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What is "[Embedded - Microcontrollers](#)"?

"[Embedded - Microcontrollers](#)" refer to small, integrated circuits designed to perform specific tasks within larger systems. These microcontrollers are essentially compact computers on a single chip, containing a processor core, memory, and programmable input/output peripherals. They are called "embedded" because they are embedded within electronic devices to control various functions, rather than serving as standalone computers. Microcontrollers are crucial in modern electronics, providing the intelligence and control needed for a wide range of applications.

Applications of "[Embedded - Microcontrollers](#)"

Details

Product Status	Obsolete
Core Processor	FR81S
Core Size	32-Bit Single-Core
Speed	80MHz
Connectivity	CANbus, CSIO, I ² C, LINbus, SPI, UART/USART
Peripherals	DMA, LVD, POR, PWM, WDT
Number of I/O	76
Program Memory Size	320KB (320K x 8)
Program Memory Type	FLASH
EEPROM Size	64K x 8
RAM Size	56K x 8
Voltage - Supply (Vcc/Vdd)	2.7V ~ 5.5V
Data Converters	A/D 37x12b; D/A 2x8b
Oscillator Type	External
Operating Temperature	-40°C ~ 105°C (TA)
Mounting Type	Surface Mount
Package / Case	100-LQFP
Supplier Device Package	100-LQFP (14x14)
Purchase URL	https://www.e-xfl.com/product-detail/infineon-technologies/mb91f522fwcpmc-gse1

Product lineup comparison 80 pins

	MB91F522D	MB91F523D	MB91F524D	MB91F525D	MB91F526D
System Clock	On chip PLL Clock multiple method				
Minimum instruction execution time	12.5ns (80MHz)				
Flash Capacity (Program)	(256+64)KB	(384+64)KB	(512+64)KB	(768+64)KB	(1024+64)KB
Flash Capacity (Data)	64KB				
RAM Capacity	(48+8)KB	(64+8)KB	(96+8)KB	(128+8)KB	
External BUS I/F (22address/16data/4cs)	None				
DMA Transfer	16ch				
16-bit Base Timer	1ch				
Free-run Timer	16bit×3ch, 32bit×2ch				
Input capture	16bit×4ch, 32bit×5ch				
Output Compare	16bit×6ch, 32bit×4ch				
16-bit Reload Timer	7ch				
PPG	16bit×27ch				
Up/down Counter	2ch				
Clock Supervisor	Yes				
External Interrupt	8ch×2units				
A/D converter	12bit×16ch (1unit), 12bit×16ch (1unit)				
D/A converter (8bit)	1ch				
Multi-Function Serial Interface	9ch ^{*1}				
CAN	64msg×2ch/128msg×1ch				
Hardware Watchdog Timer	Yes				
CRC Formation	Yes				
Low-voltage detection reset	Yes				
Flash Security	Yes				
ECC Flash/WorkFlash	Yes				
ECC RAM	Yes				
Memory Protection Function (MPU)	Yes				
Floating point arithmetic (FPU)	Yes				
Real Time Clock (RTC)	Yes				
General-purpose port (#GPIOs)	56 ports				
SSCG	Yes				
Sub clock	Yes				
CR oscillator	Yes				
NMI request function	Yes				
OCD (On Chip Debug)	Yes				
TPU (Timing Protection Unit)	Yes				
Key code register	Yes				
Waveform generator	6ch				
Operation guaranteed temperature (T _A)	-40°C to +125°C				
Power supply	2.7V to 5.5V ^{*2}				
Package	LQH080				

*1: Only channel 5, channel 6 and channel 11 support the I²C (standard mode).

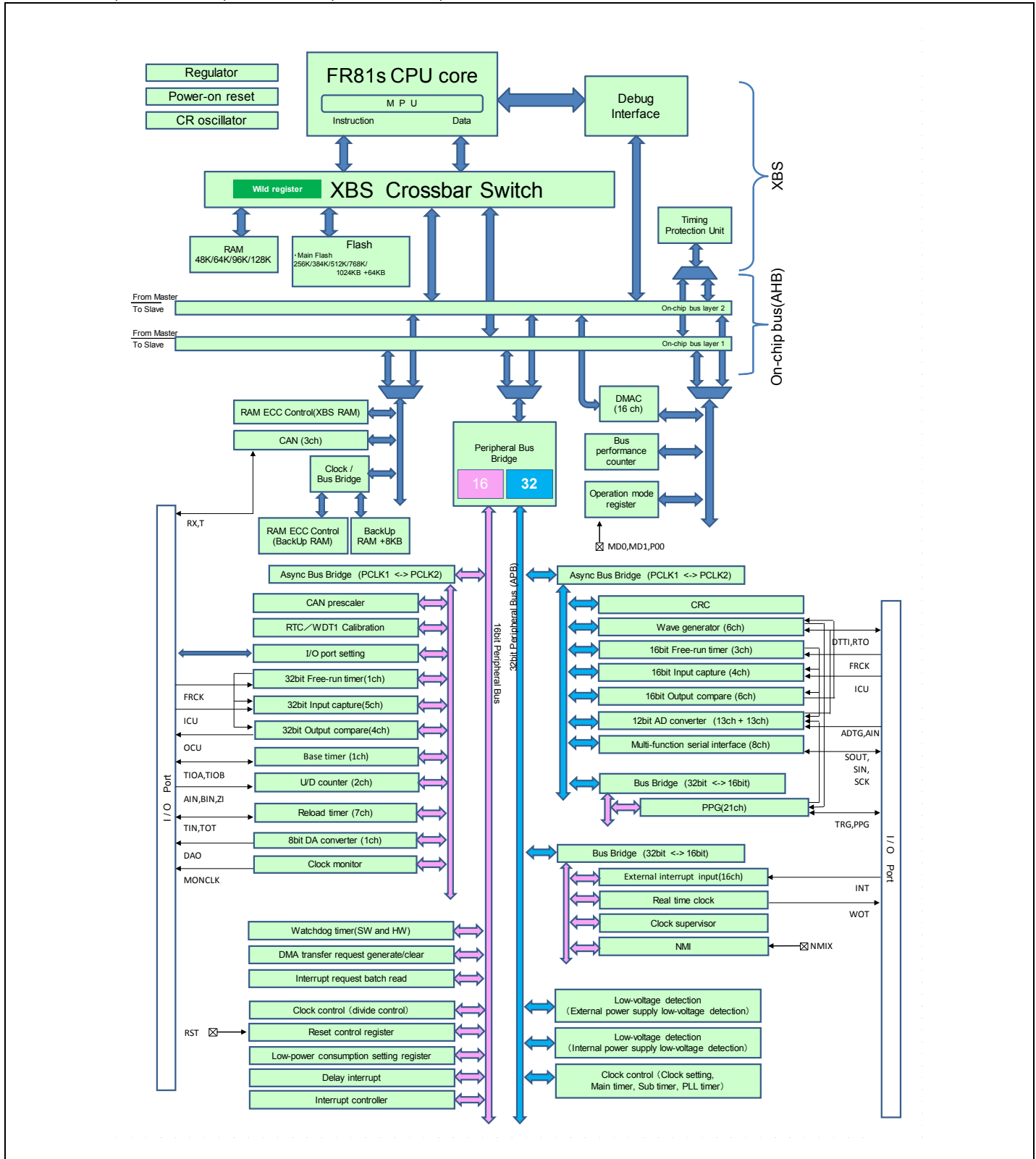
*2: The initial detection voltage of the external low voltage detection is 2.8V±8% (2.576V to 3.024V). This LVD setting and internal LVD cannot be used to reliably generate a reset before voltage dips below minimum guaranteed operation voltage, as these detection levels are below the minimum guaranteed MCU operation voltage. Below the minimum guaranteed MCU operation voltage, MCU operations are not guaranteed with the exception of LVD.

