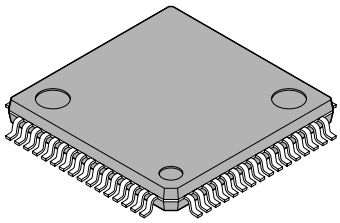
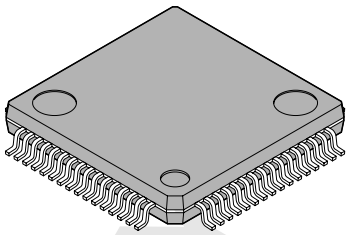
- 64-pin

64-pin Plastic LQFP



(FPT-64P-M23)

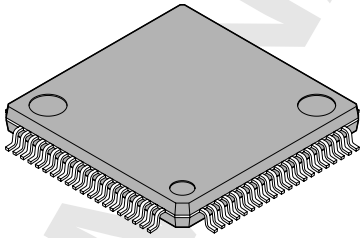
64-pin Plastic LQFP



(FPT-64P-M24)

- 80-pin

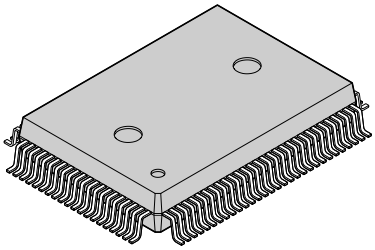
80-pin Plastic LQFP



(FPT-80P-M21)

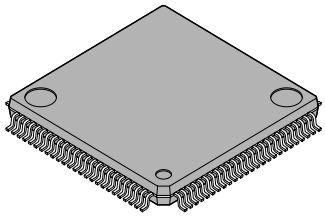
- 100-pin

100-pin Plastic QFP



(FPT-100P-M22)

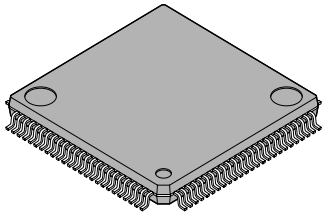
100-pin Plastic LQFP



(FPT-100P-M20)

- 120-pin

120-pin Plastic LQFP



(FPT-120P-M21)

■ FEATURES

- 16-bit core CPU, up to 56 MHz internal, 17.8 ns instruction cycle time
- 0.18µm CMOS Process Technology
- Optimized instruction set for controller applications (bit, byte, word and long-word data types; 23 different addressing modes; barrel shift; variety of pointers)
- 8-byte instruction execution queue
- Signed multiply (16 bit × 16 bit) and divide (32 bit/16 bit) instructions available
- Internal voltage regulator supports reduced internal MCU voltage, offering low EMI and low power consumption figures
- Code Security Feature
- Up to 5 FULL-CAN interfaces; conforming to Version 2.0 Part A and Part B, ISO16845 certified
- Powerful interrupt functions (8 progr. priority levels; up to 16 external interrupts)
- Fast Interrupt processing
- Up to 16 channels DMA - Automatic transfer function independent of CPU, can be assigned freely to resources
- Three independent clock timers (23-bit RC clock timer, 23-bit Main clock timer, 17-bit Sub clock timer)
- Watchdog Timer
- Up to 10 channels full duplex USARTs (SCI/LIN)
- Up to 2 channels I2C with 400 kbit/s
- Up to 40 channels analog inputs for A/D Converter (Resolution 10 bits or 8 bits)
- Up to 6 channels16-bit reload timer
- Up to 12 channels ICU (Input capture unit) 16 bit
- Up to 12 channels OCU (Output compare unit) 16 bit
- Up to 4 channels 16-bit free running timer
- Up to 20 channels × 16-bit Programmable Pulse Generator
- Up to 6 channels Stepper Motor Controller with integrated high current output drivers
- LCD controller with up to 4 COM × 72 SEG, internal or external voltage generation
- Memory Patch Function, can also be used to implement embedded debug support
- Low Power Consumption - 13 operating modes : (different Run, Sleep, Timer modes, Stop mode)
- 3-32 MHz external clock, on-chip PLL with programmable multiplication factor 1 ... 16
- 32 kHz Subsystem Clock
- 100kHz/2MHz internal RC clock
- External bus interface with up to 6 Chip select signals, 8bit or 16bit data, 24bit address, multiplexed or non-multiplexed, programmable timing
- Up to 2 channels Alarm comparators
- Programmable input levels (Automotive / CMOS-Schmitt trigger / TTL) for all ports
- Programmable Pull-up resistors for all ports
- Programmable output driving strength for EMI optimization
- Package : 48-pin / 64-pin / 80-pin /100-pin / 120-pin plastic QFP and LQFP

- Controller Area Network (CAN) - License of Robert Bosch GmbH

■ PRODUCT LINEUP

Features		MB96V300	MB9632x	MB9634x	MB9635x	MB9636x	MB9638x
Product type		Evaluation sample	Flash product: MB96F3xx Mask ROM product: MB963xx				
CPU		F2MC-16FX CPU					
System clock		On-chip PLL clock multiplier (x1..16, 1/2 when PLL stop) Minimum instruction execution time: 17.8 ns (56MHz) Clock source selectable from main- and subclock oscillator (partnumber suffix “W”), on-chip RC oscillator, independently for CPU and 2 clock domains of peripherals					
Flash/ ROM	RAM						
128kB	6kB	ROM/Flash memory emulation by external RAM, 92kB internal RAM		MB96344R, MB96344Y			MB96384R, MB96384Y
160kB	6kB					MB96F365R, MB96F365Y	MB96385R, MB96385Y
288kB	12kB		MB96F326R, MB96F326Y		MB96F356R, MB96F356Y		
288kB	16kB			MB96F346R, MB96346R, MB96F346Y, MB96346Y			MB96F386R, MB96386R, MB96F386Y, MB96386Y
416kB	16kB			MB96F347R, MB96347R, MB96F347Y, MB96347Y			MB96F387R, MB96387R, MB96F387Y, MB96387Y
544kB	24kB			MB96F348R, MB96F348Y			
Main: 544kB, Sat.: 32kB	24kB			MB96F348C, MB96F348H, MB96F348T			
Technology		0.18mm CMOS with on-chip voltage regulator for internal power supply					
Package		BGA416	FPT-80P-M21	FPT-100P-M20 FPT-100P-M22	FPT-64P-M23 FPT-64P-M24	FPT-48P-M26	FPT-120P-M21
DMA		16 channels	4 channels	6 channels	4 channels	3 channels	7 channels

Features	MB96V300	MB9632x	MB9634x	MB9635x	MB9636x	MB9638x
USART	10 channels	4 channels	MB96F348H/T: 4 channels others: 7 channels	4 channels	2 channels	5 channels
	Wide range of baud rate settings using a dedicated reload timer Special synchronous options for adapting to different synchronous serial protocols LIN functionality working either as master or slave LIN device					
I2C	2 channels	1 channel	2 channel	1 channel		1 channel
	Master and Slave functionality, 8-bit and 10-bit addressing					
A/D Converter	40 channels	18 channels	24 channels	15 channels	16 channels	
	SAR-type, 10bit resolution, signals interrupt on conversion end, single conversion mode, continuous conversion mode, stop conversion mode, activation by software, external trigger or reload timer					
A/D Converter Reference Voltage switch	yes	no	yes	no	no	MB96384R/Y, MB96385R/Y: no others: yes
16-bit Reload Timer	6 channels	4 channels	4 channels	4 channels	3 channels	4 channels
	Prescaler with $1/2^1$, $1/2^2$, $1/2^3$, $1/2^4$, $1/2^5$, $1/2^6$ of peripheral clock frequency, event count function					
16-bit Free-Running Timer	4 channels	4 channels	2 channels	2 channels	1 channel	2 channels
	Signals an interrupt on overflow, supports timer clear upon match with Output Compare (0, 4), Prescaler with $1/2^2$, $1/2^4$, $1/2^6$, $1/2^8$ of peripheral clockfrequency I/O Timer 0 (clock input FRCK0) corresponds to ICU 0/1/2/3, OCU 0/1/2/3 I/O Timer 1 (clock input FRCK1) corresponds to ICU 4/5/6/7, OCU 4/5/6/7 I/O Timer 2 (clock input FRCK2) corresponds to ICU 8/9 I/O Timer 3 (clock input FRCK3) corresponds to ICU 10/11						
16-bit Output Compare	12 channels	6 channels	8 channels	4 channels		4 channels
	Signals an interrupt when a match with 16-bit I/O Timer A pair of compare registers can be used to generate an output signal.					
16-bit Input Capture	12 channels	12 channels	8 channels	6 channels	4 channels	8 channels
	Signals an interrupt upon external event Rising edge, falling edge or rising & falling edge sensitive					
16-bit Programmable Pulse Generator	20 channels	20 channels	16 channels	20 channels	8 channels	
	16 bit down counter, cycle and duty setting registers Interrupt at triggering, cycle or duty match PWM operation and one-shot operation Internal prescaler allows 1/2, 1/4, 1/8, 1/16 of peripheral clock as counter clock and Reload timer overflow as clock input Can be triggered by software or reload timer Synchronous trigger of up to 4 PPG channels					

Features	MB96V300	MB9632x	MB9634x	MB9635x	MB9636x	MB9638x
CAN Interface (not available on MB963xxA, MB963xxC)	5 channels	2 channels	2 channels	2 channels	1 channel	MB96384R/Y, MB96385R/Y: 1 channel others: 2 channels
	Supports CAN protocol version 2.0 part A and B ISO16845 certified Bit rates up to 1 Mbit/s 32 message objects Each message object has its own identifier mask Programmable FIFO mode (concatenation of message objects) Maskable interrupt Disabled Automatic Retransmission mode for Time Triggered CAN applications Programmable loop-back mode for self-test operation					
Stepping Motor Controller	6 channels					5 channels
	Four high current outputs for each channel Two synchronized 8/10-bit PWMs per channel Internal prescaling for PMW clock: 1, 1/2, 1/4, 1/5, 1/6, 1/8, 1/10, 1/12, 1/16 of peripheral clock					
External Interrupts	16 channels	15 channels	16 channels	13 channels	10 channels	8 channels
	Edge sensitive or level sensitive Interrupt mask and pending bit per channel Each available CAN channel RX has an external interrupt for wake-up Selected USART channels SIN have an external interrupt for wake-up					
Non-Maskable Interrupt	1 channel					
	Disabled after reset Once enabled, can not be disabled other than by reset. Level high or level low sensitive Pin shared with external interrupt 0.					
Sound Generator	1channel					2 channels
	8-bit PWM signal is mixed with tone frequency from 16-bit reload counter PWM clock by internal prescaler: 1, 1/2, 1/4, 1/8, 1/16 of peripheral clock Tone frequency: PWM frequency / 2 / (reload value + 1)					
LCD Controller	4 COM x 72 SEG					4 COM x 65 SEG
	Display up to 288 segments Duty cycle: Selectable from options: 1/2, 1/3 and 1/4 Bias: Fixed at 1/3 Frame period: Selectable from three options. (for clock, peripheral clock, subclock or RC oscillator clock is selectable) Driver: Built-in (for internal divider resistors), or external divider resistors Data memory: Built-in 16-byte data memory for display Stop mode: Enable LCD display in the sub-stop mode Blank display: Selectable Pin: All SEG and COM pins can be switched between general and specialized purposes Others: External divided resistors can be also used to shut off the current when LCD is deactivated					

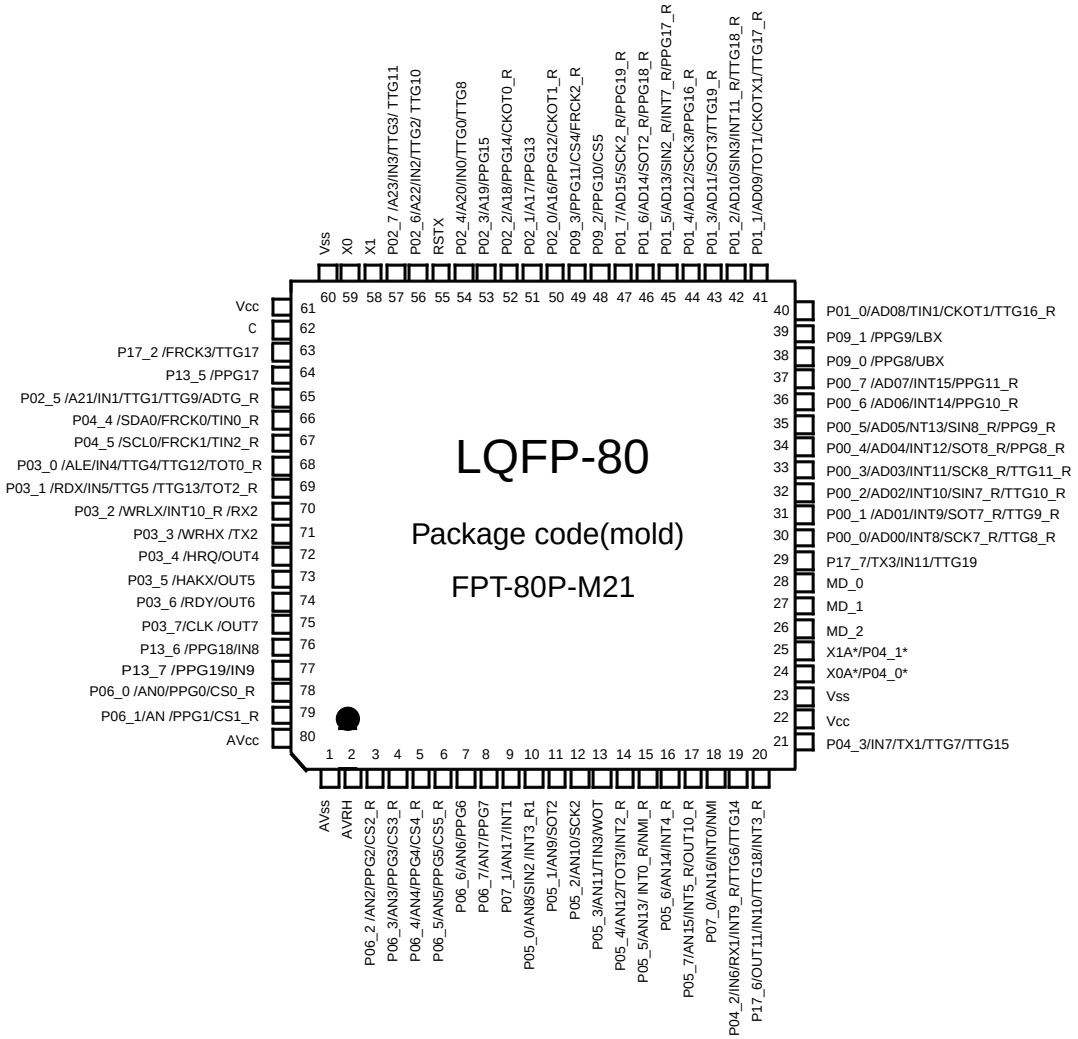
Features	MB96V300	MB9632x	MB9634x	MB9635x	MB9636x	MB9638x
Real Time Clock	MB96F348H/T: no others: 1					1
	Can be clocked either from sub oscillator (devices with partnumber suffix “W”), main oscillator or from the RC oscillator Facility to correct oscillation deviation of Sub clock or RC oscillator clock (clock calibration) Read/write accessible second/minute/ hour registers Can signal interrupts every halfsecond/second/ minute/hour/day Internal clock divider and prescaler provide exact 1s clock based on a 4 MHz or a 32 kHz clock input (devices with partnumber suffix “W”)					
I/O Ports	136	64 for part number with suffix "W", 66 for part number with suffix "S"	80 for part number with suffix "W", 82 for part number with suffix "S"	49 for part number with suffix "W", 51 for part number with suffix "S"	34 for part number with suffix "W", 36 for part number with suffix "S"	94 for part number with suffix "W", 96 for part number with suffix "S
	Virtually all external pins can be used as general purpose I/O All push-pull outputs (except when used as I2C SDA/SCL line) Bit-wise programmable input enable Bit-wise programmable Pull-up resistor Bit-wise programmable as input/output or peripheral signal Bit-wise programmable as CMOS schmitt trigger/ automotive / TTL input Bit-wise programmable output driving strength					
Alarm comparator	2 channels		2 channels			MB96384R/Y, MB96385R/Y: 1 channel others: 2 channels
	Monitors an external voltage and generates an interrupt in case of a voltage lower or higher than the defined thresholds Threshold voltages defined externally or generated internally Status is readable, interrupts can be masked separately					
External bus interface	Yes					Yes
	Multiplexed address/data lines Non-multiplexed address/data lines (MB96V300 and MB9638x only) 16-bit bidirectional data bus 24-bit address lines (MB9635x: 22-bit address lines) Wait state request External bus master possible Timing programmable					
Chip select	6 signals	6 signals	6 signals	6 signals		6 signals
Clock output function	2 channels	2 channels	2 channels	2 channels	2 channels	2 channels
	Output any on-chip clock Inverted and non-inverted clock (MB9636x,MB9635x has only non-inverted clock output) Prescaler: 1, 1/2, 1/4, 1/8, 1/16, 1/32, 1/64, 1/128 of selected clock Synchronous or asynchronous start/stop					
Low voltage reset	Reset is generated when supply voltage is below minimum.					

Features	MB96V300	MB9632x	MB9634x	MB9635x	MB9636x	MB9638x
On-chip RC-oscillator	For quick and save startup, oscillator stop detection, watchdog operation, normal clock source 2 frequencies selectable (100kHz, 2MHz)					
Flash Memory			Supports automatic programming, Embedded Algorithm™*1 Write/Erase/Erase-Suspend/Resume commands A flag indicating completion of the algorithm Number of erase cycles : 10,000 times Data retention time : 20 years Erase can be performed on each sector individually Sector protection Flash Security feature to protect the content of the Flash Low voltage detection during Flash erase			

*1 : Embedded Algorithm is a trade mark of Advanced Micro Devices Inc.

