Infineon Technologies - MB91F526KSCPMC-GSK5E2 Datasheet

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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, I²C, LINbus, SPI, UART/USART
Peripherals	DMA, LVD, POR, PWM, WDT
Number of I/O	120
Program Memory Size	1.0625MB (1.0625M x 8)
Program Memory Type	FLASH
EEPROM Size	64K x 8
RAM Size	136K 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/mb91f526kscpmc-gsk5e2

3. Pin Description

Pin no.						Pin Name	Polarity	I/O circuit types*8	Function*9
64	80	100	120	144	176				
-	-	-	-	2	2	P015	-	A	General-purpose I/O port
						D29	-		External bus data bit29 I/O (0)
						TRG0_0	-		PPG trigger 0 input (0)
-	-	-	-	3	3	P016	-	A	General-purpose I/O port
						D30	-		External bus data bit30 I/O (0)
						TRG1_0	-		PPG trigger 1 input (0)
-	-	-	-	-	4	P170	-	A	General-purpose I/O port
						PPG36_1	-		PPG ch.36 output (1)
-	-	-	-	4	5	P017	-	A	General-purpose I/O port
						D31	-		External bus data bit31 I/O (0)
						TRG2_0	-		PPG trigger 2 input (0)
-	-	-	-	-	6	P171	-	A	General-purpose I/O port
						PPG37_1	-		PPG ch.37 output (1)
2 *1	2 *1	2 *1	2 *1	5	7	P020	-	F	General-purpose I/O port
						ASX *2, *3, *4, *5	-		External bus/Address strobe output
						SIN3_1	-		Multi-function serial ch.3 serial data input (1)
						TRG3_0	-		PPG trigger 3 input (0)
						TIN0_2	-		Reload timer ch.0 event input (2)
						RTO5_1	-		Waveform generator ch.5 output pin (1)
-	-	-	3 *1	6	8	P021	-	A	General-purpose I/O port
						CS0X *5	-		External bus chip select 0 output
						SOT3_1	-		Multi-function serial ch.3 serial data output (1)
						TRG6_1	-		PPG trigger 6 input (1)
						TRG4_0	-		PPG trigger 4 input (0)
-	-	-	4 *1	7	9	P022	-	F	General-purpose I/O port
						CS1X *5	-		External bus chip select 1 output
						SCK3_1	-		Multi-function serial ch.3 clock I/O (1)
						TRG7_1	-		PPG trigger 7 input (1)
						TRG5_0	-		PPG trigger 5 input (0)
-	-	-	5 *1	8	10	P023	-	A	General-purpose I/O port
						RDX *5	-		External bus/Read strobe output
						SCS3_1	-		Serial chip select 3 output (1)
						PPG32_0	-		PPG ch.32 output (0)
						TIN0_0	-		Reload timer ch.0 event input (0)

Pin no.						Pin Name	Polarity	I/O circuit types*8	Function*9
64	80	100	120	144	176				
13 *1	15 *1	19 *1	22 *1	25	31	P042	-	B	General-purpose I/O port
						A12 *2, *3, *4, *5	-		External bus/Address bit12 output
						SOT9_0	-		Multi-function serial ch.9 serial data output (0)
						AN47	-		ADC analog 47 input
						ICU8_1	-		Input capture ch.8 input (1)
						TRG0_1	-		PPG trigger 0 input (1)
						ZIN1_0	-		U/D counter ch.1 ZIN input (0)
-	-	20 *1	23 *1	26	32	P043	-	A	General-purpose I/O port
						A13 *4, *5	-		External bus/Address bit13 output (0)
						ICU7_1	-		Input capture ch.7 input (1)
						TRG1_1	-		PPG trigger 1 input (1)
-	16 *1	21 *1	24 *1	27	33	P044	-	A	General-purpose I/O port
						A14 *3, *4, *5	-		External bus/Address bit14 output (0)
						SCS9_0	-		Serial chip select 9 I/O (0)
						ICU6_1	-		Input capture ch.6 input (1)
						TRG2_1	-		PPG trigger 2 input (1)
14 *1	17 *1	22 *1	25 *1	28	34	P045	-	G	General-purpose I/O port
						A15 *2, *3, *4, *5	-		External bus/Address bit15 output (0)
						SCK9_0	-		Multi-function serial ch.9 clock I/O (0)
						AN46	-		ADC analog 46 input
						ICU5_1	-		Input capture ch.5 input (1)
						TRG3_1	-		PPG trigger 3 input (1)
						TOT1_2	-		Reload timer ch.1 output (2)
-	-	-	26 *1	29	35	P046	-	A	General-purpose I/O port
						A16 *5	-		External bus/Address bit16 output (0)
						ICU4_1	-		Input capture ch.4 input (1)
						TRG4_1	-		PPG trigger 4 input (1)
-	-	-	-	-	36	P176	-	A	General-purpose I/O port
						TRG10_0	-		PPG trigger 10 input (0)
15 *1	18 *1	23 *1	27 *1	30	37	P047	-	B	General-purpose I/O port
						A17 *2, *3, *4, *5	-		External bus/Address bit17 output (0)
						AN45	-		ADC analog 45 input
						TRG8_0	-		PPG trigger 8 input (0)
						TIN3_2	-		Reload timer ch.3 event input (2)
						SOT0_1	-		Multi-function serial ch.0 serial data output (1)
-	-	-	-	-	38	P177	-	A	General-purpose I/O port
						TRG11_0	-		PPG trigger 11 input (0)

