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

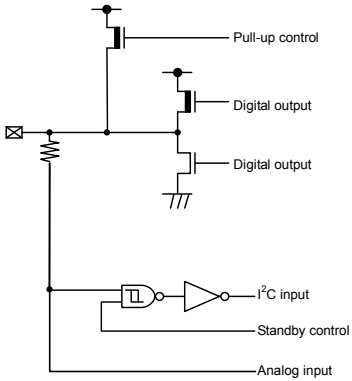
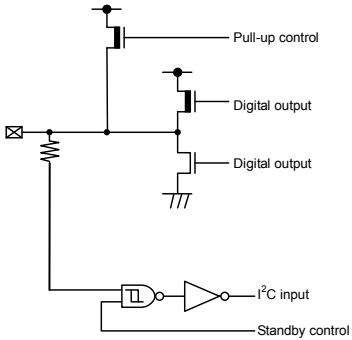
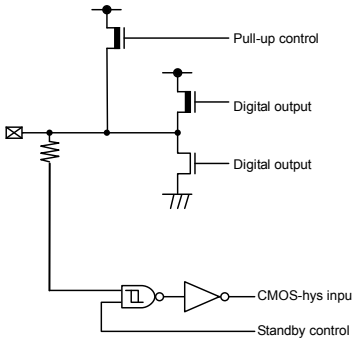
"[Embedded - Microcontrollers](#)" refer to small, integrated circuits designed to perform specific tasks within larger systems. These microcontrollers are essentially compact computers on a single chip, containing a processor core, memory, and programmable input/output peripherals. They are called "embedded" 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, EBI/EMI, I ² C, LINbus, SPI, UART/USART
Peripherals	DMA, LVD, POR, PWM, WDT
Number of I/O	120
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 48x12b; D/A 2x8b
Oscillator Type	External
Operating Temperature	-40°C ~ 105°C (TA)
Mounting Type	Surface Mount
Package / Case	144-LQFP
Supplier Device Package	144-LQFP (20x20)
Purchase URL	https://www.e-xfl.com/product-detail/infineon-technologies/mb91f522kwcpmc-gsk5e2

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	-		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)

Type	Circuit	Remarks
D		•I²C Analog input, General-purpose I/O port •Output 3mA •Pull-up resistor control 50kΩ •I²C hysteresis input
E		•I²C, General-purpose I/O port •Output 3mA •Pull-up resistor control 50kΩ •I²C hysteresis input
F		•General-purpose I/O port •Output 4mA •Pull-up resistor control 50kΩ •CMOS hysteresis input

Address	Address offset value / Register name				Block
	+0	+1	+2	+3	
000400 _H	ICSEL0 [R/W] B,H,W ----000	ICSEL1 [R/W] B,H,W ----000	ICSEL2 [R/W] B,H,W -----0	ICSEL3 [R/W] B,H,W -----0	DMA request generation and clear
000404 _H	—	ICSEL5 [R/W] B,H,W ----000	ICSEL6 [R/W] B,H,W ---0000	ICSEL7 [R/W] B,H,W ---0000	
000408 _H	ICSEL8 [R/W] B,H,W -----00	ICSEL9 [R/W] B,H,W -----00	ICSEL10 [R/W] B,H,W -----00	ICSEL11 [R/W] B,H,W -----000	
00040C _H	—	ICSEL13 [R/W] B,H,W -----00	ICSEL14 [R/W] B,H,W -----00	ICSEL15 [R/W] B,H,W -----00	
000410 _H	ICSEL16 [R/W] B,H,W ---0000	ICSEL17 [R/W] B,H,W -----00	ICSEL18 [R/W] B,H,W ---00000	ICSEL19 [R/W] B,H,W -----000	
000414 _H	ICSEL20 [R/W] B,H,W -----000	ICSEL21 [R/W] B,H,W -----00	ICSEL22 [R/W] B,H,W -----00	ICSEL23 [R/W] B,H,W -----00	
000418 _H	IRPR0H [R] B,H,W 00-----	IRPR0L [R] B,H,W 00-----	IRPR1H [R] B,H,W 00-----	IRPR1L [R] B,H,W 00-----	Interrupt Request Batch Reading Register
00041C _H	—	—	IRPR3H [R] B,H,W 000000--	IRPR3L [R] B,H,W 000000--	
000420 _H	IRPR4H [R] B,H,W 0000----	IRPR4L [R] B,H,W 0000----	IRPR5H [R] B,H,W 0000----	IRPR5L [R] B,H,W 000-----	
000424 _H	IRPR6H [R] B,H,W --00----	IRPR6L [R] B,H,W 0000----	IRPR7H [R] B,H,W -0-00--	IRPR7L [R] B,H,W -----00	
000428 _H	IRPR8H [R] B,H,W --0-----	IRPR8L [R] B,H,W -00-----	IRPR9H [R] B,H,W -0-----	IRPR9L [R] B,H,W -0-----	
00042C _H	IRPR10H [R] B,H,W -0-----	IRPR10L [R] B,H,W -0-----	IRPR11H [R] B,H,W 0-----	IRPR11L [R] B,H,W 0-----	
000430 _H	IRPR12H [R] B,H,W --0000--	IRPR12L [R] B,H,W ---00--	IRPR13H [R] B,H,W 00-----	IRPR13L [R] B,H,W 00-----	
000434 _H	IRPR14H [R] B,H,W 00000000	IRPR14L [R] B,H,W 00000000	IRPR15H [R] B,H,W 000-----	IRPR15L [R] B,H,W 0000000-	
000438 _H	ICSEL24 [R/W] B,H,W -----00	ICSEL25 [R/W] B,H,W ---00000	ICSEL26 [R/W] B,H,W -----0	ICSEL27 [R/W] B,H,W -----0	DMA request generation and clear
00043C _H	—	—	—	—	Reserved [S]