Pin no.						Pin Name	Polarity	I/O circuit types*8	Function*9
64	80	100	120	144	176				
5 ^{*1}	7 ^{*1}	9 ^{*1}	12 ^{*1}	15	19	P032	-	A	General-purpose I/O port
						A04 ^{*2, *3, *4, *5}	-		External bus/Address bit4 output (0)
						SCS43_1	-		Serial chip select 43 output (1)
						PPG30_0	-		PPG ch.30 output (0)
						TOT3_0	-		Reload timer ch.3 output (0)
						RTO2_1	-		Waveform generator ch.2 output pin (1)
6 ^{*1}	8 ^{*1}	10 ^{*1}	13 ^{*1}	16	20	P033	-	A	General-purpose I/O port
						A05 ^{*2, *3, *4, *5}	-		External bus/Address bit5 output (0)
						PPG31_0	-		PPG ch.31 output (0)
						ICU3_3	-		Input capture ch.3 input (3)
						TIN4_0	-		Reload timer ch.4 event input (0)
						RTO1_1	-		Waveform generator ch.1 output pin (1)
7 ^{*1}	9 ^{*1}	11 ^{*1}	14 ^{*1}	17	21	SCK3_2	-		Multi-function serial ch.3 clock I/O (2)
						P034	-	A	General-purpose I/O port
						A06 ^{*2, *3, *4, *5}	-		External bus/Address bit6 output (0)
						OCU11_1	-		Output compare ch.11 output (1)
						ICU2_3	-		Input capture ch.2 input (3)
						TIN5_0	-		Reload timer ch.5 event input (0)
-	-	12	15	18	22	RTO0_1	-	A	Waveform generator ch.0 output pin (1)
						SOT3_2	-		Multi-function serial ch.3 serial data output (2)
						P150	-	F	General-purpose I/O port
						SOT8_0/ SDA8	-		Multi-function serial ch.8 serial data output (0)/ I ² C bus serial data I/O
						OCU10_1	-		Output compare ch.10 output (1)
						TRG6_0	-		PPG trigger 6 input (0)
8 ^{*1}	10 ^{*1}	13	16	19	23	ICU1_3	-		Input capture ch.1 input (3)
						TIN6_0	-		Reload timer ch.6 event input (0)
						P151	-	F	General-purpose I/O port
						SCK8_0/ SCL8 ^{*2, *3}	-		Multi-function serial ch.8 clock I/O (0)/ I ² C bus serial clock I/O
						OCU9_1	-		Output compare ch.9 output (1)
						TRG7_0	-		PPG trigger 7 input (0)
						ICU0_3	-		Input capture ch.0 input (3)
						TIN7_0	-		Reload timer ch.7 event input (0)
						ZIN0_2	-		U/D counter ch.0 ZIN input (2)
						DTTI_1	-		Waveform generator ch.1 input pin (1)

Pin no.						Pin Name	Polarity	I/O circuit types*8	Function*9
64	80	100	120	144	176				
-	-	40	46	54	68	P070	-	A	General-purpose I/O port
-	-	-	-	-	-	ICU0_2	-		Input capture ch.0 input (2)
26	33	41	47	55	69	P071	-	G	General-purpose I/O port
						SCK4_2	-		Multi-function serial ch.4 clock I/O (2)
						AN35	-		ADC analog 35 input
						ICU1_2	-		Input capture ch.1 input (2)
						MONCLK	-		Clock monitor output pin
						-	-		-
27	34	42	48	56	70	P072	-	G	General-purpose I/O port
						SIN4_0	-		Multi-function serial ch.4 serial data input (0)
						AN34	-		ADC analog 34 input
						ICU2_2	-		Input capture ch.2 input (2)
						INT5_0	-		INT5 External interrupt input (0)
-	35 ⁻³	43 ⁻⁴	49	57	71	P073	-	D	General-purpose I/O port
						SOT4_0/ SDA4 ^{-3, *4}	-		Multi-function serial ch.4 serial data output (0)/I ² C bus serial data I/O
						AN33	-		ADC analog 33 input
						ICU3_2	-		Input capture ch.3 input (2)
-	-	-	-	-	72	P186	-	A	General-purpose I/O port
						PPG46_0	-		PPG ch.46 output (0)
-	-	-	-	-	73	P187	-	A	General-purpose I/O port
						PPG47_0	-		PPG ch.47 output (0)
-	-	-	50	58	74	P074	-	E	General-purpose I/O port
						SCK4_0/ SCL4	-		Multi-function serial ch.4 clock I/O (0)/ I ² C bus serial clock I/O
-	-	-	51	59	75	P075	-	F	General-purpose I/O port
						SIN3_0	-		Multi-function serial ch.3 serial data input (0)
						INT4_0	-		INT4 External interrupt input (0)
-	-	-	52	60	76	P076	-	E	General-purpose I/O port
						SOT3_0/ SDA3	-		Multi-function serial ch.3 serial data output (0)/I ² C bus serial data I/O
-	-	-	53	61	77	P077	-	E	General-purpose I/O port
						SCK3_0/ SCL3	-		Multi-function serial ch.3 clock I/O (0)/ I ² C bus serial clock I/O
-	-	44	54	62	78	P152	-	A	General-purpose I/O port
						SCS53_0	-		Serial chip select 53 output (0)
28	36	45	55	63	79	P153	-	G	General-purpose I/O port
						SCK5_0/ SCL5	-		Multi-function serial ch.5 clock I/O (0)/ I ² C bus serial clock I/O
						AN32	-		ADC analog 32 input
						FRCK1_1	-		Free-run timer 1 clock input (1)
						INT4_1	-		INT4 External interrupt input (1)