■ PIN ASSIGNMENTS

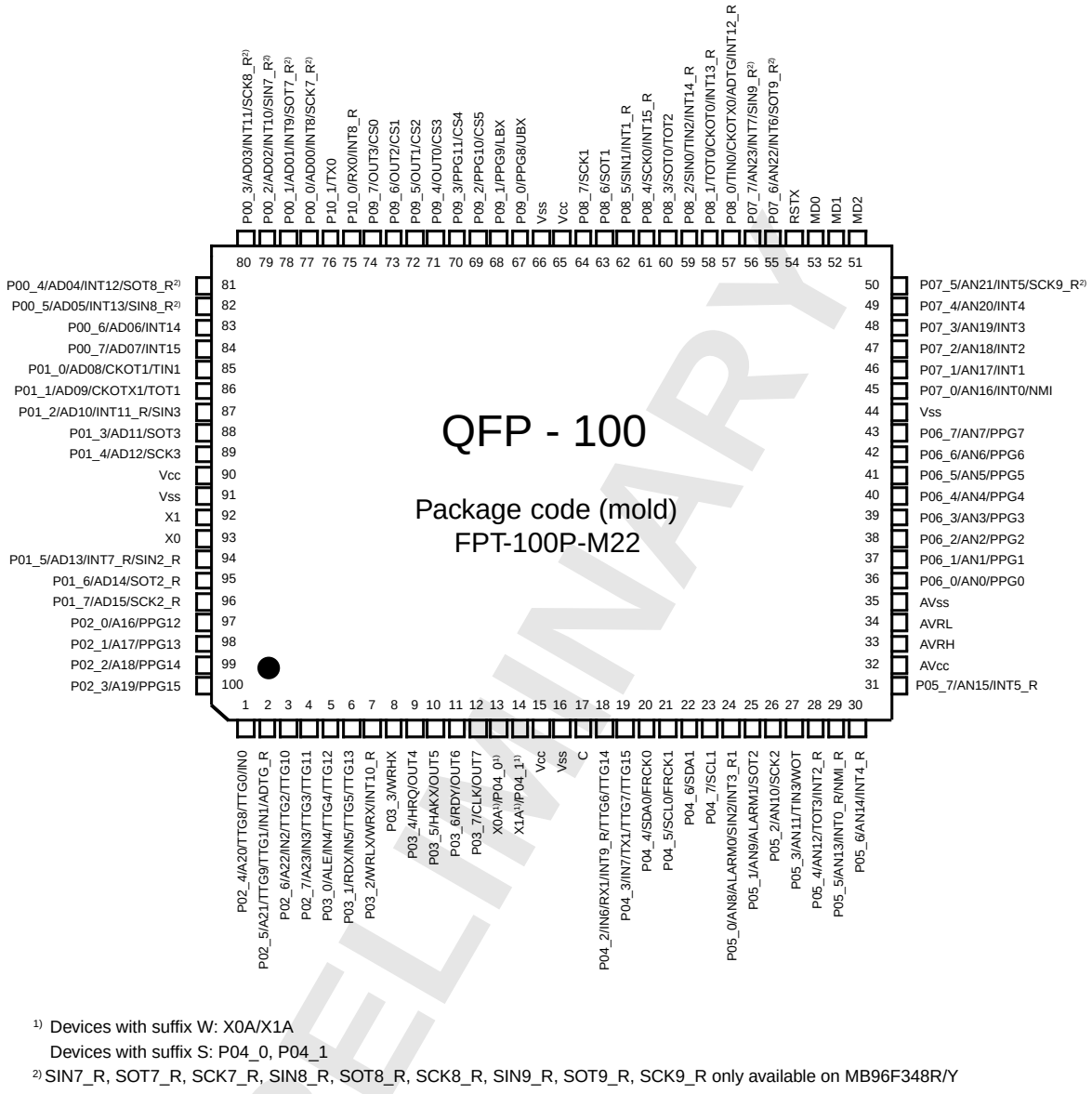
Pin assignment of MB96(F)32x



1) Devices with suffix W: X0A/X1A
Devices with suffix S: P04_0, P04_1

(FPT-80P-M21)

Pin assignment of MB96(F)34x (QFP package)



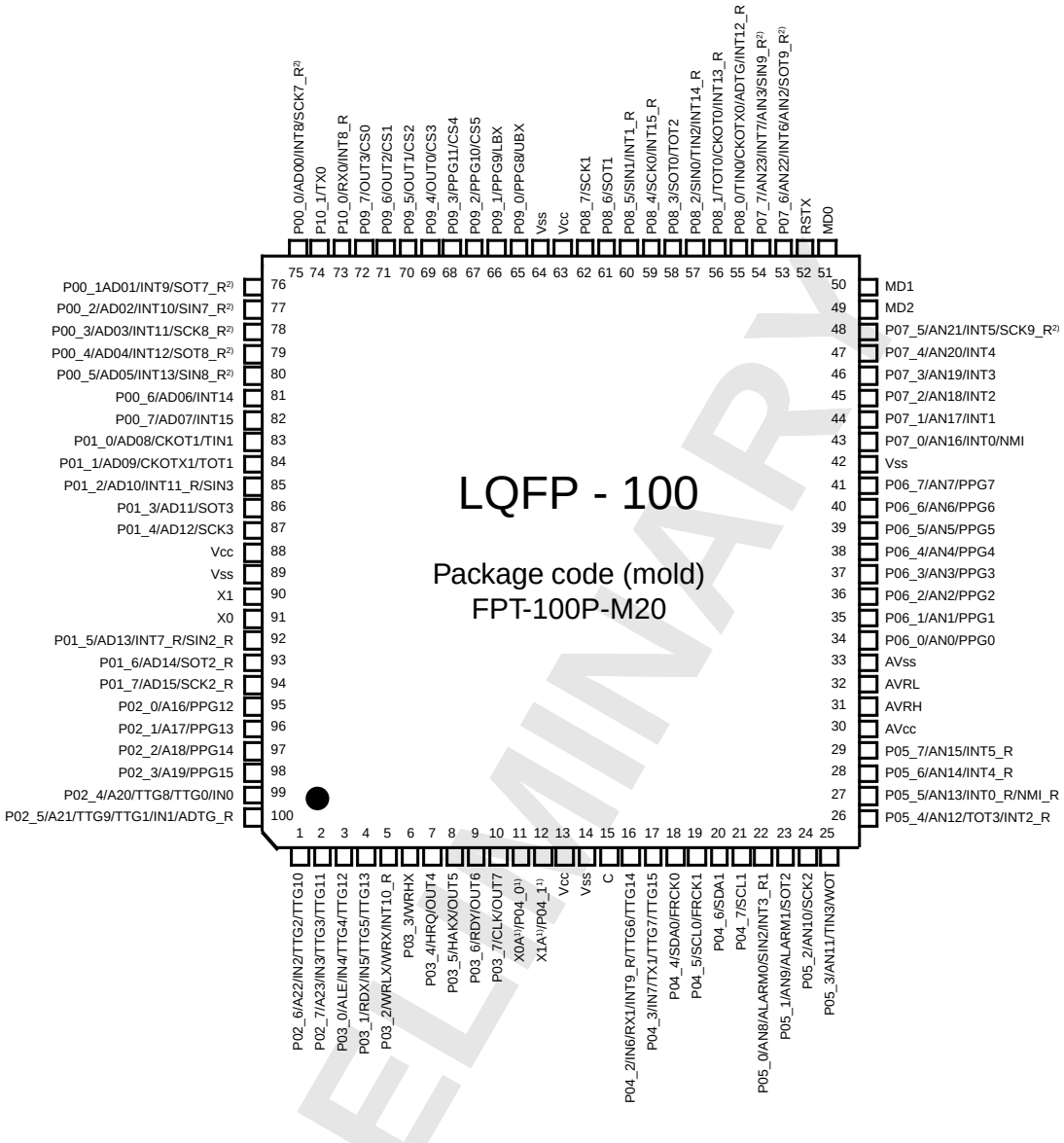
1) Devices with suffix W: X0A/X1A
Devices with suffix S: P04_0, P04_1

2) SIN7_R, SOT7_R, SCK7_R, SIN8_R, SOT8_R, SCK8_R, SIN9_R, SOT9_R, SCK9_R only available on MB96F348R/Y

(FPT-100P-M22)

Remark:
MB96(F)34x products are pin-compatible to F²MC-16LX family MB90340 series.

Pin assignment of MB96(F)34x (LQFP package)



1) Devices with suffix W: X0A/X1A
Devices with suffix S: P04_0, P04_1

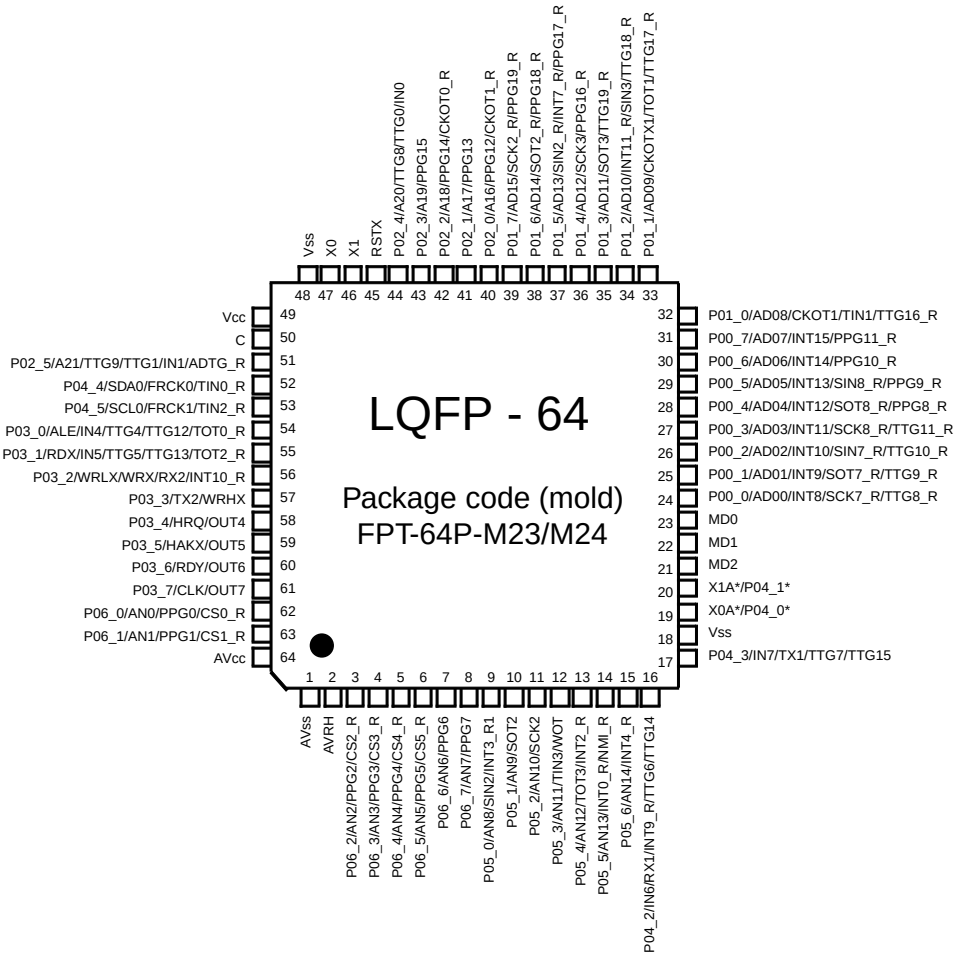
2) SIN7_R, SOT7_R, SCK7_R, SIN8_R, SOT8_R, SCK8_R, SIN9_R, SOT9_R, SCK9_R only available on MB96F348R/Y

(FPT-100P-M20)

Remark:

MB96(F)34x products are pin-compatible to F²MC-16LX family MB90340 series.

Pin assignment of MB96(F)35x

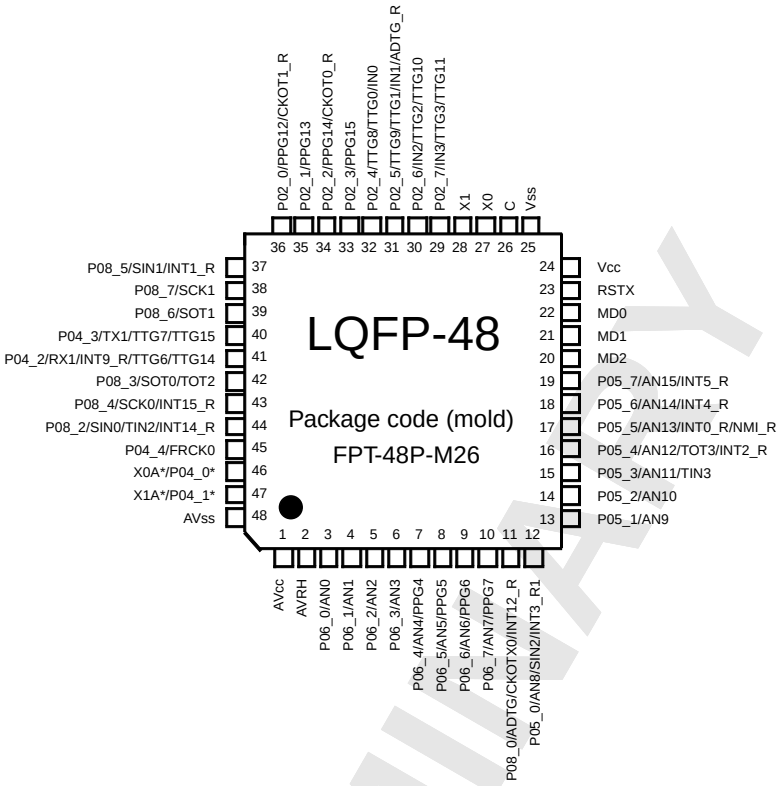


1) Devices with suffix W: X0A/X1A
Devices with suffix S: P04_0, P04_1

(FPT-64P-M23/M24)

Remark:
MB96(F)35x products are pin-compatible to F²MC-16LX family MB90350 series.

Pin assignment of MB96(F)36x



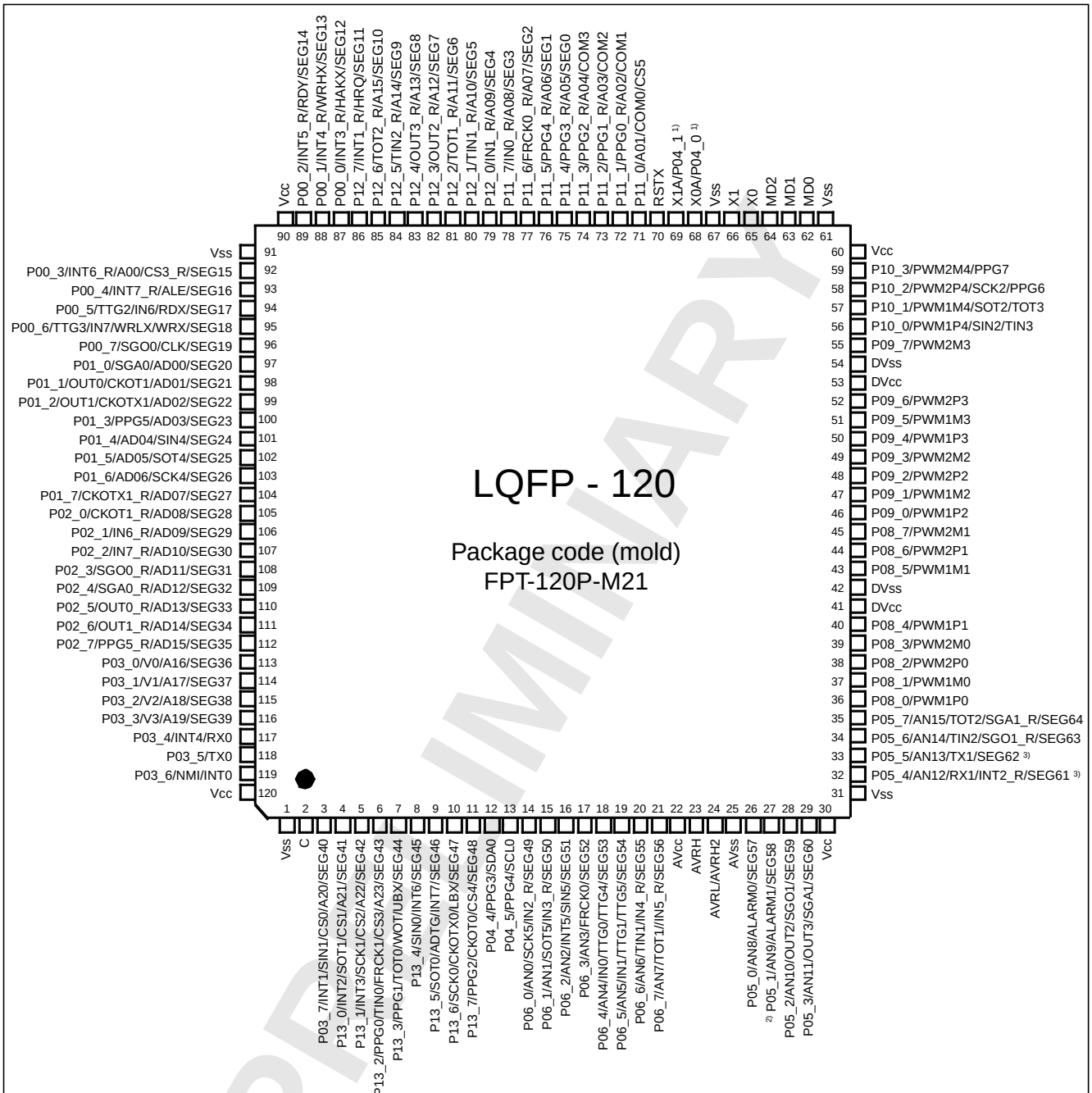
* Devices with suffix W: X0A/X1A
Devices with suffix S: P04_0, P04_1

(FPT-48P-M26)

Remark:

MB96(F)36x products are pin-compatible to F²MC-16LX family MB90360 series

Pin assignment of MB96(F)38x



1) Devices with suffix W: X0A/X1A
Devices with suffix S: P04_0, P04_1
2) MB96384/5: Alarm1 not available
3) MB96384/5: TX1 resp. RX1 not available

(FPT-120P-M21)

■ PIN DESCRIPTION FOR MB96(F)32x, MB96(F)34x, MB96(F)35x, MB96(F)36x

PIN DESCRIPTION FOR MB96(F)32x, MB96(F)34x, MB96(F)35x, MB96(F)36x

Pin no.					Pin name	Circuit type	Function
MB9632x	MB9634x		MB9635x	MB9636x			
LQFP80[*5]	LQFP100[*2]	QFP100[*1]	LQFP64[*3]	LQFP48[*4]			
58	90	92	46	28	X1	A	Oscillation output
59	91	93	47	27	X0		Oscillation input
55	52	54	45	23	RSTX	E	Reset input
30	75	77	24		P00_0	H	General purpose I/O
					AD00		External bus interface (non-multiplexed mode) data line External bus interface (multiplexed mode) address/ data line
					INT8		External interrupt request input pin for INT8
					SCK7_R		Relocated USART7 serial clock I/O (not available on MB96F348H/T)
					TTG8_R		Relocated PPG8 trigger
31	76	78	25		P00_1	H	General purpose I/O
					AD01		External bus interface (non-multiplexed mode) data line External bus interface (multiplexed mode) address/ data line
					INT9		External interrupt request input pin for INT9
					SOT7_R		Relocated USART 7 serial data output (not available on MB96F348H/T)
					TTG9_R		Relocated PPG9 trigger

PIN DESCRIPTION FOR MB96(F)32x, MB96(F)34x, MB96(F)35x, MB96(F)36x

Pin no.					Pin name	Circuit type	Function
MB9632x	MB9634x		MB9635x	MB9636x			
LQFP80*5	LQFP100*2	QFP100*1	LQFP64*3	LQFP48*4			
32	77	79	26		P00_2	H	General purpose I/O
					AD02		External bus interface (non-multiplexed mode) data line External bus interface (multiplexed mode) address/ data line
					INT10		External interrupt request input pin for INT10
					SIN7_R		Relocated USART 7 serial data input (not available on MB96F348H/T)
					TTG10_R		Relocated PPG10 trigger
33	78	80	27		P00_3	H	General purpose I/O
					AD03		External bus interface (non-multiplexed mode) data line External bus interface (multiplexed mode) address/ data line
					INT11		External interrupt request input pin for INT11
					SCK8_R		Relocated USART8 serial clock I/O (not available on MB96F348H/T)
					TTG11_R		Relocated PPG11 trigger

PIN DESCRIPTION FOR MB96(F)32x, MB96(F)34x, MB96(F)35x, MB96(F)36x

Pin no.					Pin name	Circuit type	Function
MB9632x	MB9634x		MB9635x	MB9636x			
LQFP80*5	LQFP100*2	QFP100*1	LQFP64*3	LQFP48*4			
34	79	81	28		P00_4	H	General purpose I/O
					AD04		External bus interface (non-multiplexed mode) data line External bus interface (multiplexed mode) address/ data line
					INT12		External interrupt request input pin for INT12
					SOT8_R		Relocated USART 8 serial data output (not available on MB96F348H/T)
					PPG8_R		Relocated Programmable Pulse Generator outputs
35	80	82	29		P00_5	H	General purpose I/O
					AD05		External bus interface (non-multiplexed mode) data line External bus interface (multiplexed mode) address/ data line
					INT13		External interrupt request input pin for INT13
					SCK8_R		Relocated USART8 serial clock I/O (not available on MB96F348H/T)
					PPG9_R		Relocated Programmable Pulse Generator outputs

PIN DESCRIPTION FOR MB96(F)32x, MB96(F)34x, MB96(F)35x, MB96(F)36x

Pin no.					Pin name	Circuit type	Function
MB9632 x	MB9634x		MB9635 x	MB9636 x			
LQFP80*5	LQFP100*2	QFP100*1	LQFP64*3	LQFP48*4			
36 to 37	81 to 82	83 to 84	30 to 31		P00_6 to P00_7	H	General purpose I/O
					AD06 to AD07		External bus interface (non-multiplexed mode) data lines External bus interface (multiplexed mode) address/ data lines
					INT14 to INT15		External interrupt request input pins for INT14 to INT15
					PPG10_R to PPG11_R		Relocated Programmable Pulse Generator outputs
40	83	85	32		P01_0	H	General purpose I/O
					AD08		External bus interface (non-multiplexed mode) data line External bus interface (multiplexed mode) address/ data line
					TIN1		Reload Timer 1 event input pin
					CKOT1		Clock Output Function 1 clock output
					TTG16_R		Relocated PPG16 trigger input
41	84	86	33		P01_1	H	General purpose I/O
					AD09		External bus interface (non-multiplexed mode) data line External bus interface (multiplexed mode) address/ data line
					TOT1		Reload Timer 1 output
					CKOTX1		Clock Output Function 1 inverted Clock Output
					TTG17_R		Relocated PPG17 trigger

PIN DESCRIPTION FOR MB96(F)32x, MB96(F)34x, MB96(F)35x, MB96(F)36x

Pin no.					Pin name	Circuit type	Function
MB9632 x	MB9634x		MB9635 x	MB9636 x			
LQFP80*5	LQFP100*2	QFP100*1	LQFP64*3	LQFP48*4			
42	85	87	34		P01_2	H	General purpose I/O
					AD10		External bus interface (non-multiplexed mode) data line External bus interface (multiplexed mode) address/ data line
					SIN3		USART 3 serial data input
					INT11_R		Relocated external interrupt request input for INT11
					TTG18_R		Relocated PPG18 trigger
43	86	88	35		P01_3	H	General purpose I/O
					AD11		External bus interface (non-multiplexed mode) data line External bus interface (multiplexed mode) address/ data line
					SOT3		USART 3 serial data output
					TTG19_R		Relocated PPG19 trigger
44	87	89	36		P01_4	H	General purpose IO
					AD12		External bus interface (non-multiplexed mode) data line External bus interface (multiplexed mode) address/ data line
					SCK3		USART 3 clock I/O
					PPG16_R		Relocated Pulse Programable output

