# ❑ MN101C65C , MN101C65D

| Type | MN101C65C (under planning) | MN101C65D (under planning) |
|---|---|---|
| ROM (×8-bit) | 48 K | 64 K |
| RAM (×8-bit) | 2 K | 2 K |
| Package | QFP100-P-1818B *Lead-free (under planning), LQFP100-P-1414 *Lead-free (under planning) | |
| Minimum Instruction Execution Time | 0.1 µs (at 4.5 V to 5.5 V, 20 MHz)<br>0.25 µs (at 2.7 V to 5.5 V, 8 MHz)<br>62.5 µs (at 2.0 V to 5.5 V, 32 kHz)* | |
| Interrupts | • RESET • Watchdog • External 0 • External 1 • External 2 • External 3<br>• External 4 (key interrupt selectable) • External 5 (key interrupt dedicated) • External 6 • External 7<br>• Remote control • Timer 0 • Timer 1 • Timer 2 • Timer 3 • Timer 6<br>• Time base • Timer 7 (2 systems) • Timer 8 (2 systems) • Serial 0 (2 systems) • Serial 2 • A/D conversion finish | |

* The lower limit for operation guarantee for flash memory built-in type is 2.5 V.

**Timer Counter**

Timer counter 0 : 8-bit × 1
(square-wave/8-bit PWM output, event count, generation of remote control carrier, simple pulse width measurement) (square-wave/PWM output to large current terminal P50 possible)
- Clock source ····· 1/2, 1/4 of system clock frequency; 1/1, 1/4, 1/16, 1/32, 1/64 of OSC oscillation clock frequency; 1/1 of XI oscillation clock frequency; external clock input
- Interrupt source ····· coincidence with compare register 0

Timer counter 1 : 8-bit × 1 (square-wave output, event count, synchronous output event)
- Clock source ····· 1/2, 1/8 of system clock frequency; 1/1, 1/4, 1/16, 1/8192, 1/32768 of OSC oscillation clock frequency; 1/1 of XI oscillation clock frequency; external clock input
- Interrupt source ····· coincidence with compare register 1

Timer counter 0, 1 can be cascade-connected.

Timer counter 2 : 8-bit × 1
(square-wave output, additional pulse type 10-bit PWM output, event count, synchronous output event, simple pulse width measurement) (square-wave/PWM output to large current terminal P52 possible)
- Clock source ····· 1/2, 1/4 of system clock frequency; 1/1, 1/4, 1/16, 1/32, 1/64 of OSC oscillation clock frequency; 1/1 of XI oscillation clock frequency; external clock input
- Interrupt source ····· coincidence with compare register 2

Timer counter 3 : 8-bit × 1
(square-wave output, event count, generation of remote control carrier, serial 0 baud rate timer)
- Clock source ····· 1/2, 1/8 of system clock frequency; 1/1, 1/4, 1/16, 1/64, 1/128 of OSC oscillation clock frequency; 1/1 of XI oscillation clock frequency; external clock input
- Interrupt source ····· coincidence with compare register 3

Timer counter 2, 3 can be cascade-connected.

Timer counter 6 : 8-bit freerun timer
- Clock source ····· 1/1 of system clock frequency; 1/1, 1/4096, 1/8192 of OSC oscillation clock frequency; 1/1, 1/4096, 1/8192 of XI oscillation clock frequency
- Interrupt source ····· coincidence with compare register 6

Timer counter 7 : 16-bit × 1
(square-wave output, IGBT/16-bit PWM output (cycle / duty continuous variable), event count, synchronous output evevt, pulse width measurement, input capture) (square-wave/PWM output to large current terminal P51 possible)
- Clock source ····· 1/1, 1/2, 1/4, 1/16 of system clock frequency; 1/1, 1/2, 1/4, 1/16 of OSC oscillation clock frequency; 1/1, 1/2, 1/4, 1/16 of external clock input frequency
- Interrupt source ····· coincidence with compare register 7 (2 lines)

**Timer Counter (Continue)**

Timer counter 8: 16 bit × 1
(square-wave/16-bit PWM output [duty continuous variable], event count, pulse width measurement, input capture)
(square-wave/PWM output to large current terminal P53 possible)
Clock source ····· 1/1, 1/2, 1/4, 1/16, 1/128 of system clock frequency;
1/1, 1/2, 1/4, 1/16, 1/128 of OSC oscillation clock frequency;
1/1, 1/2, 1/4, 1/16 of external clock input frequency
Interrupt source ····· coincidence with compare register 8 (2 lines)

Timer counters 7, 8 can be cascade-connected.
(square-wave output, PWM, input capture, pulse width measurement is possible as a 32-bit timer.)

