

□ MN103SJ9 Series

| | |
|------------------------------------|--------------------------|
| Type | MN103SFJ9D |
| Internal ROM type | FLASH |
| ROM (byte) | 64K |
| RAM (byte) | 4K |
| Package (Lead-free) | QFP044-P-1010F |
| Minimum Instruction Execution Time | 16.7 ns (4.5 V to 5.5 V) |

■ Interrupts

- 8 external interrupts
- 30 internal interrupts: Watchdog timer. Timer. Serial I/F. PWM. A/D conversion finish. System error. Fail-safe function

■ Timer Counter

- 8-bit timer × 8
 - Timer 0 to 7Interval timer. Event count. Cascading connectable
- 16-bit timer × 3
 - Timer 16Interval timer. Event count. PWM output. Double buffer
 - Timer 18Interval timer. Event count. PWM output (6 pins simultaneous output are available). Double buffer
 - Timer 20Interval 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, 11-bit to 8-bit transmission (synchronous). 2 and 3 channel type selectable (synchronous)

■ I/O Pins

- I/O 30 : Common use × 30

■ A/D converter

- 10-bit × 1 unit. 12-bit × 1 unit. 8 channels
- Minimum conversion time: 1.0 μs
- Simultaneous conversion of 2 series are available
- Conversion start synchronized with 3-phase PWM or timer 20 are available

■ Motor Control PWM

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

■ Clock monitoring function

- The stop of the system clock or abnormal frequency of the system clock can be detected

■ Reset

- Automatic Reset

■ Internal oscillation

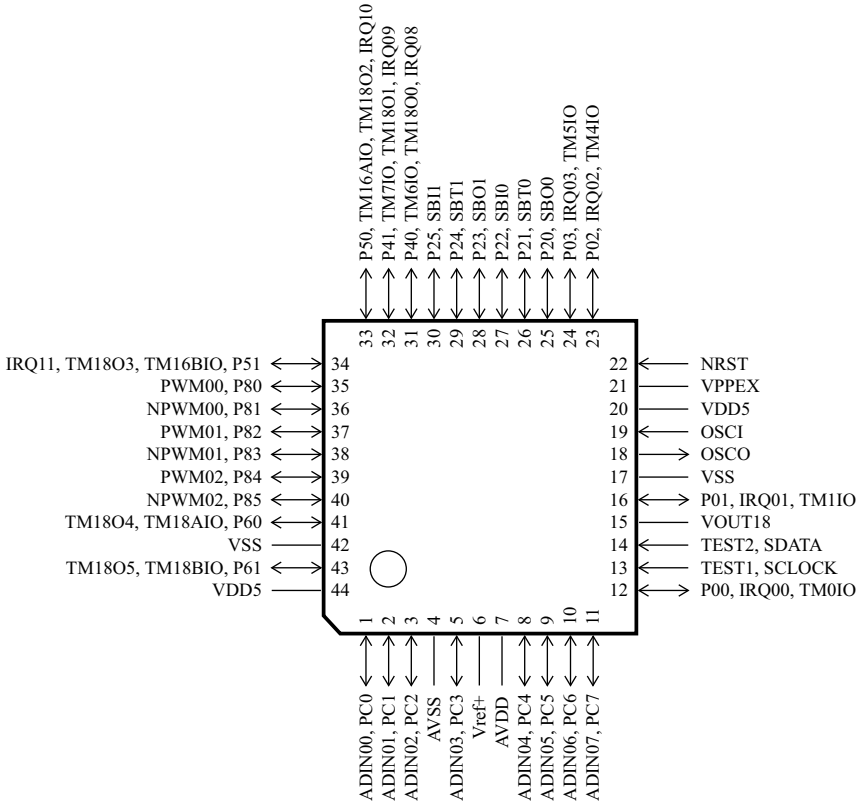
- 10 MHz

■ Electrical Characteristics (A/D converter characteristics)

| Parameter | Symbol | Condition | Limit | | | Unit |
|----------------------|--------|-----------------|-------|-----|-----|------|
| | | | min | typ | max | |
| Non-linear error | | 10 bit / 12 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
QFP044-P-1010F



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