7. Block Diagram

MB91F522B, MB91F523B, MB91F524B, MB91F525B, MB91F526B



Address	Address offset value / Register name				Block
	+0	+1	+2	+3	
000074 _H	—	FRS9 [R/W] B,H,W --00--00 --00--00 --00--00			Free-run timer selection register 9
000078 _H	—	—	—	OCLS67 [R/W] B,H,W ----0000	OCU67 Output level control register
00007C _H	—	—	—	OCLS89 [R/W] B,H,W ----0000	OCU89 Output level control register
000080 _H	BT0TMR [R] H 00000000 00000000		BT0TMCR [R/W] H -000--00 -000-000		Base Timer 0
000084 _H	BT0TMCR2 [R/W] B -----0	BT0STC [R/W] B -0-0-0-0	—	—	
000088 _H	BT0PCSR/BT0PRL [R/W] H 00000000 00000000		BT0PDUT/BT0PRLH/BT0DTBF [R/W] H 00000000 00000000		
00008C _H	—	—	—	—	Reserved
000090 _H	BT1TMR [R] H 00000000 00000000		BT1TMCR [R/W] H -000--00 -000-000		Base Timer 1
000094 _H	BT1TMCR2 [R/W] B -----0	BT1STC [R/W] B -0-0-0-0	—	—	
000098 _H	BT1PCSR/BT1PRL [R/W] H 00000000 00000000		BT1PDUT/BT1PRLH/BT1DTBF [R/W] H 00000000 00000000		
00009C _H	BTSEL01 [R/W] B ----0000	—	BTSSSR [W] B,H -----11		Base Timer 0,1
0000A0 _H to 0000FC _H	—	—	—	—	Reserved
000100 _H	TMRLRA1 [R/W] H XXXXXXXX XXXXXXXX		TMR1 [R] H XXXXXXXX XXXXXXXX		Reload Timer 1
000104 _H	TMRLRB1 [R/W] H XXXXXXXX XXXXXXXX		TMCSR1 [R/W] B, H,W 00000000 0-000000		
000108 _H	TMRLRA2 [R/W] H XXXXXXXX XXXXXXXX		TMR2 [R] H XXXXXXXX XXXXXXXX		Reload Timer 2
00010C _H	TMRLRB2 [R/W] H XXXXXXXX XXXXXXXX		TMCSR2 [R/W] B,H,W 00000000 0-000000		
000110 _H	TMRLRA3 [R/W] H XXXXXXXX XXXXXXXX		TMR3 [R] H XXXXXXXX XXXXXXXX		Reload Timer 3
000114 _H	TMRLRB3 [R/W] H XXXXXXXX XXXXXXXX		TMCSR3 [R/W] B,H,W 00000000 0-000000		
000118 _H	MSCY4 [R] H,W XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX				Input Capture 4,5 Cycle measurement data register 45
00011C _H	MSCY5 [R] H,W XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX				

Address	Address offset value / Register name				Block
	+0	+1	+2	+3	
000C4C _H	DDAR4 [R/W] W XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX				DMA Controller [S]
000C50 _H	DCCR5 [R/W] W 0----000 --00--00 00000000 0-000000				
000C54 _H	DCSR5 [R/W] H 0----- ----000		DTCR5 [R/W] H 00000000 00000000		
000C58 _H	DSAR5 [R/W] W XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX				
000C5C _H	DDAR5 [R/W] W XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX				
000C60 _H	DCCR6 [R/W] W 0----000 --00--00 00000000 0-000000				
000C64 _H	DCSR6 [R/W] H 0----- ----000		DTCR6 [R/W] H 00000000 00000000		
000C68 _H	DSAR6 [R/W] W XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX				
000C6C _H	DDAR6 [R/W] W XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX				
000C70 _H	DCCR7 [R/W] W 0----000 --00--00 00000000 0-000000				
000C74 _H	DCSR7 [R/W] H 0----- ----000		DTCR7 [R/W] H 00000000 00000000		
000C78 _H	DSAR7 [R/W] W XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX				
000C7C _H	DDAR7 [R/W] W XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX				
000C80 _H	DCCR8 [R/W] W 0----000 --00--00 00000000 0-000000				
000C84 _H	DCSR8 [R/W] H 0----- ----000		DTCR8 [R/W] H 00000000 00000000		
000C88 _H	DSAR8 [R/W] W XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX				
000C8C _H	DDAR8 [R/W] W XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX				
000C90 _H	DCCR9 [R/W] W 0----000 --00--00 00000000 0-000000				
000C94 _H	DCSR9 [R/W] H 0----- ----000		DTCR9 [R/W] H 00000000 00000000		
000C98 _H	DSAR9 [R/W] W XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX				
000C9C _H	DDAR9 [R/W] W XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX				

Address	Address offset value / Register name				Block
	+0	+1	+2	+3	
00125C _H	OCCPB4/OCCP4 [R/W] H,W 00000000 00000000		OCCPB5/OCCP5 [R/W] H,W 00000000 00000000		16-bit Output compare 4/5
001260 _H	OCS45 [R/W] B,H,W -110--00 00001100		—	OCMOD45 [R/W] B,H,W -----00	
001264 _H to 001278 _H	—	—	—	—	Reserved
00127C _H	IPCP0 [R] H,W 00000000 00000000		IPCP1 [R] H,W 00000000 00000000		16-bit Input capture 0/1
001280 _H	ICS01 [R/W] B,H,W -----00 00000000		—	LSYNS [R/W] B,H,W ----0000	
001284 _H	IPCP2 [R] H,W 00000000 00000000		IPCP3 [R] H,W 00000000 00000000		16-bit Input capture 2/3
001288 _H	ICS23 [R/W] B,H,W -----00 00000000		—	—	
00128C _H to 001298 _H	—	—	—	—	Reserved
00129C _H	—	—	—	—	Reserved
0012A0 _H	TMRR0 [R/W] H,W 00000000 00000001		TMRR1 [R/W] H,W 00000000 00000001		Waveform generator 0/1/2
0012A4 _H	TMRR2 [R/W] H,W 00000000 00000001		—	—	
0012A8 _H	DTSCR0 [R/W] B,H,W 00000000	DTSCR1 [R/W] B,H,W 00000000	DTSCR2 [R/W] B,H,W 00000000	—	
0012AC _H	—	DTIR0 [R/W] B,H,W 000000--	—	DTMNS0 [R/W] B,H,W 00---000	
0012B0 _H	—	SIGCR10 [R/W] B,H,W 00000000	—	SIGCR20 [R/W] B,H,W 000000-1	
0012B4 _H	PICS0 [R/W] B,H,W 000000-- -----				
0012B8 _H to 0012CC _H	—	—	—	—	Reserved
0012D0 _H	FRS5 [R/W] B,H,W --00--00 --00--00 --00--00 --00--00				16-bit Free-run timer selection A/D activation compare