Pin no.						Pin Name	Polarity	I/O circuit types*8	Function*9
64	80	100	120	144	176				
-	-	-	-	64	80	P080	-	A	General-purpose I/O port
						SCS52_0	-		Serial chip select 52 output (0)
						PPG0_0	-		PPG ch.0 output (0)
29	37	46	56	65	81	P081	-	G	General-purpose I/O port
						SOT5_0/ SDA5	-		Multi-function serial ch.5 serial data output (0)/I^{2}C bus serial data I/O
						AN0	-		ADC analog 0 input
						PPG1_0	-		PPG ch.1 output (0)
30	38	47	57	66	82	P082	-	G	General-purpose I/O port
						SIN5_0	-		Multi-function serial ch.5 serial data input (0)
						AN1	-		ADC analog 1 input
						PPG2_0	-		PPG ch.2 output (0)
-	-	-	-	67	83	P083	-	B	General-purpose I/O port
						SCS50_0	-		Serial chip select 50 I/O (0)
						AN2	-		ADC analog 2 input
						PPG3_0	-		PPG ch.3 output (0)
-	-	-	-	68	84	P084	-	B	General-purpose I/O port
						SCS51_0	-		Serial chip select 51 output (0)
						AN3	-		ADC analog 3 input
						PPG4_0	-		PPG ch.4 output (0)
-	-	-	-	69	85	P085	-	A	General-purpose I/O port
						PPG5_0	-		PPG ch.5 output (0)
-	-	48	58	70	86	P086	-	C	General-purpose I/O port
						DAO1	-		DAC analog 1 output
						PPG6_0	-		PPG ch.6 output (0)
31	39	49	59	71	87	P087	-	C	General-purpose I/O port
						DAO0	-		DAC analog 0 output
						PPG7_0	-		PPG ch.7 output (0)
						INT8_0	-		INT8 External interrupt input (0)
-	-	-	-	-	90	P190	-	A	General-purpose I/O port
						TIN0_1	-		Reload timer ch.0 event input (1)
-	-	-	-	-	91	P191	-	A	General-purpose I/O port
						TIN1_1	-		Reload timer ch.1 event input (1)
-	-	-	-	74	92	P090	-	B	General-purpose I/O port
						AN4	-		ADC analog 4 input
						ICU0_0	-		Input capture ch.0 input (0)
						TIN2_1	-		Reload timer ch.2 event input (1)
-	-	-	-	75	93	P091	-	B	General-purpose I/O port
						AN5	-		ADC analog 5 input
						PPG41_1	-		PPG ch.41 output (1)
						ICU1_0	-		Input capture ch.1 input (0)
						TIN3_1	-		Reload timer ch.3 event input (1)

6. Handling Devices

This section explains the latch-up prevention and pin processing.

- For latch-up prevention
  If a voltage higher than VCC or a voltage lower than VSS is applied to an I/O pin, or if a voltage exceeding the ratings is applied between VCC and VSS pins, a latch-up may occur in CMOS IC. If the latch-up occurs, the power supply current increases excessively and device elements may be damaged by heat. Take care to prevent any voltage from exceeding the maximum ratings in device application.

  Also, the analog power supply (AVCC, AVRH) and analog input must not be exceed the digital power supply (VCC) when the power supply to the analog system is turned on or off.

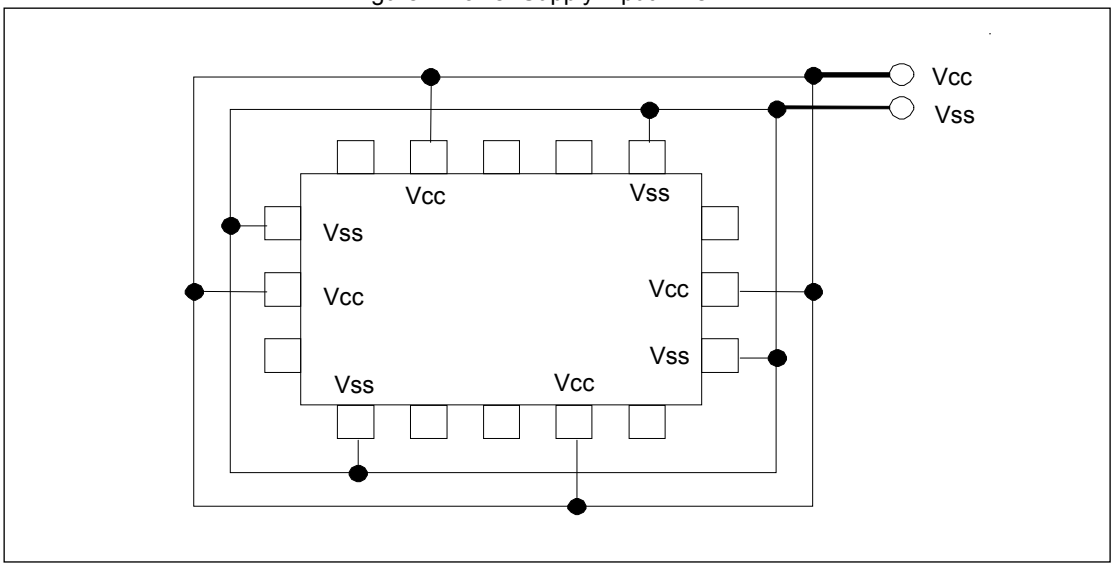
  In the correct power-on sequence of the microcontroller, turn on the digital power supply (VCC) and analog power supplies (AVCC, AVRH) simultaneously. Or, turn on the digital power supply (VCC), and then turn on analog power supplies (AVCC, AVRH).

