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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	44
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 26x12b; D/A 1x8b
Oscillator Type	External
Operating Temperature	-40°C ~ 105°C (TA)
Mounting Type	Surface Mount
Package / Case	64-LQFP
Supplier Device Package	64-LQFP (10x10)
Purchase URL	https://www.e-xfl.com/product-detail/infineon-technologies/mb91f522bsbpmc1-gs-f4e1

Pin no.						Pin Name	Polarity	I/O circuit types*8	Function*9
64	80	100	120	144	176				
-	-	-	113 *1	133	161	P002	-	F	General-purpose I/O port
						D18 *5	-		External bus data bit18 I/O
						SCK1_0	-		Multi-function serial ch.1 clock I/O (0)
						TIOB0_1	-		TIOB input of Base timer ch.0 (1)
-	76 *1	96 *1	114 *1	134	162	P003	-	F	General-purpose I/O port
						D19 *3, *4, *5	-		External bus data bit19 I/O
						SIN2_0	-		Multi-function serial ch.2 serial data input (0)
						TIOB1_1	-		TIOB input of Base timer ch.1 (1)
						INT3_0	-		INT3 External interrupt input (0)
-	-	-	-	135	163	P004	-	A	General-purpose I/O port
						D20	-		External bus data bit20 I/O (0)
						SOT2_0	-		Multi-function serial ch.2 serial data output (0)
-	-	-	-	-	164	P164	-	A	General-purpose I/O port
						PPG32_1	-		PPG ch.32 output (1)
61 *1	77 *1	97 *1	115 *1	136 *1	165 *1	P005	-	F	General-purpose I/O port
						D21 *2, *3, *4, *5	-		External bus data bit21 I/O (0)
						SCK2_0 *2	-		Multi-function serial ch.2 clock I/O (0)
						ADTG0_1	-		A/D converter external trigger input 0 (1)
						INT7_1	-		INT7 External interrupt input (1)
						RX2(64) *4, *5, *6, *7	-		CAN reception data 2 input
-	-	-	-	-	166	P165	-	A	General-purpose I/O port
						PPG33_1	-		PPG ch.33 output (1)
62 *1	78 *1	98 *1	116 *1	137 *1	167 *1	P006	-	A	General-purpose I/O port
						D22 *2, *3, *4, *5	-		External bus data bit22 I/O (0)
						SCS2_0 *2	-		Serial chip select 2 I/O (0)
						ADTG1_1	-		A/D converter external trigger input 1 (1)
						INT2_1	-		INT2 External interrupt input (1)
						TX2(64) *4, *5, *6, *7	-		CAN transmission data 2 output
-	-	-	117 *1	138	168	P007	-	A	General-purpose I/O port
						D23 *5	-		External bus data bit23 I/O
-	-	-	-	-	169	P166	-	A	General-purpose I/O port
						PPG34_1	-		PPG ch.34 output (1)
-	-	-	118 *1	139	170	P010	-	A	General-purpose I/O port
						D24 *5	-		External bus data bit24 I/O

Address	Address offset value / Register name				Block
	+0	+1	+2	+3	
00059C _H to 0005BC _H	—	—	—	—	Reserved
0005C0 _H to 0005FC _H	—	—	—	—	Reserved
000600 _H	ASR0 [R/W] W 00000000 00000000 ----- 1111-001				External Bus Interface [S]
000604 _H	ASR1 [R/W] W XXXXXXXX XXXXXXXX ----- XXXX-XX0				
000608 _H	ASR2 [R/W] W XXXXXXXX XXXXXXXX ----- XXXX-XX0				
00060C _H	ASR3 [R/W] W XXXXXXXX XXXXXXXX ----- XXXX-XX0				
000610 _H to 00063C _H	—	—	—	—	Reserved [S]
000640 _H	ACR0 [R/W] W ----- ----- 01--00--				External Bus Interface [S]
000644 _H	ACR1 [R/W] W ----- ----- XX--XX--				
000648 _H	ACR2 [R/W] W ----- ----- XX--XX--				
00064C _H	ACR3 [R/W] W ----- ----- XX--XX--				
000650 _H to 00067C _H	—	—	—	—	Reserved [S]
000680 _H	AWR0 [R/W] W ----1111 00000000 11110000 00000-0-				External Bus Interface [S]
000684 _H	AWR1 [R/W] W ---XXXX XXXXXXXX XXXXXXXX XXXXX-X-				
000688 _H	AWR2 [R/W] W ---XXXX XXXXXXXX XXXXXXXX XXXXX-X-				External Bus Interface [S]
00068C _H	AWR3 [R/W] W ---XXXX XXXXXXXX XXXXXXXX XXXXX-X-				
000690 _H to 0006FC _H	—	—	—	—	Reserved [S]
000700 _H to 00070C _H	—	—	—	—	Reserved

Address	Address offset value / Register name				Block
	+0	+1	+2	+3	
0008A0 _H	WRAR04 [R/W] W ----- --XXXXXX XXXXXXXX XXXXXX--				Wild Register [S]
0008A4 _H	WRDR04 [R/W] W XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX				
0008A8 _H	WRAR05 [R/W] W ----- --XXXXXX XXXXXXXX XXXXXX--				
0008AC _H	WRDR05 [R/W] W XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX				
0008B0 _H	WRAR06 [R/W] W ----- --XXXXXX XXXXXXXX XXXXXX--				
0008B4 _H	WRDR06 [R/W] W XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX				
0008B8 _H	WRAR07 [R/W] W ----- --XXXXXX XXXXXXXX XXXXXX--				
0008BC _H	WRDR07 [R/W] W XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX				
0008C0 _H	WRAR08 [R/W] W ----- --XXXXXX XXXXXXXX XXXXXX--				
0008C4 _H	WRDR08 [R/W] W XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX				
0008C8 _H	WRAR09 [R/W] W ----- --XXXXXX XXXXXXXX XXXXXX--				
0008CC _H	WRDR09 [R/W] W XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX				
0008D0 _H	WRAR10 [R/W] W ----- --XXXXXX XXXXXXXX XXXXXX--				
0008D4 _H	WRDR10 [R/W] W XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX				
0008D8 _H	WRAR11 [R/W] W ----- --XXXXXX XXXXXXXX XXXXXX--				
0008DC _H	WRDR11 [R/W] W XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX				
0008E0 _H	WRAR12 [R/W] W ----- --XXXXXX XXXXXXXX XXXXXX--				
0008E4 _H	WRDR12 [R/W] W XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX				
0008E8 _H	WRAR13 [R/W] W ----- --XXXXXX XXXXXXXX XXXXXX--				
0008EC _H	WRDR13 [R/W] W XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX				
0008F0 _H	WRAR14 [R/W] W ----- --XXXXXX XXXXXXXX XXXXXX--				