Address	Address offset value / Register name				Block
	+0	+1	+2	+3	
001500 _H	ADTCD36[R] B,H,W 10--0000 00000000		ADTCD37[R] B,H,W 10--0000 00000000		12-bit A/D converter 2/2 unit
001504 _H	ADTCD38[R] B,H,W 10--0000 00000000		ADTCD39[R] B,H,W 10--0000 00000000		
001508 _H	ADTCD40[R] B,H,W 10--0000 00000000		ADTCD41[R] B,H,W 10--0000 00000000		
00150C _H	ADTCD42[R] B,H,W 10--0000 00000000		ADTCD43[R] B,H,W 10--0000 00000000		
001510 _H	ADTCD44[R] B,H,W 10--0000 00000000		ADTCD45[R] B,H,W 10--0000 00000000		
001514 _H	ADTCD46[R] B,H,W 10--0000 00000000		ADTCD47[R] B,H,W 10--0000 00000000		
001518 _H to 001534 _H	—	—	—	—	Reserved
001538 _H	ADTECS32[R/W] B,H,W -----0 ----0000		ADTECS33[R/W] B,H,W -----0 ----0000		12-bit A/D converter 2/2 unit
00153C _H	ADTECS34[R/W] B,H,W -----0 ----0000		ADTECS35[R/W] B,H,W -----0 ----0000		
001540 _H	ADTECS36[R/W] B,H,W -----0 ----0000		ADTECS37[R/W] B,H,W -----0 ----0000		
001544 _H	ADTECS38[R/W] B,H,W -----0 ----0000		ADTECS39[R/W] B,H,W -----0 ----0000		
001548 _H	ADTECS40[R/W] B,H,W -----0 ----0000		ADTECS41[R/W] B,H,W -----0 ----0000		
00154C _H	ADTECS42[R/W] B,H,W -----0 ----0000		ADTECS43[R/W] B,H,W -----0 ----0000		
001550 _H	ADTECS44[R/W] B,H,W -----0 ----0000		ADTECS45[R/W] B,H,W -----0 ----0000		
001554 _H	ADTECS46[R/W] B,H,W -----0 ----0000		ADTECS47[R/W] B,H,W -----0 ----0000		
001558 _H to 001574 _H	—	—	—	—	Reserved
001578 _H	ADRCUT4[R/W] B,H,W ----0000 00000000		ADRCLT4[R/W] B,H,W ----0000 00000000		12-bit A/D converter 2/2 unit
00157C _H	ADRCUT5[R/W] B,H,W ----0000 00000000		ADRCLT5[R/W] B,H,W ----0000 00000000		
001580 _H	ADRCUT6[R/W] B,H,W ----0000 00000000		ADRCLT6[R/W] B,H,W ----0000 00000000		
001584 _H	ADRCUT7[R/W] B,H,W ----0000 00000000		ADRCLT7[R/W] B,H,W ----0000 00000000		

Address	Address offset value / Register name				Block
	+0	+1	+2	+3	
001A80 _H	PCN202 [R/W] B,H,W --000000 ----110		PSDR2 [R/W] H,W 00000000 00000000		PPG2 * for communication
001A84 _H	PTPC2 [R/W] H,W 00000000 00000000		PCMDWD2 [R/W] B,H,W ----- ----0000		
001A88 _H	PHCSR2 [W] H,W XXXXXXXX XXXXXXXX		PLCSR2 [W] H,W XXXXXXXX XXXXXXXX		
001A8C _H	PHDUT2 [W] H,W XXXXXXXX XXXXXXXX		PLDUT2 [W] H,W XXXXXXXX XXXXXXXX		
001A90 _H	PCMDDT2 [R/W] H,W 00000000 00000000		—	—	
001A94 _H	PCN3 [R/W] B,H,W 00000000 000000-0		PCSR3 [W] H,W XXXXXXXX XXXXXXXX		PPG3 * for communication
001A98 _H	PDUT3 [W] H,W XXXXXXXX XXXXXXXX		PTMR3 [R] H,W 11111111 11111111		
001A9C _H	PCN203 [R/W] B,H,W --000000 ----110		PSDR3 [R/W] H,W 00000000 00000000		
001AA0 _H	PTPC3 [R/W] H,W 00000000 00000000		PCMDWD3 [R/W] B,H,W ----- ----0000		
001AA4 _H	PHCSR3 [W] H,W XXXXXXXX XXXXXXXX		PLCSR3 [W] H,W XXXXXXXX XXXXXXXX		
001AA8 _H	PHDUT3 [W] H,W XXXXXXXX XXXXXXXX		PLDUT3 [W] H,W XXXXXXXX XXXXXXXX		
001AAC _H	PCMDDT3 [R/W] H,W 00000000 00000000		—	—	PPG4
001AB0 _H	PCN4 [R/W] B,H,W 00000000 000000-0		PCSR4 [W] H,W XXXXXXXX XXXXXXXX		
001AB4 _H	PDUT4 [W] H,W XXXXXXXX XXXXXXXX		PTMR4 [R] H,W 11111111 11111111		
001AB8 _H	PCN204 [R/W] B,H,W --000000 ----110		PSDR4 [R/W] H,W 00000000 00000000		
001ABC _H	PTPC4 [R/W] H,W 00000000 00000000		—	—	PPG4
001AC0 _H	PCN5 [R/W] B,H,W 00000000 000000-0		PCSR5 [W] H,W XXXXXXXX XXXXXXXX		PPG5
001AC4 _H	PDUT5 [W] H,W XXXXXXXX XXXXXXXX		PTMR5 [R] H,W 11111111 11111111		
001AC8 _H	PCN205 [R/W] B,H,W --000000 ----110		PSDR5 [R/W] H,W 00000000 00000000		
001ACC _H	PTPC5 [R/W] H,W 00000000 00000000		—	—	

Address	Address offset value / Register name				Block
	+0	+1	+2	+3	
001AD0 _H	PCN6 [R/W] B,H,W 00000000 000000-0		PCSR6 [W] H,W XXXXXXXXXX XXXXXXXXX		PPG6
001AD4 _H	PDUT6 [W] H,W XXXXXXXXXX XXXXXXXXX		PTMR6 [R] H,W 11111111 11111111		
001AD8 _H	PCN206 [R/W] B,H,W --000000 ----110		PSDR6 [R/W] H,W 00000000 00000000		
001ADC _H	PTPC6 [R/W] H,W 00000000 00000000		—	—	
001AE0 _H	PCN7 [R/W] B,H,W 00000000 000000-0		PCSR7 [W] H,W XXXXXXXXXX XXXXXXXXX		PPG7
001AE4 _H	PDUT7 [W] H,W XXXXXXXXXX XXXXXXXXX		PTMR7 [R] H,W 11111111 11111111		
001AE8 _H	PCN207 [R/W] B,H,W --000000 ----110		PSDR7 [R/W] H,W 00000000 00000000		
001AEC _H	PTPC7 [R/W] H,W 00000000 00000000		—	—	
001AF0 _H	PCN8 [R/W] B,H,W 00000000 000000-0		PCSR8 [W] H,W XXXXXXXXXX XXXXXXXXX		PPG8
001AF4 _H	PDUT8 [W] H,W XXXXXXXXXX XXXXXXXXX		PTMR8 [R] H,W 11111111 11111111		
001AF8 _H	PCN208 [R/W] B,H,W --000000 ----110		PSDR8 [R/W] H,W 00000000 00000000		
001AFC _H	PTPC8 [R/W] H,W 00000000 00000000		—	—	
001B00 _H	PCN9 [R/W] B,H,W 00000000 000000-0		PCSR9 [W] H,W XXXXXXXXXX XXXXXXXXX		PPG9
001B04 _H	PDUT9 [W] H,W XXXXXXXXXX XXXXXXXXX		PTMR9 [R] H,W 11111111 11111111		
001B08 _H	PCN209 [R/W] B,H,W --000000 ----110		PSDR9 [R/W] H,W 00000000 00000000		
001B0C _H	PTPC9 [R/W] H,W 00000000 00000000		—	—	
001B10 _H	PCN10 [R/W] B,H,W 00000000 000000-0		PCSR10 [W] H,W XXXXXXXXXX XXXXXXXXX		PPG10
001B14 _H	PDUT10 [W] H,W XXXXXXXXXX XXXXXXXXX		PTMR10 [R] H,W 11111111 11111111		
001B18 _H	PCN210 [R/W] B,H,W --000000 ----110		PSDR10 [R/W] H,W 00000000 00000000		PPG10
001B1C _H	PTPC10 [R/W] H,W 00000000 00000000		—	—	
001B20 _H	PCN11 [R/W] B,H,W 00000000 000000-0		PCSR11 [W] H,W XXXXXXXXXX XXXXXXXXX		PPG11

