# ❑ MN103SE3 Series

| Type | MN103SE3K | MN103SFE3K |
|---|---|---|
| Internal ROM type | Mask ROM | FLASH |
| ROM (byte) | 256K | |
| RAM (byte) | 8K | |
| Package (Lead-free) | QFP100-P-1818B | |
| Minimum Instruction Execution Time | 16.7 ns (4.5 V to 5.5 V) | |

## ■ Interrupts

9 external interrupts
47 internal interrupts: Watchdog timer. Timer. Serial I/F. PWM. A/D conversion finish. System error

## ■ Timer Counter

8-bit timer × 12
Timer 0 to 7, 14 to 17 Interval timer. Event count. Cascading connectable
16-bit timer × 6
Timer 8 to 10 .....Interval timer. Event count. PWM output. Double buffer
Timer 11 .....Interval timer. Event count. PWM output (6 pins simultaneous output are available). Double buffer
Timer 12, 13 .....Interval timer. Double buffer. Start synchronized with 3-phase PWM are available
Watchdog timer × 1

## ■ Serial interface

UART (full duplex) /Synchronous interfaces selective × 3
Serial 0, 1.....7-bit, 8-bit transmission
Serial 2.....1-bit to 8-bit transmission (synchronous). 2 and 3 channel type selectable (synchronous)

## ■ I/O Pins

I/O 81 : Common use × 81

## ■ A/D converter

10-bit × 3 unit. 20 channels
Minimum conversion time: 1.0 µs
Simultaneous conversion of 3 series are available
Conversion start synchronized with 3-phase PWM or timer 12, 13 are available

## ■ Motor Control PWM

16-bit 3-phase PWM × 2
Triangular waveform or jigsaw waveform. Dead time setup. Double buffer. Output polar switching is available. PWM output pin protect function

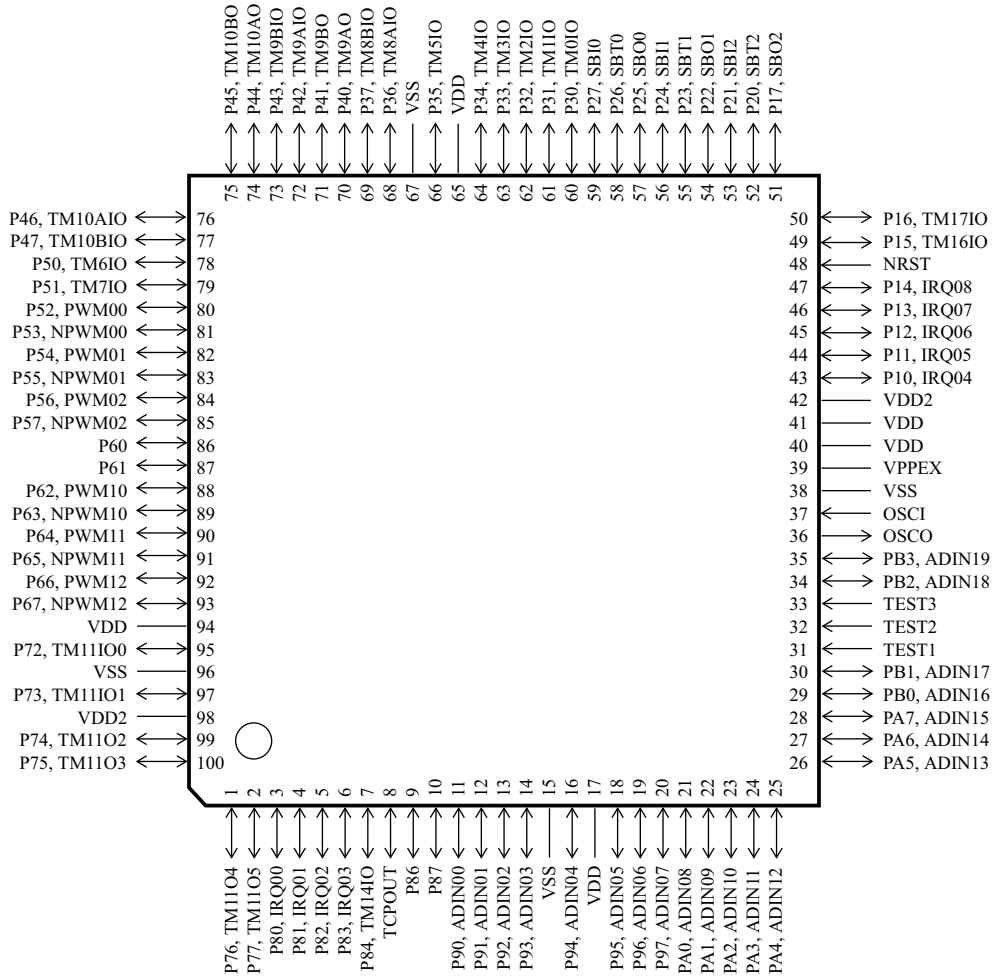
## ■ Electrical Charactreistics (A/D converter characteristics)

| Parameter | Symbol | Condition | Limit | | | Unit |
|---|---|---|---|---|---|---|
| | | | min | typ | max | |
| Non-linear error | | 10-bit | | | ±3 | LSB |
| A/D conversion time | TAD | | 1.0 | | | µs |
| Analog input voltage | VIA | | VSS | | VDD | V |

Ta = 25 °C. VDD = 5.0 V. VSS = 0 V

■ Pin Assignment

QFP100-P-1818B



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