❑ MN103SH6 Series

Type	MN103SFH6K
Internal ROM type	FLASH
ROM (byte)	256K
RAM (byte)	12K
Package (Lead-free)	UBGA128-P-0707AE
Minimum Instruction Execution Time	25 ns (2.2 V to 5.5 V)

■ Interrupts

8 external interrupts
68 internal interrupts: Watchdog timer. Timer. 16-bit timer expansion PWM finish. Serial I/F. A/D conversion finish. DMA. System error

■ Timer Counter

8-bit timer × 8
Timer 0 to 7 .....Interval timer. Event count. Cascading connectable (Usable as 16-bit, 24-bit and 32-bit counter)
16-bit timer × 8
Timer C0 to C5.....Interval timer. Event count. Input capture. PWM output (Cycle and pulse width variable)
Timer C6, C7.....Interval timer. Event count. Input capture. PWM output (Cycle and pulse width variable). Expansion PWM output

■ Serial interface

Multi-master I^2C/Synchronous interface selective × 2
UART (full duplex) /Synchronous interfaces selective × 3

■ DMA controller

Number of channels: 4 channels

■ I/O Pins

I/O 82 : Common use × 82

■ A/D converter

(10-bit resolution 9 channels) × 2 unit
Minimum conversion time: 1.3 µs
Simultaneous conversion of 2 unit are available
Conversion start synchronized with timer 1, 3, C0, C1 or PWM for motor automatic control (PID) are available

■ D/A converter

(8-bit resolution 1 channel) × 6 unit

■ Motor Control PWM

PWM for motor automatic control (PID) × 3
PID operation and motor control PWM output (operation parameter and PWM parameter adjustments possible)

■ Electrical Charactreistics (A/D converter characteristics)

Parameter	Symbol	Condition	Limit			Unit
			min	typ	max	
Non-linear error		VDD5 = 5.0 V. VSS = 0 V Vref+ = 5.0 V. TAD = 100 ns			±3	LSB
Differential non-linearity error					±3	LSB
A/D conversion time			1.3			µs
Analog input voltage			VSS		Vref+	V

■ Pin Assignment

UBGA128-P-0707AE

	A	B	C	D	E	F	G	H	J	K	L	M	
12	N.C.	N.C.	P62, TMC4BIO	P60, TMC3BIO, IRQ7	P56, TMC2BIO	PA1, IRQ6	P53, TMC7EP3, TMC7DIO	P51, TMC7EP1, TMC7BIO	P45, TMC6EP1, TMC6BIO	P43, PIDBNZ, PIDPWMZ	P37, PIDBNY, PIDPWMX	N.C.	12
11	P65, DACOUT0	P67, DACOUT2	P64, TMC5BIO	P63, TMC5AIO	P57, TMC3AIO	P55, TMC2AIO	P52, TMC7EP2, TMC7CIO	P46, TMC6EP2, TMC6CIO	P42, PIDBPZ, PIDDIRZ	P40, PIDAPZ, PIDDIRY, TMC1AIO	N.C.	P36, PIDBPY, PIDDIRX	11
10	P70, DACOUT3	P71, DACOUT4	P66, DACOUT1	P61, TMC4AIO	VDD18	P54, CLKOUT	P50, TMC7EP0, TMC7AIO	P47, TMC6EP3, TMC6DIO	P41, PIDANZ, PIDPWMY, TMC1BIO	P34, PIDAPY, PIDFWDZ	P35, PIDANY, PIDREVZ	P33, PIDBNX, PIDREVY	10
9	VSS	P73, IRQ0	P72, DACOUT5	N.C.	N.C.	N.C.	VSS	P44, TMC6EP0, TMC6AIO	N.C.	P30, PIDAPX, PIDFWDX, SBI4	P32, PIDBPX, PIDFWDY, SBT4	P31, PIDANX, PIDREVX, SBO4	9
8	VSS	VDD5	VDD5	N.C.					N.C.	P27, IRQ5	VDD5	VSS	8
7	P75, ADIN01	P76, ADIN02	P74, ADIN00	N.C.					N.C.	VDD5	VSS	VDD5	7
6	P77, ADIN03	P81, ADIN05	P80, ADIN04	N.C.					N.C.	P24, SBO3	P26, IRQ4	P25, SBT3	6
5	P82, ADIN06	P84, ADIN08	P83, ADIN07	N.C.					N.C.	P21, SBO2	P23, SBI3	P22, SBT2	5
4	P85, IRQ1	Vref1+	Vref0+	N.C.	P97, IRQ2	VSS	N.C.	N.C.	N.C.	P16, SBO1	P20, SBI2	P17, SBT1	4
3	P86, ADIN10	P90, ADIN12	P87, ADIN11	P93, ADIN15	SDATA, TEST2	TEST3	P00, TM0IO	P03, TM3IO	P13, SBO0	P12, SBI0	P15, SBI1	P14, SBT0	3
2	P91, ADIN13	N.C.	P94, ADIN16	P95, ADIN17	SCLOCK, TEST1	OSCO	VPPEX	P02, TM2IO	P05, TM5IO	P06, TM6IO	P10, TMC0AIO	P11, TMC0BIO	2
1	N.C.	P92, ADIN14	P96, ADIN18	PA0, IRQ3	VDD18	OSCI	VDD5	NRST	P01, TM1IO	P04, TM4IO	P07, TM7IO	N.C.	1
	A	B	C	D	E	F	G	H	J	K	L	M	

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