- Treatment of unused pins
  If unused input pins are left open, they may cause a permanent damage to the device due to malfunction or latch-up. Connect at least a 2kΩ resistor to each of the unused pins for pull-up or pull-down processing.

  Also, if I/O pins are not used, they must be set to the output state for releasing or they must be set to the input state and treated in the same way as for the input pins.

- Power supply pins
  The device is designed to ensure that if the device contains multiple VCC or VSS pins, the pins that should be at the same potential are interconnected to prevent latch-up or other malfunctions. Further, connect these pins to an external power supply or ground to reduce unwanted radiation, prevent strobe signals from malfunctioning due to a raised ground level, and fulfill the total output current standard, etc. As shown in figure 1, all Vss power supply pins must be treated in the similar way. If multiple Vcc or Vss systems are connected, the device cannot operate correctly even within the guaranteed operating range.

Figure 1 Power Supply Input Pins



The power supply pins should be connected to VCC and VSS pins of this device at the low impedance from the power supply source.

In the area close to this device, a ceramic capacitor having the capacitance larger than the capacitor of C pin is recommended to use as a bypass capacitor between VCC and VSS pins.

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	
$000E94_H$	—	—	—	—	Extended Port Function Register
$000E98_H$	EPFR56 [R/W] B,H,W -----0-0	EPFR57 [R/W] B,H,W ----00-0	EPFR58 [R/W] B,H,W ----00-0	EPFR59 [R/W] B,H,W ----00-0	
$000E9C_H$	EPFR60 [R/W] B,H,W ----00-0	EPFR61 [R/W] B,H,W -----00-	EPFR62 [R/W] B,H,W -----00-	EPFR63 [R/W] B,H,W ---0000-	
$000EA0_H$ to $000EBC_H$	—	—	—	—	Reserved
$000EC0_H$	PPER00 [R/W] B,H,W 00000000	PPER01 [R/W] B,H,W 00000000	PPER02 [R/W] B,H,W 00000000	PPER03 [R/W] B,H,W 00000000	Port Pull-up/down Enable Register
$000EC4_H$	PPER04 [R/W] B,H,W 00000000	PPER05 [R/W] B,H,W 00000000	PPER06 [R/W] B,H,W 00000000	PPER07 [R/W] B,H,W 00000000	
$000EC8_H$	PPER08 [R/W] B,H,W 00000000	PPER09 [R/W] B,H,W 00000000	PPER10 [R/W] B,H,W 00000000	PPER11 [R/W] B,H,W 00000000	
$000ECC_H$	PPER12 [R/W] B,H,W 00000000	PPER13 [R/W] B,H,W -0000000	PPER14 [R/W] B,H,W ---000--	PPER15 [R/W] B,H,W --000000	
$000ED0_H$	—	—	—	—	
$000ED4_H$	—	—	—	—	
$000ED8_H$	PPER16 [R/W] B,H,W 00000000	PPER17 [R/W] B,H,W 00000000	PPER18 [R/W] B,H,W 00000000	PPER19 [R/W] B,H,W 00000000	
$000EDC_H$ to $000F3C_H$	—	—	—	—	Reserved
$000F40_H$	PORTEN [R/W] B,H,W -------0	—	—	—	Port Enable Register
$000F44_H$	KEYCDR [R/W] H 00000000 00000000		—	—	KeyCodeRegister
$000F48_H$ to $000F64_H$	—	—	—	—	Reserved
$000F68_H$	MSCY6 [R] H,W XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX				Input Capture 6,7 Cycle measurement data register 67
$000F6C_H$	MSCY7 [R] H,W XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX				

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	
$001D20_H$	PCN43 [R/W] B,H,W 00000000 000000-0		PCSR43 [W] H,W XXXXXXXX XXXXXXXX		PPG43
$001D24_H$	PDUT43 [W] H,W XXXXXXXX XXXXXXXX		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 XXXXXXXX XXXXXXXX		PPG44
$001D34_H$	PDUT44 [W] H,W XXXXXXXX XXXXXXXX		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 XXXXXXXX XXXXXXXX		PPG45
$001D44_H$	PDUT45 [W] H,W XXXXXXXX XXXXXXXX		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 XXXXXXXX XXXXXXXX		PPG46
$001D54_H$	PDUT46 [W] H,W XXXXXXXX XXXXXXXX		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 XXXXXXXX XXXXXXXX		PPG47
$001D64_H$	PDUT47 [W] H,W XXXXXXXX XXXXXXXX		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		—	—	