Address	Address offset value / Register name				Block
	+0	+1	+2	+3	
000954 _H	TPUTCN11 [R/W] B,H,W ---00000	—	—	—	Time Protection Unit [S]
000958 _H	TPUTCN12 [R/W] B,H,W ---00000	—	—	—	
00095C _H	TPUTCN13 [R/W] B,H,W ---00000	—	—	—	
000960 _H	TPUTCN14 [R/W] B,H,W ---00000	—	—	—	
000964 _H	TPUTCN15 [R/W] B,H,W ---00000	—	—	—	
000968 _H	TPUTCN16 [R/W] B,H,W ---00000	—	—	—	
00096C _H	TPUTCN17 [R/W] B,H,W ---00000	—	—	—	
000970 _H	TPUTCC0 [R] B,H,W ----- 00000000 00000000 00000000				
000974 _H	TPUTCC1 [R] B,H,W ----- 00000000 00000000 00000000				
000978 _H	TPUTCC2 [R] B,H,W ----- 00000000 00000000 00000000				
00097C _H	TPUTCC3 [R] B,H,W ----- 00000000 00000000 00000000				
000980 _H	TPUTCC4 [R] B,H,W ----- 00000000 00000000 00000000				
000984 _H	TPUTCC5 [R] B,H,W ----- 00000000 00000000 00000000				
000988 _H	TPUTCC6 [R] B,H,W ----- 00000000 00000000 00000000				
00098C _H	TPUTCC7 [R] B,H,W ----- 00000000 00000000 00000000				
000990 _H to 0009FC _H	—	—	—	—	
000A00 _H to 000BEC _H	—	—	—	—	Reserved
000BF0 _H	HSCFR [R/W] B,H,W -----00 00000000 00000000				OCDU
000BF4 _H	—	—	—	—	

Address	Address offset value / Register name				Block
	+0	+1	+2	+3	
000BF8 _H	—	—	MBR [R/W] B,H,W 00----- XXXXXXXX		OCDU
000BFC _H	—	—	UER [W] B,H,W -----X		
000C00 _H	DCCR0 [R/W] W 0----000 --00--00 00000000 0-000000				DMA Controller [S]
000C04 _H	DCSR0 [R/W] H 0-----000		DTCR0 [R/W] H 00000000 00000000		
000C08 _H	DSAR0 [R/W] W XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX				
000C0C _H	DDAR0 [R/W] W XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX				
000C10 _H	DCCR1 [R/W] W 0----000 --00--00 00000000 0-000000				
000C14 _H	DCSR1 [R/W] H 0-----000		DTCR1 [R/W] H 00000000 00000000		
000C18 _H	DSAR1 [R/W] W XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX				
000C1C _H	DDAR1 [R/W] W XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX				
000C20 _H	DCCR2 [R/W] W 0----000 --00--00 00000000 0-000000				
000C24 _H	DCSR2 [R/W] H 0-----000		DTCR2 [R/W] H 00000000 00000000		
000C28 _H	DSAR2 [R/W] W XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX				
000C2C _H	DDAR2 [R/W] W XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX				
000C30 _H	DCCR3 [R/W] W 0----000 --00--00 00000000 0-000000				
000C34 _H	DCSR3 [R/W] H 0-----000		DTCR3 [R/W] H 00000000 00000000		
000C38 _H	DSAR3 [R/W] W XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX				
000C3C _H	DDAR3 [R/W] W XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX				
000C40 _H	DCCR4 [R/W] W 0----000 --00--00 00000000 0-000000				
000C44 _H	DCSR4 [R/W] H 0-----000		DTCR4 [R/W] H 00000000 00000000		
000C48 _H	DSAR4 [R/W] W XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX				

Address	Address offset value / Register name				Block
	+0	+1	+2	+3	
0012D4 _H	FRS6 [R/W] B,H,W --00--00 --00--00 --00--00 --00--00				16-bit Free-run timer selection A/D activation compare
0012D8 _H	FRS7 [R/W] B,H,W --00--00 --00--00 --00--00 --00--00				
0012DC _H to 0012FC _H	—	—	—	—	Reserved
001300 _H	—				Reserved
001304 _H	ADTSS0[R/W] B,H,W -----0	—	—	—	12-bit A/D converter 1/2 unit
001308 _H	ADTSE0[R/W] B,H,W 00000000 00000000 00000000 00000000				
00130C _H	ADCOMP0/ADCOMPB0[R/W] H,W 00000000 00000000		ADCOMP1/ADCOMPB1[R/W] H,W 00000000 00000000		12-bit A/D converter 1/2 unit
001310 _H	ADCOMP2/ADCOMPB2[R/W] H,W 00000000 00000000		ADCOMP3/ADCOMPB3[R/W] H,W 00000000 00000000		
001314 _H	ADCOMP4/ADCOMPB4[R/W] H,W 00000000 00000000		ADCOMP5/ADCOMPB5[R/W] H,W 00000000 00000000		
001318 _H	ADCOMP6/ADCOMPB6[R/W] H,W 00000000 00000000		ADCOMP7/ADCOMPB7[R/W] H,W 00000000 00000000		
00131C _H	ADCOMP8/ADCOMPB8[R/W] H,W 00000000 00000000		ADCOMP9/ADCOMPB9[R/W] H,W 00000000 00000000		
001320 _H	ADCOMP10/ADCOMPB10[R/W] H,W 00000000 00000000		ADCOMP11/ADCOMPB11[R/W] H,W 00000000 00000000		
001324 _H	ADCOMP12/ADCOMPB12[R/W] H,W 00000000 00000000		ADCOMP13/ADCOMPB13[R/W] H,W 00000000 00000000		
001328 _H	ADCOMP14/ADCOMPB14[R/W] H,W 00000000 00000000		ADCOMP15/ADCOMPB15[R/W] H,W 00000000 00000000		
00132C _H	ADCOMP16/ADCOMPB16[R/W] H,W 00000000 00000000		ADCOMP17/ADCOMPB17[R/W] H,W 00000000 00000000		
001330 _H	ADCOMP18/ADCOMPB18[R/W] H,W 00000000 00000000		ADCOMP19/ADCOMPB19[R/W] H,W 00000000 00000000		
001334 _H	ADCOMP20/ADCOMPB20[R/W] H,W 00000000 00000000		ADCOMP21/ADCOMPB21[R/W] H,W 00000000 00000000		
001338 _H	ADCOMP22/ADCOMPB22[R/W] H,W 00000000 00000000		ADCOMP23/ADCOMPB23[R/W] H,W 00000000 00000000		
00133C _H	ADCOMP24/ADCOMPB24[R/W] H,W 00000000 00000000		ADCOMP25/ADCOMPB25[R/W] H,W 00000000 00000000		
001340 _H	ADCOMP26/ADCOMPB26[R/W] H,W 00000000 00000000		ADCOMP27/ADCOMPB27[R/W] H,W 00000000 00000000		