Time base timer (one-minute count setting)
Clock source ····· 1/1 of OSC oscillation clock frequency; 1/1 of XI oscillation clock frequency
Interrupt source ····· 1/128, 1/256, 1/512, 1/1024, 1/8192, 1/32768 of clock source frequency

Watchdog timer
Interrupt source ····· 1/65536, 1/262144, 1/1048576 of system clock frequency

**Serial Interface**

Serial 0 : synchronous type/UART (full-duplex) × 1
Clock source ····· 1/2, 1/4 of system clock frequency; 1/2 of pulse output of timer counter 3 frequency ; 1/2, 1/4, 1/16, 1/64 of OSC oscillation clock frequency

Serial 2 : synchronous type × 1
Clock source ····· 1/2, 1/4 of system clock frequency; 1/2 of pulse output of timer counter 3 frequency; 1/2, 1/4, 1/16, 1/32 of OSC oscillation clock frequency

**Remote Control Interface**

Remote control output: timer 0 and 3 output: the remote control carrier output of 1/2 and 1/3 duty.
Remote control reception: correspondence with low speed clock waiting
correspondence with AEHA (Association for Electric Home Appliances) format
(selection of a formart is available by the set-up)

| | | | |
|---|---|---|---|
| **I/O Pins** | **I/O** | 77 | • Common use • Specified pull-up resistor available • Input/output selectable (bit unit) |
| | **Input** | 6 | • Common use • Specified pull-up resistor available |

**A/D Inputs**

10-bit ×16-ch. (with S/H)

**LCD**

47 segments × 4 commons (static, 1/2, 1/3, or 1/4 duty)
LCD power supply separated from VDD (usable if VDD ≤ VLCD ≤ 5.5 V)
LCD power step-up circuit contained (3/2, 2 and 3 times)
LCD power shunt resistance contained

**Special Ports**

Buzzer output, remote control carrier signal output, high-current drive port

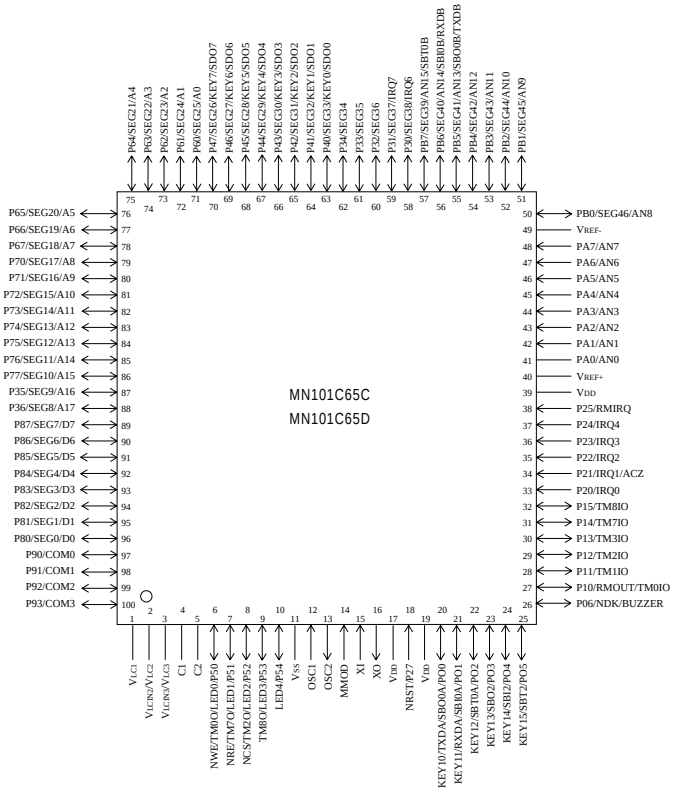
**Electrical Characteristics**

**Supply current**

| Parameter | Symbol | Condition | Limit | | | Unit |
|---|---|---|---|---|---|---|
| | | | min | typ | max | |
| Operating supply current | IDD1 | fosc = 20 MHz, VDD = 5 V | | 25 | 60 | mA |
| | IDD2 | fosc = 8 MHz, VDD = 5 V | | 10 | 25 | mA |
| | IDD3 | fx = 32 kHz, VDD = 3 V | | 30 | 100 | µA |
| Supply current at HALT | IDD4 | fx = 32 kHz, VDD = 3 V, Ta = 25°C | | 4 | 8 | µA |
| | IDD5 | fx = 32 kHz, VDD = 3 V, Ta = –40°C to +85°C | | | T.B.D(30) | µA |
| Supply current at STOP | IDD6 | VDD = 5 V, Ta = 25°C | | | 2 | µA |
| | IDD7 | VDD = 5 V, Ta = –40°C to +85°C | | | T.B.D(50) | µA |

**See the next page for pin assignment and support tool.**

## Pin Assignment




QFP100-P-1818B *Lead-free (under planning)

LQFP100-P-1414 *Lead-free (under planning)

## Support Tool

| | | |
|---|---|---|
| **In-circuit Emulator** | PX-ICE101C / D + PX-PRB101C65-QFP100-P-1818B (under planning) | |
| **Flash Memory Built-in Type** | Type | MN101CF65D (under planning) |
| | ROM (× 8-bit) | 64 K |
| | RAM (× 8-bit) | 2 K |
| | Minimum instruction execution time | 0.1 µs (at 4.5 V to 5.5 V, 20 MHz)<br>0.25 µs (at 2.7 V to 5.5 V, 8 MHz)<br>62.5 µs (at 2.5 V to 5.5 V, 32 kHz) |
| | Package | QFP100-P-1818B *Lead-free (under planning),<br>LQFP100-P-1414 *Lead-free (under planning) |

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