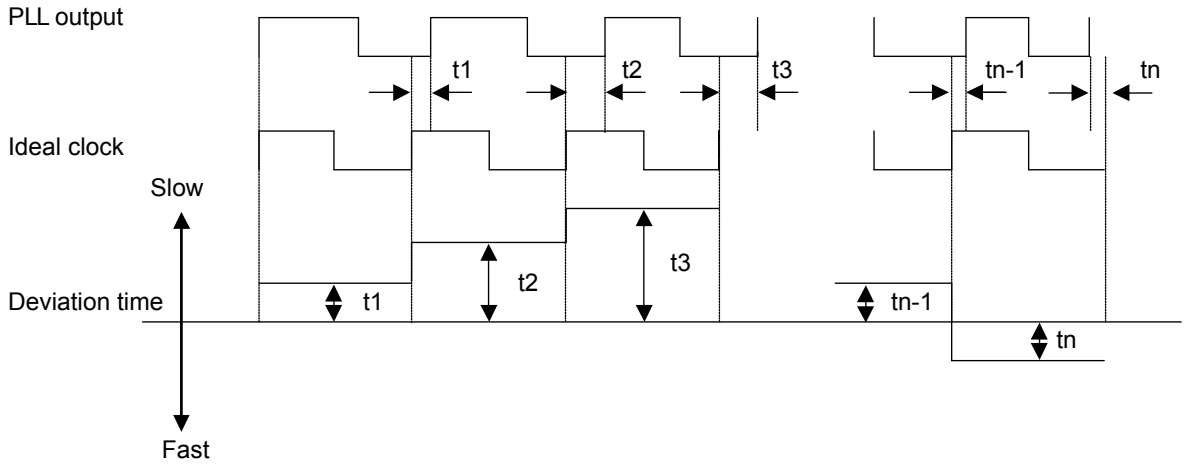
Address	Address offset value / Register name				Block
	+0	+1	+2	+3	
003030_H	TEAR0A[R] B,H,W 000----- -------- -----000 00000000				RAM/ diagnosis Backup RAM
003034_H	TEAR1A[R] B,H,W 000----- -------- -----000 00000000				
003038_H	TEAR2A[R] B,H,W 000----- -------- -----000 00000000				
$00303C_H$	TAEARA[R/W] B,H,W -----111 11111111		TASARA[R/W] B,H,W -----000 00000000		
003040_H	TFECRA [R/W] B,H,W ----0000	TICRA [R/W] B,H,W ----0000	TTCRA [R/W] B,H,W ------00 00001100		RAM/ diagnosis Backup RAM
003044_H	TSRCRA [R/W] B,H,W 0-------	—	—	TKCCRA [R/W] B,H,W 00----00	
003048_H to $0030FC_H$	—				Reserved
003100_H	BUSDIGSR0[R/W] H,W 00000000 0-----00		BUSDIGSR1[R/W] H,W 00000000 0-----00		BUS diagnosis
003104_H	BUSDIGSR2[R/W] H,W 00000000 0-----00		BUSTSTR0[R/W] H,W 00--0000 00000000		
003108_H	BUSADR0 [R] W 00000000 00000000 00000000 00000000				
$00310C_H$	BUSADR1 [R] W 00000000 00000000 00000000 00000000				
003110_H	BUSADR2 [R] W 00000000 00000000 00000000 00000000				
003114_H	—	—	BUSDIGSR3[R/W] H,W 00000000 0-----00		
003118_H	BUSDIGSR4[R/W] H,W 00000000 0-----00		BUSTSTR1[R/W] H,W 00--000- 00000000		
$00311C_H$	—	—	—	—	
003120_H	BUSADR3 [R] W 00000000 00000000 00000000 00000000				
003124_H	BUSADR4 [R] W 00000000 00000000 00000000 00000000				
003128_H to $003FFC_H$	—				Reserved
004000_H to $005FFC_H$	Backup-RAM				Backup RAM area

Interrupt factor	Interrupt number		Interrupt level	Offset	Default address for TBR	RN
	Decimal	Hexadecimal				
Multi-function serial interface ch.8 (reception completed) Multi-function serial interface ch.8 (status) 16-bit ICU 0 (fetching) / 16-bit ICU 1 (fetching)	45	2D	ICR29	348_H	$000FFF48_H$	29*1
Main timer Sub timer PLL timer Multi-function serial interface ch.8 (transmission completed) 16-bit ICU 2 (fetching) /16-bit ICU 3 (fetching)	46	2E	ICR30	344_H	$000FFF44_H$	30
Clock calibration unit (sub oscillation) Multi-function serial interface ch.9 (reception completed) Multi-function serial interface ch.9 (status)	47	2F	ICR31	340_H	$000FFF40_H$	31*1, *4
A/D converter 0/1/7/9/10/11/12/13/14/15/16 17/18/19/22/23/26/27/28/29/31	48	30	ICR32	$33C_H$	$000FFF3C_H$	32
Clock calibration unit (CR oscillation) Multi-function serial interface ch.9 (transmission completed) 16-bit OCU 0 (match) / 16-bit OCU 1 (match)	49	31	ICR33	338_H	$000FFF38_H$	33
32-bit Free-run timer 4 16-bit OCU 2 (match) / 16-bit OCU 3 (match)	50	32	ICR34	334_H	$000FFF34_H$	34*5
32-bit Free-run timer 3/5 16-bit OCU 4 (match) / 16-bit OCU 5 (match)	51	33	ICR35	330_H	$000FFF30_H$	35*5
32-bit ICU6 (fetching/measurement) Multi-function serial interface ch.10 (reception completed) Multi-function serial interface ch.10 (status)	52	34	ICR36	$32C_H$	$000FFF2C_H$	36*1
32-bit ICU7 (fetching/measurement) Multi-function serial interface ch.10 (transmission completed)	53	35	ICR37	328_H	$000FFF28_H$	37
32-bit ICU8 (fetching/measurement) Multi-function serial interface ch.11 (reception completed) Multi-function serial interface ch.11 (status)	54	36	ICR38	324_H	$000FFF24_H$	38*1
32-bit ICU9 (fetching/measurement) 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)	56	38	ICR40	$31C_H$	$000FFF1C_H$	40