Address	Address offset value / Register name				Block
	+0	+1	+2	+3	
00147C _H	ADCOMP34/ADCOMPB34[R/W] H,W 00000000 00000000		ADCOMP35/ADCOMPB35[R/W] H,W 00000000 00000000		12-bit A/D converter 2/2 unit
001480 _H	ADCOMP36/ADCOMPB36[R/W] H,W 00000000 00000000		ADCOMP37/ADCOMPB37[R/W] H,W 00000000 00000000		
001484 _H	ADCOMP38/ADCOMPB38[R/W] H,W 00000000 00000000		ADCOMP39/ADCOMPB39[R/W] H,W 00000000 00000000		
001488 _H	ADCOMP40/ADCOMPB40[R/W] H,W 00000000 00000000		ADCOMP41/ADCOMPB41[R/W] H,W 00000000 00000000		
00148C _H	ADCOMP42/ADCOMPB42[R/W] H,W 00000000 00000000		ADCOMP43/ADCOMPB43[R/W] H,W 00000000 00000000		
001490 _H	ADCOMP44/ADCOMPB44[R/W] H,W 00000000 00000000		ADCOMP45/ADCOMPB45[R/W] H,W 00000000 00000000		
001494 _H	ADCOMP46/ADCOMPB46[R/W] H,W 00000000 00000000		ADCOMP47/ADCOMPB47[R/W] H,W 00000000 00000000		
001498 _H to 0014B4 _H	—	—	—	—	Reserved
0014B8 _H	ADTCS32[R/W] B,H,W 00000000 0010----		ADTCS33[R/W] B,H,W 00000000 0010----		12-bit A/D converter 2/2 unit
0014BC _H	ADTCS34[R/W] B,H,W 00000000 0010----		ADTCS35[R/W] B,H,W 00000000 0010----		
0014C0 _H	ADTCS36[R/W] B,H,W 00000000 0010----		ADTCS37[R/W] B,H,W 00000000 0010----		
0014C4 _H	ADTCS38[R/W] B,H,W 00000000 0010----		ADTCS39[R/W] B,H,W 00000000 0010----		
0014C8 _H	ADTCS40[R/W] B,H,W 00000000 0010----		ADTCS41[R/W] B,H,W 00000000 0010----		
0014CC _H	ADTCS42[R/W] B,H,W 00000000 0010----		ADTCS43[R/W] B,H,W 00000000 0010----		
0014D0 _H	ADTCS44[R/W] B,H,W 00000000 0010----		ADTCS45[R/W] B,H,W 00000000 0010----		
0014D4 _H	ADTCS46[R/W] B,H,W 00000000 0010----		ADTCS47[R/W] B,H,W 00000000 0010----		
0014D8 _H to 0014F4 _H	—	—	—	—	Reserved
0014F8 _H	ADTCD32[R] B,H,W 10--0000 00000000		ADTCD33[R] B,H,W 10--0000 00000000		12-bit A/D converter 2/2 unit
0014FC _H	ADTCD34[R] B,H,W 10--0000 00000000		ADTCD35[R] B,H,W 10--0000 00000000		

Address	Address offset value / Register name				Block
	+0	+1	+2	+3	
001B24 _H	PDUT11 [W] H,W XXXXXXXXXX XXXXXXXXXX		PTMR11 [R] H,W 11111111 11111111		PPG11
001B28 _H	PCN211 [R/W] B,H,W --000000 -----110		PSDR11 [R/W] H,W 00000000 00000000		
001B2C _H	PTPC11 [R/W] H,W 00000000 00000000		—	—	
001B30 _H	PCN12 [R/W] B,H,W 00000000 000000-0		PCSR12 [W] H,W XXXXXXXXXX XXXXXXXXXX		PPG12
001B34 _H	PDUT12 [W] H,W XXXXXXXXXX XXXXXXXXXX		PTMR12 [R] H,W 11111111 11111111		
001B38 _H	PCN212 [R/W] B,H,W --000000 -----110		PSDR12 [R/W] H,W 00000000 00000000		
001B3C _H	PTPC12 [R/W] H,W 00000000 00000000		—	—	
001B40 _H	PCN13 [R/W] B,H,W 00000000 000000-0		PCSR13 [W] H,W XXXXXXXXXX XXXXXXXXXX		PPG13
001B44 _H	PDUT13 [W] H,W XXXXXXXXXX XXXXXXXXXX		PTMR13 [R] H,W 11111111 11111111		
001B48 _H	PCN213 [R/W] B,H,W --000000 -----110		PSDR13 [R/W] H,W 00000000 00000000		
001B4C _H	PTPC13 [R/W] H,W 00000000 00000000		—	—	
001B50 _H	PCN14 [R/W] B,H,W 00000000 000000-0		PCSR14 [W] H,W XXXXXXXXXX XXXXXXXXXX		PPG14
001B54 _H	PDUT14 [W] H,W XXXXXXXXXX XXXXXXXXXX		PTMR14 [R] H,W 11111111 11111111		
001B58 _H	PCN214 [R/W] B,H,W --000000 -----110		PSDR14 [R/W] H,W 00000000 00000000		
001B5C _H	PTPC14 [R/W] H,W 00000000 00000000		—	—	
001B60 _H	PCN15 [R/W] B,H,W 00000000 000000-0		PCSR15 [W] H,W XXXXXXXXXX XXXXXXXXXX		PPG15
001B64 _H	PDUT15 [W] H,W XXXXXXXXXX XXXXXXXXXX		PTMR15 [R] H,W 11111111 11111111		
001B68 _H	PCN215 [R/W] B,H,W --000000 -----110		PSDR15 [R/W] H,W 00000000 00000000		
001B6C _H	PTPC15 [R/W] H,W 00000000 00000000		—	—	
001B70 _H	PCN16 [R/W] B,H,W 00000000 000000-0		PCSR16 [W] H,W XXXXXXXXXX XXXXXXXXXX		PPG16
001B74 _H	PDUT16 [W] H,W XXXXXXXXXX XXXXXXXXXX		PTMR16 [R] H,W 11111111 11111111		