Address	Address offset value / Register name				Block
	+0	+1	+2	+3	
000E3C _H	—	—	—	—	Reserved
000E40 _H	PDDR00 [R] B,H,W XXXXXXXXXX	PDDR01 [R] B,H,W XXXXXXXXXX	PDDR02 [R] B,H,W XXXXXXXXXX	PDDR03 [R] B,H,W XXXXXXXXXX	Port Direct Read Register
000E44 _H	PDDR04 [R] B,H,W XXXXXXXXXX	PDDR05 [R] B,H,W XXXXXXXXXX	PDDR06 [R] B,H,W XXXXXXXXXX	PDDR07 [R] B,H,W XXXXXXXXXX	
000E48 _H	PDDR08 [R] B,H,W XXXXXXXXXX	PDDR09 [R] B,H,W XXXXXXXXXX	PDDR10 [R] B,H,W XXXXXXXXXX	PDDR11 [R] B,H,W XXXXXXXXXX	
000E4C _H	PDDR12 [R] B,H,W XXXXXXXXXX	PDDR13 [R] B,H,W -XXXXXXXXX	PDDR14 [R] B,H,W ---XXX--	PDDR15 [R] B,H,W --XXXXXX	
000E50 _H	—	—	—	—	
000E54 _H	—	—	—	—	
000E58 _H	PDDR16 [R] B,H,W XXXXXXXXXX	PDDR17 [R] B,H,W XXXXXXXXXX	PDDR18 [R] B,H,W XXXXXXXXXX	PDDR19 [R] B,H,W XXXXXXXXXX	
000E5C _H	—	—	—	—	Reserved
000E60 _H	EPFR00 [R/W] B,H,W 00000000	EPFR01 [R/W] B,H,W -0-0-000	EPFR02 [R/W] B,H,W ---0000	EPFR03 [R/W] B,H,W --000-0	Extended Port Function Register
000E64 _H	EPFR04 [R/W] B,H,W ---00-0	EPFR05 [R/W] B,H,W ---0000	EPFR06 [R/W] B,H,W ---000-	EPFR07 [R/W] B,H,W --00000	
000E68 _H	EPFR08 [R/W] B,H,W ---00000	EPFR09 [R/W] B,H,W ----00-	EPFR10 [R/W] B,H,W ---0000	EPFR11 [R/W] B,H,W ----0000	
000E6C _H	EPFR12 [R/W] B,H,W ----0000	EPFR13 [R/W] B,H,W -----00	EPFR14 [R/W] B,H,W -----00	EPFR15 [R/W] B,H,W -----000	
000E70 _H	—	—	—	—	
000E74 _H	—	—	—	—	
000E78 _H	—	—	EPFR26 [R/W] B,H,W 00000000	EPFR27 [R/W] B,H,W ---0----	
000E7C _H	EPFR28 [R/W] B,H,W --000-0-	EPFR29 [R/W] B,H,W 00000000	—	—	
000E80 _H	—	EPFR33 [R/W] B,H,W -----00-	EPFR34 [R/W] B,H,W -----00-	EPFR35 [R/W] B,H,W ---00000	
000E84 _H	EPFR36 [R/W] B,H,W ----000-	—	—	—	
000E88 _H	—	—	EPFR42 [R/W] B,H,W -----00	EPFR43 [R/W] B,H,W 0--0000-	
000E8C _H	EPFR44 [R/W] B,H,W -00---0-	EPFR45 [R/W] B,H,W -0000000	—	—	
000E90 _H	—	—	—	—	

