

# □ MN103S927, MN103S92A

Type	MN103S927	MN103S92A	MN103SF92G
Internal ROM type	Mask ROM		FLASH
ROM (byte)	16K	32K	128K
RAM (byte)	2K		4K
Package (Lead-free)	LQFP064-P-1414 (Under development)		LQFP064-P-1414A
Minimum Instruction Execution Time	25 ns (at 3.0 V to 3.6 V, 10 MHz) * at internal 4 times oscillation used		25 ns (at 3.0 V to 3.6 V, 10 MHz)

## ■ Interrupts

8 external interrupts  
18 internal interrupts : watch dog timer, timer, serial I/F, PWM, A/D, system error

## ■ Timer Counter

8-bit timer × 4

Timer 0 to 3 ..... Interval timer, Event counter, Cascading connectable

16-bit timer × 2

Timer 8 ..... Interval timer, Event counter, PWM output (6 pins simultaneous output are available), Double buffer  
Timer 11 ..... Interval timer, Double buffer, Start synchronized with 3-phase PWM are available

Watch dog timer

## ■ Serial interface

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

## ■ Expanded Calculation Functions

Multiply-and-accumulate; Multiply saturation

## ■ I/O Pins

I/O	41	Exclusive × 11, common use × 30
Input	8	Common use × 8

## ■ A/D converter

10-bit × 3 unit, 2 inputs × 1, 6 inputs × 1  
Simultaneous conversion of 2 series are available, With S/H,  
Conversion start synchronized with 3-phase PWM or timer 11 are available

## ■ Motor Control PWM

16-bit 3-phase PWM × 1  
Minimum resolution : 50 ns  
Triangular waveform or jigsaw waveform dead time setup,  
Double buffer, Output polar switching is available, PWM output pin protect function

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

Parameter	Symbol	Condition	Limit			Unit
			min	typ	max	
Non-linear error		10-bit			±3	LSB
A/D conversion time	tAD			1.5		μs
Analog input voltage	VIA		VSS		VDD	V

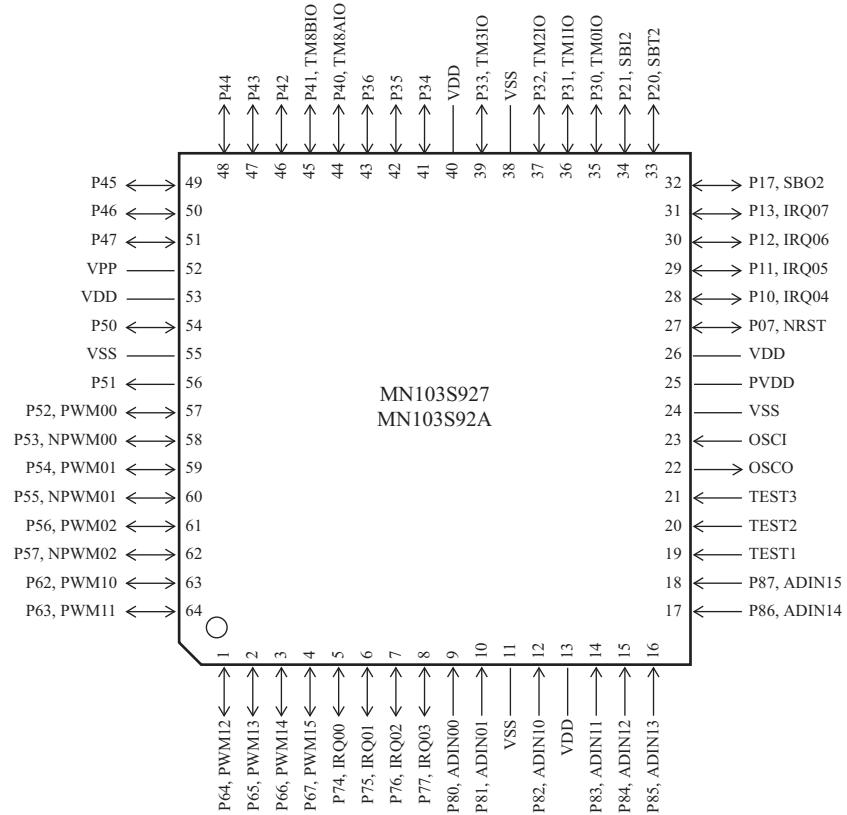
(Ta = 25°C, VDD = 3.0 V, VSS = 0 V)

■ Development tools

In-circuit Emulator  
PX-ICE-103S92

On-board Development Tools  
PX-ODB103-DO

■ Pin Assignment



**LQFP064-P-1414  
LQFP064-P-1414A**

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