Address	Address offset value / Register name				Block
	+0	+1	+2	+3	
001D20 _H	PCN43 [R/W] B,H,W 00000000 000000-0		PCSR43 [W] H,W XXXXXXXXXX XXXXXXXXXX		PPG43
001D24 _H	PDUT43 [W] H,W XXXXXXXXXX XXXXXXXXXX		PTMR43 [R] H,W 11111111 11111111		
001D28 _H	PCN243 [R/W] B,H,W --000000 -----110		PSDR43 [R/W] H,W 00000000 00000000		
001D2C _H	PTPC43 [R/W] H,W 00000000 00000000		—	—	
001D30 _H	PCN44 [R/W] B,H,W 00000000 000000-0		PCSR44 [W] H,W XXXXXXXXXX XXXXXXXXXX		PPG44
001D34 _H	PDUT44 [W] H,W XXXXXXXXXX XXXXXXXXXX		PTMR44 [R] H,W 11111111 11111111		
001D38 _H	PCN244 [R/W] B,H,W --000000 -----110		PSDR44 [R/W] H,W 00000000 00000000		
001D3C _H	PTPC44 [R/W] H,W 00000000 00000000		—	—	
001D40 _H	PCN45 [R/W] B,H,W 00000000 000000-0		PCSR45 [W] H,W XXXXXXXXXX XXXXXXXXXX		PPG45
001D44 _H	PDUT45 [W] H,W XXXXXXXXXX XXXXXXXXXX		PTMR45 [R] H,W 11111111 11111111		
001D48 _H	PCN245 [R/W] B,H,W --000000 -----110		PSDR45 [R/W] H,W 00000000 00000000		
001D4C _H	PTPC45 [R/W] H,W 00000000 00000000		—	—	
001D50 _H	PCN46 [R/W] B,H,W 00000000 000000-0		PCSR46 [W] H,W XXXXXXXXXX XXXXXXXXXX		PPG46
001D54 _H	PDUT46 [W] H,W XXXXXXXXXX XXXXXXXXXX		PTMR46 [R] H,W 11111111 11111111		
001D58 _H	PCN246 [R/W] B,H,W --000000 -----110		PSDR46 [R/W] H,W 00000000 00000000		
001D5C _H	PTPC46 [R/W] H,W 00000000 00000000		—	—	
001D60 _H	PCN47 [R/W] B,H,W 00000000 000000-0		PCSR47 [W] H,W XXXXXXXXXX XXXXXXXXXX		PPG47
001D64 _H	PDUT47 [W] H,W XXXXXXXXXX XXXXXXXXXX		PTMR47 [R] H,W 11111111 11111111		
001D68 _H	PCN247 [R/W] B,H,W --000000 -----110		PSDR47 [R/W] H,W 00000000 00000000		
001D6C _H	PTPC47 [R/W] H,W 00000000 00000000		—	—	

Interrupt factor	Interrupt number		Interrupt level	Offset	Default address for TBR	RN
	Decimal	Hexadecimal				
Multi-function serial interface ch.8 (reception completed)	45	2D	ICR29	348 _H	000FFF48 _H	29* ¹
Multi-function serial interface ch.8 (status)						
16-bit ICU 0 (fetching) / 16-bit ICU 1 (fetching)						
Main timer	46	2E	ICR30	344 _H	000FFF44 _H	30
Sub timer						
PLL timer						
Multi-function serial interface ch.8 (transmission completed)						
16-bit ICU 2 (fetching) / 16-bit ICU 3 (fetching)						
Clock calibration unit (sub oscillation)	47	2F	ICR31	340 _H	000FFF40 _H	31* ¹ , * ⁴
Multi-function serial interface ch.9 (reception completed)						
Multi-function serial interface ch.9 (status)						
A/D converter 0/1/7/9/10/11/12/13/14/15/16/ 17/18/19/20/21/22/23/24/25/26/27/28/29/30/31	48	30	ICR32	33C _H	000FFF3C _H	32
Clock calibration unit (CR oscillation)	49	31	ICR33	338 _H	000FFF38 _H	33
Multi-function serial interface ch.9 (transmission completed)						
16-bit OCU 0 (match) / 16-bit OCU 1 (match)						
32-bit Free-run timer 4	50	32	ICR34	334 _H	000FFF34 _H	34* ⁵
16-bit OCU 2 (match) / 16-bit OCU 3 (match)						
32-bit Free-run timer 3/5	51	33	ICR35	330 _H	000FFF30 _H	35* ⁵
16-bit OCU 4 (match) / 16-bit OCU 5 (match)						
32-bit ICU6 (fetching/measurement)	52	34	ICR36	32C _H	000FFF2C _H	36* ¹
Multi-function serial interface ch.10 (reception completed)						
Multi-function serial interface ch.10 (status)						
32-bit ICU7 (fetching/measurement)	53	35	ICR37	328 _H	000FFF28 _H	37
Multi-function serial interface ch.10 (transmission completed)						
32-bit ICU8 (fetching/measurement)						
Multi-function serial interface ch.11 (reception completed)	54	36	ICR38	324 _H	000FFF24 _H	38* ¹
Multi-function serial interface ch.11 (status)						
32-bit ICU9 (fetching/measurement)						
WG dead timer underflow 0/1/2	55	37	ICR39	320 _H	000FFF20 _H	39
WG dead timer reload 0/1/2						
WG DTTI 0						
32-bit ICU4 (fetching/measurement)	56	38	ICR40	31C _H	000FFF1C _H	40
Multi-function serial interface ch.11 (transmission completed)						