Address	Address offset value / Register name				Block
	+0	+1	+2	+3	
001790 _H	—/(TBYTE31)/ (LAMESR1) [R/W] B,H,W ----- *3	—/(TBYTE21)/ (LAMERT1) [R/W] B,H,W ----- *3	—/(TBYTE11)/ (LAMIER1) [R/W] B,H,W ----- *3	TBYTE01/(LAMRID1) / (LAMTID1) [R/W] B,H,W 00000000	Multi-UART1 *3: Reserved because CSIO mode is not set immediately after reset. *4: Reserved because LIN2.1 mode is not set immediately after reset.
001794 _H	BGR1[R/W] H,W 00000000 00000000		—/(ISMK1)[R/W] B,H,W ----- *2	—/(ISBA1)[R/W] B,H,W ----- *2	
001798 _H	FCR11[R/W] B,H,W ---00100	FCR01[R/W] B,H,W -0000000	FBYTE1[R/W] B,H,W 00000000 00000000		
00179C _H	FTICR1[R/W] B,H,W 00000000 00000000		—	—	
0017A0 _H	SCR2/(IBCR2)[R/W] B,H,W 0--00000	SMR2[R/W] B,H,W 000-00-0	SSR2[R/W] B,H,W 0-000011	ESCR2/(IBSR2)[R/W]] B,H,W 00000000	Multi-UART2 *1: Byte access is possible only for access to lower 8 bits. *2: Reserved because I ² C mode is not set immediately after reset. *3: Reserved because CSIO mode is not set immediately after reset. *4: Reserved because LIN2.1 mode is not set immediately after reset.
0017A4 _H	—/(RDR12/(TDR12))[R/W] B,H,W ----- *3		RDR02/(TDR02)[R/W] B,H,W -----0 00000000 *1		
0017A8 _H	SACSR2[R/W] B,H,W 0---000 00000000		STMR2[R] B,H,W 00000000 00000000		
0017AC _H	STMCR2[R/W] B,H,W 00000000 00000000		—/(SCSCR2/SFUR2)[R/W] B,H,W ----- *3 *4		
0017B0 _H	—/(SCSTR32)/ (LAMSR2) [R/W] B,H,W ----- *3	—/(SCSTR22)/ (LAMCR2) [R/W] B,H,W ----- *3	—/(SCSTR12)/ (SFLR12) [R/W] B,H,W ----- *3	—/(SCSTR02)/ (SFLR02) [R/W] B,H,W ----- *3	
0017B4 _H	—	—/(SCSFR22) [R/W] B,H,W ----- *3	—/(SCSFR12) [R/W] B,H,W ----- *3	—/(SCSFR02) [R/W] B,H,W ----- *3	
0017B8 _H	—/(TBYTE32)/ (LAMESR2) [R/W] B,H,W ----- *3	—/(TBYTE22)/ (LAMERT2) [R/W] B,H,W ----- *3	—/(TBYTE12)/ (LAMIER2) [R/W] B,H,W ----- *3	TBYTE02/(LAMRID2) / (LAMTID2) [R/W] B,H,W 00000000	
0017BC _H	BGR2[R/W] H, W 00000000 00000000		—/(ISMK2)[R/W] B,H,W ----- *2	—/(ISBA2)[R/W] B,H,W ----- *2	
0017C0 _H	FCR12[R/W] B,H,W ---00100	FCR02[R/W] B,H,W -0000000	FBYTE2[R/W] B,H,W 00000000 00000000		Multi-UART2
0017C4 _H	FTICR2[R/W] B,H,W 00000000 00000000		—	—	

Address	Address offset value / Register name				Block
	+0	+1	+2	+3	
001B24 _H	PDUT11 [W] H,W XXXXXXXX XXXXXXXX		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 XXXXXXXX XXXXXXXX		PPG12
001B34 _H	PDUT12 [W] H,W XXXXXXXX XXXXXXXX		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 XXXXXXXX XXXXXXXX		PPG13
001B44 _H	PDUT13 [W] H,W XXXXXXXX XXXXXXXX		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 XXXXXXXX XXXXXXXX		PPG14
001B54 _H	PDUT14 [W] H,W XXXXXXXX XXXXXXXX		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 XXXXXXXX XXXXXXXX		PPG15
001B64 _H	PDUT15 [W] H,W XXXXXXXX XXXXXXXX		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 XXXXXXXX XXXXXXXX		PPG16
001B74 _H	PDUT16 [W] H,W XXXXXXXX XXXXXXXX		PTMR16 [R] H,W 11111111 11111111		