PIN DESCRIPTION FOR MB96(F)32x, MB96(F)34x, MB96(F)35x, MB96(F)36x

Pin no.					Pin name	Circuit type	Function
MB9632x	MB9634x		MB9635x	MB9636x			
LQFP80*5	LQFP100*2	QFP100*1	LQFP64*3	LQFP48*4			
45	92	94	37		P01_5	H	General purpose IO
					AD13		External bus interface (non-multiplexed mode) data line External bus interface (multiplexed mode) address/ data line
					INT7_R		Relocated external interrupt request pin for INT7
					SIN2_R		Relocated USART 2 serial data input
					PPG17_R		Relocated Pulse Programable output
46	93	95	38		P01_6	H	General purpose IO
					AD14		External bus interface (non-multiplexed mode) data line External bus interface (multiplexed mode) address/ data line
					SOT2_R		Relocated USART2 serial data output
					PPG18_R		Relocated Pulse Programable output
47	94	96	39		P01_7	H	General purpose IO
					AD15		External bus interface (non-multiplexed mode) data line External bus interface (multiplexed mode) address/ data line
					SCK2_R		Relocated USART2 clock I/O
					PPG19_R		Relocated Pulse Programable output

PIN DESCRIPTION FOR MB96(F)32x, MB96(F)34x, MB96(F)35x, MB96(F)36x

Pin no.					Pin name	Circuit type	Function
MB9632x	MB9634x		MB9635x	MB9636x			
LQFP80*5	LQFP100*2	QFP100*1	LQFP64*3	LQFP48*4			
50	95	97	40	36	P02_0	H	General purpose IO
					PPG12		Programmable Pulse Generator outputs
					A16		External bus interface address output
				36	CKOT1_R		Relocated Clock Output Function 1 clock output
51	96	98	41	35	P02_1	H	General purpose IO
					PPG13		Programmable Pulse Generator output
					A17		External bus interface address output
52	97	99	42	34	P02_2	H	General purpose IO
					PPG14		Programmable Pulse Generator output
					A18		External bus interface address output
				34	CKOT0_R		Relocated Clock Output Function 0 clock output
53	98	100	43	33	P02_3	H	General purpose IO
					PPG15		Programmable Pulse Generator output
					A19		External bus interface address output
54	99	1	44	32	P02_4	H	General purpose IO
					IN0		Input Capture Unit 0 data sample input
					TTG0/ TTG8		Programmable Pulse Generator PPG0 and PPG8 trigger input
					A20		External bus interface address output

PIN DESCRIPTION FOR MB96(F)32x, MB96(F)34x, MB96(F)35x, MB96(F)36x

Pin no.					Pin name	Circuit type	Function
MB9632 x	MB9634x		MB9635 x	MB9636 x			
LQFP80*5	LQFP100*2	QFP100*1	LQFP64*3	LQFP48*4			
65	100	1	51	31	P02_5	H	General purpose IO
					ADTG_R		Relocated A/D converter trigger input
					IN1		Input Capture Unit ICU 1 data sample input
					TTG1/ TTG9		Programmable Pulse Generator PPG1 and PPG9 trigger
					A21		External bus interface address output
56, 57	1, 2	3, 4		30, 29	P02_6, P02_7	H	General purpose IO
					IN2, IN3		Input Capture Unit ICU2 to ICU3 data sample input
					TTG2/ TTG10, TTG3/ TTG11		Programmable Pulse Generator PPG2 and PPG10 trigger, Programmable Pulse Generator PPG3 and PPG11 trigger
					A22, A23		External bus interface address outputs
68	3	5	54		P03_0	H	General purpose IO
					IN4		Input Capture Unit 4 data sample input
					ALE		External bus interface address latch enable output pin
					TTG4/ TTG12		Programmable Pulse Generator PPG4 and PPG12 trigger
					TOT0_R		Reload Timer 0 relocated output

PIN DESCRIPTION FOR MB96(F)32x, MB96(F)34x, MB96(F)35x, MB96(F)36x

Pin no.					Pin name	Circuit type	Function
MB9632x	MB9634x		MB9635x	MB9636x			
LQFP80*5	LQFP100*2	QFP100*1	LQFP64*3	LQFP48*4			
69	4	6	55		P03_1	H	General purpose IO
					RDX		External bus interface read strobe output
					IN5		Input Capture Unit ICU 5 data sample input
					TTG5/ TTG13		Programmable Pulse Generator PPG5 and PPG13 trigger
					TOT2_R		Reload Timer 2 relocated output
70	5	7	56		P03_2	H	General purpose IO
					WRLX / WRX		External bus (16-bit data mode) interface low byte write strobe output pin External bus (8-bit data mode) interface write strobe output pin
					INT10_R		Relocated external interrupt request input for INT10
					RX2		CAN2 interface RX input (not available on MB96F3xxA, MB96F3xxC)
71	6	8	57		P03_3	H	General purpose IO
					WRHX		External bus interface write strobe output pin for the 8 higher bits of the data bus
					TX2		CAN2 interface TX output pin (not available on MB96F3xxA, MB96F3xxC)
72	7	9	58		P03_4	H	General purpose IO
					HRQ		External bus interface hold request input
					OUT4		Output Compare Unit OCU4 waveform output

PIN DESCRIPTION FOR MB96(F)32x, MB96(F)34x, MB96(F)35x, MB96(F)36x

Pin no.					Pin name	Circuit type	Function
MB9632x	MB9634x		MB9635x	MB9636x			
LQFP80*5	LQFP100*2	QFP100*1	LQFP64*3	LQFP48*4			
73	8	10	59		P03_5	H	General purpose IO
					HAKX		External bus interface hold acknowledge output
					OUT5		Output Compare Unit OCU5 waveform output
74	9	11	60		P03_6	H	General purpose IO
					RDY		External bus interface external wait state request
					OUT6		Output Compare Unit OCU6 waveform output
75	10	12	61		P03_7	H	General purpose IO
					CLK		External bus interface clock output pin
					OUT7		Output Compare Unit OCU7 waveform output pin
24,25	11, 12	13, 14	19, 20	46, 47	P04_0, P04_1	H	General purpose IO (only for devices with S-suffix)
					X0A, X1A	B	Oscillator input pins for sub-clock (only for devices without S-suffix)
19	16	18	16	41	P04_2	H	General purpose IO
					IN6		Input Capture Unit ICU6 data sample input
					RX1		CAN1 Interface RX input (not available on MB96F3xxA, MB96F3xxC)
					INT9_R		Relocated external interrupt request input pin for INT9
					TTG6/ TTG14		Programmable Pulse Generators PPG6 and PPG14 trigger

PIN DESCRIPTION FOR MB96(F)32x, MB96(F)34x, MB96(F)35x, MB96(F)36x

Pin no.					Pin name	Circuit type	Function
MB9632x	MB9634x		MB9635x	MB9636x			
LQFP80*5	LQFP100*2	QFP100*1	LQFP64*3	LQFP48*4			
21	17	19	17	40	P04_3	H	General purpose IO
					IN7		Input Capture Unit ICU7 data sample input
					TTG7/ TTG15		Programmable Pulse Generators PPG7 and PPG15 trigger
					TX1		CAN1 Interface TX Output pin (not available on MB96F3xxA, MB96F3xxC)
66	18	20	52	45	P04_4	N	General purpose IO
					FRCK0		Free Running Timer 0 input
					SDA0		I2C 0 interface serial data I/O
					TIN0_R		Reload Timer 0 event relocated input pin
67	19	21	53	35	P04_5	N	General purpose IO
					SCL0		I2C 0 interface serial clock I/O
					FRCK1		Free Running Timer 1 input
					TIN2_R		Reload Timer 2 event relocated input pin
	20	22			P04_6	N	General purpose IO
					SDA1		I2C 1 interface serial data I/O
	21	23			P04_7	N	General purpose IO
					SCL1		I2C 1 interface serial clock I/O

PIN DESCRIPTION FOR MB96(F)32x, MB96(F)34x, MB96(F)35x, MB96(F)36x

Pin no.					Pin name	Circuit type	Function
MB9632x	MB9634x		MB9635x	MB9636x			
LQFP80*5	LQFP100*2	QFP100*1	LQFP64*3	LQFP48*4			
10	22	24	9	12	P05_0	I	General purpose IO
					AN8		A/D converter analog input pin
					SIN2		USART2 serial data input
					INT3_R1		Relocated input of external interrupt INT3
					ALARM0		Alarm Comparator 0 input
11	23	25	10	13	P05_1	I	General purpose IO
					AN9		A/D converter analog input
					SOT2		USART 2 serial data output
					ALARM1		Alarm Comparator 1 input
12	24	26	11	14	P05_2	I	General purpose IO
					AN10		A/D converter analog input
					SCK2		USART 2 clock I/O
13	25	27	12	15	P05_3	I	General purpose IO
					AN11		A/D converter analog input
					TIN3		Reload Timer 3 event input
					WOT		Real Timer clock output
14	26	28	13	16	P05_4	I	General purpose IO
					AN12		A/D converter analog input
					TOT3		Output pin for the reload timer 3
					INT2_R		Relocated input of external interrupt INT2
15	27	29	14	17	P05_5	I	General purpose IO
					AN13		A/D converter analog input
					INT0_R		Relocated External interrupt INT0 input
					NMI_R		Relocated Non-Maskable Interrupt NMI

PIN DESCRIPTION FOR MB96(F)32x, MB96(F)34x, MB96(F)35x, MB96(F)36x

Pin no.					Pin name	Circuit type	Function
MB9632 x	MB9634x		MB9635 x	MB9636 x			
LQFP80*5	LQFP100*2	QFP100*1	LQFP64*3	LQFP48*4			
16	28	30	15	18	P05_6	I	General purpose IO
					AN14		A/D converter analog input
					INT4_R		Relocated External Interrupt INT4 input
17	29	31		19	P05_7	I	General purpose IO
					AN15		A/D converter analog input
					INT5_R		Relocated External Interrupt INT5 input
					OUT10_R		Output Compare Unit OCU10 waveform reloacted output pin
78,79, 3 to 5	34 to 38	36 to 40	62, 63, 3 to 5	62, 63, 3 to 5	P06_0 to P06_4	I	General purpose IO
					AN0 to AN4		A/D converter analog input
					PPG0 to PPG4		Programmable Pulse Generator outputs
					CS0_R to CS4_R		External Chip selects relocated output
6	39	41	6	6	P06_5	I	General purpose IO
					AN5		A/D converter analog input
					PPG5		Programmable Pulse Generator outputs
					CS5_R		External Chip select relocated output
7	40	42	7	7	P06_6	I	General purpose IO
					AN6		A/D converter analog input
					PPG6		Programmable Pulse Generator outputs

PIN DESCRIPTION FOR MB96(F)32x, MB96(F)34x, MB96(F)35x, MB96(F)36x

Pin no.					Pin name	Circuit type	Function
MB9632x	MB9634x		MB9635x	MB9636x			
LQFP80*5	LQFP100*2	QFP100*1	LQFP64*3	LQFP48*4			
8	41	43	8	10	P06_7	I	General purpose IO
					AN7		A/D converter analog input
					PPG7		Programmable Pulse Generator output
18	43	45			P07_0	I	General purpose IO
					AN16		A/D converter analog input
					INT0		External interrupt INT0 request input
					NMI		Non-Maskable Interrupt NMI input
9	44	46			P07_1	I	General purpose IO
					AN17 to AN20		A/D converter analog input
					INT1 to INT4		External interrupt INT1 to INT4 request input
	45 to 47	47 to 49			P07_2 to P07_4	I	General purpose IO
					AN18to AN20		A/D converter analog input
					INT2 to INT4		External interrupt INT2 to INT4 request input
	48	50			P07_5	I	General purpose IO
					AN21		A/D converter analog input
					INT5		External interrupt INT5 request input
					SCK9_R		Relocated USART9 serial clock I/O (not available on MB96F348H/T)

PIN DESCRIPTION FOR MB96(F)32x, MB96(F)34x, MB96(F)35x, MB96(F)36x

Pin no.					Pin name	Circuit type	Function
MB9632x	MB9634x		MB9635x	MB9636x			
LQFP80*5	LQFP100*2	QFP100*1	LQFP64*3	LQFP48*4			
	53	55			P07_6	I	General purpose IO
					AN22		A/D converter analog input
					INT6		External interrupt INT6 request input
					SOT9_R		Relocated USART 9 serial data output (not available on MB96F348H/T)
	54	56			P07_7	I	General purpose IO
					AN23		A/D converter analog input
					INT7		External interrupt INT7 request input
					SIN9_R		Relocated USART 9 serial data input (not available on MB96F348H/T)
	55	57		11	P08_0	H	General purpose IO
					CKOTX0		Clock Output Function 0 inverted output
					ADTG		A/D converter trigger input
					INT12_R		Relocated external interrupt INT12 request input
					TIN0		Reload Timer 0 event input
	56	58			P08_1	H	General purpose IO
					TOT0		Reload Timer 0 output
					CKOT0		Clock output function 0 output
					INT13_R		Relocated external interrupt INT13 request input
	57	59		44	P08_2	H	General purpose IO
					SIN0		USART 0 serial data input
					TIN2		Reload Timer 2 event input
					INT14_R		Relocated external interrupt INT14 request input

PIN DESCRIPTION FOR MB96(F)32x, MB96(F)34x, MB96(F)35x, MB96(F)36x

Pin no.					Pin name	Circuit type	Function
MB9632x	MB9634x		MB9635x	MB9636x			
LQFP80*5	LQFP100*2	QFP100*1	LQFP64*3	LQFP48*4			
	58	60		42	P08_3	H	General purpose IO
					SOT0		USART0 serial data output
					TOT2		Reload timer 2 output
	59	61		43	P08_4	H	General purpose IO
					SCK0		USART0 clock I/O
					INT15_R		Relocated external interrupt INT15 request input
	60	62		37	P08_5	H	General purpose IO
					SIN1		USART1 serial data input
					INT1_R		Relocated external interrupt INT1 request input
	61	63		39	P08_6	H	General purpose IO
					SOT1		USART1 serial data output
	62	64		38	P08_7	H	General purpose IO
					SCK1		USART1 clock I/O
38	65	67			P09_0	H	General purpose IO
					PPG8		Programmable Pulse Generator 8 output
					UBX		External Bus Interface Upper Byte select strobe
39	66	68			P09_1	H	General purpose IO
					PPG9		Output pin for PPG 9
					LBX		External Bus Interface Lower Byte select strobe
48	67	69			P09_2	H	General purpose IO
					PPG10		Programmable Pulse Generator 10 output
					CS5		External Bus Interface Chip Select 5

PIN DESCRIPTION FOR MB96(F)32x, MB96(F)34x, MB96(F)35x, MB96(F)36x

Pin no.					Pin name	Circuit type	Function
MB9632x	MB9634x		MB9635x	MB9636x			
LQFP80*5	LQFP100*2	QFP100*1	LQFP64*3	LQFP48*4			
49	68	70			P09_3	H	General purpose IO
					PPG11		Programmable Pulse Generator 11 output
					CS4		External Bus Interface Chip Select 4
	69 to 72	71 to 74			P09_4 to P09_7	H	General purpose IO
					OUT0 to OUT3		Output Compare Unit OCU0 to OCU3 waveform output
					CS3 to CS0		External Bus Interface Chip Select 3 to 0
	73	75			P10_0	H	General purpose IO
					RX0		CAN0 interface RX input (not available on MB96F3xxA, MB96F3xxC)
					INT8_R		Relocated external interrupt INT8 request input
	74	76			P10_1	H	General purpose IO
					TX0		CAN0 interface TX output (not available on MB96F3xxA, MB96F3xxC)
64					P13_5	I	General purpose IO
					PPG17		Programmable Pulse Generator17 output
76,77					P13_6 , P13_7	I	General purpose IO
					PPG18,PPG19		Programmable Pulse Generator output
					IN8,IN9		Input Capture Unit ICU8, ICU9 data sample input

PIN DESCRIPTION FOR MB96(F)32x, MB96(F)34x, MB96(F)35x, MB96(F)36x

Pin no.					Pin name	Circuit type	Function
MB9632x	MB9634x		MB9635x	MB9636x			
LQFP80*5	LQFP100*2	QFP100*1	LQFP64*3	LQFP48*4			
63					P17_2	I	General purpose IO
					FRCK3		Free Running Timer3 input
					TTG17		Programmable Pulse Generators PPG17 trigger
20					P17_6	I	General purpose IO
					OCU11		Output Compare Unit OCU11 waveform output pin
					IN10		Input Capture Unit ICU10 data sample input
					TTG18		Programmable Pulse Generators PPG18 trigger
					INT3_R		Relocated input of external interrupt INT3
29					P17_7	I	General purpose IO
					IN11		Input Capture Unit ICU11 data sample input
					TTG19		Programmable Pulse Generators PPG19 trigger
80	30	32	64	1	AVCC	F	Analog circuits VCC power supply
2	31	33	2	2	AVRH	G	A/D converter upper reference voltage Supply voltage to AVCC pin must be kept higher than or equal to AVRH pin voltage specially when the supply voltage to AVRH is turned on or off
	32	34			AVRL	F	A/D converter lower reference voltage
1	33	35	1	48	AVSS	F	Analog circuits VSS power supply

PIN DESCRIPTION FOR MB96(F)32x, MB96(F)34x, MB96(F)35x, MB96(F)36x

Pin no.					Pin name	Circuit type	Function
MB9632x	MB9634x		MB9635x	MB9636x			
LQFP80*5	LQFP100*2	QFP100*1	LQFP64*3	LQFP48*4			
26, 27, 28	49, 50, 51	51, 52, 53	21, 22, 23	20, 21, 22	MD2, MD1, MD0	C	Input pins for specifying the operating mode The pins must be directly connected to VCC or VSS
22,61	13, 63, 88	15, 65, 90	49	24	VCC		Power supply
23,60	13, 42, 64, 89	16, 44, 66, 91	18, 48	25	VSS		Power supply
62	15	17	50	26	C	F	Internally regulated power supply stabilization capacitor pin. Please refer to the datasheet for recommended capacitor values.