Address	Address offset value / Register name				Block
	+0	+1	+2	+3	
001B78 _H	PCN216 [R/W] B,H,W --000000 -----110		PSDR16 [R/W] H,W 00000000 00000000		PPG16
001B7C _H	PTPC16 [R/W] H,W 00000000 00000000		—	—	
001B80 _H	PCN17 [R/W] B,H,W 00000000 000000-0		PCSR17 [W] H,W XXXXXXXX XXXXXXXX		PPG17
001B84 _H	PDUT17 [W] H,W XXXXXXXX XXXXXXXX		PTMR17 [R] H,W 11111111 11111111		
001B88 _H	PCN217 [R/W] B,H,W --000000 -----110		PSDR17 [R/W] H,W 00000000 00000000		
001B8C _H	PTPC17 [R/W] H,W 00000000 00000000		—	—	
001B90 _H	PCN18 [R/W] B,H,W 00000000 000000-0		PCSR18 [W] H,W XXXXXXXX XXXXXXXX		PPG18
001B94 _H	PDUT18 [W] H,W XXXXXXXX XXXXXXXX		PTMR18 [R] H,W 11111111 11111111		
001B98 _H	PCN218 [R/W] B,H,W --000000 -----110		PSDR18 [R/W] H,W 00000000 00000000		
001B9C _H	PTPC18 [R/W] H,W 00000000 00000000		—	—	
001BA0 _H	PCN19 [R/W] B,H,W 00000000 000000-0		PCSR19 [W] H,W XXXXXXXX XXXXXXXX		PPG19
001BA4 _H	PDUT19 [W] H,W XXXXXXXX XXXXXXXX		PTMR19 [R] H,W 11111111 11111111		
001BA8 _H	PCN219 [R/W] B,H,W --000000 -----110		PSDR19 [R/W] H,W 00000000 00000000		
001BAC _H	PTPC19 [R/W] H,W 00000000 00000000		—	—	
001BB0 _H	PCN20 [R/W] B,H,W 00000000 000000-0		PCSR20 [W] H,W XXXXXXXX XXXXXXXX		PPG20
001BB4 _H	PDUT20 [W] H,W XXXXXXXX XXXXXXXX		PTMR20 [R] H,W 11111111 11111111		
001BB8 _H	PCN220 [R/W] B,H,W --000000 -----110		PSDR20 [R/W] H,W 00000000 00000000		
001BBC _H	PTPC20 [R/W] H,W 00000000 00000000		—	—	
001BC0 _H	PCN21 [R/W] B,H,W 00000000 000000-0		PCSR21 [W] H,W XXXXXXXX XXXXXXXX		PPG21
001BC4 _H	PDUT21 [W] H,W XXXXXXXX XXXXXXXX		PTMR21 [R] H,W 11111111 11111111		
001BC8 _H	PCN221 [R/W] B,H,W --000000 -----110		PSDR21 [R/W] H,W 00000000 00000000		

80 pins

Interrupt factor	Interrupt number		Interrupt level	Offset	Default address for TBR	RN
	Decimal	Hexa decimal				
Reset	0	0	-	3FC _H	000FFFFC _H	-
System reserved	1	1	-	3F8 _H	000FFFF8 _H	-
System reserved	2	2	-	3F4 _H	000FFFF4 _H	-
System reserved	3	3	-	3F0 _H	000FFFF0 _H	-
System reserved	4	4	-	3EC _H	000FFFE4 _H	-
FPU exception	5	5	-	3E8 _H	000FFFE8 _H	-
Exception of instruction access protection violation	6	6	-	3E4 _H	000FFFE4 _H	-
Exception of data access protection violation	7	7	-	3E0 _H	000FFFE0 _H	-
Data access error interrupt	8	8	-	3DC _H	000FFFD4 _H	-
INTE instruction	9	9	-	3D8 _H	000FFFD8 _H	-
Instruction break	10	0A	-	3D4 _H	000FFFD4 _H	-
System reserved	11	0B	-	3D0 _H	000FFFD0 _H	-
System reserved	12	0C	-	3CC _H	000FFFC4 _H	-
System reserved	13	0D	-	3C8 _H	000FFFC8 _H	-
Exception of invalid instruction	14	0E	-	3C4 _H	000FFFC4 _H	-
NMI request	15	0F	15 (F _H) Fixed	3C0 _H	000FFFC0 _H	-
Error generation during internal bus diagnosis						
XBS RAM double-bit error generation						
Backup RAM double-bit error generation						
TPU violation						
External interrupt 0-7	16	10	ICR00	3BC _H	000FFFB4 _H	0
External interrupt 8-15	17	11	ICR01	3B8 _H	000FFFB8 _H	1* ⁷
External low-voltage detection interrupt						
Reload timer 0/1/4/5	18	12	ICR02	3B4 _H	000FFFB4 _H	2* ²
Reload timer 3/6/7	19	13	ICR03	3B0 _H	000FFFB0 _H	3* ²
Multi-function serial interface ch.0 (reception completed)	20	14	ICR04	3AC _H	000FFFA4 _H	4* ¹
Multi-function serial interface ch.0 (status)						
Multi-function serial interface ch.0 (transmission completed)	21	15	ICR05	3A8 _H	000FFFA8 _H	5* ¹
-	22	16	ICR06	3A4 _H	000FFFA4 _H	-* ⁶
-	23	17	ICR07	3A0 _H	000FFFA0 _H	-* ⁶
Multi-function serial interface ch.2 (reception completed)	24	18	ICR08	39C _H	000FFF9C _H	8* ¹
Multi-function serial interface ch.2 (status)						
Multi-function serial interface ch.2 (transmission completed)	25	19	ICR09	398 _H	000FFF98 _H	9* ¹
Multi-function serial interface ch.3 (reception completed)	26	1A	ICR10	394 _H	000FFF94 _H	10* ¹
Multi-function serial interface ch.3 (status)						
Multi-function serial interface ch.3 (transmission completed)	27	1B	ICR11	390 _H	000FFF90 _H	11