Address	Address offset value / Register name				Block
	+0	+1	+2	+3	
001C78 _H	PCN232 [R/W] B,H,W --000000 -----110		PSDR32 [R/W] H,W 00000000 00000000		PPG32
001C7C _H	PTPC32 [R/W] H,W 00000000 00000000		—	—	
001C80 _H	PCN33 [R/W] B,H,W 00000000 000000-0		PCSR33 [W] H,W XXXXXXXXXX XXXXXXXXXX		PPG33
001C84 _H	PDUT33 [W] H,W XXXXXXXXXX XXXXXXXXXX		PTMR33 [R] H,W 11111111 11111111		
001C88 _H	PCN233 [R/W] B,H,W --000000 -----110		PSDR33 [R/W] H,W 00000000 00000000		PPG33
001C8C _H	PTPC33 [R/W] H,W 00000000 00000000		—	—	
001C90 _H	PCN34 [R/W] B,H,W 00000000 000000-0		PCSR34 [W] H,W XXXXXXXXXX XXXXXXXXXX		PPG34
001C94 _H	PDUT34 [W] H,W XXXXXXXXXX XXXXXXXXXX		PTMR34 [R] H,W 11111111 11111111		
001C98 _H	PCN234 [R/W] B,H,W --000000 -----110		PSDR34 [R/W] H,W 00000000 00000000		
001C9C _H	PTPC34 [R/W] H,W 00000000 00000000		—	—	
001CA0 _H	PCN35 [R/W] B,H,W 00000000 000000-0		PCSR35 [W] H,W XXXXXXXXXX XXXXXXXXXX		PPG35
001CA4 _H	PDUT35 [W] H,W XXXXXXXXXX XXXXXXXXXX		PTMR35 [R] H,W 11111111 11111111		
001CA8 _H	PCN235 [R/W] B,H,W --000000 -----110		PSDR35 [R/W] H,W 00000000 00000000		
001CAC _H	PTPC35 [R/W] H,W 00000000 00000000		—	—	
001CB0 _H	PCN36 [R/W] B,H,W 00000000 000000-0		PCSR36 [W] H,W XXXXXXXXXX XXXXXXXXXX		PPG36
001CB4 _H	PDUT36 [W] H,W XXXXXXXXXX XXXXXXXXXX		PTMR36 [R] H,W 11111111 11111111		
001CB8 _H	PCN236 [R/W] B,H,W --000000 -----110		PSDR36 [R/W] H,W 00000000 00000000		
001CBC _H	PTPC36 [R/W] H,W 00000000 00000000		—	—	
001CC0 _H	PCN37 [R/W] B,H,W 00000000 000000-0		PCSR37 [W] H,W XXXXXXXXXX XXXXXXXXXX		PPG37
001CC4 _H	PDUT37 [W] H,W XXXXXXXXXX XXXXXXXXXX		PTMR37 [R] H,W 11111111 11111111		
001CC8 _H	PCN237 [R/W] B,H,W --000000 -----110		PSDR37 [R/W] H,W 00000000 00000000		

Address	Address offset value / Register name				Block
	+0	+1	+2	+3	
002150 _H	IF2DTA11 [R/W] B,H,W 00000000 00000000		IF2DTA21 [R/W] B,H,W 00000000 00000000		CAN1 (64msb)
002154 _H	IF2DTB11 [R/W] B,H,W 00000000 00000000		IF2DTB21 [R/W] B,H,W 00000000 00000000		
002158 _H	—	—	—	—	
00215C _H	—	—	—	—	
002160 _H , 002164 _H	Reserved (IF2 data mirror)				
002168 _H to 00217C _H	—				
002180 _H	TREQR21 [R] B,H,W 00000000 00000000		TREQR11 [R] B,H,W 00000000 00000000		
002184 _H	TREQR41 [R] B,H,W 00000000 00000000		TREQR31 [R] B,H,W 00000000 00000000		
002188 _H	—	—	—	—	
00218C _H	—	—	—	—	
002190 _H	NEWDT21 [R] B,H,W 00000000 00000000		NEWDT11 [R] B,H,W 00000000 00000000		
002194 _H	NEWDT41 [R] B,H,W 00000000 00000000		NEWDT31 [R] B,H,W 00000000 00000000		
002198 _H	—	—	—	—	
00219C _H	—	—	—	—	
0021A0 _H	INTPND21 [R] B,H,W 00000000 00000000		INTPND11 [R] B,H,W 00000000 00000000		
0021A4 _H	INTPND41 [R] B,H,W 00000000 00000000		INTPND31 [R] B,H,W 00000000 00000000		
0021A8 _H	—	—	—	—	
0021AC _H	—	—	—	—	
0021B0 _H	MSGVAL21 [R] B,H,W 00000000 00000000		MSGVAL11 [R] B,H,W 00000000 00000000		
0021B4 _H	MSGVAL41 [R] B,H,W 00000000 00000000		MSGVAL31 [R] B,H,W 00000000 00000000		
0021B8 _H	—	—	—	—	
0021BC _H	—	—	—	—	

10. Interrupt Vector Table

This list shows the assignments of interrupt factors and interrupt vectors/interrupt control registers.