*1: FPT-100P-M22
*2: FPT-100P-M20
*3: FPT-64P-M23/M24
*4: FPT-48P-M26
*5: FPT-80P-M21

■ PIN DESCRIPTION FOR MB96(F)38X

PIN DESCRIPTION FOR MB96(F)38X

Pin no. MB96(F)38x LQFP120*1	Pin name	Circuit type	Function
65	X0	A	Oscillation input
66	X1	A	Oscillation output
68	X0A	B	Oscillation input (only for devices without S-suffix)
	P04_0	H	General purpose I/O (only for devices with S-suffix)
69	X1A	B	Oscillation output (only for devices without S-suffix)
	P04_1	H	General purpose I/O (only for devices with S-suffix)
70	RSTX	E	Reset input
71	P11_0	J	General purpose I/O
	A01		External bus (non-multiplexed mode) address line
	COM0		LCD controller/driver common output pin
	CS5		External bus chip select 5
72 to 74	P11_1 to P11_3	J	General purpose I/O
	A02 to A04		External bus (non-multiplexed mode) address lines
	COM1 to COM3		LCD controller/driver common output pins
	PPG0_R to PPG2_R		Relocated Programmable Pulse Generator 0 to 2 outputs
75, 76	P11_4, P11_5	J	General purpose I/O
	A05, A06		External bus (non-multiplexed mode) address lines
	SEG0, SEG1		LCD controller / driver segment outputs
	PPG3_R, PPG4_R		Relocated Programmable Pulse Generator 3 and 4 outputs
77	P11_6	J	General purpose I/O
	FRCK0_R		Relocated Free-Running Timer 0 clock input
	A07		External bus (non-multiplexed mode) address line
	SEG2		LCD controller / driver segment output

PIN DESCRIPTION FOR MB96(F)38X

Pin no. MB96(F)38x LQFP120*1	Pin name	Circuit type	Function
78, 79	P11_7, P12_0	J	General purpose I/O
	IN0_R,IN1_R		Input Capture Unit relocated input pin
	A08, A09		External bus (non-multiplexed mode) address lines
	SEG3, SEG4		LCD controller / driver segment output
80	P12_1	J	General purpose I/O
	TIN1_R		Relocated event input pin for Reload Timer 1
	A10		External bus (non-multiplexed mode) address line
	SEG5		LCD controller / driver segment output
81	P12_2	J	General purpose I/O
	TOT1_R		Relocated output pin for Reload Timer 1
	A11		External bus (non-multiplexed mode) address line
	SEG6		LCD controller / driver segment output
82, 83	P12_3, P12_4	J	General purpose I/O
	OUT2_R, TOT2_R		Relocated waveform output pins of Output Compare Units
	A12, A13		External bus (non-multiplexed mode) address lines
	SEG7, SEG8		LCD controller / driver segment outputs
84	P12_5	J	General purpose I/O
	TIN2_R		Relocated event input pin for Reload Timer 2
	A14		External bus (non-multiplexed mode) address line
	SEG9		LCD controller / driver segment output
85	P12_6	J	General purpose I/O
	TOT2_R		Relocated output pin for Reload Timer 2
	A15		External bus (non-multiplexed mode) address line
	SEG10		LCD controller / driver segment output

PIN DESCRIPTION FOR MB96(F)38X

Pin no. MB96(F)38x LQFP120*1	Pin name	Circuit type	Function
86	P12_7	J	General purpose I/O
	INT1_R		Relocated external interrupt 1
	HRQ		External bus Hold Request
	SEG11		LCD controller / driver segment output
87	P00_0	J	General purpose I/O
	INT3_R		Relocated external interrupt 3
	HAKX		External bus Hold Acknowlegde
	SEG12		LCD controller / driver segment output
88	P00_1	J	General purpose I/O
	INT4_R		Relocated external interrupt 4
	WRHX		External bus High byte Write strobe
	SEG13		LCD controller / driver segment output
89	P00_2	J	General purpose I/O
	INT5_R		Relocated external interrupt 5
	RDY		External bus external wait state request
	SEG14		LCD controller / driver segment output
92	P00_3	J	General purpose I/O
	INT6_R		Relocated external interrupt 6
	A00		External bus (non-multiplexed mode) address line
	CS3_R		External bus relocated Chip Select 3
	SEG15		LCD controller / driver segment output
93	P00_4	J	General purpose I/O
	INT7_R		Relocated external interrupt 7
	ALE		External bus Address Latch Enable signal
	SEG16		LCD controller / driver segment output

PIN DESCRIPTION FOR MB96(F)38X

Pin no. MB96(F)38x LQFP120*1	Pin name	Circuit type	Function
94	P00_5	J	General purpose I/O
	TTG2		Programmable Pulse Generator 2 trigger
	IN6		Input Capture Unit ICU 6 data sample input
	RDX		External bus Read Strobe
	SEG17		LCD controller / driver segment output
95	P00_6	J	General purpose I/O
	TTG3		Trigger for Programmable Pulse Generator 3
	IN7		Input Capture Unit ICU7 data sample input
	WRLX		External bus (16-bit data mode) low byte write strobe
	WRX		External bus (8-bit data mode) write strobe
	SEG18		LCD controller / driver segment output
96	P00_7	J	General purpose I/O
	SGO0		SGO output of Sound Generator 0
	CLK		External bus clock
	SEG19		LCD controller / driver segment output
97	P01_0	J	General purpose I/O
	SGA0		SGA output of Sound Generator 0
	AD00		External bus (non-multiplexed mode) data line and External bus (multiplexed mode) address/data line
	SEG20		LCD controller / driver segment output
98	P01_1	J	General purpose I/O
	OUT0		Output Compare Unit OCU0 waveform output
	CKOT1		Output of Clock Output function 1
	AD01		External bus (non-multiplexed mode) data line and External bus (multiplexed mode) address/data line
	SEG21		LCD controller / driver segment output

PIN DESCRIPTION FOR MB96(F)38X

Pin no. MB96(F)38x LQFP120*1	Pin name	Circuit type	Function
99	P01_2	J	General purpose I/O
	OUT1		Waveform output pin for Output Compare Unit 1
	CKOTX1		Clock Output function 1 inverted output
	AD02		External bus (non-multiplexed mode) data line and External bus (multiplexed mode) address/data line
	SEG22		LCD controller / driver segment output
100	P01_3	J	General purpose I/O
	PPG5		Programmable Pulse Generator 5 output
	AD03		External bus (non-multiplexed mode) data line and External bus (multiplexed mode) address/data line
	SEG23		LCD controller / driver segment output
101	P01_4	J	General purpose I/O
	AD04		External bus (non-multiplexed mode) data lines and External bus (multiplexed mode) address/data lines
	SIN4		USART 4 serial data input
	SEG24		LCD controller / driver segment outputs
102	P01_5	J	General purpose I/O
	AD05		External bus (non-multiplexed mode) data lines and External bus (multiplexed mode) address/data lines
	SOT4		USART 4 serial data output
	SEG25		LCD controller / driver segment outputs
103	P01_6	J	General purpose I/O
	AD06		External bus (non-multiplexed mode) data lines and External bus (multiplexed mode) address/data lines
	SCK4		USART 1 serial clock
	SEG26		LCD controller / driver segment outputs

PIN DESCRIPTION FOR MB96(F)38X

Pin no. MB96(F)38x LQFP120*1	Pin name	Circuit type	Function
104	P01_7	J	General purpose I/O
	CKOTX1_R		Relocated Clock Output function 1 inverted output
	AD07		External bus (non-multiplexed mode) data line and External bus (multiplexed mode) address/data line
	SEG27		LCD controller / driver segment output
105	P02_0	J	General purpose I/O
	CKOT1_R		Relocated clock output function 1 output
	AD08		External bus (non-multiplexed mode) data line and External bus (multiplexed mode) address/data line
	SEG28		LCD controller / driver segment output
106, 107	P02_1, P02_2	J	General purpose I/O
	IN6_R, IN7_R		Relocated Input Capture Units 6 and 7 data sample input pins
	AD09, AD10		External bus (non-multiplexed mode) data line and External bus (multiplexed mode) address/data line
	SEG29, SEG30		LCD controller / driver segment output
108	P02_3	J	General purpose I/O
	SGO0_R		Relocated Sound Generator 0 SGO output
	AD11		External bus (non-multiplexed mode) data line and External bus (multiplexed mode) address/data line
	SEG31		LCD controller / driver segment output
109	P02_4	J	General purpose I/O
	SGA0_R		Relocated Sound generator 0 SGA output
	AD12		External bus (non-multiplexed mode) data line and External bus (multiplexed mode) address/data line
	SEG32		LCD controller / driver segment output

PIN DESCRIPTION FOR MB96(F)38X

Pin no. MB96(F)38x LQFP120*1	Pin name	Circuit type	Function
110,111	P02_5, P02_6	J	General purpose I/O
	OUT0_R, OUT1_R		Relocated Output Compare Units OCU 0 and OCU 1 waveform outputs
	AD13, AD14		External bus (non-multiplexed mode) data line and External bus (multiplexed mode) address/data lines
	SEG33, SEG34		LCD controller / driver segment outputs
112	P02_7	J	General purpose I/O
	PPG5_R		Relocated Programmable Pulse Generator 5 output
	AD15		External bus (non-multiplexed mode) data line and External bus (multiplexed mode) address/data line
	SEG35		LCD controller / driver segment output
113 to 116	P03_0 to P03_3	J	General purpose I/O
	V0 to V3		LCD controller / driver reference voltage pins (when reference voltage is externally supplied)
	A16 to A19		External bus (non-multiplexed mode) data line and External bus (multiplexed mode) address/data lines
	SEG36 to SEG39		LCD controller / driver segment outputs (when reference voltage is internally supplied)
117	P03_4	J	General purpose I/O
	INT4		External Interrupt 4
	RX0		CAN0 interface RX input
118	P03_5	J	General purpose I/O
	TX0		CAN0 Interface TX output
119	P03_6	J	General purpose I/O
	NMI		Non-Maskable Interrupt input
	INT0		External interrupt 0 input

PIN DESCRIPTION FOR MB96(F)38X

Pin no. MB96(F)38x LQFP120*1	Pin name	Circuit type	Function
3	P03_7	J	General purpose I/O
	INT1		External Interrupt 1 input
	SIN1		USART 1 serial data input
	CS0		External bus Chip Select 0
	A20		External bus address line
	SEG40		LCD controller / driver segment output
4	P13_0	J	General purpose I/O
	INT2		External Interrupt 2 input
	SOT1		USART 1 serial data output
	CS1		External bus Chip Select 1
	A21		External bus address line
	SEG41		LCD controller / driver segment output
5	P13_1	J	General purpose I/O
	INT3		External Interrupt 3 input
	SCK1		USART 1 serial clock
	CS2		External bus Chip Select 1
	A22		External bus address line
	SEG42		LCD controller / driver segment output
6	P13_2	J	General purpose I/O
	PPG0		Output pin for Programmable Pulse Generator 0
	TIN0		Reload Timer 0 input pin
	FRCK1		Free Running Timer 1 input pin
	CS3		External bus Chip Select 3
	A23		External bus address line
	SEG43		LCD controller / driver segment output

PIN DESCRIPTION FOR MB96(F)38X

Pin no. MB96(F)38x LQFP120*1	Pin name	Circuit type	Function
7	P13_3	J	General purpose I/O
	PPG1		Output pin for Programmable Pulse Generator 1
	TOT0		Reload Timer 0 output
	WOT		Real Time Clock output
	UBX		External bus Upper Byte Strobe
	SEG44		LCD controller / driver segment output
8	P13_4	J	General purpose I/O
	SIN0		USART 0 data input
	INT6		External interrupt 1 input
	SEG45		LCD controller / driver segment output
9	P13_5	J	General purpose I/O
	SOT0		USART 0 data input
	ATDG		A/D converter trigger input
	INT7		External interrupt 7 input
	SEG46		LCD controller / driver segment output
10	P13_6	J	General purpose I/O
	SCK0		USART 0 clock
	CKOTX0		Clock Output function 0 inverted output
	LBX		External bus interface low byte strobe
	SEG47		LCD controller / driver segment output
11	P13_7	J	General purpose I/O
	PPG2		Programmable Pulse Generator 2 output
	CKOT0		Clock Output function 0 output
	CS4		External bus interface Chip Select 4
	SEG48		LCD controller / driver segment output
12	P04_4	J	General purpose I/O
	PPG3		Programmable Pulse Generator 3 output
	SDA0		I2C interface 0 data I/O

PIN DESCRIPTION FOR MB96(F)38X

Pin no. MB96(F)38x LQFP120*1	Pin name	Circuit type	Function
13	P04_5	J	General purpose I/O
	PPG4		Programmable Pulse Generator 4 output
	SCL0		I2C interface 0 clock I/O
14	P06_0	K	General purpose I/O
	AN0		A/D converter inputs
	SCK5		USART 5 Serial clock
	IN2_R		Input Capture Unit relocated input pin
	SEG49		LCD controller / driver segment outputs
15	P06_1	K	General purpose I/O
	AN1		A/D converter inputs
	SOT5		USART 5 Serial data output
	IN3_R		Input Capture Unit relocated input pin
	SEG50		LCD controller / driver segment outputs
16	P06_2	K	General purpose I/O
	AN2		A/D converter input
	INT5		External interrupt input
	SIN5		USART 5 Serial input data
	SEG51		LCD controller / driver segment output
17	P06_3	K	General purpose I/O
	AN3		A/D converter input
	FRCK0		Free Running Timer 0 clock input
	SEG52		LCD controller / driver segment output

PIN DESCRIPTION FOR MB96(F)38X

Pin no. MB96(F)38x LQFP120*1	Pin name	Circuit type	Function
18, 19	P06_4, P06_5	K	General purpose I/O
	AN4, AN5		A/D converter inputs
	IN0, IN1		Input Capture Unit input pin
	TTG0/TTG4, TTG1/TTG5		Programmable Pulse Generator 0 and 4 external trigger, Programmable Pulse Generator 1 and 5 external trigger
	SEG53, SEG54		LCD controller / driver segment outputs
20	P06_6	K	General purpose I/O
	AN6		A/D converter input
	TIN1		Reload Timer 1 input
	IN4_R		Input Capture Unit relocated input pin
	SEG55		LCD controller / driver segment output
21	P06_7	K	General purpose I/O
	AN7		A/D converter input
	TOT1		Reload Timer 1 output
	IN5_R		Input Capture Unit relocated input pin
	SEG56		LCD controller / driver segment output
22	AVCC	F	Analogue circuits power supply
23	AVRH	G	A/D converter high reference voltage Supply voltage to AVCC pin must be kept higher than or equal to AVRH pin voltage especially when the supply voltage to AVRH is turned on or off
24	AVRL	F	A/D converter low reference voltage
25	AVSS	F	Analogue circuits power supply

PIN DESCRIPTION FOR MB96(F)38X

Pin no. MB96(F)38x LQFP120*1	Pin name	Circuit type	Function
26, 27	P05_0, P05_1	K	General purpose I/O
	AN8, AN9		A/D converter inputs
	ALARM0, ALARM1		Alarm comparator 0, 1 inputs
	SEG57, SEG58		LCD controller / driver segment outputs
28	P05_2	K	General purpose I/O
	AN10		A/D converter inputs
	OUT2		Output Compare Unit 2 and 3 waveform output pins
	SGO1		SGO output of Sound Generator 1
	SEG59		LCD controller / driver segment outputs
29	P05_3	K	General purpose I/O
	AN11		A/D converter inputs
	OUT3		Output Compare Unit 2 and 3 waveform output pins
	SGA1		SGA output of Sound Generator 1
	SEG60		LCD controller / driver segment outputs
32	P05_4	K	General purpose I/O
	AN12		A/D converter input
	RX1		CAN controller 1 data receive
	INT2_R		Relocated External Interrupt 2 input
	SEG61		LCD controller / driver segment output
33	P05_5	K	General purpose I/O
	AN13		A/D converter input
	TX1		CAN controller 1 data transmit
	SEG62		LCD controller / driver segment output

PIN DESCRIPTION FOR MB96(F)38X

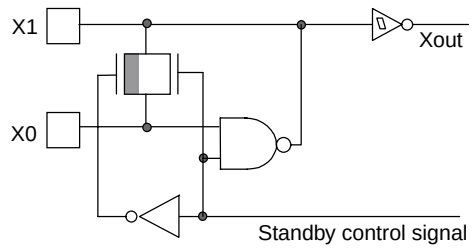
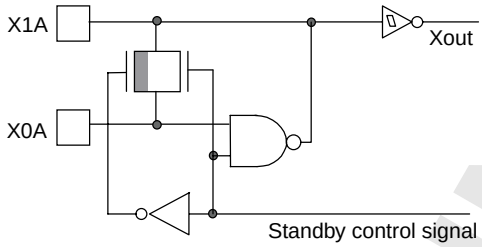
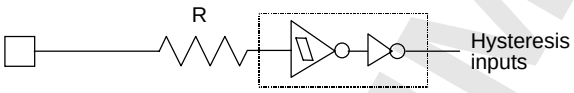
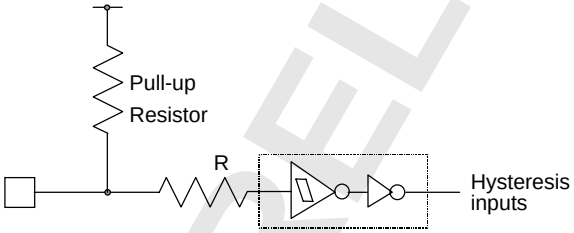
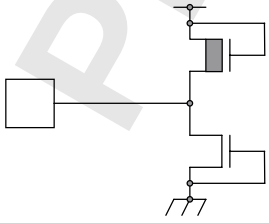
Pin no. MB96(F)38x LQFP120*1	Pin name	Circuit type	Function
34	P05_6	K	General purpose I/O
	AN14		A/D converter input
	TIN2		Reload Timer 2 event input
	SGO1_R		Relocated SGO output of Sound Generator 1
	SEG63		LCD controller / driver segment output
35	P05_7	K	General purpose I/O
	AN15		A/D converter input
	TOT2		Reload Timer 2 output
	SGA1_R		Relocated SGA output of Sound Generator 1
	SEG64		LCD controller / driver segment output
36 to 39	GP08_0 to GP08_3	M	General purpose I/O
	PWM1P0 PWM1M0 PWM2P0 PWM2M0		Stepper Motor Controller 0 outputs
40, 43 to 45	GP08_4 to GP08_7	M	General purpose I/O
	PWM1P1 PWM1M1 PWM2P1 PWM2M1		Stepper Motor Controller 1 outputs
46 to 49	GP09_0 to GP09_3	M	General purpose I/O
	PWM1P2 PWM1M2 PWM2P2 PWM2M2		Stepper Motor Controller 2 outputs
50 to 52, 55	GP09_4 to GP09_7	M	General purpose I/O
	PWM1P3 PWM1M3 PWM2P3 PWM2M3		Stepper Motor Controller 3 outputs

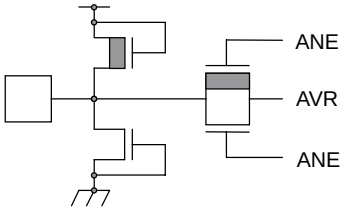
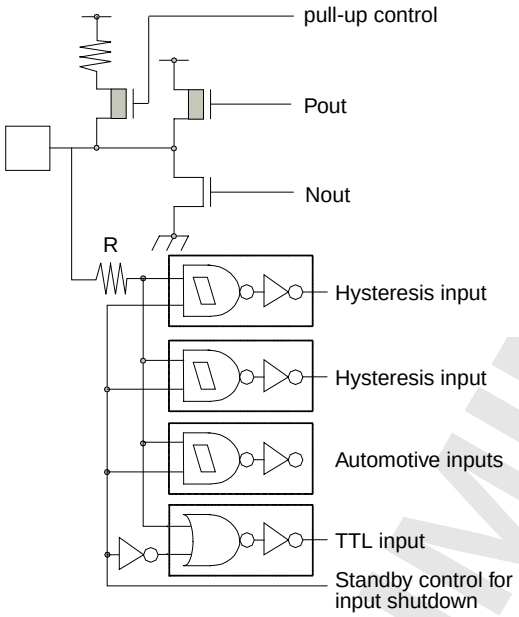
PIN DESCRIPTION FOR MB96(F)38X

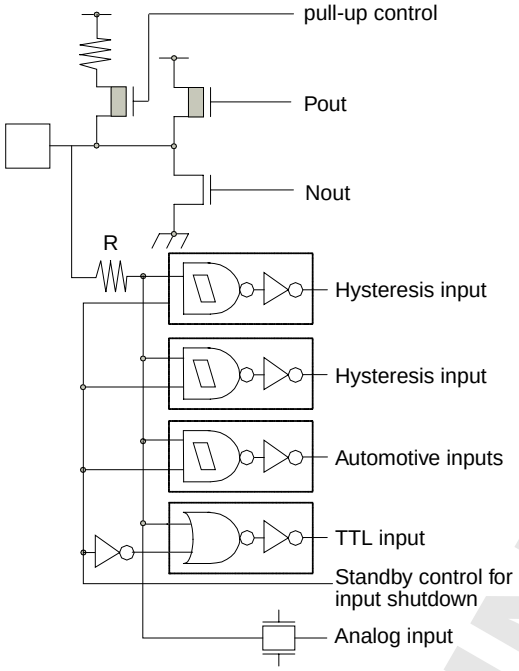
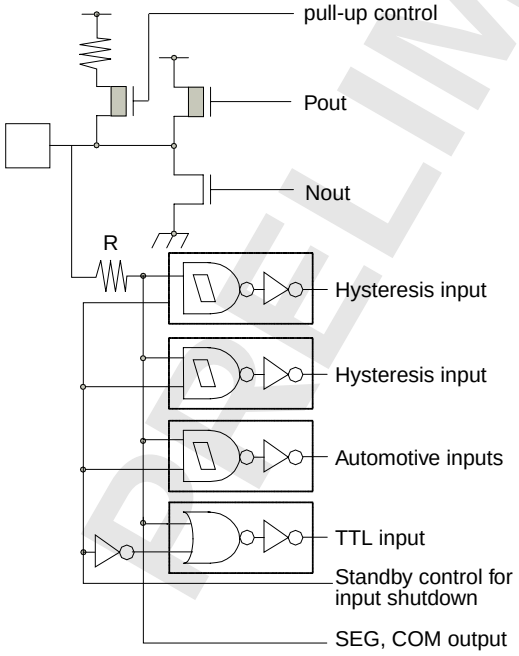
Pin no. MB96(F)38x LQFP120*1	Pin name	Circuit type	Function
56	GP10_0	M	General purpose I/O
	PWM1P4		Stepper Motor Controller 4 output
	SIN2		USART 2 Serial data input
	TIN3		Reload Timer 3 event input
57	GP10_1	M	General purpose I/O
	PWM1M4		Stepper Motor Controller 4 output
	SOT2		USART 2 Serial data output
	TOT3		Reload Timer 3 output
58	GP10_2	M	General purpose I/O
	PWM2P4		Stepper Motor Controller 4 output
	SCK2		USART 2 clock
	PPG6		Programmable Pulse Generator 6 output
59	GP10_3	M	General purpose I/O
	PWM2M4		Stepper Motor Controller 4 output
	PPG7		Programmable Pulse Generator 7 output
62, 63, 64	MD0, MD1, MD2	C	Input pins for specifying the operating mode The pins must be directly connected to VCC or VSS
30, 60, 90, 120	VCC		Power supply
1, 31, 61, 91	VSS		Power supply
41, 53,	DVCC		High current I/O power supply
42, 54	DVSS		High current I/O power supply
2	C	F	Internally regulated power supply stabilization capacitor pin. Please refer to the datasheet for recommended capacitor values.