120 pins

Interrupt factor	Interrupt number		Interrupt level	Offset	Default address for TBR	RN
	Decimal	Hexadecimal				
Reset	0	0	-	3FC _H	000FFFFC _H	-
System reserved	1	1	-	3F8 _H	000FFFF8 _H	-
System reserved	2	2	-	3F4 _H	000FFFF4 _H	-
System reserved	3	3	-	3F0 _H	000FFFF0 _H	-
System reserved	4	4	-	3EC _H	000FFFE _C	-
FPU exception	5	5	-	3E8 _H	000FFFE8 _H	-
Exception of instruction access protection violation	6	6	-	3E4 _H	000FFFE4 _H	-
Exception of data access protection violation	7	7	-	3E0 _H	000FFFE0 _H	-
Data access error interrupt	8	8	-	3DC _H	000FFFD _C	-
INTE instruction	9	9	-	3D8 _H	000FFFD8 _H	-
Instruction break	10	0A	-	3D4 _H	000FFFD4 _H	-
System reserved	11	0B	-	3D0 _H	000FFFD0 _H	-
System reserved	12	0C	-	3CC _H	000FFFC _C	-
System reserved	13	0D	-	3C8 _H	000FFFC8 _H	-
Exception of invalid instruction	14	0E	-	3C4 _H	000FFFC4 _H	-
NMI request	15	0F	15 (F _H) Fixed	3C0 _H	000FFFC0 _H	-
Error generation during internal bus diagnosis						
XBS RAM double-bit error generation						
Backup RAM double-bit error generation						
TPU violation	16	10	ICR00	3BC _H	000FFFB _C	0
External interrupt 0-7						
External interrupt 8-15						
External low-voltage detection interrupt						
Reload timer 0/1/4/5	17	11	ICR01	3B8 _H	000FFFB8 _H	1* ⁷
Reload timer 2/3/6/7	18	12	ICR02	3B4 _H	000FFFB4 _H	2* ²
	19	13	ICR03	3B0 _H	000FFFB0 _H	3* ²
Multi-function serial interface ch.0 (reception completed)	20	14	ICR04	3AC _H	000FFFA _C	4* ¹
Multi-function serial interface ch.0 (status)						
Multi-function serial interface ch.0 (transmission completed)	21	15	ICR05	3A8 _H	000FFFA8 _H	5* ¹
Multi-function serial interface ch.1 (reception completed)	22	16	ICR06	3A4 _H	000FFFA4 _H	6* ¹
Multi-function serial interface ch.1 (status)						
Multi-function serial interface ch.1 (transmission completed)	23	17	ICR07	3A0 _H	000FFFA0 _H	7* ¹
Multi-function serial interface ch.2 (reception completed)	24	18	ICR08	39C _H	000FFF9 _C	8* ¹
Multi-function serial interface ch.2 (status)						
Multi-function serial interface ch.2 (transmission completed)	25	19	ICR09	398 _H	000FFF98 _H	9* ¹
Multi-function serial interface ch.3 (reception completed)	26	1A	ICR10	394 _H	000FFF94 _H	10* ¹
Multi-function serial interface ch.3 (status)						

11. Electrical Characteristics

Absolute Maximum Ratings

Parameter		Symbol	Rating		Unit	Remarks
			Min	Max		
Power supply voltage *1,*2		V _{CC}	V _{SS} -0.3	V _{SS} +6.0	V	
Analog power supply voltage *1,*2		AV _{CC}	V _{SS} -0.3	V _{SS} +6.0	V	AVRH ≤ AV _{CC} ≤ V _{CC}
Analog reference voltage *1		AVRH	V _{SS} -0.3	V _{SS} +6.0	V	AVRH ≤ AV _{CC}
Input voltage *1		V _I	V _{SS} -0.3	V _{CC} +0.3	V	
Analog pin input voltage *1		V _{IA5}	V _{SS} -0.3	V _{CC} +0.3	V	
Output voltage *1		V _o	V _{SS} -0.3	V _{CC} +0.3	V	
Maximum clamp current		I _{CLAMP}	-	4.0	mA	*6
Total maximum clamp current		Σ I _{CLAMP}	-	20	mA	*6
"L" level maximum output current *3		I _{OL1}	-	15	mA	
		I _{OL2}	-	30	mA	
"L" level average output current *4		I _{OLAV1}	-	4	mA	*9
		I _{OLAV2}	-	12	mA	*10
"L" level total output current *5		ΣI _{OL1}	-	100	mA	
		ΣI _{OL2}	-	120	mA	
"H" level maximum output current*3		I _{OH1}	-	-15	mA	
		I _{OH2}	-	-30	mA	
"H" level average output current*4		I _{OHAV1}	-	-4	mA	*9
		I _{OHAV2}	-	-12	mA	*10
"H" level total output current *5		ΣI _{OH1}	-	-100	mA	
		ΣI _{OH2}	-	-120	mA	
Power consumption	T _A : -40°C to +105°C	P _D	-	882	mW	*8
	T _A : -40°C to +125°C		-	675	mW	*8
Operating temperature		T _A	-40	+105	°C	
			-40	+125	°C	
Storage temperature		T _{stg}	-55	+150	°C	

*1: These parameters are based on the condition that $V_{SS}=AV_{SS}=0.0\text{V}$

*2: Caution must be taken that AV_{CC} , $AVRH$ do not exceed V_{CC} upon power-on and under other circumstances.

*3: The maximum output current is defined as the value of the peak current flowing through any one of the corresponding pins.

*4: The average output current is defined as the value of the average current flowing through any one of the corresponding pins for a 10 ms period. The average value is the operation current $\times$ the operation ratio.

*5: The total output current is defined as the maximum current value flowing through all of corresponding pins.

*6: · Corresponding pins: all general-purpose ports except P035, 041, 093, 122.

· Use within recommended operating conditions.

· Use at DC voltage (current).

· The + B signal should always be applied by connecting a limiting resistor between the + B signal and the microcontroller.

· The value of the limiting resistor should be set so that the current input to the microcontroller pin does not exceed rated values at any time regardless of instantaneously or constantly when the + B signal is input.

· Note that when the microcontroller drive current is low, such as in the low power consumption modes, the + B input potential can increase the potential at the V_{CC} pin via a protective diode, possibly affecting other devices.

· Note that if the + B signal is input when the microcontroller is off (not fixed at 0 V), since the power is supplied through the pin, the microcontroller may operate incompletely.