Interrupt vector 64 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	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						
External interrupt 0-7	16	10	ICR00	3BC _H	000FFFB _C	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	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
-	22	16	ICR06	3A4 _H	000FFFA4 _H	-* ⁶
-	23	17	ICR07	3A0 _H	000FFFA0 _H	-* ⁶
-	24	18	ICR08	39C _H	000FFF9C _H	-* ⁶
-	25	19	ICR09	398 _H	000FFF98 _H	-* ⁶
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

Interrupt factor	Interrupt number		Interrupt level	Offset	Default address for TBR	RN
	Decimal	Hexa decimal				
Multi-function serial interface ch.4 (reception completed)	28	1C	ICR12	38C _H	000FFF8C _H	12* ¹
Multi-function serial interface ch.4 (status)						
Multi-function serial interface ch.4 (transmission completed)	29	1D	ICR13	388 _H	000FFF88 _H	13
Multi-function serial interface ch.5 (reception completed)	30	1E	ICR14	384 _H	000FFF84 _H	14* ¹
Multi-function serial interface ch.5 (status)						
Multi-function serial interface ch.5 (transmission completed)	31	1F	ICR15	380 _H	000FFF80 _H	15
Multi-function serial interface ch.6 (reception completed)	32	20	ICR16	37C _H	000FFF7C _H	16* ¹
Multi-function serial interface ch.6 (status)						
Multi-function serial interface ch.6 (transmission completed)	33	21	ICR17	378 _H	000FFF78 _H	17
CAN0	34	22	ICR18	374 _H	000FFF74 _H	-
CAN1	35	23	ICR19	370 _H	000FFF70 _H	-
RAM diagnosis end						
RAM initialization completion						
Error generation during RAM diagnosis						
Backup RAM diagnosis end						
Backup RAM initialization completion						
Error generation during Backup RAM diagnosis						
CAN2	36	24	ICR20	36C _H	000FFF6C _H	-
Up/down counter 0						
Up/down counter 1						
Real time clock	37	25	ICR21	368 _H	000FFF68 _H	-
-	38	26	ICR22	364 _H	000FFF64 _H	-* ⁶
16-bit Free-run timer 0 (0 detection) / (compare clear)	39	27	ICR23	360 _H	000FFF60 _H	23
PPG 1/10/11/20/30/31	40	28	ICR24	35C _H	000FFF5C _H	24* ³
16-bit Free-run timer 1 (0 detection) / (compare clear)						
PPG 2/3/12/13/23/43	41	29	ICR25	358 _H	000FFF58 _H	25* ³
16-bit Free-run timer 2 (0 detection) / (compare clear)						
PPG 4/24/35	42	2A	ICR26	354 _H	000FFF54 _H	26* ³
PPG 7/16/17/27/37	43	2B	ICR27	350 _H	000FFF50 _H	27* ³
PPG 19	44	2C	ICR28	34C _H	000FFF4C _H	28* ³
16-bit ICU 0 (fetching) / 16-bit ICU 1 (fetching)	45	2D	ICR29	348 _H	000FFF48 _H	29
Main timer	46	2E	ICR30	344 _H	000FFF44 _H	30
Sub timer						
PLL timer						
16-bit ICU 2 (fetching) /16-bit ICU 3 (fetching)						

Interrupt factor	Interrupt number		Interrupt level	Offset	Default address for TBR	RN
	Decimal	Hexa decimal				
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 0/1/7/10/11/14/15/16/17/22/27/28/31	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)						
16-bit OCU 4 (match) / 16-bit OCU 5 (match)						
32-bit ICU6 (fetching/measurement)	51	33	ICR35	330 _H	000FFF30 _H	35
Multi-function serial interface ch.10 (reception completed)						
Multi-function serial interface ch.10 (status)						
Multi-function serial interface ch.10 (transmission completed)	52	34	ICR36	32C _H	000FFF2C _H	36* ¹
32-bit ICU8 (fetching/measurement)	53	35	ICR37	328 _H	000FFF28 _H	37
Multi-function serial interface ch.11 (reception completed)						
Multi-function serial interface ch.11 (status)						
32-bit ICU9 (fetching/measurement)	54	36	ICR38	324 _H	000FFF24 _H	38* ¹
WG dead timer underflow 0 / 1/ 2						
WG dead timer reload 0 / 1/ 2						
WG DTTI 0	55	37	ICR39	320 _H	000FFF20 _H	39
32-bit ICU4 (fetching/measurement)						
Multi-function serial interface ch.11 (transmission completed)						
32-bit ICU5 (fetching/measurement)	56	38	ICR40	31C _H	000FFF1C _H	40
A/D converter 32/34/35/37/38/40/41/42/43/44/45/46/47						
32-bit OCU7/11 (match)						
32-bit OCU8/9 (match)	57	39	ICR41	318 _H	000FFF18 _H	41
-	58	3A	ICR42	314 _H	000FFF14 _H	42
-	59	3B	ICR43	310 _H	000FFF10 _H	43
-	60	3C	ICR44	30C _H	000FFF0C _H	-* ⁶
-	61	3D	ICR45	308 _H	000FFF08 _H	-
-						
-						
DMAC0/1/2/3/4/5/6/7/8/9/10/11/12/13/14/15	62	3E	ICR46	304 _H	000FFF04 _H	-
Delay interrupt	63	3F	ICR47	300 _H	000FFF00 _H	-
System reserved (Used for REALOS™* ⁸)	64	40	-	2FC _H	000FFEFC _H	-
System reserved (Used for REALOS)	65	41	-	2F8 _H	000FFE8 _H	-

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.