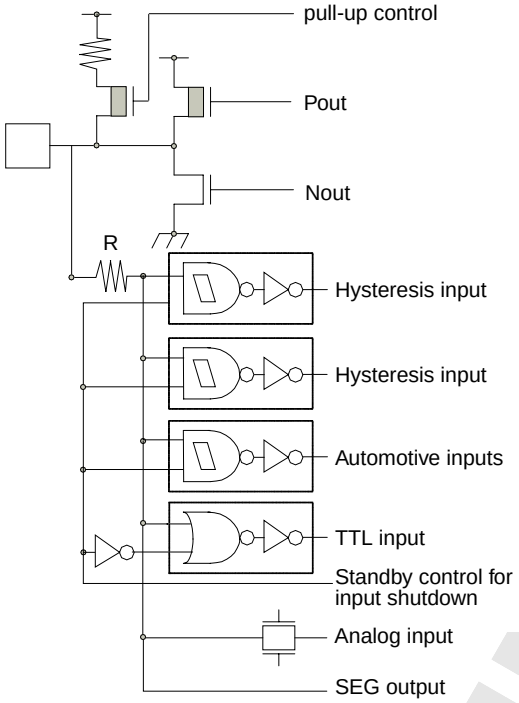
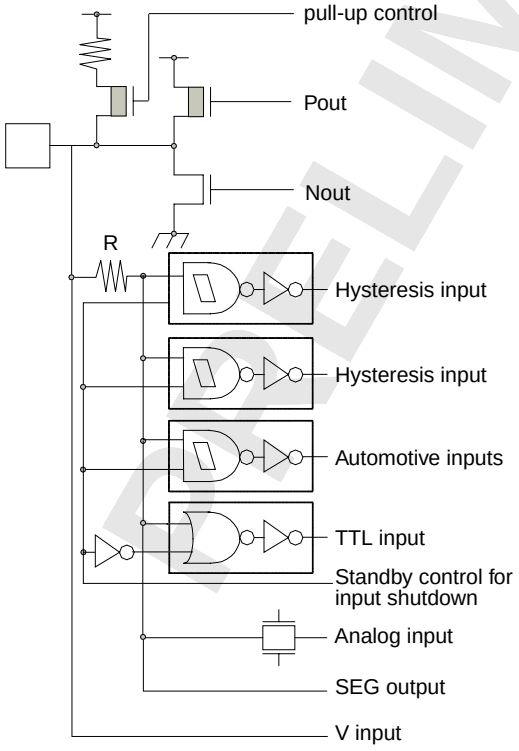
*1: FPT-120P-M21

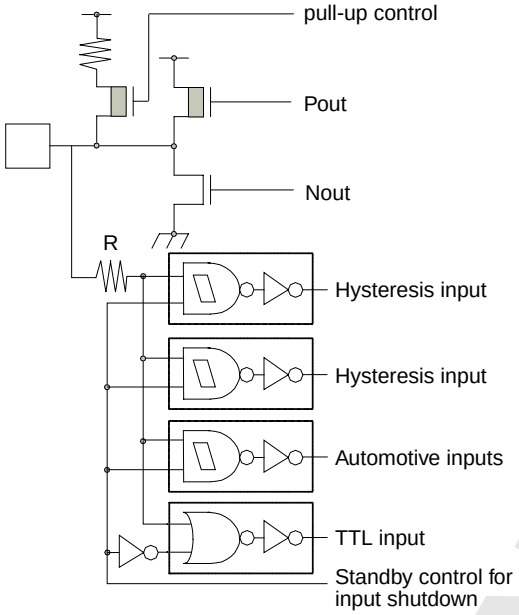
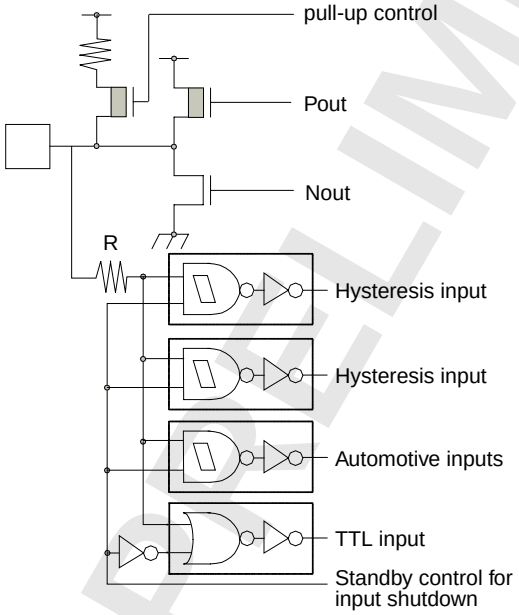
■ I/O CIRCUIT TYPE

Type	Circuit	Remarks
A		Oscillation circuit High-speed oscillation feedback resistor = approx. 1 MΩ
B		Oscillation circuit Low-speed oscillation feedback resistor = approx. 10 MΩ
C		Mask ROM and EVA device: CMOS Hysteresis input pin Flash device: CMOS input pin
E		CMOS Hysteresis input pin Pull-up resistor value: approx. 50 kΩ
F		Power supply input protection circuit

Type	Circuit	Remarks
G		A/D converter ref+ (AVRH) power supply input pin, With the protection circuit Flash devices do not have a protection circuit against VCC for pin AVRH
H		CMOS level output (programmable I_{OL} = 5mA, I_{OH} = -5mA and I_{OL} = 2mA, I_{OH} = -2mA) 2 different CMOS hysteresis inputs with input shutdown function Automotive input with input shutdown function TTL input with input shutdown function Programmable pull-up registor:50kΩ approx.

Type	Circuit	Remarks
I		CMOS level output (programmable I_{OL} = 5mA, I_{OH} = -5mA and I_{OL} = 2mA, I_{OH} = -2mA) 2 different CMOS hysteresis inputs with input shutdown function Automotive input with input shutdown function) TTL input with input shutdown function Programmable pull-up registor: 50kΩ approx. Analogue input
J		CMOS level output (programmable I_{OL} = 5mA, I_{OH} = -5mA and I_{OL} = 2mA, I_{OH} = -2mA) 2 different CMOS hysteresis inputs with input shutdown function Automotive input with input shutdown function) TTL input with input shutdown function Programmable pull-up registor: 50kΩ approx. SEG or COM output

Type	Circuit	Remarks
K		CMOS level output (programmable I_{OL} = 5mA, I_{OH} = -5mA and I_{OL} = 2mA, I_{OH} = -2mA) 2 different CMOS hysteresis inputs with input shutdown function Automotive input with input shutdown function) TTL input with input shutdown function Programmable pull-up registor: 50kΩ approx. Analogue input SEG output
L		CMOS level output (programmable I_{OL} = 5mA, I_{OH} = -5mA and I_{OL} = 2mA, I_{OH} = -2mA) 2 different CMOS hysteresis inputs with input shutdown function Automotive input with input shutdown function) TTL input with input shutdown function Programmable pull-up registor:50kΩ approx. Analogue input

Type	Circuit	Remarks
M		CMOS level output (programmable I_{OL} = 5mA, I_{OH} = -5mA and I_{OL} = 2mA, I_{OH} = -2mA, I_{OL} = 30mA, I_{OH} = -30mA) 2 different CMOS hysteresis inputs with input shutdown function Automotive input with input shutdown function TTL input with input shutdown function Programmable pull-up registor:50kΩ approx.
N		CMOS level output (I_{OL} = 3mA, I_{OH} = -3mA) 2 different CMOS hysteresis inputs with input shutdown function Automotive input with input shutdown function TTL input with input shutdown function Programmable pull-up registor:50kΩ approx.

■ HANDLING DEVICES

Special care is required for the following when handling the device:

- Preventing latch-up
- Treatment of unused pins
- Using external clock
- Precautions for when not using a sub clock signal
- Notes on during operation of PLL clock mode
- Power supply pins (VCC/VSS)
- Crystal Oscillator Circuit
- Turning-on Sequence of Power Supply to A/D Converter and Analog Inputs
- Connection of Unused Pins of A/D Converter
- Notes on Energization
- Stabilization of power supply voltage

1. Preventing latch-up

- CMOS IC chips may suffer latch-up under the following conditions:
- A voltage higher than VCC or lower than VSS is applied to an input or output pin.
- A voltage higher than the rated voltage is applied between VCC and VSS.
- The AVCC power supply is applied before the VCC voltage.
- Latch-up may increase the power supply current drastically, causing thermal damage to the device.
- For the same reason, also be careful not to let the analog power-supply voltage (AVCC, AVRH) exceed the digital power-supply voltage.

2. Treatment of unused pins

- Unused input pins may be left open when the input is disabled (corresponding bit of Port Input Enable register PIER = 0).
- Leaving unused input pins open when the input is enabled may result in misbehavior and possible permanent damage of the device. Therefore they must be pulled up or pulled down through resistors. To prevent latchup, those resistors should be more than 2 kOhm.
- Unused bidirectional pins should be set to the output state and can be left open, or the input state with either input disabled or external pull-up/pull-down resistor as described above.

3. Using external clock

- To use external clock, drive the X0 pin and leave X1 pin open.

4. Precautions for when not using a sub clock signal

- If you do not connect pins X0A and X1A to an oscillator, use a pull-down resistor on the X0A pin, and
- leave the X1A pin open.

5. Notes on during operation of PLL clock mode

- If the PLL clock mode is selected and no external oscillator is operating or no external clock is supplied, the microcontroller attempts to be working with the freely oscillating PLL. Performance of this operation, however, cannot be guaranteed.

6. Power supply pins (VCC/VSS)

- Ensure that all VCC-level power supply pins are at the same potential. In addition, ensure the same for all VSS-level power supply pins. If there are more than one VCC or VSS system, the device may operate incorrectly even within the guaranteed operating range.

- Connect VCC and VSS to the device from the power supply with lowest possible impedance.
- As a measure against power supply noise, connect a capacitor of about 0.1 µF as a bypass capacitor between VCC and VSS as close as possible to VCC and VSS pins.

7. Crystal Oscillator Circuit

- Noise at X0 or X1 pins may possibly cause abnormal operation. Make sure to provide bypass capacitors with shortest distance to X0, X1 pins, crystal oscillator (or ceramic resonator) and ground lines, and make sure, to the utmost effort, that lines of oscillation circuit not cross the lines of other circuits.
- It is highly recommended to provide a printed circuit board art work surrounding X0 and X1 pins with a ground area for stabilizing the operation.

8. Turning-on Sequence of Power Supply to A/D Converter and Analog Inputs

- Make sure to turn on the A/D converter power supply (AVCC, AVRH, AVRL) and analog inputs (ANn) after turning-on the digital power supply (VCC).
- Turn-off the digital power after turning off the A/D converter supply and analog inputs. In this case, make sure that the voltage does not exceed AVRH or AVCC (turning on/off the analog and digital power supplies simultaneously is acceptable).

9. Connection of Unused Pins of A/D Converter

- Connect unused pins of A/D converter as AVCC = VCC, AVSS = AVRH = AVRL = VSS.

10. Notes on Energization

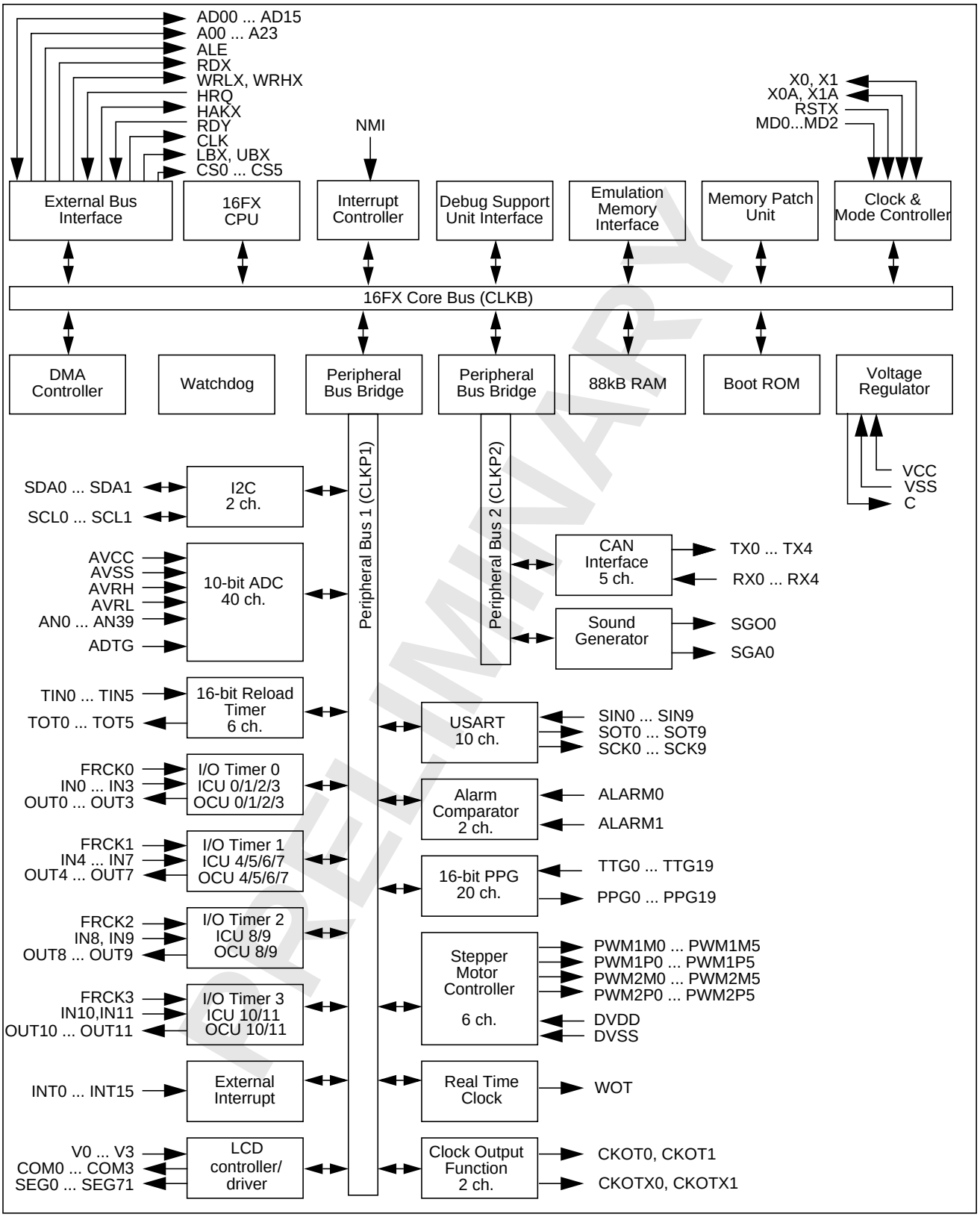
- To prevent malfunction of the internal voltage regulator, supply voltage profile while turning on the power supply should be slower than 50us from 0.2 V to 2.7 V.

11. Stabilization of power supply voltage

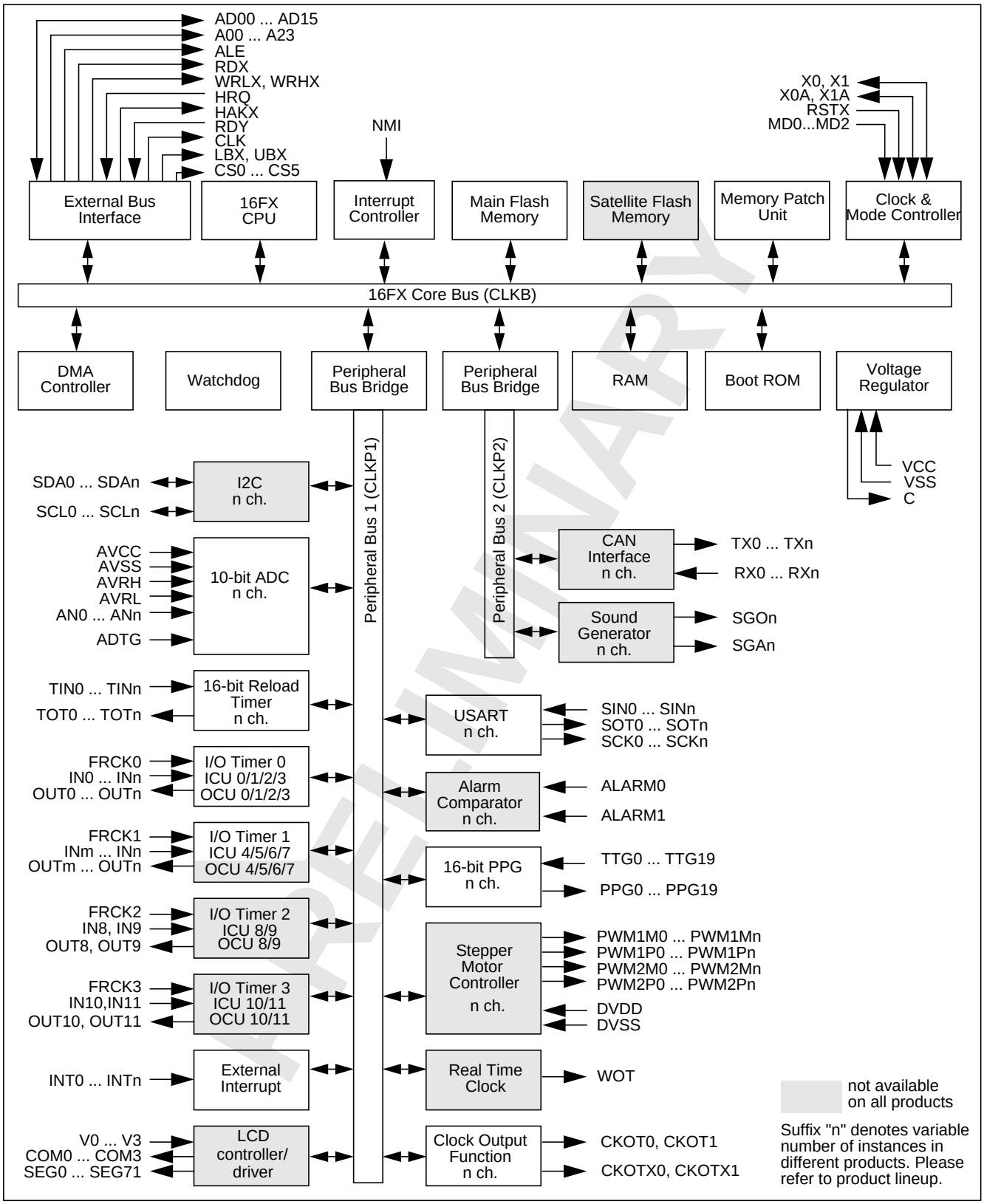
- If the power supply voltage varies acutely even within the operation assurance range of the Vcc power supply voltage, a malfunction may occur. The Vcc power supply voltage must therefore be stabilized. As stabilization guidelines, stabilize the power supply voltage so that Vcc ripple fluctuations (peak to peak value) in the commercial frequencies (50 to 60 Hz) fall within 10% of the standard Vcc power supply voltage and the transient fluctuation rate becomes 0.1V/µs or less in instantaneous fluctuation for power supply switching.