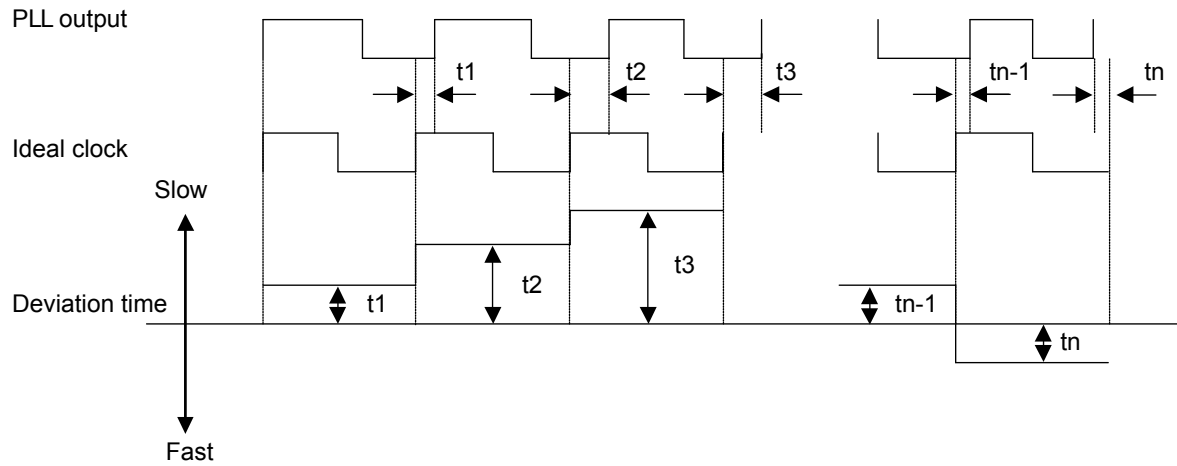
· Note that if the +B signal is input at power-on, since the power is supplied through the pin, the power-on reset may not function in the power supply voltage.

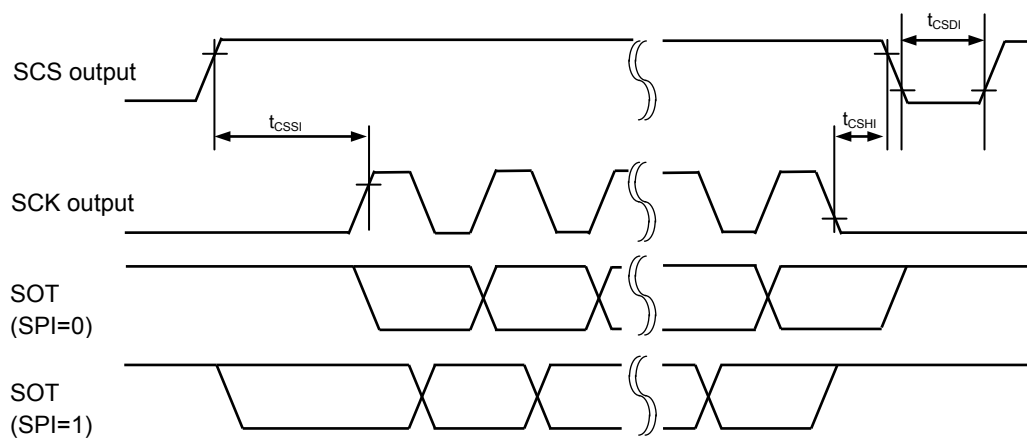
· Do not leave + B input pins open.

*7: When it is used under this condition, contact your sales representative.

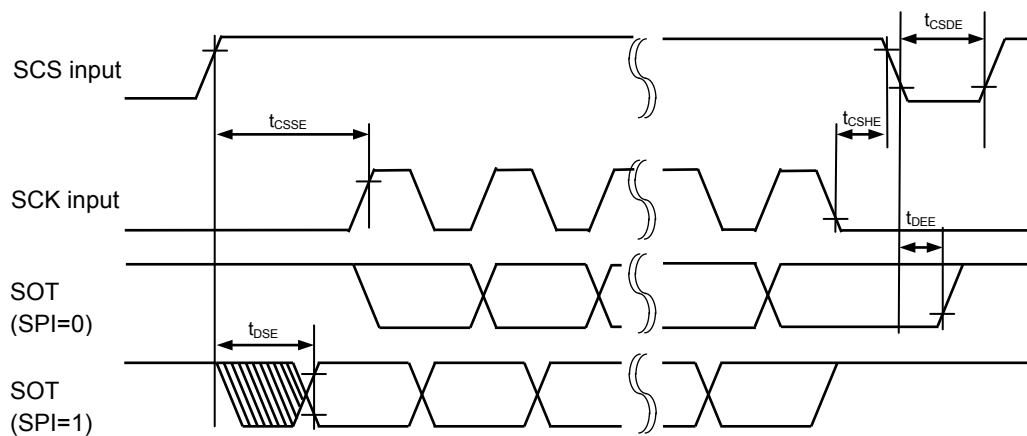
• CAN PLL jitter

Deviation time from the ideal clock is assured per cycle out of 20,000 cycles.





When Serial chip select is used , Serial clock output mark level "L",
Serial chip select Inactive level "L"
Master mode



When Serial chip select is used , Serial clock output mark level "L",
Serial chip select Inactive level "L"
Slave mode

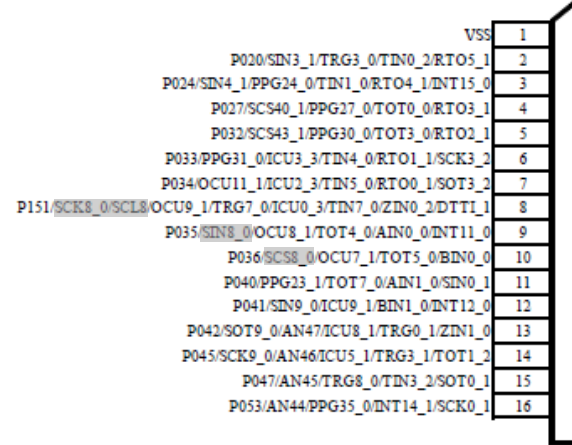
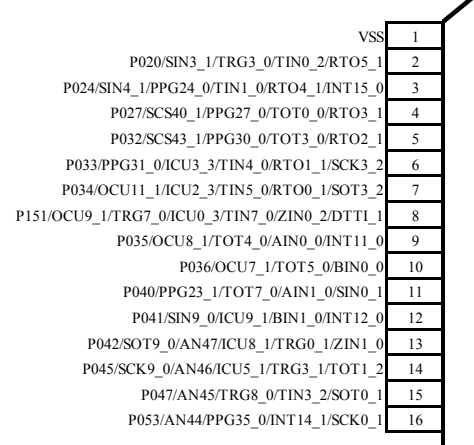
Part number	Sub clock	CSV Initial value	LVD Initial value	Package*
MB91F526BWEPMC1	Yes	ON	ON	LQE • 64 pin, Plastic
MB91F526BJEPMC1		OFF	ON	
MB91F525BWEPMC1		ON	ON	
MB91F525BJEPMC1		OFF	ON	
MB91F524BWEPMC1		ON	ON	
MB91F524BJEPMC1		OFF	ON	
MB91F523BWEPMC1		ON	ON	
MB91F523BJEPMC1		OFF	ON	
MB91F522BWEPMC1		ON	ON	
MB91F522BJEPMC1		OFF	ON	
MB91F526BSEPMC1	None	ON	ON	
MB91F526BHEPMC1		OFF	ON	
MB91F525BSEPMC1		ON	ON	
MB91F525BHEPMC1		OFF	ON	
MB91F524BSEPMC1		ON	ON	
MB91F524BHEPMC1		OFF	ON	
MB91F523BSEPMC1		ON	ON	
MB91F523BHEPMC1		OFF	ON	
MB91F522BSEPMC1		ON	ON	
MB91F522BHEPMC1		OFF	ON	

*: For details of the package, see "■ PACKAGE DIMENSIONS".