(4-1-5) Bit setting: SMR:MD2=0, SMR:MD1=1, SMR:MD0=0,

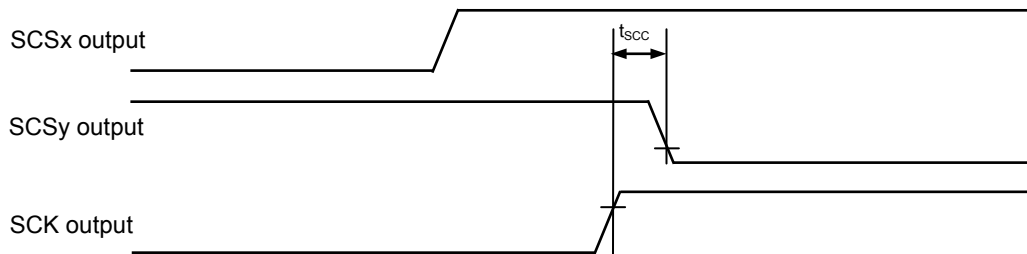
When Serial chip select is used : SCSCR:CSSEN=1,

Serial clock output mark level "H" : SMR,SCSFR:SCINV=0,

Serial chip select Inactive level "H" : SCSCR,SCSFR:CSLVL=1

(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	Conditions	Value		Unit	Remarks
				Min	Max		
SCS↓→SCK↓ setup time	t _{CSSI}	SCK1, SCK2, SCK5 to SCK11 SCS1, SCS2, SCS50 to SCS53, SCS60 to SCS63, SCS70 to SCS73, SCS8 to SCS11	-	t _{CSSU} -50 *1	t _{CSSU} +0 *1	ns	Internal shift clock mode output pin : C _L =50pF
		SCK3, SCK4 SCS3, SCS40 to SCS43		t _{CSSU} -50 *1	t _{CSSU} +300 *1	ns	
SCK↑→SCS↑ hold time	t _{CSHI}	SCK1, SCK2, SCK5 to SCK11 SCS1, SCS2, SCS50 to SCS53, SCS60 to SCS63, SCS70 to SCS73, SCS8 to SCS11		t _{CSHD} -10 *2	t _{CSHD} +50 *2	ns	
		SCK3, SCK4 SCS3, SCS40 to SCS43		t _{CSHD} -300 *2	t _{CSHD} +50 *2	ns	
SCS deselect time	t _{CSDI}	SCS1 to SCS3, SCS40 to SCS43, SCS50 to SCS53, SCS60 to SCS63, SCS70 to SCS73, SCS8 to SCS11		t _{CSDS} -50 *3	t _{CSDS} +50 *3	ns	

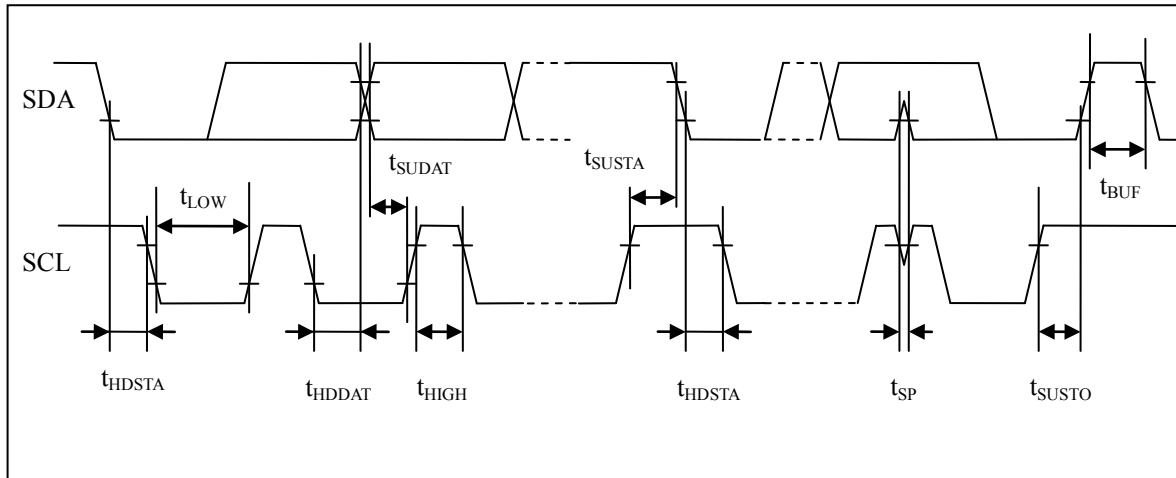


When Serial chip select is used , Serial clock output mark level "L",
Serial chip select Inactive level "H"
Internal shift clock mode , Example of switching clock by round operation (x,y=0,1,2,3)

" $t_{SUDAT} \geq 250 \text{ ns}$ ".