■ BLOCK DIAGRAMS

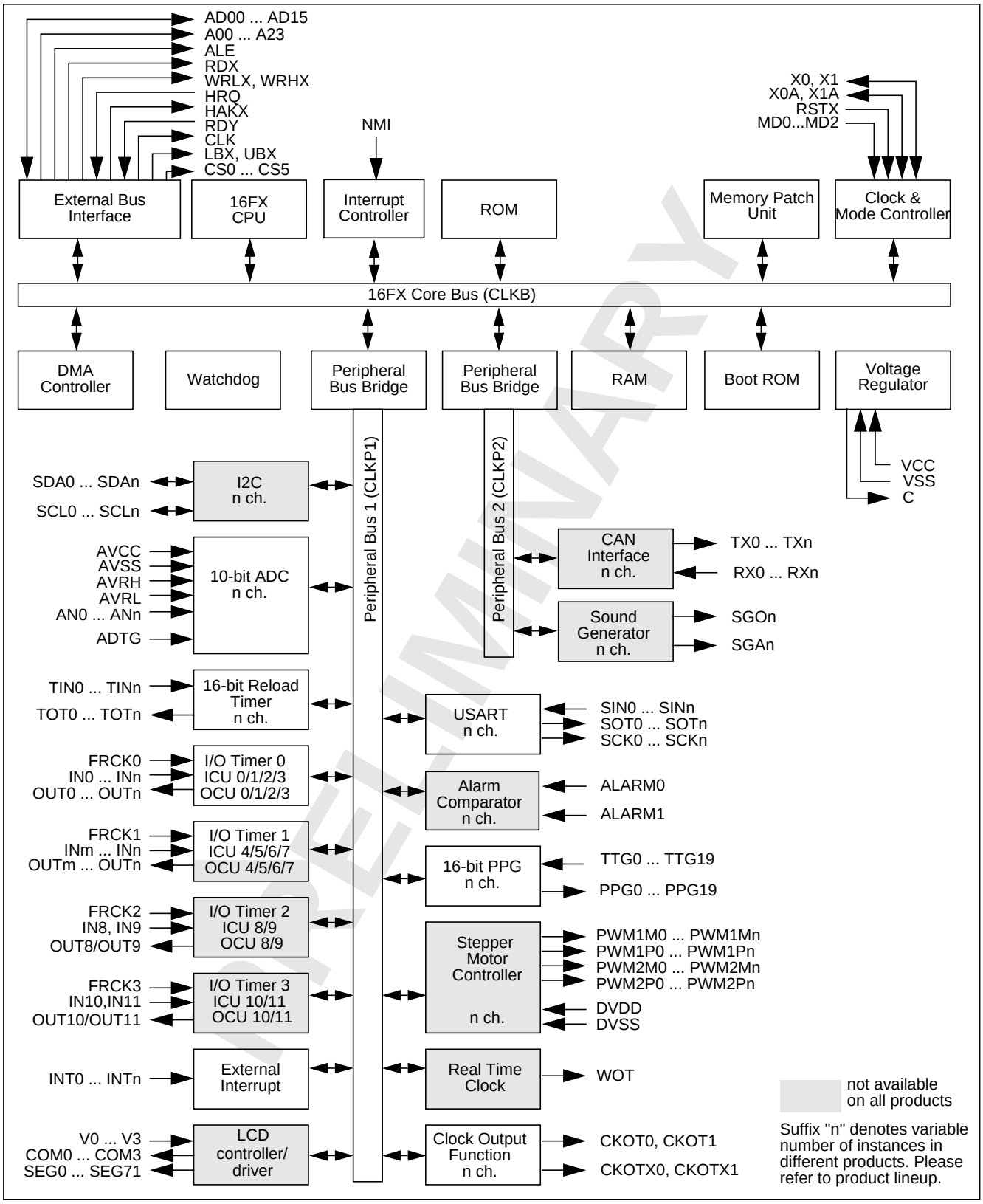
Block Diagram of MB96V300



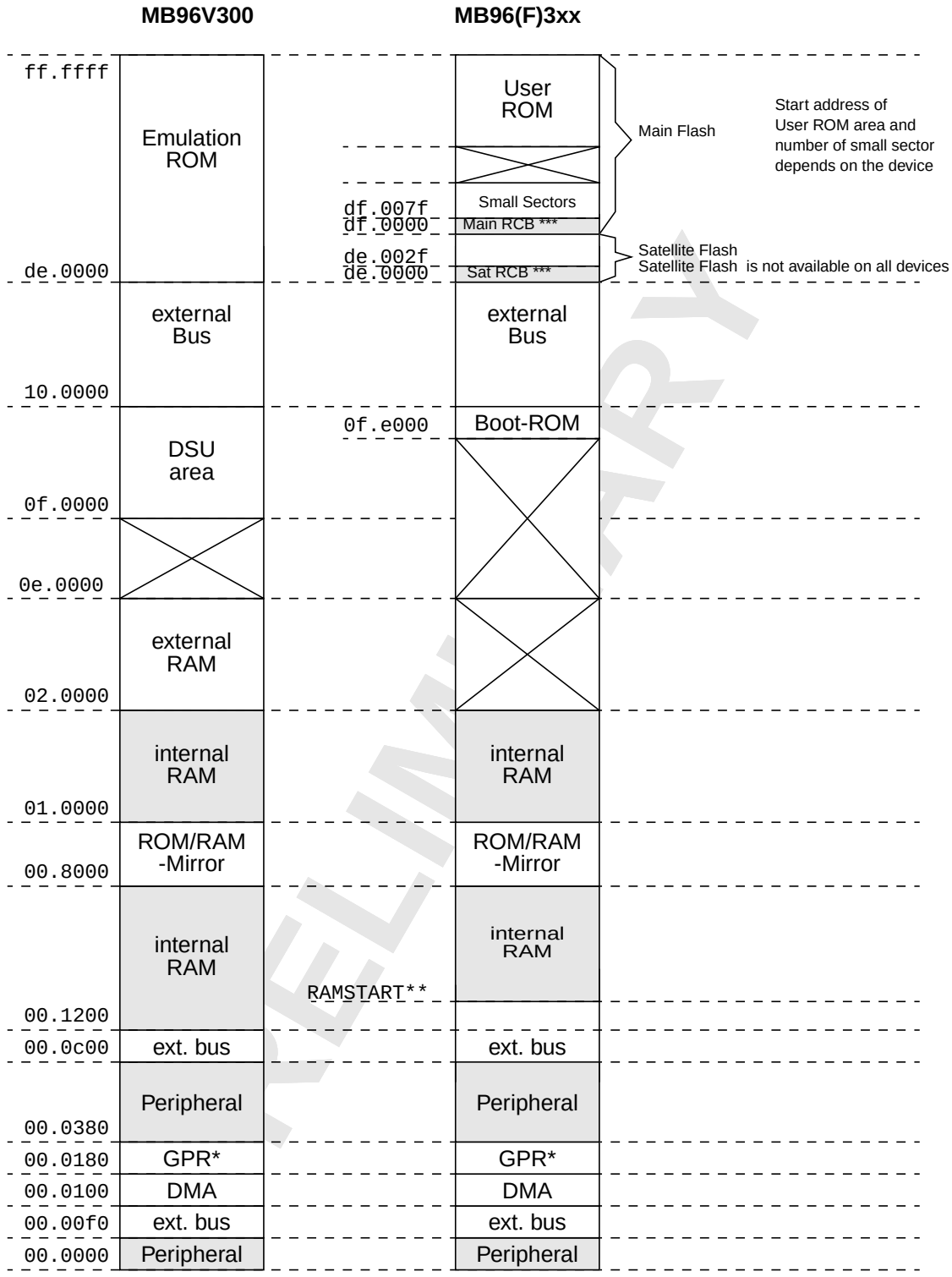
Block Diagram of MB96F3xx



Block Diagram of MB963xx



■ MEMORY MAP



* Unused GPR banks can be used as RAM area.
** Please refer to the table “RAMSTART for different RAM sizes” on the next page
*** ROM Configuration Block (RCB) must not be used for other purposes than described in the manual
The external Bus area DMA area are only available if the device contains the corresponding resource.
The available RAM and ROM area depends on the device configuration.

■ RAMSTART for different RAM sizes

Devices	RAM size	RAMSTART
	1 kB	7E40
	2 kB	7A40
	3 kB	7640
	4 kB	7240
	5 kB	6E40
MB96344, MB96F365, MB96384, MB96385	6 kB	6A40
	7 kB	6640
	8 kB	6240
	9 kB	5E40
	10 kB	5A40
	11 kB	5640
MB96F326, MB96F356	12 kB	5240
	13 kB	4E40
	14 kB	4A40
	15 kB	4640
MB96(F)346, MB96(F)347, MB96(F)386, MB96(F)387	16 kB	4240
	17 kB	3E40
	18 kB	3A40
	19 kB	3640
	20 kB	3240
	21 kB	2E40
	22 kB	2A40
	23 kB	2640
MB96F348	24 kB	2240
	25 kB	1E40
	26 kB	1A40
	27 kB	1640
	28 kB	1240

■ I/O MAP

Table 0-1 I/O map (1 / 53)

Address	Register	Abbreviation 8-bit access	Abbreviation 16-bit access	Access
000000H	I/O Port - Port Data Register Port 00	PDR00		RW
000001H	I/O Port - Port Data Register Port 01	PDR01		RW
000002H	I/O Port - Port Data Register Port 02	PDR02		RW
000003H	I/O Port - Port Data Register Port 03	PDR03		RW
000004H	I/O Port - Port Data Register Port 04	PDR04		RW
000005H	I/O Port - Port Data Register Port 05	PDR05		RW
000006H	I/O Port - Port Data Register Port 06	PDR06		RW
000007H	I/O Port - Port Data Register Port 07	PDR07		RW
000008H	I/O Port - Port Data Register Port 08	PDR08		RW
000009H	I/O Port - Port Data Register Port 09	PDR09		RW
00000AH	I/O Port - Port Data Register Port 10	PDR10		RW
00000BH	I/O Port - Port Data Register Port 11	PDR11		RW
00000CH	I/O Port - Port Data Register Port 12	PDR12		RW
00000DH	I/O Port - Port Data Register Port 13	PDR13		RW
00000EH	I/O Port - Port Data Register Port 14	PDR14		RW
00000FH	I/O Port - Port Data Register Port 15	PDR15		RW
000010H	I/O Port - Port Data Register Port 16	PDR16		RW
000011H	I/O Port - Port Data Register Port 17	PDR17		RW
000018H	ADC - Control Status Register 0 Low	ADCSL	ADCS	RW
000019H	ADC - Control Status Register 0 High	ADCSH		RW
00001AH	ADC - Data register 0 Low	ADCRL	ADCR	R
00001BH	ADC - Data register 0 High	ADCRH		RW
00001CH	ADC - Setting Register 0 Low	ADSRL	ADSR	RW
00001DH	ADC - Setting Register 0 High	ADSRH		RW
00001EH	ADC - Extended configuration register	ADECR		RW
000020H	FRT - Data register of free-running timer 0		TCDT0	RW
000021H	FRT - Data register of free-running timer 0			RW
000022H	FRT - Control status register of free-running timer 0	TCCSL0	TCCS0	RW

Table 0-1 I/O map (2 / 53)

Address	Register	Abbreviation 8-bit access	Abbreviation 16-bit access	Access
000023H	FRT - Control status register of free-running timer 0	TCCSH0		RW
000024H	FRT - Data register of free-running timer 1		TCDT1	RW
000025H	FRT - Data register of free-running timer 1			RW
000026H	FRT - Control status register of free-running timer 1	TCCSL1	TCCS1	RW
000027H	FRT - Control status register of free-running timer 1	TCCSH1		RW
000028H	OCU - Output Compare Control Status 0	OCS0		RW
000029H	OCU - Output Compare Control Status 1	OCS1		RW
00002AH	OCU - Compare Register 0		OCCP0	RW
00002BH	OCU - Compare Register 0			RW
00002CH	OCU - Compare Register 1		OCCP1	RW
00002DH	OCU - Compare Register 1			RW
00002EH	OCU - Output Compare Control Status 2	OCS2		RW
00002FH	OCU - Output Compare Control Status 3	OCS3		RW
000030H	OCU - Compare Register 2		OCCP2	RW
000031H	OCU - Compare Register 2			RW
000032H	OCU - Compare Register 3		OCCP3	RW
000033H	OCU - Compare Register 3			RW
000034H	OCU - Output Compare Control Status 4	OCS4		RW
000035H	OCU - Output Compare Control Status 5	OCS5		RW
000036H	OCU - Compare Register 4		OCCP4	RW
000037H	OCU - Compare Register 4			RW
000038H	OCU - Compare Register 5		OCCP5	RW
000039H	OCU - Compare Register 5			RW
00003AH	OCU - Output Compare Control Status 6	OCS6		RW
00003BH	OCU - Output Compare Control Status 7	OCS7		RW
00003CH	OCU - Compare Register 6		OCCP6	RW
00003DH	OCU - Compare Register 6			RW
00003EH	OCU - Compare Register 7		OCCP7	RW

Table 0-1 I/O map (3 / 53)

Address	Register	Abbreviation 8-bit access	Abbreviation 16-bit access	Access
00003FH	OCU - Compare Register 7			RW
000040H	ICU - Control Status Register 0/1	ICS01		RW
000041H	ICU - Edge register 0/1	ICE01		RW
000042H	ICU - Capture Register 0	IPCPL0	IPCP0	R
000043H	ICU - Capture Register 0	IPCPH0		R
000044H	ICU - Capture Register 1	IPCPL1	IPCP1	R
000045H	ICU - Capture Register 1	IPCPH1		R
000046H	ICU - Control Status Register 2/3	ICS23		RW
000047H	ICU - Edge register 2/3	ICE23		RW
000048H	ICU - Capture Register 2	IPCPL2	IPCP2	R
000049H	ICU - Capture Register 2	IPCPH2		R
00004AH	ICU - Capture Register 3	IPCPL3	IPCP3	R
00004BH	ICU - Capture Register 3	IPCPH3		R
00004CH	ICU - Control Status Register 4/5	ICS45		RW
00004DH	ICU - Edge register 4/5	ICE45		RW
00004EH	ICU - Capture Register 4	IPCPL4	IPCP4	R
00004FH	ICU - Capture Register 4	IPCPH4		R
000050H	ICU - Capture Register 5	IPCPL5	IPCP5	R
000051H	ICU - Capture Register 5	IPCPH5		R
000052H	ICU - Control Status Register 6/7	ICS67		RW
000053H	ICU - Edge register 6/7	ICE67		RW
000054H	ICU - Capture Register 6	IPCPL6	IPCP6	R
000055H	ICU - Capture Register 6	IPCPH6		R
000056H	ICU - Capture Register 7	IPCPL7	IPCP7	R
000057H	ICU - Capture Register 7	IPCPH7		R
000058H	External Interrupt - Enable Register 0	ENIR0		RW
000059H	External Interrupt - Interrupt request Register 0	EIRR0		RW
00005AH	External Interrupt - Level Select 0	ELVRL0	ELVR0	RW
00005BH	External Interrupt - Level Select 0	ELVRH0		RW

Table 0-1 I/O map (4 / 53)

Address	Register	Abbreviation 8-bit access	Abbreviation 16-bit access	Access
00005CH	External Interrupt - Enable Register 1	ENIR1		RW
00005DH	External Interrupt - Interrupt request Register 1	EIRR1		RW
00005EH	External Interrupt - Level Select 1	ELVRL1	ELVR1	RW
00005FH	External Interrupt - Level Select 1	ELVRH1		RW
000060H	RLT - Timer Control Status Register 0 Low	TMCSRL0	TMCSR0	RW
000061H	RLT - Timer Control Status Register 0 High	TMCSRH0		RW
000062H	RLT - Reload Register 0 Low - for writing		TMRLR0	W
000062H	RLT - Reload Register 0 Low - for reading		TMR0	R
000063H	RLT - Reload Register 0 High - for writing			W
000063H	RLT - Reload Register 0 High - for reading			R
000064H	RLT - Timer Control Status Register 1 Low	TMCSRL1	TMCSR1	RW
000065H	RLT - Timer Control Status Register 1 High	TMCSRH1		RW
000066H	RLT - Reload Register 1 Low - for writing		TMRLR1	W
000066H	RLT - Reload Register 1 Low - for reading		TMR1	R
000067H	RLT - Reload Register 1 High - for writing			W
000067H	RLT - Reload Register 1 High - for reading			R
000068H	RLT - Timer Control Status Register 2 Low	TMCSRL2	TMCSR2	RW
000069H	RLT - Timer Control Status Register 2 High	TMCSRH2		RW
00006AH	RLT - Reload Register 2 - for writing		TMRLR2	W
00006AH	RLT - Reload Register 2 - for reading		TMR2	R
00006BH	RLT - Reload Register 2 - for writing			W
00006BH	RLT - Reload Register 2 - for reading			R
00006CH	RLT - Timer Control Status Register 3 Low	TMCSRL3	TMCSR3	RW
00006DH	RLT - Timer Control Status Register 3 High	TMCSRH3		RW
00006EH	RLT - Reload Register 3 - for writing		TMRLR3	W
00006EH	RLT - Reload Register 3 - for reading		TMR3	R
00006FH	RLT - Reload Register 3 - for writing			W

Table 0-1 I/O map (5 / 53)

Address	Register	Abbreviation 8-bit access	Abbreviation 16-bit access	Access
00006FH	RLT - Reload Register 3 - for reading			R
000070H	RLT - Timer Control Status Register 6 Low (dedic. RLT for PPG) - for writing	TMCSRL6	TMCSR6	RW
000071H	RLT - Timer Control Status Register 6 High (dedic. RLT for PPG)	TMCSRH6		RW
000072H	RLT - Reload Register 6 Low (dedic. RLT for PPG) - for writing		TMRLR6	W
000072H	RLT - Reload Register 6 Low (dedic. RLT for PPG) - for reading		TMR6	R
000073H	RLT - Reload Register 6 High (dedic. RLT for PPG) - for writing			W
000073H	RLT - Reload Register 6 High (dedic. RLT for PPG) - for reading			R
000074H	PPG - General Control rgister 1 PPG 3-0 Low	GCN1L0	GCN10	RW
000075H	PPG - General Control rgister 1 PPG 3-0 High	GCN1H0		RW
000076H	PPG - General Control rgister 2 PPG 3-0 Low	GCN2L0	GCN20	RW
000077H	PPG - General Control rgister 2 PPG 3-0 High	GCN2H0		RW
000078H	PPG - Timer register 0		PTMR0	R
000079H	PPG - Timer register 0			R
00007AH	PPG - Period setting register 0		PCSR0	W
00007BH	PPG - Period setting register 0			W
00007CH	PPG - Duty cycle register 0		PDUT0	W
00007DH	PPG - Duty cycle register 0			W
00007EH	PPG - Control status register 0	PCNL0	PCN0	RW
00007FH	PPG - Control status register 0	PCNH0		RW
000080H	PPG - Timer register 1		PTMR1	R
000081H	PPG - Timer register 1			R
000082H	PPG - Period setting register 1		PCSR1	W
000083H	PPG - Period setting register 1			W
000084H	PPG - Duty cycle register 1		PDUT1	W

Table 0-1 I/O map (6 / 53)

Address	Register	Abbreviation 8-bit access	Abbreviation 16-bit access	Access
000085H	PPG - Duty cycle register 1	PDUTH1		W
000086H	PPG - Control status register 1	PCNL1	PCN1	RW
000087H	PPG - Control status register 1	PCNH1		RW
000088H	PPG - Timer register 2		PTMR2	R
000089H	PPG - Timer register 2			R
00008AH	PPG - Period setting register 2		PCSR2	W
00008BH	PPG - Period setting register 2			W
00008CH	PPG - Duty cycle register 2		PDUT2	W
00008DH	PPG - Duty cycle register 2			W
00008EH	PPG - Control status register 2	PCNL2	PCN2	RW
00008FH	PPG - Control status register 2	PCNH2		RW
000090H	PPG - Timer register 3		PTMR3	R
000091H	PPG - Timer register 3			R
000092H	PPG - Period setting register 3		PCSR3	W
000093H	PPG - Period setting register 3			W
000094H	PPG - Duty cycle register 3		PDUT3	W
000095H	PPG - Duty cycle register 3			W
000096H	PPG - Control status register 3	PCNL3	PCN3	RW
000097H	PPG - Control status register 3	PCNH3		RW
000098H	PPG - General Control rgister 1 PPG 7-4 Low	GCN1L1	GCN11	RW
000099H	PPG - General Control rgister 1 PPG 7-4 High	GCN1H1		RW
00009AH	PPG - General Control rgister 2 PPG 7-4 Low	GCN2L1	GCN21	RW
00009BH	PPG - General Control rgister 2 PPG 7-4 High	GCN2H1		RW
00009CH	PPG - Timer register 4		PTMR4	R
00009DH	PPG - Timer register 4			R
00009EH	PPG - Period setting register 4		PCSR4	W
00009FH	PPG - Period setting register 4			W

Table 0-1 I/O map (7 / 53)