Interrupt factor	Interrupt number		Interrupt level	Offset	Default address for TBR	RN
	Decimal	Hexadecimal				
Multi-function serial interface ch.8 (reception completed)	45	2D	ICR29	348 _H	000FFF48 _H	29* ¹
Multi-function serial interface ch.8 (status)						
16-bit ICU 0 (fetching) / 16-bit ICU 1 (fetching)						
Main timer	46	2E	ICR30	344 _H	000FFF44 _H	30
Sub timer						
PLL timer						
Multi-function serial interface ch.8 (transmission completed)						
16-bit ICU 2 (fetching) / 16-bit ICU 3 (fetching)						
Clock calibration unit (sub oscillation)	47	2F	ICR31	340 _H	000FFF40 _H	31* ¹ , * ⁴
Multi-function serial interface ch.9 (reception completed)						
Multi-function serial interface ch.9 (status)						
A/D converter 0/1/2/3/4/5/6/7/8/9/10/11/12/13/14/15/16 17/18/19/20/21/22/23/24/25/26/27/28/29/30/31	48	30	ICR32	33C _H	000FFF3C _H	32
Clock calibration unit (CR oscillation)	49	31	ICR33	338 _H	000FFF38 _H	33
Multi-function serial interface ch.9 (transmission completed)						
16-bit OCU 0 (match) / 16-bit OCU 1 (match)						
32-bit Free-run timer 4	50	32	ICR34	334 _H	000FFF34 _H	34* ⁵
16-bit OCU 2 (match) / 16-bit OCU 3 (match)						
32-bit Free-run timer 3/5	51	33	ICR35	330 _H	000FFF30 _H	35* ⁵
16-bit OCU 4 (match) / 16-bit OCU 5 (match)						
32-bit ICU6 (fetching/measurement)	52	34	ICR36	32C _H	000FFF2C _H	36* ¹
Multi-function serial interface ch.10 (reception completed)						
Multi-function serial interface ch.10 (status)						
32-bit ICU7 (fetching/measurement)	53	35	ICR37	328 _H	000FFF28 _H	37
Multi-function serial interface ch.10 (transmission completed)						
32-bit ICU8 (fetching/measurement)	54	36	ICR38	324 _H	000FFF24 _H	38* ¹
Multi-function serial interface ch.11 (reception completed)						
Multi-function serial interface ch.11 (status)						
32-bit ICU9 (fetching/measurement)	55	37	ICR39	320 _H	000FFF20 _H	39
WG dead timer underflow 0/1/2						
WG dead timer reload 0/1/2						
WG DTTI 0						
32-bit ICU4 (fetching/measurement)	56	38	ICR40	31C _H	000FFF1C _H	40
Multi-function serial interface ch.11 (transmission completed)						

Interrupt factor	Interrupt number		Interrupt level	Offset	Default address for TBR	RN
	Decimal	Hexadecimal				
32-bit ICU5 (fetching/measurement)	57	39	ICR41	318 _H	000FFF18 _H	41
A/D converter						
32/33/34/35/36/37/38/39/40/41/42/43/44/45/46/47						
32-bit OCU 6/7/10/11 (match)						
32-bit OCU 8/9 (match)	58	3A	ICR42	314 _H	000FFF14 _H	42
Base timer 0 IRQ0	59	3B	ICR43	310 _H	000FFF10 _H	43
Base timer 0 IRQ1						
Base timer 1 IRQ0	60	3C	ICR44	30C _H	000FFF0C _H	44
Base timer 1 IRQ1						
-						
-						
DMAC 0/1/2/3/4/5/6/7/8/9/10/11/12/13/14/15	61	3D	ICR45	308 _H	000FFF08 _H	45
Delay interrupt	62	3E	ICR46	304 _H	000FFF04 _H	-
System reserved (Used for REALOS)	63	3F	ICR47	300 _H	000FFF00 _H	-
System reserved (Used for REALOS)	64	40	-	2FC _H	000FFEFC _H	-
System reserved (Used for REALOS)	65	41	-	2F8 _H	000FFEFC _H	-
Used with the INT instruction	66	42	-	2F4 _H	000FFEFC _H	-
			-			-
	255	FF		000 _H	000FFC00 _H	

Note: It does not support a DMA transfer request caused by an interrupt generated from a peripheral to which no RN (Resource Number) is assigned.

*1: It does not support a DMA transfer by the status of the multi-function serial interface and I²C reception.

*2: Reload timer ch.4 to ch.7 do not support a DMA transfer by the interrupt.

*3: PPG ch.24 to ch.47 do not support a DMA transfer by the interrupt.

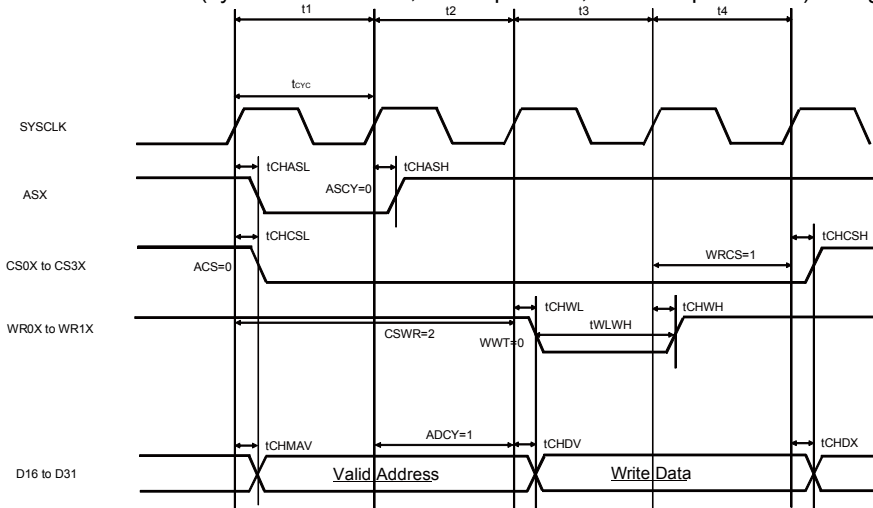
*4: The clock calibration unit does not support a DMA transfer by the interrupt.