*4: t_{CPP} is the peripheral clock cycle time. Adjust the clock of the bus in the surrounding to 8MHz or more when use I²C.

• I²C timing



Part number	Sub clock	CSV Initial value	LVD Initial value	Package*2
MB91F526DWBPMC	Yes	ON	ON	LQH • 80 pin, Plastic
MB91F526DYBPMC			OFF	
MB91F526DJBPMC		OFF	ON	
MB91F526DLBPMC			OFF	
MB91F525DWBPMC		ON	ON	
MB91F525DYBPMC			OFF	
MB91F525DJBPMC		OFF	ON	
MB91F525DLBPMC			OFF	
MB91F524DWBPMC		ON	ON	
MB91F524DYBPMC			OFF	
MB91F524DJBPMC		OFF	ON	
MB91F524DLBPMC			OFF	
MB91F523DWBPMC		ON	ON	
MB91F523DYBPMC			OFF	
MB91F523DJBPMC		OFF	ON	
MB91F523DLBPMC			OFF	
MB91F522DWBPMC		ON	ON	
MB91F522DYBPMC			OFF	
MB91F522DJBPMC		OFF	ON	
MB91F522DLBPMC			OFF	
MB91F526DSBPMC	None	ON	ON	
MB91F526DUBPMC			OFF	
MB91F526DHBPMC		OFF	ON	
MB91F526DKBPMC			OFF	
MB91F525DSBPMC		ON	ON	
MB91F525DUBPMC			OFF	
MB91F525DHBPMC		OFF	ON	
MB91F525DKBPMC			OFF	
MB91F524DSBPMC		ON	ON	
MB91F524DUBPMC			OFF	
MB91F524DHBPMC		OFF	ON	
MB91F524DKBPMC			OFF	
MB91F523DSBPMC		ON	ON	
MB91F523DUBPMC			OFF	
MB91F523DHBPMC		OFF	ON	
MB91F523DKBPMC			OFF	
MB91F522DSBPMC		ON	ON	
MB91F522DUBPMC			OFF	
MB91F522DHBPMC		OFF	ON	
MB91F522DKBPMC			OFF	

Part number	Sub clock	CSV Initial value	LVD Initial value	Package* ²
MB91F526BWBPMC1	Yes	ON	ON	LQD • 64 pin, Plastic
MB91F526BYBPMC1			OFF	
MB91F526BJBPMC1		OFF	ON	
MB91F526BLBPMC1			OFF	
MB91F525BWBPMC1		ON	ON	
MB91F525BYBPMC1			OFF	
MB91F525BJBPMC1		OFF	ON	
MB91F525BLBPMC1			OFF	
MB91F524BWBPMC1		ON	ON	
MB91F524BYBPMC1			OFF	
MB91F524BJBPMC1		OFF	ON	
MB91F524BLBPMC1			OFF	
MB91F523BWBPMC1		ON	ON	
MB91F523BYBPMC1			OFF	
MB91F523BJBPMC1		OFF	ON	
MB91F523BLBPMC1			OFF	
MB91F522BWBPMC1		ON	ON	
MB91F522BYBPMC1			OFF	
MB91F522BJBPMC1		OFF	ON	
MB91F522BLBPMC1			OFF	
MB91F526BSBPMC1	None	ON	ON	
MB91F526BUBPMC1			OFF	
MB91F526BHBPMC1		OFF	ON	
MB91F526BKBPMC1			OFF	
MB91F525BSBPMC1		ON	ON	
MB91F525BUBPMC1			OFF	
MB91F525BHBPMC1		OFF	ON	
MB91F525BKBPMC1			OFF	
MB91F524BSBPMC1		ON	ON	
MB91F524BUBPMC1			OFF	
MB91F524BHBPMC1		OFF	ON	
MB91F524BKBPMC1			OFF	
MB91F523BSBPMC1		ON	ON	
MB91F523BUBPMC1			OFF	
MB91F523BHBPMC1		OFF	ON	
MB91F523BKBPMC1			OFF	
MB91F522BSBPMC1		ON	ON	
MB91F522BUBPMC1			OFF	
MB91F522BHBPMC1		OFF	ON	
MB91F522BKBPMC1			OFF	

*¹: It is only supported for customers who have already adopted it now. We do not recommend adopting new products.

*²: For details of the package, see "■ PACKAGE DIMENSIONS".