Address	Register	Abbreviation 8-bit access	Abbreviation 16-bit access	Access
0000A0H	PPG - Duty cycle register 4		PDUT4	W
0000A1H	PPG - Duty cycle register 4			W
0000A2H	PPG - Control status register 4	PCNL4	PCN4	RW
0000A3H	PPG - Control status register 4	PCNH4		RW
0000A4H	PPG - Timer register 5		PTMR5	R
0000A5H	PPG - Timer register 5			R
0000A6H	PPG - Period setting register 5		PCSR5	W
0000A7H	PPG - Period setting register 5			W
0000A8H	PPG - Duty cycle register 5		PDUT5	W
0000A9H	PPG - Duty cycle register 5			W
0000AAH	PPG - Control status register 5	PCNL5	PCN5	RW
0000ABH	PPG - Control status register 5	PCNH5		RW
0000ACH	I2C - Bus Status Register 0	IBSR0		R
0000ADH	I2C - Bus Control Register 0	IBCR0		RW
0000AEH	I2C - Ten bit Slave address Register 0 Low	ITBAL0	ITBA0	RW
0000AFH	I2C - Ten bit Slave address Register 0 High	ITBAH0		RW
0000B0H	I2C - Ten bit Address mask Register 0 Low	ITMKL0	ITMK0	RW
0000B1H	I2C - Ten bit Address mask Register 0 High	ITMKH0		RW
0000B2H	I2C - Seven bit Slave address Register 0	ISBA0		RW
0000B3H	I2C - Seven bit Address mask Register 0	ISMK0		RW
0000B4H	I2C - Data Register 0	IDAR0		RW
0000B5H	I2C - Clock Control Register 0	ICCR0		RW
0000B6H	I2C - Bus Status Register 1	IBSR1		R
0000B7H	I2C - Bus Control Register 1	IBCR1		RW
0000B8H	I2C - Ten bit Slave address Register 1 Low	ITBAL1	ITBA1	RW
0000B9H	I2C - Ten bit Slave address Register 1 High	ITBAH1		RW

Table 0-1 I/O map (8 / 53)

Address	Register	Abbreviation 8-bit access	Abbreviation 16-bit access	Access
0000BAH	I2C - Ten bit Address mask Register 1 Low	ITMKL1	ITMK1	RW
0000BBH	I2C - Ten bit Address mask Register 1 High	ITMKH1		RW
0000BCH	I2C - Seven bit Slave address Register 1	ISBA1		RW
0000BDH	I2C - Seven bit Address mask Register 1	ISMK1		RW
0000BEH	I2C - Data Register 1	IDAR1		RW
0000BFH	I2C - Clock Control Register 1	ICCR1		RW
0000C0H	LIN USART USART - Serial Mode Register 0	SMR0		RW
0000C1H	LIN USART - Serial Control Register 0	SCR0		RW
0000C2H	LIN USART - TX Register 0	TDR0		W
0000C2H	LIN USART - RX Register 0	RDR0		R
0000C3H	LIN USART - Serial Status 0	SSR0		RW
0000C4H	LIN USART - Control/Com. Register 0	ECCR0		RW
0000C5H	LIN USART - Ext. Status Register 0	ESCR0		RW
0000C6H	LIN USART - Baud Rate Generator Register 0 Low	BGRL0	BGR0	RW
0000C7H	LIN USART - Baud Rate Generator Register 0 High	BGRH0		RW
0000CAH	LIN USART - Serial Mode Register 1	SMR1		RW
0000CBH	LIN USART - Serial Control Register 1	SCR1		RW
0000CCH	LIN USART - TX Register 1	TDR1		W
0000CCH	LIN USART - RX Register 1	RDR1		R
0000CDH	LIN USART - Serial Status 1	SSR1		RW
0000CEH	LIN USART - Control/Com. Register 1	ECCR1		RW
0000CFH	LIN USART - Ext. Status Register 1	ESCR1		RW
0000D0H	LIN USART - Baud Rate Generator Register 1 Low	BGRL1	BGR1	RW
0000D1H	LIN USART - Baud Rate Generator Register 1 High	BGRH1		RW
0000D4H	LIN USART - Serial Mode Register 2	SMR2		RW

Table 0-1 I/O map (9 / 53)

Address	Register	Abbreviation 8-bit access	Abbreviation 16-bit access	Access
0000D5H	LIN USART - Serial Control Register 2	SCR2		RW
0000D6H	LIN USART - TX Register 2	TDR2		W
0000D6H	LIN USART - RX Register 2	RDR2		R
0000D7H	LIN USART - Serial Status 2	SSR2		RW
0000D8H	LIN USART - Control/Com. Register 2	ECCR2		RW
0000D9H	LIN USART - Ext. Status Register 2	ESCR2		RW
0000DAH	LIN USART - Baud Rate Generator Register 2 Low	BGRL2	BGR2	RW
0000DBH	LIN USART - Baud Rate Generator Register 2 High	BGRH2		RW
0000DEH	LIN USART - Serial Mode Register 3	SMR3		RW
0000DFH	LIN USART - Serial Control Register 3	SCR3		RW
0000E0H	LIN USART - TX Register 3	TDR3		W
0000E0H	LIN USART - RX Register 3	RDR3		R
0000E1H	LIN USART - Serial Status 3	SSR3		RW
0000E2H	LIN USART - Control/Com. Register 3	ECCR3		RW
0000E3H	LIN USART - Ext. Status Register 3	ESCR3		RW
0000E4H	LIN USART - Baud Rate Generator Register 3 Low	BGRL3	BGR3	RW
0000E5H	LIN USART - Baud Rate Generator Register 3 High	BGRH3		RW
0000F0H	external bus	EXTBUS0		RW
000100H	DMA - Buffer address pointer low byte	BAPL0		RW
000101H	DMA - Buffer address pointer middle byte	BAPM0		RW
000102H	DMA - Buffer address pointer high byte	BAPH0		RW
000103H	DMA - DMA control register	DMACS0		RW
000104H	DMA - I/O register address pointer low byte	IOAL0	IOA0	RW
000105H	DMA - I/O register address pointer high byte	IOAH0		RW
000106H	DMA - Data counter low byte	DCTL0	DCT0	RW
000107H	DMA - Data counter high byte	DCTH0		RW

Table 0-1 I/O map (10 / 53)

Address	Register	Abbreviation 8-bit access	Abbreviation 16-bit access	Access
000108H	DMA - Buffer address pointer low byte	BAPL1		RW
000109H	DMA - Buffer address pointer middle byte	BAPM1		RW
00010AH	DMA - Buffer address pointer high byte	BAPH1		RW
00010BH	DMA - DMA control register	DMACS1		RW
00010CH	DMA - I/O register address pointer low byte	IOAL1	IOA1	RW
00010DH	DMA - I/O register address pointer high byte	IOAH1		RW
00010EH	DMA - Data counter low byte	DCTL1	DCT1	RW
00010FH	DMA - Data counter high byte	DCTH1		RW
000110H	DMA - Buffer address pointer low byte	BAPL2		RW
000111H	DMA - Buffer address pointer middle byte	BAPM2		RW
000112H	DMA - Buffer address pointer high byte	BAPH2		RW
000113H	DMA - DMA control register	DMACS2		RW
000114H	DMA - I/O register address pointer low byte	IOAL2	IOA2	RW
000115H	DMA - I/O register address pointer high byte	IOAH2		RW
000116H	DMA - Data counter low byte	DCTL2	DCT2	RW
000117H	DMA - Data counter high byte	DCTH2		RW
000118H	DMA - Buffer address pointer low byte	BAPL3		RW
000119H	DMA - Buffer address pointer middle byte	BAPM3		RW
00011AH	DMA - Buffer address pointer high byte	BAPH3		RW
00011BH	DMA - DMA control register	DMACS3		RW
00011CH	DMA - I/O register address pointer low byte	IOAL3	IOA3	RW
00011DH	DMA - I/O register address pointer high byte	IOAH3		RW
00011EH	DMA - Data counter low byte	DCTL3	DCT3	RW
00011FH	DMA - Data counter high byte	DCTH3		RW
000120H	DMA - Buffer address pointer low byte	BAPL4		RW
000121H	DMA - Buffer address pointer middle byte	BAPM4		RW

Table 0-1 I/O map (11 / 53)

Address	Register	Abbreviation 8-bit access	Abbreviation 16-bit access	Access
000122H	DMA - Buffer address pointer high byte	BAPH4		RW
000123H	DMA - DMA control register	DMACS4		RW
000124H	DMA - I/O register address pointer low byte	IOAL4	IOA4	RW
000125H	DMA - I/O register address pointer high byte	IOAH4		RW
000126H	DMA - Data counter low byte	DCTL4	DCT4	RW
000127H	DMA - Data counter high byte	DCTH4		RW
000128H	DMA - Buffer address pointer low byte	BAPL5		RW
000129H	DMA - Buffer address pointer middle byte	BAPM5		RW
00012AH	DMA - Buffer address pointer high byte	BAPH5		RW
00012BH	DMA - DMA control register	DMACS5		RW
00012CH	DMA - I/O register address pointer low byte	IOAL5	IOA5	RW
00012DH	DMA - I/O register address pointer high byte	IOAH5		RW
00012EH	DMA - Data counter low byte	DCTL5	DCT5	RW
00012FH	DMA - Data counter high byte	DCTH5		RW
000130H	DMA - Buffer address pointer low byte	BAPL6		RW
000131H	DMA - Buffer address pointer middle byte	BAPM6		RW
000132H	DMA - Buffer address pointer high byte	BAPH6		RW
000133H	DMA - DMA control register	DMACS6		RW
000134H	DMA - I/O register address pointer low byte	IOAL6	IOA6	RW
000135H	DMA - I/O register address pointer high byte	IOAH6		RW
000136H	DMA - Data counter low byte	DCTL6	DCT6	RW
000137H	DMA - Data counter high byte	DCTH6		RW
000138H	Buffer address pointer low byte	BAPL7		RW
000139H	Buffer address pointer middle byte	BAPM7		RW
00013AH	Buffer address pointer high byte	BAPH7		RW
00013BH	DMA control register	DMACS7		RW

Table 0-1 I/O map (12 / 53)

Address	Register	Abbreviation 8-bit access	Abbreviation 16-bit access	Access
00013CH	I/O register address pointer low byte	IOAL7	IOA7	RW
00013DH	I/O register address pointer high byte	IOAH7		RW
00013EH	Data counter low byte	DCTL7	DCT7	RW
00013FH	Data counter high byte	DCTH7		RW
000140H	DMA - Buffer address pointer low byte	BAPL8		RW
000141H	DMA - Buffer address pointer middle byte	BAPM8		RW
000142H	DMA - Buffer address pointer high byte	BAPH8		RW
000143H	DMA - DMA control register	DMACS8		RW
000144H	DMA - I/O register address pointer low byte	IOAL8	IOA8	RW
000145H	DMA - I/O register address pointer high byte	IOAH8		RW
000146H	DMA - Data counter low byte	DCTL8	DCT8	RW
000147H	DMA - Data counter high byte	DCTH8		RW
000148H	DMA - Buffer address pointer low byte	BAPL9		RW
000149H	DMA - Buffer address pointer middle byte	BAPM9		RW
00014AH	DMA - Buffer address pointer high byte	BAPH9		RW
00014BH	DMA - DMA control register	DMACS9		RW
00014CH	DMA - I/O register address pointer low byte	IOAL9	IOA9	RW
00014DH	DMA - I/O register address pointer high byte	IOAH9		RW
00014EH	DMA - Data counter low byte	DCTL9	DCT9	RW
00014FH	DMA - Data counter high byte	DCTH9		RW
000150H	DMA - Buffer address pointer low byte	BAPL10		RW
000151H	DMA - Buffer address pointer middle byte	BAPM10		RW
000152H	DMA - Buffer address pointer high byte	BAPH10		RW
000153H	DMA - DMA control register	DMACS10		RW
000154H	DMA - I/O register address pointer low byte	IOAL10	IOA10	RW
000155H	DMA - I/O register address pointer high byte	IOAH10		RW

Table 0-1 I/O map (13 / 53)

Address	Register	Abbreviation 8-bit access	Abbreviation 16-bit access	Access
000156H	DMA - Data counter low byte	DCTL10	DCT10	RW
000157H	DMA - Data counter high byte	DCTH10		RW
000158H	DMA - Buffer address pointer low byte	BAPL11		RW
000159H	DMA - Buffer address pointer middle byte	BAPM11		RW
00015AH	DMA - Buffer address pointer high byte	BAPH11		RW
00015BH	DMA - DMA control register	DMACS11		RW
00015CH	DMA - I/O register address pointer low byte	IOAL11	IOA11	RW
00015DH	DMA - I/O register address pointer high byte	IOAH11		RW
00015EH	DMA - Data counter low byte	DCTL11	DCT11	RW
00015FH	DMA - Data counter high byte	DCTH11		RW
000160H	DMA - Buffer address pointer low byte	BAPL12		RW
000161H	DMA - Buffer address pointer middle byte	BAPM12		RW
000162H	DMA - Buffer address pointer high byte	BAPH12		RW
000163H	DMA - DMA control register	DMACS12		RW
000164H	DMA - I/O register address pointer low byte	IOAL12	IOA12	RW
000165H	DMA - I/O register address pointer high byte	IOAH12		RW
000166H	DMA - Data counter low byte	DCTL12	DCT12	RW
000167H	DMA - Data counter high byte	DCTH12		RW
000168H	DMA - Buffer address pointer low byte	BAPL13		RW
000169H	DMA - Buffer address pointer middle byte	BAPM13		RW
00016AH	DMA - Buffer address pointer high byte	BAPH13		RW
00016BH	DMA - DMA control register	DMACS13		RW
00016CH	DMA - I/O register address pointer low byte	IOAL13	IOA13	RW
00016DH	DMA - I/O register address pointer high byte	IOAH13		RW
00016EH	DMA - Data counter low byte	DCTL13	DCT13	RW
00016FH	DMA - Data counter high byte	DCTH13		RW

Table 0-1 I/O map (14 / 53)

Address	Register	Abbreviation 8-bit access	Abbreviation 16-bit access	Access
000170H	DMA - Buffer address pointer low byte	BAPL14		RW
000171H	DMA - Buffer address pointer middle byte	BAPM14		RW
000172H	DMA - Buffer address pointer high byte	BAPH14		RW
000173H	DMA - DMA control register	DMACS14		RW
000174H	DMA - I/O register address pointer low byte	IOAL14	IOA14	RW
000175H	DMA - I/O register address pointer high byte	IOAH14		RW
000176H	DMA - Data counter low byte	DCTL14	DCT14	RW
000177H	DMA - Data counter high byte	DCTH14		RW
000178H	DMA - Buffer address pointer low byte	BAPL15		RW
000179H	DMA - Buffer address pointer middle byte	BAPM15		RW
00017AH	DMA - Buffer address pointer high byte	BAPH15		RW
00017BH	DMA - DMA control register	DMACS15		RW
00017CH	DMA - I/O register address pointer low byte	IOAL15	IOA15	RW
00017DH	DMA - I/O register address pointer high byte	IOAH15		RW
00017EH	DMA - Data counter low byte	DCTL15	DCT15	RW
00017FH	DMA - Data counter high byte	DCTH15		RW
000180H	CPU - General Purpose registers (RAM access)	GPR_RAM		RW
000380H	DMA - Interrupt select for DMA channel 0	DISEL0		RW
000381H	DMA - Interrupt select for DMA channel 1	DISEL1		RW
000382H	DMA - Interrupt select for DMA channel 2	DISEL2		RW
000383H	DMA - Interrupt select for DMA channel 3	DISEL3		RW
000384H	DMA - Interrupt select for DMA channel 4	DISEL4		RW
000385H	DMA - Interrupt select for DMA channel 5	DISEL5		RW
000386H	DMA - Interrupt select for DMA channel 6	DISEL6		RW
000387H	DMA - Interrupt select for DMA channel 7	DISEL7		RW
000388H	DMA - Interrupt select for DMA channel 8	DISEL8		RW
000389H	DMA - Interrupt select for DMA channel 9	DISEL9		RW

Table 0-1 I/O map (15 / 53)

Address	Register	Abbreviation 8-bit access	Abbreviation 16-bit access	Access
00038AH	DMA - Interrupt select for DMA channel 10	DISEL10		RW
00038BH	DMA - Interrupt select for DMA channel 11	DISEL11		RW
00038CH	DMA - Interrupt select for DMA channel 12	DISEL12		RW
00038DH	DMA - Interrupt select for DMA channel 13	DISEL13		RW
00038EH	DMA - Interrupt select for DMA channel 14	DISEL14		RW
00038FH	DMA - Interrupt select for DMA channel 15	DISEL15		RW
000390H	DMA status register for DMA channels 7 - 0	DSRL	DSR	RW
000391H	DMA status register for DMA channels 15 - 8	DSRH		RW
000392H	DMA stop status register for DMA channels 7 - 0	DSSRL	DSSR	RW
000393H	DMA stop status register for DMA channels 15 - 8	DSSRH		RW
000394H	DMA enable register for DMA channels 7 - 0	DERL	DER	RW
000395H	DMA enable register for DMA channels 15 - 8	DERH		RW
0003A0H	Interrupt level register	ILR	ICR	RW
0003A1H	Interrupt Index register	IDX		RW
0003A2H	Interrupt vector Table base register	TBRL	TBR	RW
0003A3H	Interrupt vector Table base register	TBRH		RW
0003A4H	Delayed Interrupt register	DIRR		RW
0003A5H	Non maskable Interrupt register	NMI		RW
0003AEH	ROM mirror control register	ROMM		RW
0003AFH	EDSU configuration register	EDSU		RW
0003B0H	Memory patch control/status register ch 0/ 1		PFCS0	RW
0003B1H	Memory patch control/status register ch 0/ 1			RW
0003B2H	Memory patch control/status register ch 2/ 3		PFCS1	RW
0003B3H	Memory patch control/status register ch 2/ 3			RW

Table 0-1 I/O map (16 / 53)

Address	Register	Abbreviation 8-bit access	Abbreviation 16-bit access	Access
0003B4H	Memory patch control/status register ch 4/5		PFCS2	RW
0003B5H	Memory patch control/status register ch 4/5			RW
0003B6H	Memory patch control/status register ch 6/7		PFCS3	RW
0003B7H	Memory patch control/status register ch 6/7			RW
0003B8H	Memory Patch function - Patch address 0 low	PFAL0		RW
0003B9H	Memory Patch function - Patch address 0 middle	PFAM0		RW
0003BAH	Memory Patch function - Patch address 0 high	PFAH0		RW
0003BBH	Memory Patch function - Patch address 1 low	PFAL1		RW
0003BCH	Memory Patch function - Patch address 1 middle	PFAM1		RW
0003BDH	Memory Patch function - Patch address 1 high	PFAH1		RW
0003BEH	Memory Patch function - Patch address 2 low	PFAL2		RW
0003BFH	Memory Patch function - Patch address 2 middle	PFAM2		RW
0003C0H	Memory Patch function - Patch address 2 high	PFAH2		RW
0003C1H	Memory Patch function - Patch address 3 low	PFAL3		RW
0003C2H	Memory Patch function - Patch address 3 middle	PFAM3		RW
0003C3H	Memory Patch function - Patch address 3 high	PFAH3		RW
0003C4H	Memory Patch function - Patch address 4 low	PFAL4		RW
0003C5H	Memory Patch function - Patch address 4 middle	PFAM4		RW

Table 0-1 I/O map (17 / 53)

Address	Register	Abbreviation 8-bit access	Abbreviation 16-bit access	Access
0003C6H	Memory Patch function - Patch address 4 high	PFAH4		RW
0003C7H	Memory Patch function - Patch address 5 low	PFAL5		RW
0003C8H	Memory Patch function - Patch address 5 middle	PFAM5		RW
0003C9H	Memory Patch function - Patch address 5 high	PFAH5		RW
0003CAH	Memory Patch function - Patch address 6 low	PFAL6		RW
0003CBH	Memory Patch function - Patch address 6 middle	PFAM6		RW
0003CCH	Memory Patch function - Patch address 6 high	PFAH6		RW
0003CDH	Memory Patch function - Patch address 7 low	PFAL7		RW
0003CEH	Memory Patch function - Patch address 7 middle	PFAM7		RW
0003CFH	Memory Patch function - Patch address 7 high	PFAH7		RW
0003D0H	Memory Patch function - Patch data 0	PFDL0	PFD0	RW
0003D1H	Memory Patch function - Patch data 0	PFDH0		RW
0003D2H	Memory Patch function - Patch data 1	PFDL1	PFD1	RW
0003D3H	Memory Patch function - Patch data 1	PFDH1		RW
0003D4H	Memory Patch function - Patch data 2	PFDL2	PFD2	RW
0003D5H	Memory Patch function - Patch data 2	PFDH2		RW
0003D6H	Memory Patch function - Patch data 3	PFDL3	PFD3	RW
0003D7H	Memory Patch function - Patch data 3	PFDH3		RW
0003D8H	Memory Patch function - Patch data 4	PFDL4	PFD4	RW
0003D9H	Memory Patch function - Patch data 4	PFDH4		RW
0003DAH	Memory Patch function - Patch data 5	PFDL5	PFD5	RW
0003DBH	Memory Patch function - Patch data 5	PFDH5		RW
0003DCH	Memory Patch function - Patch data 6	PFDL6	PFD6	RW
0003DDH	Memory Patch function - Patch data 6	PFDH6		RW