*5: 32-bit Free-run timer ch.3, ch.4 and ch.5 do not support a DMA transfer by the interrupt.

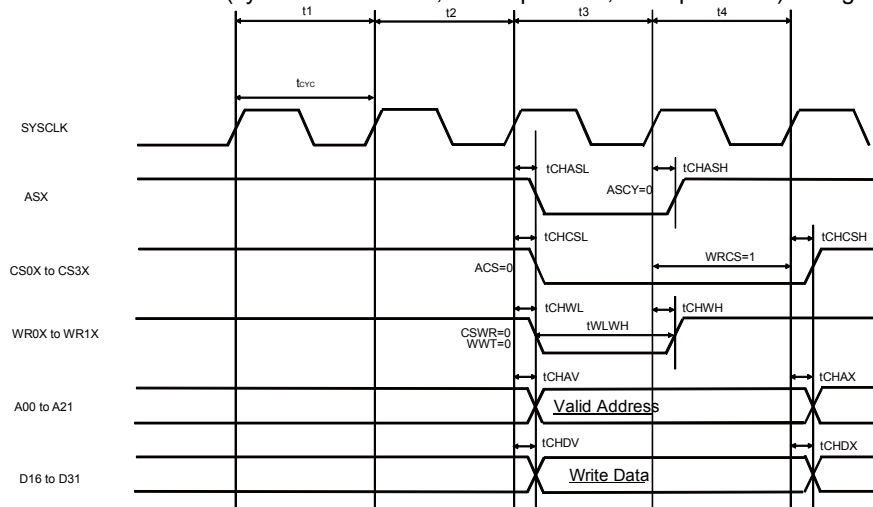
*6: There is no resource corresponding to the interrupt level.

*7: It does not support a DMA transfer by the external low-voltage detection interrupt.

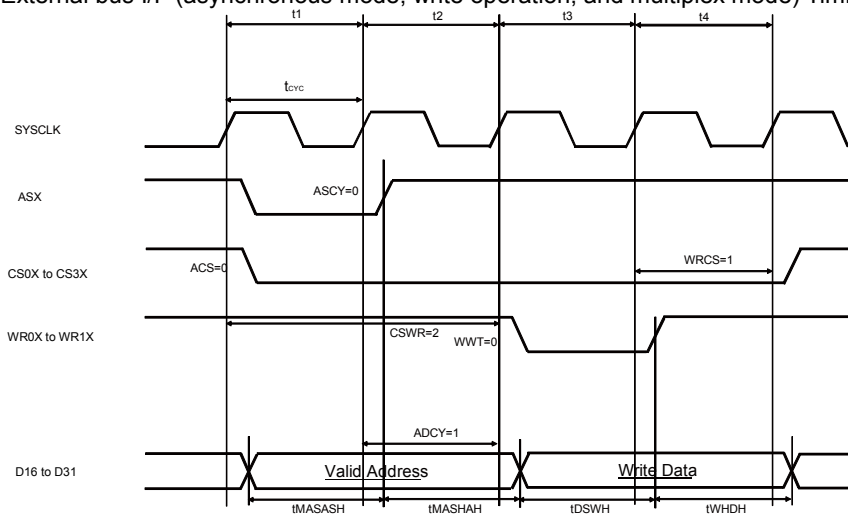
External bus I/F (synchronous mode, write operation, and multiplex mode) timing



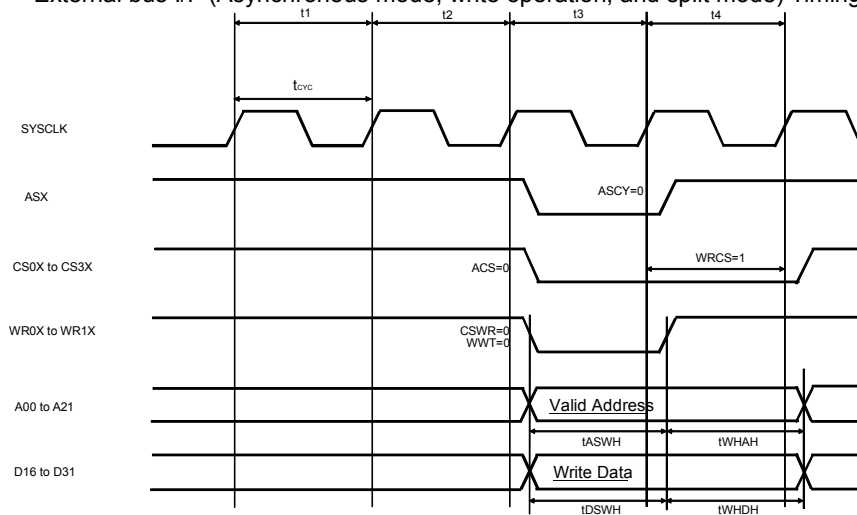
External bus I/F (synchronous mode, write operation, and split mode) timing



External bus I/F (asynchronous mode, write operation, and multiplex mode) Timing



External bus I/F (Asynchronous mode, write operation, and split mode) Timing



A/D Converter

(1) 12-bit A/D Converter Electrical Characteristics

 (T_A: -40°C to +125°C, V_{CC}=AV_{CC}=5.0V ± 10%/V_{CC}= AV_{CC}=3.3V±0.3V, V_{SS}=AV_{SS}=0.0V)

