☐ MN103SB9N

Type	MN103SB9N	MN103SFB9R
Internal ROM type	Mask ROM	FLASH
ROM (byte)	512K	1024K
RAM (byte)	32K	
Package (Lead-free)	TQFP128-P-1414A (ES (Engineering Sample) available)	
Minimum Instruction Execution Time	16.7 ns (at 2.7 V to 3.6 V, 60 MHz)	

■ **Interrupts**

RESET, IRQ × 9, NMI, Timer × 28, SIF × 10, I²C × 3, Time base timer × 2, DMA × 12, WDT, A/D, System error

■ **Timer Counter**

8-bit timer × 10

Reload-down count, Cascade connection possible (usable as a 16-bit to 32-bit timer)

16-bit timer × 6

Up-down count, Input capture function, PWM generating function, Compare/capture register 2-ch.

Time base timer × 1

Watchdog timer × 1

■ **Serial interface**

UART/synchronous/multi-master I²C interface selective : 3

UART/synchronous interface selective : 2

■ **DMA controller**

Number of channels : 4
Unit of transfer : 8/16/32 bits
Max. Transfer cycles : 65535
Staring factor : external interrupt, timer factor, serial transmission/reception factor, I²C transmission/reception factor, external transmission request factor, A/D conversion finish, software factor
Transfer method : 2-bus cycle transfer
Adressing modes : fixed, increment, decrement
Transfer modes : word transfer, burst transfer, intermittent transfer

■ **Expanded Calculation Functions**

Multiply-and-accumulate; Multiply saturation

■ **I/O Pins**

I/O	104	Common use

■ **A/D converter**

10-bit × 12-ch.

■ **ROM Correction**

8-ch.

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

Parameter	Symbol	Condition	Limit			Unit
			min	typ	max	
Resolution					10	Bits
Non-linear error		AVDD = 3.3 V, VSS = 0 V			±4	LSB
Differential non-linearity error					±4	LSB

Panasonic

■ Development tools
  In-circuit Emulator
    PX-ICE-103SB9

  On-board Development Tools
    PX-ODB103S-D0

■ Pin Assignment

TQFP128-P-1414A