Interrupt factor	Interrupt number		Interrupt level	Offset	Default address for TBR	RN
	Decimal	Hexadecimal				
Multi-function serial interface ch.3 (transmission completed)	27	1B	ICR11	390_H	$000FFF90_H$	11
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	$000FFF68_H$	-
Multi-function serial interface ch.7 (reception completed)	38	26	ICR22	364_H	$000FFF64_H$	22*1
Multi-function serial interface ch.7 (status)						
16-bit Free-run timer 0 (0 detection) / (compare clear)	39	27	ICR23	360_H	$000FFF60_H$	23
Multi-function serial interface ch.7 (transmission completed)						
PPG 0/1/10/11/20/21/30/31	40	28	ICR24	$35C_H$	$000FFF5C_H$	24*3
16-bit Free-run timer 1 (0 detection) / (compare clear)						
PPG 2/3/12/13/22/23/32/33/43	41	29	ICR25	358_H	$000FFF58_H$	25*3
16-bit Free-run timer 2 (0 detection) / (compare clear)						
PPG 4/5/14/15/24/25/35/44	42	2A	ICR26	354_H	$000FFF54_H$	26*3
PPG 6/7/16/17/26/27/37	43	2B	ICR27	350_H	$000FFF50_H$	27*3
PPG 8/9/18/19/28/29	44	2C	ICR28	$34C_H$	$000FFF4C_H$	28*3

• CAN PLL jitter

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



(4-1-6) Bit setting: SMR:MD2=0, SMR:MD1=1, SMR:MD0=0,
When Serial chip select is used : SCSCR:CSEN=1,
Serial clock output mark level "L" : SMR,SCSFR:SCINV=1,
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)

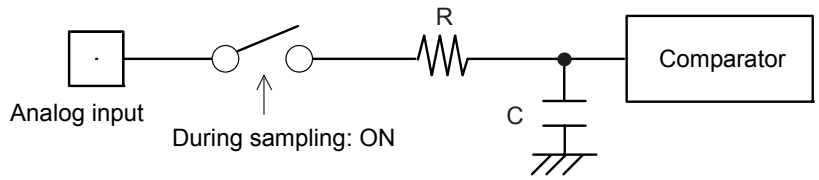
Parameter	Symbol	Pin name	Conditions	Value		Unit	Remarks
				Min	Max		
SCS↓→SCK↑ setup time	t_{CSSI}	SCK1 , SCK2, SCK5 to SCK11 SCS1 , SCS2, SCS50 to SCS53, SCS60 to SCS63, SCS70 to SCS73, SCS8 to SCS11	-	t_{CSSU}-50 *1	t_{CSSU}+0 *1	ns	Internal shift clock mode output pin : C_L=50pF
		SCK3 , SCK4 SCS3 , 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	

(3) Notes on Using A/D Converter

<About the output impedance of the analog input of external circuit>

When the external impedance is too high, the sampling period for analog voltages may not be sufficient. In this case, it is recommended to connect the capacitor (approx. 0.1 µF) to the analog input pin.