Parameter	Symbol	Pin name	Value			Unit	Remarks
			Min	Typ	Max		
Resolution	-	-	-	-	12	bit	
Total error	-	-	-	-	±12	LSB	
Linearity error	-	-	-	-	± 4.0	LSB	
Differential linearity error	-	-	-	-	± 1.9	LSB	
Zero transition voltage	V _{OT}	AN0 to AN47	AVRL-11.5LSB	-	AVRL+12.5LSB	V	1LSB= (V _{FST} -V _{OT})/4094
Full-scale transition voltage	V _{FST}	AN0 to AN47	AVRH-13.5LSB	-	AVRH+10.5LSB	V	
Sampling time	t _{SMP}	-	0.7	-	-	μs	*1
Compare time	t _{CMP}	-	0.7	-	-	μs	*1
A/D conversion time	t _{CNV}	-	1.4	-	-	μs	*1
Analog port input current	I _{AIN}	AN0 to AN47	-1.0	-	+1.0	μA	V _{AVSS} ≤ V _{AIN} ≤ V _{AVCC}
Analog input voltage	V _{AIN}	AN0 to AN47	AVRL	-	AVRH	V	
Reference voltage	AVRH	AVRH	3.0	-	5.5	V	
	AVRL	AVSS/AVRL	-	0.0	-	V	
Power supply current	I _A	AVCC*3	-	0.47	0.63	mA	Per unit T _A : +105°C
			-	0.47	0.7	mA	Per unit T _A : +125°C
	I _{AH}	AVRH	-	-	2.5	μA	*2
	I _R		-	1	1.96	mA	Per unit
	I _{RH}		-	-	1.6	μA	*2
Variation between channels	-	AN0 to AN47	-	-	4	LSB	

*1: Time for each channel.

 *2: Power supply current (V_{CC} = AV_{CC} = 5.0 V) is specified if A/D converter is not operating and CPU is stopped.

*3: The power supply current described only current value on A/D converter.

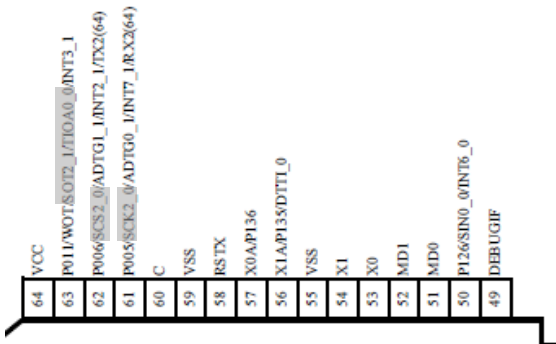
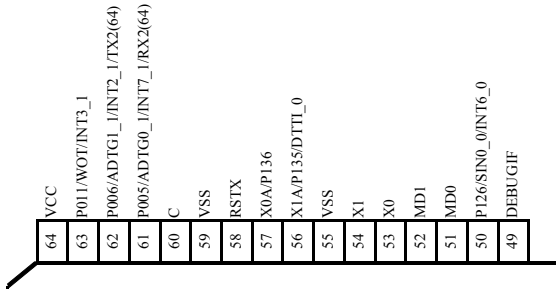
 The total AV_{CC} current value must be calculated the power supply current for A/D converter and D/A converter.

(Note) Please use the clock of 0.5MHz-20MHz for the output clock of A/D converter to guarantee accuracy.

14. Ordering Information MB91F52xxxC*¹

Part number	Sub clock	CSV Initial value	LVD Initial value	Package ⁷²
MB91F526LWCPMC	Yes	ON	ON	LQP • 176 pin, Plastic
MB91F526LYCPMC			OFF	
MB91F526LJCPMC		OFF	ON	
MB91F526LLCPMC			OFF	
MB91F525LWCPMC		ON	ON	
MB91F525LYCPMC			OFF	
MB91F525LJCPMC		OFF	ON	
MB91F525LLCPMC			OFF	
MB91F524LWCPMC		ON	ON	
MB91F524LYCPMC			OFF	
MB91F524LJCPMC		OFF	ON	
MB91F524LLCPMC			OFF	
MB91F523LWCPMC		ON	ON	
MB91F523LYCPMC			OFF	
MB91F523LJCPMC		OFF	ON	
MB91F523LLCPMC			OFF	
MB91F522LWCPMC		ON	ON	
MB91F522LYCPMC			OFF	
MB91F522LJCPMC		OFF	ON	
MB91F522LLCPMC			OFF	
MB91F526LSCPMC	None	ON	ON	
MB91F526LUCPMC			OFF	
MB91F526LHCPMC		OFF	ON	
MB91F526LKCPMC			OFF	
MB91F525LSCPMC		ON	ON	
MB91F525LUCPMC			OFF	
MB91F525LHCPMC		OFF	ON	
MB91F525LKCPMC			OFF	
MB91F524LSCPMC		ON	ON	
MB91F524LUCPMC			OFF	
MB91F524LHCPMC		OFF	ON	
MB91F524LKCPMC			OFF	
MB91F523LSCPMC		ON	ON	
MB91F523LUCPMC			OFF	
MB91F523LHCPMC		OFF	ON	
MB91F523LKCPMC			OFF	
MB91F522LSCPMC		ON	ON	
MB91F522LUCPMC			OFF	
MB91F522LHCPMC		OFF	ON	
MB91F522LKCPMC			OFF	

Part number	Sub clock	CSV Initial value	LVD Initial value	Package ⁷²
MB91F526FWCPMC	Yes	ON	ON	LQI • 100 pin, Plastic
MB91F526FYCPMC			OFF	
MB91F526FJCPMC		OFF	ON	
MB91F526FLCPMC			OFF	
MB91F525FWCPMC		ON	ON	
MB91F525FYCPMC			OFF	
MB91F525FJCPMC		OFF	ON	
MB91F525FLCPMC			OFF	
MB91F524FWCPMC		ON	ON	
MB91F524FYCPMC			OFF	
MB91F524FJCPMC		OFF	ON	
MB91F524FLCPMC			OFF	
MB91F523FWCPMC		ON	ON	
MB91F523FYCPMC			OFF	
MB91F523FJCPMC		OFF	ON	
MB91F523FLCPMC			OFF	
MB91F522FWCPMC		ON	ON	
MB91F522FYCPMC			OFF	
MB91F522FJCPMC		OFF	ON	
MB91F522FLCPMC			OFF	
MB91F526FSCPMC	None	ON	ON	
MB91F526FUCPMC			OFF	
MB91F526FHCPMC		OFF	ON	
MB91F526FKCPMC			OFF	
MB91F525FSCPMC		ON	ON	
MB91F525FUCPMC			OFF	
MB91F525FHCPMC		OFF	ON	
MB91F525FKCPMC			OFF	
MB91F524FSCPMC		ON	ON	
MB91F524FUCPMC			OFF	
MB91F524FHCPMC		OFF	ON	
MB91F524FKCPMC			OFF	
MB91F523FSCPMC		ON	ON	
MB91F523FUCPMC			OFF	
MB91F523FHCPMC		OFF	ON	
MB91F523FKCPMC			OFF	
MB91F522FSCPMC		ON	ON	
MB91F522FUCPMC			OFF	
MB91F522FHCPMC		OFF	ON	
MB91F522FKCPMC			OFF	