Part number	Sub clock	CSV Initial value	LVD Initial value	Package*
MB91F526KWDPMC1	Yes	ON	ON	LQN • 144 pin, (Lead pitch 0.4mm) Plastic
MB91F526KJDPMC1		OFF	ON	
MB91F525KWDPMC1		ON	ON	
MB91F525KJDPMC1		OFF	ON	
MB91F524KWDPMC1		ON	ON	
MB91F524KJDPMC1		OFF	ON	
MB91F523KWDPMC1		ON	ON	
MB91F523KJDPMC1		OFF	ON	
MB91F522KWDPMC1		ON	ON	
MB91F522KJDPMC1		OFF	ON	
MB91F526KSDPMC1	None	ON	ON	
MB91F526KHDPMC1		OFF	ON	
MB91F525KSDPMC1		ON	ON	
MB91F525KHDPMC1		OFF	ON	
MB91F524KSDPMC1		ON	ON	
MB91F524KHDPMC1		OFF	ON	
MB91F523KSDPMC1		ON	ON	
MB91F523KHDPMC1		OFF	ON	
MB91F522KSDPMC1		ON	ON	
MB91F522KHDPMC1		OFF	ON	
MB91F526JWDPMC	Yes	ON	ON	LQM • 120 pin, Plastic
MB91F526JJDPMC		OFF	ON	
MB91F525JWDPMC		ON	ON	
MB91F525JJDPMC		OFF	ON	
MB91F524JWDPMC		ON	ON	
MB91F524JJDPMC		OFF	ON	
MB91F523JWDPMC		ON	ON	
MB91F523JJDPMC		OFF	ON	
MB91F522JWDPMC		ON	ON	
MB91F522JJDPMC		OFF	ON	
MB91F526JSDPMC	None	ON	ON	
MB91F526JHDPMC		OFF	ON	
MB91F525JSDPMC		ON	ON	
MB91F525JHDPMC		OFF	ON	
MB91F524JSDPMC		ON	ON	
MB91F524JHDPMC		OFF	ON	
MB91F523JSDPMC		ON	ON	
MB91F523JHDPMC		OFF	ON	
MB91F522JSDPMC		ON	ON	
MB91F522JHDPMC		OFF	ON	

Page	Section	Change Results						
19	■PIN Description	(Continued) (Correct)						
		Pin no.						Pin Name
		64	80	100	120	144	176	
		-	-	-	-	2	2	P015
								D29
								TRG0_0
		-	-	-	-	3	3	P016
								D30
								TRG1_0
		-	-	-	-	-	4	P170
								PPG36_1
		-	-	-	-	4	5	P017
								D31
								TRG2_0
		-	-	-	-	-	6	P171
								PPG37_1
								P020
		2 ^{*1}	2 ^{*1}	2 ^{*1}	2 ^{*1}	5	7	ASX ^{*2, *3, *4, *5}
								SIN3_1
								TRG3_0
								TIN0_2
								RTO5_1
		-	-	-	3 ^{*1}	6	8	P021
								CS0X ^{*5}
								SOT3_1
								TRG6_1
								TRG4_0
		-	-	-	4 ^{*1}	7	9	P022
								CS1X ^{*5}
								SCK3_1
								TRG7_1
								TRG5_0
		-	-	-	5 ^{*1}	8	10	P023
								RDY ^{*5}
								SCS3_1
								PPG32_0
								TIN0_0
		3 ^{*1}	3 ^{*1}	3 ^{*1}	6 ^{*1}	9	11	P024
								WR0X ^{*2, *3, *4, *5}
								SIN4_1
						PPG24_0		
						TIN1_0		
						RTO4_1		
						INT15_0		

Page	Section	Change Results
36	■PIN Description	The following sentences modified under the Table of Pin description. (Error) *1: For the I/O circuit types, see "■I/O CIRCUIT TYPE". *2: For switching, see "I/O Port" in HARDWARE MANUAL. (Correct) *1: There is a restriction of pin functions. See "Pin Name" of this table. *2: not supported in 64pin *3: not supported in 80pin *4: not supported in 100pin *5: not supported in 120pin *6: not supported in 144pin *7: not supported in 176pin *8: For the I/O circuit types, see "■I/O CIRCUIT TYPE". *9: For switching, see "I/O Port" in HARDWARE MANUAL.
39	■I/O Circuit Type	Remarks for Type I in "I/O Circuit Types" modified as follows: (Error) - 3V pad power supply (5V tolerant), General-purpose I/O port - Output 4mA - CMOS hysteresis input (Correct) - General-purpose I/O port (5V tolerant) - Output 4mA - CMOS hysteresis input
40	■I/O Circuit Type	Remarks for Type J in "I/O Circuit Types" modified as follows: (Error) - 3V pad power supply (5V tolerant), Analog input, General-purpose I/O port - Output 4mA - CMOS hysteresis input (Correct) - Analog input, General-purpose I/O port (5V tolerant) - Output 4mA - CMOS hysteresis input