4, A15
- 86 P85, TM9OD5, PWMN02, SDO5, A16
- 87 P86, SDO6, A17
- 88 P87, SDO7, A18
- 89 P92, A19
- 90 P93, NDK
- 91 P94, DA_C, SYSCLK
- 92 P95, DA_D
- 93 AVDD
- 94 DA1_AOUT
- 95 DA1_DOUT
- 96 AVSS
- 97 PB3, AN11
- 98 PB2, AN10
- 99 PB1, AN9
- 100 PB0, AN8

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Right pins (50–26):
- 50 P41, SBI3B, RXD3B
- 49 P40, SBO3B, TXD3B
- 48 P36
- 47 P35, SBI4B
- 46 P34, SBT4B, SCL4B
- 45 P33, SBO4B, SDA4B
- 44 P32, SBT2B
- 43 P31, SBI2B, RXD2B
- 42 P30, SBO2B, TXD2B
- 41 P16, TM8IOC, NBUZZERB
- 40 P15, TM7IOC, BUZZERB
- 39 P14, TM4IOC
- 38 P13, TM3IOC
- 37 P12, TM1IOC
- 36 P11, TM2IOC
- 35 P10, TM0IOC, RMOUTC
- 34 P24, IRQ4
- 33 P23, IRQ3
- 32 P22, IRQ2
- 31 P21, IRQ1, ACZ1
- 30 P20, IRQ0, ACZ0
- 29 P07, LED7, DA_A
- 28 P06, LED6, SBT3A
- 27 P05, LED5, SBI3A, RXD3A
- 26 P04, LED4, SBO3A, TXD3A

Bottom pins (1–25):
- 1 PA0, AN0, TM0IOA, RMOUTA
- 2 PA1, AN1, TM1IOA
- 3 PA2, AN2, TM2IOA
- 4 PA3, AN3, TM3IOA
- 5 PA4, AN4, TM4IOA
- 6 PA5, AN5, TM7IOA
- 7 PA6, AN6, TM8IOA
- 8 PA7, AN7, TM9IOA
- 9 VREF+
- 10 MMOD
- 11 ATRST
- 12 P27, NRST
- 13 P91, XO
- 14 P90, XI
- 15 VSS
- 16 OSC1
- 17 OSC2
- 18 VDD5
- 19 VDD18
- 20 VDD3
- 21 DMOD
- 22 P00, LED0, TM7IOB, SBI1A, RXD1A
- 23 P01, LED1, TM8IOB, SBO1A, TXD1A
- 24 P02, LED2, TM9IOB, SBT1A
- 25 P03, LED3, TM0IOB, TM2IOB, RMOUTB

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