Page	Section	Change Results
13	■ Pin Assignment MB91F52xB	- Top  ↓ 
13	■ Pin Assignment MB91F52xB	The following note added on the bottom left of Figure. * In a single clock product, pin 56 and pin 57 are the general-purpose ports.

Page	Section	Change Results																																																																																										
21, 22	■PIN Description	A List of "Pin Description" modified.																																																																																										
		(Error)																																																																																										
		Pin no.						Pin Name	64	80	100	120	144	176	7	9	11	14	17	21	P034	A06	OCU11_1	ICU2_3	TIN5_0	RTO0_1	SOT3_2								8	10	13	16	19	23	P151	SCK8_0/ SCL8	OCU9_1	TRG7_0	ICU0_3	TIN7_0	ZIN0_2	DTTI_1	9	11	14	17	20	24	P035	A07	SIN8_0	OCU8_1	TOT4_0	AIN0_0	INT11_0	10	12	15	18	21	25	P036	A08	SCS8_0	OCU7_1	TOT5_0	BIN0_0	-	-	16	19	22	26	P037	A09	OCU6_1	TOT6_0	ZIN0_0	-	-	-	-	-	27	P174	TRG8_1
		Pin no.							Pin Name																																																																																			
		64	80	100	120	144	176																																																																																					
		7	9	11	14	17	21	P034																																																																																				
								A06																																																																																				
								OCU11_1																																																																																				
								ICU2_3																																																																																				
								TIN5_0																																																																																				
								RTO0_1																																																																																				
								SOT3_2																																																																																				
		8	10	13	16	19	23	P151																																																																																				
								SCK8_0/ SCL8																																																																																				
								OCU9_1																																																																																				
								TRG7_0																																																																																				
								ICU0_3																																																																																				
								TIN7_0																																																																																				
								ZIN0_2																																																																																				
								DTTI_1																																																																																				
		9	11	14	17	20	24	P035																																																																																				
								A07																																																																																				
								SIN8_0																																																																																				
								OCU8_1																																																																																				
								TOT4_0																																																																																				
								AIN0_0																																																																																				
		INT11_0																																																																																										
		10	12	15	18	21	25	P036																																																																																				
								A08																																																																																				
								SCS8_0																																																																																				
								OCU7_1																																																																																				
								TOT5_0																																																																																				
		BIN0_0																																																																																										
		-	-	16	19	22	26	P037																																																																																				
								A09																																																																																				
								OCU6_1																																																																																				
TOT6_0																																																																																												
ZIN0_0																																																																																												
-	-	-	-	-	27	P174																																																																																						
						TRG8_1																																																																																						

Revision	ECN	Orig. of Change	Submission Date	Description of Change
				Value: Min -30 Max 30 ↓ Pin name: SCK0 to SCK2,SCK5 to SCK11 SOT0 to SOT2,SOT5 to SOT11 Value: Min -30 Max 30 Pin name: SCK3,SCK4 SOT3,SOT4 Value: Min -300 Max 300 (4-1-1),(4-1-4)Valid SIN⇒SCK↑ setup time t_{IVSHI} (4-1-2),(4-1-3)Valid SIN⇒SCK↓ setup time t_{IVSLI} Corrected the following description. Pin name: SCK0 to SCK11 SIN0 to SIN11 Value: Min 34 Max - ↓ Pin name: SCK0 to SCK2,SCK5 to SCK11 SIN0 to SIN2,SIN5 to SIN11 Value: Min 34 Max - Pin name: SCK3,SCK4,SIN3,SIN4 Value: Min 300 Max - (4-1-1),(4-1-4)SCK↓⇒SOT delay time t_{SLOVE} (4-1-2),(4-1-3)SCK↑⇒SOT delay time t_{SHOVE} Corrected the following description. Pin name: SCK0 to SCK11 SOT0 to SOT11 Value: Min - Max 33 ↓ Pin name: SCK0 to SCK2,SCK5 to SCK11 SOT0 to SOT2,SOT5 to SOT11 Value: Min - Max 33 Pin name: SCK3,SCK4 SOT3,SOT4 Value: Min - Max 300 (4-1-1),(4-1-2),(4-1-3),(4-1-4)SCK fall time t_f Corrected the following description. Pin name: SCK0 to SCK2,SCK5 to SCK11 Value: Min - Max 5 Pin name: SCK3,SCK4 Value: Min - Max 250 ↓ Pin name: SCK0 to SCK11 Value: Min - Max 5 (4-1-5)SCS↓⇒SCK↓ setup time t_{CSSI} (4-1-6)SCS↓⇒SCK↑ setup time t_{CSSI} (4-1-7)SCS↑⇒SCK↓ setup time t_{CSSI} (4-1-8)SCS↑⇒SCK↑ setup time t_{CSSI} Corrected the following description. Pin name: SCK1 to SCK11 SCS1 to SCS3,SCS40 to SCS43,SCS50 to SCS53,SCS60 to SCS63,SCS70 to SCS73,SCS8 to SCS11 Value: Min $t_{CSSU}+0$ Max $t_{CSSU}+50$ ↓ Pin name: SCK1,SCK2,SCK5 to SCK11 SCS1,SCS2,SCS50 to SCS53,SCS60 to SCS63,SCS70 to SCS73,SCS8 to SCS11 Value: Min $t_{CSSU}-50$ Max $t_{CSSU}+0$ Pin name: SCK3,SCK4 SCS3,SCS40 to SCS43 Value: Min $t_{CSSU}-50$ Max $t_{CSSU}+300$