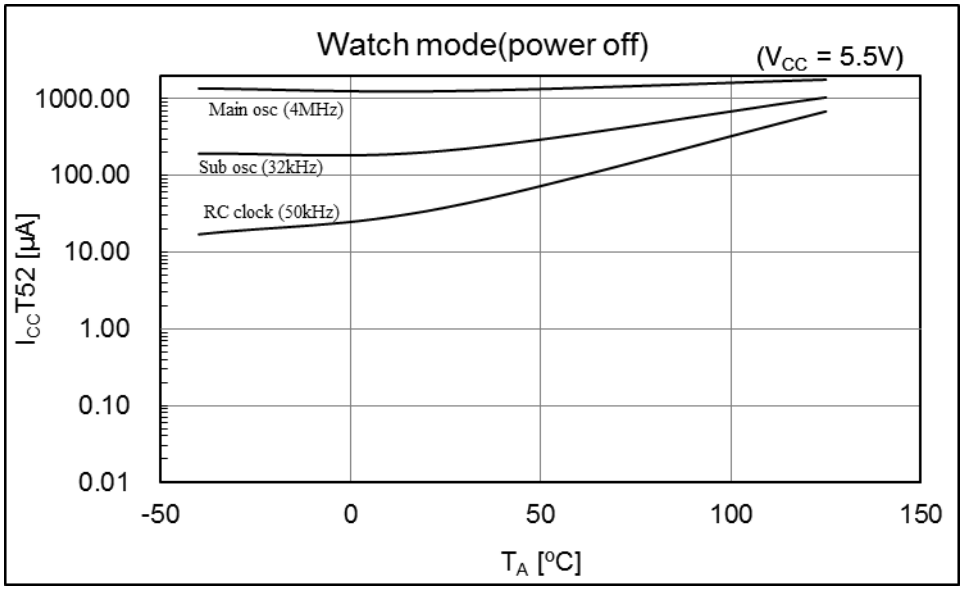
- Analog input circuit model

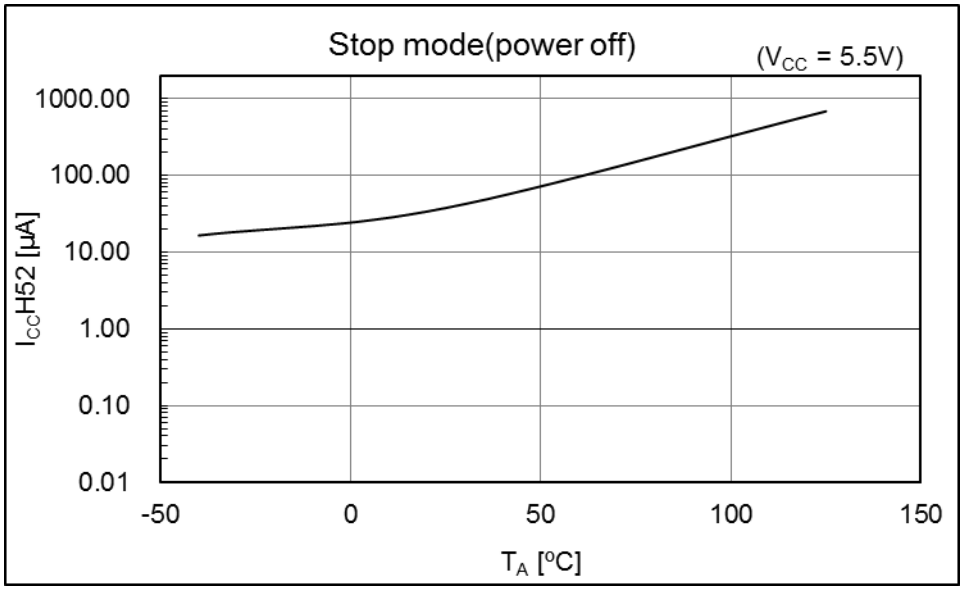


	R	C	
12bit A/D	1.9kΩ (Max)	8.30pF (Max)	(4.5V ≤ AV_{CC} ≤ 5.5V)
	4.3kΩ (Max)	8.30pF (Max)	(3.0V ≤ AV_{CC} ≤ 3.6V)

Note: Listed values must be considered as reference values.

MB91F526


Watch mode(power off)
(V_{CC} = 5.5V)
Main osc (4MHz)
Sub osc (32kHz)
RC clock (50kHz)
1000.00
100.00
10.00
1.00
0.10
0.01
I_{CC}T52 [µA]
-50
0
50
100
150
T_A [°C]


Stop mode(power off)
(V_{CC} = 5.5V)
1000.00
100.00
10.00
1.00
0.10
0.01
I_{CC}H52 [µA]
-50
0
50
100
150
T_A [°C]

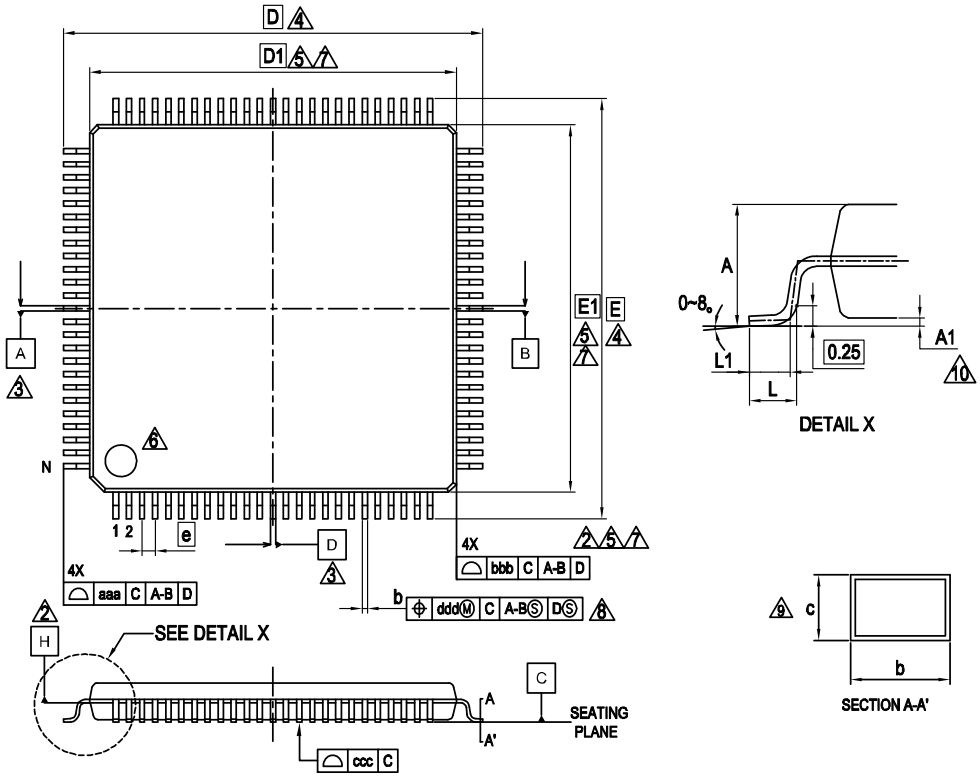
Part number	Sub clock	CSV Initial value	LVD Initial value	Package*2
MB91F526KWBPMC	Yes	ON	ON	LQS・144 pin, (Lead pitch 0.5mm) Plastic
MB91F526KYBPMC			OFF	
MB91F526KJBPMC		OFF	ON	
MB91F526KLBPMC			OFF	
MB91F525KWBPMC		ON	ON	
MB91F525KYBPMC			OFF	
MB91F525KJBPMC		OFF	ON	
MB91F525KLBPMC			OFF	
MB91F524KWBPMC		ON	ON	
MB91F524KYBPMC			OFF	
MB91F524KJBPMC		OFF	ON	
MB91F524KLBPMC			OFF	
MB91F523KWBPMC		ON	ON	
MB91F523KYBPMC			OFF	
MB91F523KJBPMC		OFF	ON	
MB91F523KLBPMC			OFF	
MB91F522KWBPMC		ON	ON	
MB91F522KYBPMC			OFF	
MB91F522KJBPMC		OFF	ON	
MB91F522KLBPMC			OFF	
MB91F526KSBPMC	None	ON	ON	
MB91F526KUBPMC			OFF	
MB91F526KHBPMC		OFF	ON	
MB91F526KKBPMC			OFF	
MB91F525KSBPMC		ON	ON	
MB91F525KUBPMC			OFF	
MB91F525KHBPMC		OFF	ON	
MB91F525KKBPMC			OFF	
MB91F524KSBPMC		ON	ON	
MB91F524KUBPMC			OFF	
MB91F524KHBPMC		OFF	ON	
MB91F524KKBPMC			OFF	
MB91F523KSBPMC		ON	ON	
MB91F523KUBPMC			OFF	
MB91F523KHBPMC		OFF	ON	
MB91F523KKBPMC			OFF	
MB91F522KSBPMC		ON	ON	
MB91F522KUBPMC			OFF	
MB91F522KHBPMC		OFF	ON	
MB91F522KKBPMC			OFF	