19. Major Changes

Spanion Publication Number: MB91F526L_DS705-00011

Page	Section	Change Results
Revision 1.0		
-	-	Initial release
Revision 2.0		
3	■FEATURES	Corrected the following description. 5V tolerant input: 4 channels ch.6, ch.8, ch.9, ch.11 Automotive input ↓ 5V tolerant input: 4 channels ch.6, ch.8, ch.9, ch.11 CMOS hysteresis input
33 to 36	■I/O CIRCUIT TYPE	Corrected the following description to "Type F, G, I, J, K, M". Schmitt input → CMOS hysteresis input Corrected the following description to "Type D, E". I ² C Schmitt input → I ² C hysteresis input
44 to 49	■BLOCK DIAGRAM	Corrected the following description. ●MB91F522B, MB91F523B, MB91F524B, MB91F525B, MB91F526B ●MB91F522D, MB91F523D, MB91F524D, MB91F525D, MB91F526D ●MB91F522F, MB91F523F, MB91F524F, MB91F525F, MB91F526F ●MB91F522J, MB91F523J, MB91F524J, MB91F525J, MB91F526J ●MB91F522K, MB91F523K, MB91F524K, MB91F525K, MB91F526K ●MB91F522L, MB91F523L, MB91F524L, MB91F525L, MB91F526L
138	■ELECTRICAL CHARACTERISTICS 2. Recommended operating conditions	Added the following description. *1 : When it is used outside recommended operation guarantee range (range of the operation guarantee), contact your sales representative. Moreover, minimum value with an effective external low-voltage detection reset becomes a voltage until generating low-voltage detection reset
139,140	■ELECTRICAL CHARACTERISTICS 3.DC characteristics	Corrected the value of "ICCT5 When using sub clock 32kHz TA=+25°C". Max 1420μA → Max 2000μA
139	■ELECTRICAL CHARACTERISTICS 3.DC characteristics	Corrected the value of "Power supply voltage range". (TA:-40°C to +105°C, Vcc=AVcc=2.7V to 5.5V, VSS=AVSS=0.0V) ↓ (TA:-40°C to +105°C, Vcc=AVcc=5.0V±10%/3.3V±0.3V, VSS=AVSS=0.0V)
140,141	■ELECTRICAL CHARACTERISTICS 3.DC characteristics	Corrected the value of "Power supply voltage range". (TA:-40°C to +125°C, Vcc=AVcc=2.7V to 5.5V, VSS=AVSS=0.0V) ↓ (TA:-40°C to +125°C, Vcc=AVcc=5.0V±10%/3.3V±0.3V, VSS=AVSS=0.0V)
141	■ELECTRICAL CHARACTERISTICS 3.DC characteristics	Corrected the value of " Pull-up resistance R _{UP1} ". Vcc=3.3V±0.3V Min 49 Max 140 →Min 45 Max 140

Page	Section	Change Results
13	■ Pin Assignment MB91F52xB	Signals indicated by the shading below deleted in Figure. - Left side  ↓ 

Page	Section	Change Results																				
125	■Interrupt Vector Table	The following sentence deleted from Interrupt vector 80pins. (Error) *5: It does not support the DMA transfer by the interrupt because of the RAM ECC bit error.																				
129	■Interrupt Vector Table	The interrupt factor in Interrupt vector 100pin modified as follows: (Error) <table><tr><td>Base timer 0 IRQ0</td><td rowspan="2">60</td><td rowspan="2">3 C</td><td rowspan="2">ICR 44</td><td rowspan="2">30C_H</td><td rowspan="2">000F FF0C_H</td><td rowspan="2">44</td></tr><tr><td>Base timer 0 IRQ1</td></tr></table> (Correct) <table><tr><td>—</td><td rowspan="2">60</td><td rowspan="2">3 C</td><td rowspan="2">ICR 44</td><td rowspan="2">30C_H</td><td rowspan="2">000F FF0C_H</td><td rowspan="2">44</td></tr><tr><td>—</td></tr></table>	Base timer 0 IRQ0	60	3 C	ICR 44	30C _H	000F FF0C _H	44	Base timer 0 IRQ1	—	60	3 C	ICR 44	30C _H	000F FF0C _H	44	—				
Base timer 0 IRQ0	60	3 C	ICR 44							30C _H	000F FF0C _H							44				
Base timer 0 IRQ1																						
—	60	3 C	ICR 44	30C _H	000F FF0C _H	44																
—																						
129	■Interrupt Vector Table	The interrupt factor in Interrupt vector 100pin modified as follows: (Error) <table><tr><td>Base timer 1 IRQ0</td><td rowspan="4">61</td><td rowspan="4">3D</td><td rowspan="4">ICR 45</td><td rowspan="4">308_H</td><td rowspan="4">000F FF08_H</td><td rowspan="4">45 *5</td></tr><tr><td>Base timer 1 IRQ1</td></tr><tr><td>—</td></tr><tr><td>—</td></tr></table> (Correct) <table><tr><td>Base timer 1 IRQ0</td><td rowspan="4">61</td><td rowspan="4">3D</td><td rowspan="4">ICR 45</td><td rowspan="4">308_H</td><td rowspan="4">000F FF08_H</td><td rowspan="4">45</td></tr><tr><td>Base timer 1 IRQ1</td></tr><tr><td>—</td></tr><tr><td>—</td></tr></table>	Base timer 1 IRQ0	61	3D	ICR 45	308 _H	000F FF08 _H	45 *5	Base timer 1 IRQ1	—	—	Base timer 1 IRQ0	61	3D	ICR 45	308 _H	000F FF08 _H	45	Base timer 1 IRQ1	—	—
Base timer 1 IRQ0	61	3D	ICR 45							308 _H	000F FF08 _H	45 *5										
Base timer 1 IRQ1																						
—																						
—																						
Base timer 1 IRQ0	61	3D	ICR 45	308 _H	000F FF08 _H	45																
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—																						
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129	■Interrupt Vector Table	The following sentence deleted from Interrupt vector 100pins. (Error) *5: It does not support the DMA transfer by the interrupt because of the RAM ECC bit error.																				