Part number	Sub clock	CSV Initial value	LVD Initial value	Package*
MB91F526FWDPMC	Yes	ON	ON	LQI・100 pin, Plastic
MB91F526FJDPMC		OFF	ON	
MB91F525FWDPMC		ON	ON	
MB91F525FJDPMC		OFF	ON	
MB91F524FWDPMC		ON	ON	
MB91F524FJDPMC		OFF	ON	
MB91F523FWDPMC		ON	ON	
MB91F523FJDPMC		OFF	ON	
MB91F522FWDPMC		ON	ON	
MB91F522FJDPMC		OFF	ON	
MB91F526FSDPMC	None	ON	ON	
MB91F526FHDPMC		OFF	ON	
MB91F525FSDPMC		ON	ON	
MB91F525FHDPMC		OFF	ON	
MB91F524FSDPMC		ON	ON	
MB91F524FHDPMC		OFF	ON	
MB91F523FSDPMC		ON	ON	
MB91F523FHDPMC		OFF	ON	
MB91F522FSDPMC		ON	ON	
MB91F522FHDPMC		OFF	ON	
MB91F526DWDPMC	Yes	ON	ON	LQH・80 pin, Plastic
MB91F526DJDPMC		OFF	ON	
MB91F525DWDPMC		ON	ON	
MB91F525DJDPMC		OFF	ON	
MB91F524DWDPMC		ON	ON	
MB91F524DJDPMC		OFF	ON	
MB91F523DWDPMC		ON	ON	
MB91F523DJDPMC		OFF	ON	
MB91F522DWDPMC		ON	ON	
MB91F522DJDPMC		OFF	ON	
MB91F526DSDPMC	None	ON	ON	
MB91F526DHDPMC		OFF	ON	
MB91F525DSDPMC		ON	ON	
MB91F525DHDPMC		OFF	ON	
MB91F524DSDPMC		ON	ON	
MB91F524DHDPMC		OFF	ON	
MB91F523DSDPMC		ON	ON	
MB91F523DHDPMC		OFF	ON	
MB91F522DSDPMC		ON	ON	
MB91F522DHDPMC		OFF	ON	

16. Ordering Information MB91F52xxxE

Part number	Sub clock	CSV Initial value	LVD Initial value	Package*
MB91F526LWEPMC	Yes	ON	ON	LQP・176 pin, Plastic
MB91F526LJEPMC		OFF	ON	
MB91F525LWEPMC		ON	ON	
MB91F525LJEPMC		OFF	ON	
MB91F524LWEPMC		ON	ON	
MB91F524LJEPMC		OFF	ON	
MB91F523LWEPMC		ON	ON	
MB91F523LJEPMC		OFF	ON	
MB91F522LWEPMC		ON	ON	
MB91F522LJEPMC		OFF	ON	
MB91F526LSEPMC	None	ON	ON	
MB91F526LHEPMC		OFF	ON	
MB91F525LSEPMC		ON	ON	
MB91F525LHEPMC		OFF	ON	
MB91F524LSEPMC		ON	ON	
MB91F524LHEPMC		OFF	ON	
MB91F523LSEPMC		ON	ON	
MB91F523LHEPMC		OFF	ON	
MB91F522LSEPMC		ON	ON	
MB91F522LHEPMC		OFF	ON	
MB91F526KWEPMC	Yes	ON	ON	LQS・144 pin, (Lead pitch 0.5mm) Plastic
MB91F526KJEPMC		OFF	ON	
MB91F525KWEPMC		ON	ON	
MB91F525KJEPMC		OFF	ON	
MB91F524KWEPMC		ON	ON	
MB91F524KJEPMC		OFF	ON	
MB91F523KWEPMC		ON	ON	
MB91F523KJEPMC		OFF	ON	
MB91F522KWEPMC		ON	ON	
MB91F522KJEPMC		OFF	ON	
MB91F526KSEPMC	None	ON	ON	
MB91F526KHEPMC		OFF	ON	
MB91F525KSEPMC		ON	ON	
MB91F525KHEPMC		OFF	ON	
MB91F524KSEPMC		ON	ON	
MB91F524KHEPMC		OFF	ON	
MB91F523KSEPMC		ON	ON	
MB91F523KHEPMC		OFF	ON	
MB91F522KSEPMC		ON	ON	
MB91F522KHEPMC		OFF	ON	

LQI100 , 100 Lead Plastic Low Profile Quad Flat Package

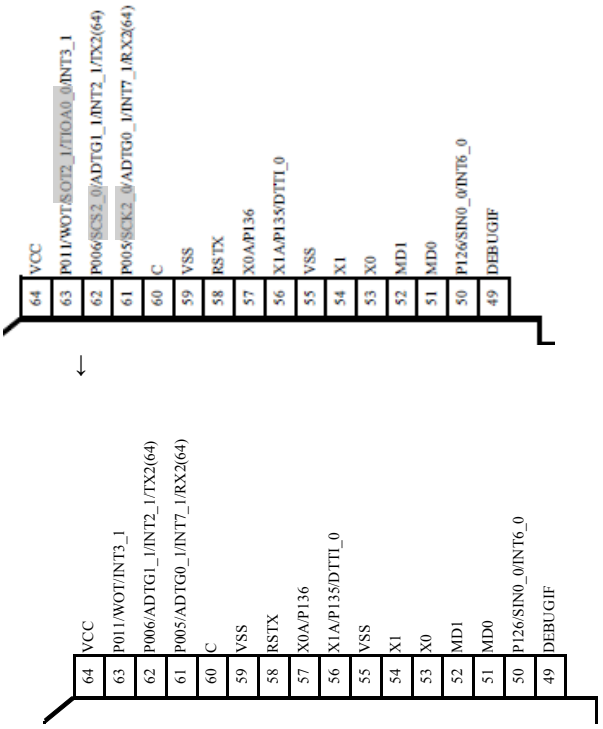


PACKAGE	LQI100		
SYMBOL	MIN.	NOM.	MAX.
A	——	——	1.70
A1	0.00	——	0.20
b	0.15	0.20	0.25
c	0.09	——	0.20
D	16.00 BSC.		
D1	14.00 BSC.		
e	0.50 BSC		
E	16.00 BSC.		
E1	14.00 BSC.		
L	0.45	0.60	0.75
L1	0.30	0.50	0.70
aaa	——	——	0.20
bbb	——	——	0.10
ccc	——	——	0.08
ddd	——	——	0.08
N	100		

NOTES

1. CONTROLLING DIMENSIONS ARE IN MILLIMETERS (mm)
2. DATUM PLANE H IS LOCATED AT THE BOTTOM OF THE MOLD PARTING LINE COINCIDENT WITH WHERE THE LEAD EXITS THE BODY.
3. DATUMS A-B AND D TO BE DETERMINED AT DATUM PLANE H.
4. TO BE DETERMINED AT SEATING PLANE C.
5. DIMENSIONS D1 AND E1 DO NOT INCLUDE MOLD PROTRUSION. ALLOWABLE PROTRUSION IS 0.25mm PRE SIDE. DIMENSIONS D1 AND E1 INCLUDE MOLD MISMATCH AND ARE DETERMINED AT DATUM PLANE H.
6. DETAILS OF PIN 1 IDENTIFIER ARE OPTIONAL BUT MUST BE LOCATED WITHIN THE ZONE INDICATED.
7. REGARDLESS OF THE RELATIVE SIZE OF THE UPPER AND LOWER BODY SECTIONS. DIMENSIONS D1 AND E1 ARE DETERMINED AT THE LARGEST FEATURE OF THE BODY EXCLUSIVE OF MOLD FLASH AND GATE BURRS. BUT INCLUDING ANY MISMATCH BETWEEN THE UPPER AND LOWER SECTIONS OF THE MOLDER BODY.
8. DIMENSION b DOES NOT INCLUDE DAMBER PROTRUSION. THE DAMBAR PROTRUSION (S) SHALL NOT CAUSE THE LEAD WIDTH TO EXCEED b MAXIMUM BY MORE THAN 0.08mm. DAMBAR CANNOT BE LOCATED ON THE LOWER RADIUS OR THE LEAD FOOT.
9. THESE DIMENSIONS APPLY TO THE FLAT SECTION OF THE LEAD BETWEEN 0.10mm AND 0.25mm FROM THE LEAD TIP.
10. A1 IS DEFINED AS THE DISTANCE FROM THE SEATING PLANE TO THE LOWEST POINT OF THE PACKAGE BODY.

Rev. A

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.