Table 0-1 I/O map (18 / 53)

Address	Register	Abbreviation 8-bit access	Abbreviation 16-bit access	Access
0003DEH	Memory Patch function - Patch data 7	PFDL7	PFD7	RW
0003DFH	Memory Patch function - Patch data 7	PFDH7		RW
0003F1H	Flash Memory Configuration register (Main Flash) + EVA	MFMCS		RW
0003F2H	Flash Memory Timing Configuration register 0 (Main Flash) + EVA	MFMTCL	MFMTC	RW
0003F6H	Flash Memory Timing Configuration register 0 (Sat Flash) + EVA	SFMTCL	SFMTC	RW
000400H	Standby Mode control register	SMCR		RW
000401H	Clock select register	CKSR		RW
000402H	Clock Stabilisation select register	CKSSR		RW
000403H	Clock monitor register	CKMR		R
000404H	Clock Frequncy control register Low	CKFCRL	CKFCR	RW
000405H	Clock Frequncy control register High	CKFCRH		RW
000406H	PLL Control register Low	PLLCRL	PLLCR	RW
000407H	PLL Control register High	PLLCRH		RW
000408H	RC clock timer control register	RCTCR		RW
000409H	Main clock timer control register	MCTCR		RW
00040AH	Sub clock timer control register	SCTCR		RW
00040BH	Reset cause and clock status register with clear function	RCCSRC		R
00040CH	Reset configuration register	RCR		RW
00040DH	Reset cause and clock status register	RCCSR		R
00040EH	Watch dog timer configuration register	WDTC		RW
00040FH	Watch dog timer clear pattern register	WDTCP		W
000415H	Clock output activation register	COAR		RW
000416H	Clock output configuration register 0	COCR0		RW
000417H	Clock output configuration register 1	COCR1		RW
000418H	Clock Modulator control register	CMCR		RW
00041AH	Clock Modulator Parameter register Low	CMPRL	CMPR	RW
00041BH	Clock Modulator Parameter register High	CMPRH		RW

Table 0-1 I/O map (19 / 53)

Address	Register	Abbreviation 8-bit access	Abbreviation 16-bit access	Access
000430H	I/O Port - Data Direction Register Port 00	DDR00		RW
000431H	I/O Port - Data Direction Register Port 01	DDR01		RW
000432H	I/O Port - Data Direction Register Port 02	DDR02		RW
000433H	I/O Port - Data Direction Register Port 03	DDR03		RW
000434H	I/O Port - Data Direction Register Port 04	DDR04		RW
000435H	I/O Port - Data Direction Register Port 05	DDR05		RW
000436H	I/O Port - Data Direction Register Port 06	DDR06		RW
000437H	I/O Port - Data Direction Register Port 07	DDR07		RW
000438H	I/O Port - Data Direction Register Port 08	DDR08		RW
000439H	I/O Port - Data Direction Register Port 09	DDR09		RW
00043AH	I/O Port - Data Direction Register Port 10	DDR10		RW
00043BH	I/O Port - Data Direction Register Port 11	DDR11		RW
00043CH	I/O Port - Data Direction Register Port 12	DDR12		RW
00043DH	I/O Port - Data Direction Register Port 13	DDR13		RW
00043EH	I/O Port - Data Direction Register Port 14	DDR14		RW
00043FH	I/O Port - Data Direction Register Port 15	DDR15		RW
000440H	I/O Port - Data Direction Register Port 16	DDR16		RW
000441H	I/O Port - Data Direction Register Port 17	DDR17		RW
000444H	I/O Port - Port Input Enable Register I/O Port - Port 00	PIER00		RW
000445H	I/O Port - Port Input Enable Register I/O Port - Port 01	PIER01		RW
000446H	I/O Port - Port Input Enable Register I/O Port - Port 02	PIER02		RW
000447H	I/O Port - Port Input Enable Register I/O Port - Port 03	PIER03		RW
000448H	I/O Port - Port Input Enable Register I/O Port - Port 04	PIER04		RW
000449H	I/O Port - Port Input Enable Register I/O Port - Port 05	PIER05		RW
00044AH	I/O Port - Port Input Enable Register I/O Port - Port 06	PIER06		RW

Table 0-1 I/O map (20 / 53)

Address	Register	Abbreviation 8-bit access	Abbreviation 16-bit access	Access
00044BH	I/O Port - Port Input Enable Register I/O Port - Port 07	PIER07		RW
00044CH	I/O Port - Port Input Enable Register I/O Port - Port 08	PIER08		RW
00044DH	I/O Port - Port Input Enable Register I/O Port - Port 09	PIER09		RW
00044EH	I/O Port - Port Input Enable Register I/O Port - Port 10	PIER10		RW
00044FH	I/O Port - Port Input Enable Register I/O Port - Port 11	PIER11		RW
000450H	I/O Port - Port Input Enable Register I/O Port - Port 12	PIER12		RW
000451H	I/O Port - Port Input Enable Register I/O Port - Port 13	PIER13		RW
000452H	I/O Port - Port Input Enable Register I/O Port - Port 14	PIER14		RW
000453H	I/O Port - Port Input Enable Register I/O Port - Port 15	PIER15		RW
000454H	I/O Port - Port Input Enable Register I/O Port - Port 16	PIER16		RW
000455H	I/O Port - Port Input Enable Register I/O Port - Port 17	PIER17		RW
000458H	I/O Port - Port Input Level Register I/O Port - Port 00	PILR00		RW
000459H	I/O Port - Port Input Level Register I/O Port - Port 01	PILR01		RW
00045AH	I/O Port - Port Input Level Register I/O Port - Port 02	PILR02		RW
00045BH	I/O Port - Port Input Level Register I/O Port - Port 03	PILR03		RW
00045CH	I/O Port - Port Input Level Register I/O Port - Port 04	PILR04		RW
00045DH	I/O Port - Port Input Level Register I/O Port - Port 05	PILR05		RW
00045EH	I/O Port - Port Input Level Register I/O Port - Port 06	PILR06		RW

Table 0-1 I/O map (21 / 53)

Address	Register	Abbreviation 8-bit access	Abbreviation 16-bit access	Access
00045FH	I/O Port - Port Input Level Register I/O Port - Port 07	PILR07		RW
000460H	I/O Port - Port Input Level Register I/O Port - Port 08	PILR08		RW
000461H	I/O Port - Port Input Level Register I/O Port - Port 09	PILR09		RW
000462H	I/O Port - Port Input Level Register I/O Port - Port 10	PILR10		RW
000463H	I/O Port - Port Input Level Register I/O Port - Port 11	PILR11		RW
000464H	I/O Port - Port Input Level Register I/O Port - Port 12	PILR12		RW
000465H	I/O Port - Port Input Level Register I/O Port - Port 13	PILR13		RW
000466H	I/O Port - Port Input Level Register I/O Port - Port 14	PILR14		RW
000467H	I/O Port - Port Input Level Register I/O Port - Port 15	PILR15		RW
000468H	I/O Port - Port Input Level Register I/O Port - Port 16	PILR16		RW
000469H	I/O Port - Port Input Level Register I/O Port - Port 17	PILR17		RW
00046CH	I/O Port - Extended Port Input Level Register Port 00	EPILR00		RW
00046DH	I/O Port - Extended Port Input Level Register Port 01	EPILR01		RW
00046EH	I/O Port - Extended Port Input Level Register Port 02	EPILR02		RW
00046FH	I/O Port - Extended Port Input Level Register Port 03	EPILR03		RW
000470H	I/O Port - Extended Port Input Level Register Port 04	EPILR04		RW
000471H	I/O Port - Extended Port Input Level Register Port 05	EPILR05		RW
000472H	I/O Port - Extended Port Input Level Register Port 06	EPILR06		RW

Table 0-1 I/O map (22 / 53)

Address	Register	Abbreviation 8-bit access	Abbreviation 16-bit access	Access
000473H	I/O Port - Extended Port Input Level Register Port 07	EPILR07		RW
000474H	I/O Port - Extended Port Input Level Register Port 08	EPILR08		RW
000475H	I/O Port - Extended Port Input Level Register Port 09	EPILR09		RW
000476H	I/O Port - Extended Port Input Level Register Port 10	EPILR10		RW
000477H	I/O Port - Extended Port Input Level Register Port 11	EPILR11		RW
000478H	I/O Port - Extended Port Input Level Register Port 12	EPILR12		RW
000479H	I/O Port - Extended Port Input Level Register Port 13	EPILR13		RW
00047AH	I/O Port - Extended Port Input Level Register Port 14	EPILR14		RW
00047BH	I/O Port - Extended Port Input Level Register Port 15	EPILR15		RW
00047CH	I/O Port - Extended Port Input Level Register Port 16	EPILR16		RW
00047DH	I/O Port - Extended Port Input Level Register Port 17	EPILR17		RW
000480H	I/O Port - Port Output Drive Register Port 00	PODR00		RW
000481H	I/O Port - Port Output Drive Register Port 01	PODR01		RW
000482H	I/O Port - Port Output Drive Register Port 02	PODR02		RW
000483H	I/O Port - Port Output Drive Register Port 03	PODR03		RW
000484H	I/O Port - Port Output Drive Register Port 04	PODR04		RW
000485H	I/O Port - Port Output Drive Register Port 05	PODR05		RW
000486H	I/O Port - Port Output Drive Register Port 06	PODR06		RW

Table 0-1 I/O map (23 / 53)

Address	Register	Abbreviation 8-bit access	Abbreviation 16-bit access	Access
000487H	I/O Port - Port Output Drive Register Port 07	PODR07		RW
000488H	I/O Port - Port Output Drive Register Port 08	PODR08		RW
000489H	I/O Port - Port Output Drive Register Port 09	PODR09		RW
00048AH	I/O Port - Port Output Drive Register Port 10	PODR10		RW
00048BH	I/O Port - Port Output Drive Register Port 11	PODR11		RW
00048CH	I/O Port - Port Output Drive Register Port 12	PODR12		RW
00048DH	I/O Port - Port Output Drive Register Port 13	PODR13		RW
00048EH	I/O Port - Port Output Drive Register Port 14	PODR14		RW
00048FH	I/O Port - Port Output Drive Register Port 15	PODR15		RW
000490H	I/O Port - Port Output Drive Register Port 16	PODR16		RW
000491H	I/O Port - Port Output Drive Register Port 17	PODR17		RW
00049CH	I/O Port - Port High Drive Register Port 08	PHDR08		RW
00049DH	I/O Port - Port High Drive Register Port 09	PHDR09		RW
00049EH	I/O Port - Port High Drive Register Port 10	PHDR10		RW
0004A8H	I/O Port - Pull-Up resistor Control Register Port 00	PUCR00		RW
0004A9H	I/O Port - Pull-Up resistor Control Register Port 01	PUCR01		RW
0004AAH	I/O Port - Pull-Up resistor Control Register Port 02	PUCR02		RW
0004ABH	I/O Port - Pull-Up resistor Control Register Port 03	PUCR03		RW
0004ACH	I/O Port - Pull-Up resistor Control Register Port 04	PUCR04		RW

Table 0-1 I/O map (24 / 53)

Address	Register	Abbreviation 8-bit access	Abbreviation 16-bit access	Access
0004ADH	I/O Port - Pull-Up resistor Control Register Port 05	PUCR05		RW
0004AEH	I/O Port - Pull-Up resistor Control Register Port 06	PUCR06		RW
0004AFH	I/O Port - Pull-Up resistor Control Register Port 07	PUCR07		RW
0004B0H	I/O Port - Pull-Up resistor Control Register Port 08	PUCR08		RW
0004B1H	I/O Port - Pull-Up resistor Control Register Port 09	PUCR09		RW
0004B2H	I/O Port - Pull-Up resistor Control Register Port 10	PUCR10		RW
0004B3H	I/O Port - Pull-Up resistor Control Register Port 11	PUCR11		RW
0004B4H	I/O Port - Pull-Up resistor Control Register Port 12	PUCR12		RW
0004B5H	I/O Port - Pull-Up resistor Control Register Port 13	PUCR13		RW
0004B6H	I/O Port - Pull-Up resistor Control Register Port 14	PUCR14		RW
0004B7H	I/O Port - Pull-Up resistor Control Register Port 15	PUCR15		RW
0004B8H	I/O Port - Pull-Up resistor Control Register Port 16	PUCR16		RW
0004B9H	I/O Port - Pull-Up resistor Control Register Port 17	PUCR17		RW
0004BCH	I/O Port - External Pin State Register Port 00	EPSR00		R
0004BDH	I/O Port - External Pin State Register Port 01	EPSR01		R
0004BEH	I/O Port - External Pin State Register Port 02	EPSR02		R
0004BFH	I/O Port - External Pin State Register Port 03	EPSR03		R
0004C0H	I/O Port - External Pin State Register Port 04	EPSR04		R

Table 0-1 I/O map (25 / 53)

Address	Register	Abbreviation 8-bit access	Abbreviation 16-bit access	Access
0004C1H	I/O Port - External Pin State Register Port 05	EPSR05		R
0004C2H	I/O Port - External Pin State Register Port 06	EPSR06		R
0004C3H	I/O Port - External Pin State Register Port 07	EPSR07		R
0004C4H	I/O Port - External Pin State Register Port 08	EPSR08		R
0004C5H	I/O Port - External Pin State Register Port 09	EPSR09		R
0004C6H	I/O Port - External Pin State Register Port 10	EPSR10		R
0004C7H	I/O Port - External Pin State Register Port 11	EPSR11		R
0004C8H	I/O Port - External Pin State Register Port 12	EPSR12		R
0004C9H	I/O Port - External Pin State Register Port 13	EPSR13		R
0004CAH	I/O Port - External Pin State Register Port 14	EPSR14		R
0004CBH	I/O Port - External Pin State Register Port 15	EPSR15		R
0004CCH	I/O Port - External Pin State Register Port 16	EPSR16		R
0004CDH	I/O Port - External Pin State Register Port 17	EPSR17		R
0004D0H	ADC analog input enable register 0	ADER0		RW
0004D1H	ADC analog input enable register 1	ADER1		RW
0004D2H	ADC analog input enable register 2	ADER2		RW
0004D3H	ADC analog input enable register 3	ADER3		RW
0004D4H	ADC analog input enable register 4	ADER4		RW
0004D6H	Peripheral Resource Relocation Register 0	PRRR0		RW
0004D7H	Peripheral Resource Relocation Register 1	PRRR1		RW

Table 0-1 I/O map (26 / 53)

Address	Register	Abbreviation 8-bit access	Abbreviation 16-bit access	Access
0004D8H	Peripheral Resource Relocation Register 2	PRRR2		RW
0004D9H	Peripheral Resource Relocation Register 3	PRRR3		RW
0004DAH	Peripheral Resource Relocation Register 4	PRRR4		RW
0004DBH	Peripheral Resource Relocation Register 5	PRRR5		RW
0004DCH	Peripheral Resource Relocation Register 6	PRRR6		RW
0004DDH	Peripheral Resource Relocation Register 7	PRRR7		RW
0004DEH	Peripheral Resource Relocation Register 8	PRRR8		RW
0004DFH	Peripheral Resource Relocation Register 9	PRRR9		RW
0004E0H	RTC - Sub Second Register L	WTBRL0	WTBR0	RW
0004E1H	RTC - Sub Second Register M	WTBRH0		RW
0004E2H	RTC - Sub-Second Register H	WTBR1		RW
0004E3H	RTC - Second Register	WTSR		RW
0004E4H	RTC - Minutes	WTMR		RW
0004E5H	RTC - Hour	WTHR		RW
0004E6H	RTC - Timer Control Extended Register	WTCER		RW
0004E7H	RTC - Clock select register	WTCKSR		RW
0004E8H	RTC - Timer Control Register L	WTCRL		RW
0004E9H	RTC - Timer Control Register H	WTCRH		RW
0004EAH	CAL - Calibration unit Control register	CUCR		RW
0004ECH	CAL - Sub/RC-clock timer data register L	CUTDL	CUTD	RW
0004EDH	CAL - Sub/RC-clock timer data register H	CUTDH		RW
0004EEH	CAL - Main clock timer data register 2 L	CUTR2L	CUTR2	R
0004EFH	CAL - Main clock timer data register 2 H	CUTR2H		R
0004F0H	CAL - Main clock timer data register 1 L	CUTR1L	CUTR1	R
0004F1H	CAL - Main clock timer data register 1 H	CUTR1H		R

Table 0-1 I/O map (27 / 53)

Address	Register	Abbreviation 8-bit access	Abbreviation 16-bit access	Access
0004F2H	RLT - Timer Control Status Register 4 Low	TMCSRL4	TMCSR4	RW
0004F3H	RLT - Timer Control Status Register 4 High	TMCSRH4		RW
0004F4H	RLT - Reload Register 4 - for writing		TMRLR4	W
0004F4H	RLT - Reload Register 4 - for reading		TMR4	R
0004F5H	RLT - Reload Register 4 - for writing			W
0004F5H	RLT - Reload Register 4 - for reading			R
0004F6H	RLT - Timer Control Status Register 5 Low	TMCSRL5	TMCSR5	RW
0004F7H	RLT - Timer Control Status Register 5 High	TMCSRH5		RW
0004F8H	RLT - Reload Register 5 - for writing		TMRLR5	W
0004F8H	RLT - Reload Register 5 - for reading		TMR5	R
0004F9H	RLT - Reload Register 5 - for writing			W
0004F9H	RLT - Reload Register 5 - for reading			R
0004FAH	RLT - Timer input select (for Cascading)	TMISR		RW
000500H	FRT - Data register of free-running timer 2		TCDT2	RW
000501H	FRT - Data register of free-running timer 2			RW
000502H	FRT - Control status register of free-running timer 2	TCCSL2	TCCS2	RW
000503H	FRT - Control status register of free-running timer 2	TCCSH2		RW
000504H	FRT - Data register of free-running timer 3		TCDT3	RW
000505H	FRT - Data register of free-running timer 3			RW
000506H	FRT - Control status register of free-running timer 3	TCCSL3	TCCS3	RW
000507H	FRT - Control status register of free-running timer 3	TCCSH3		RW
000508H	OCU - Output Compare Control Status 8	OCS8		RW
000509H	OCU - Output Compare Control Status 9	OCS9		RW
00050AH	OCU - Compare Register 8		OCCP8	RW
00050BH	OCU - Compare Register 8			RW
00050CH	OCU - Compare Register 9		OCCP9	RW

Table 0-1 I/O map (28 / 53)

Address	Register	Abbreviation 8-bit access	Abbreviation 16-bit access	Access
00050DH	OCU - Compare Register 9			RW
00050EH	OCU - Output Compare Control Status 10	OCS10		RW
00050FH	OCU - Output Compare Control Status 11	OCS11		RW
000510H	OCU - Compare Register 10		OCCP10	RW
000511H	OCU - Compare Register 10			RW
000512H	OCU - Compare Register 11		OCCP11	RW
000513H	OCU - Compare Register 11			RW
000514H	ICU - Control Status Register 8/9	ICS89		RW
000515H	ICU - Edge register 8/9	ICE89		RW
000516H	ICU - Capture Register 8	IPCPL8	IPCP8	R
000517H	ICU - Capture Register 8	IPCPH8		R
000518H	ICU - Capture Register 9	IPCPL9	IPCP9	R
000519H	ICU - Capture Register 9	IPCPH9		R
00051AH	ICU - Control Status Register 10/11	ICS1011		RW
00051BH	ICU - Edge register 10/11	ICE1011		RW
00051CH	ICU - Capture Register 10	IPCPL10	IPCP10	R
00051DH	ICU - Capture Register 10	IPCPH10		R
00051EH	ICU - Capture Register 11	IPCPL11	IPCP11	R
00051FH	ICU - Capture Register 11	IPCPH11		R
000520H	LIN USART - Serial Mode Register 4	SMR4		RW
000521H	LIN USART - Serial Control Register 4	SCR4		RW
000522H	LIN USART - TX Register 4	TDR4		W
000522H	LIN USART - RX Register 4	RDR4		R
000523H	LIN USART - Serial Status 4	SSR4		RW
000524H	LIN USART - Control/Com. Register 4	ECCR4		RW
000525H	LIN USART - Ext. Status Register 4	ESCR4		RW
000526H	LIN USART - Baud Rate Generator Register 4 Low	BGRL4	BGR4	RW
000527H	LIN USART - Baud Rate Generator Register 4 High	BGRH4		RW

Table 0-1 I/O map (29 / 53)

Address	Register	Abbreviation 8-bit access	Abbreviation 16-bit access	Access
00052AH	LIN USART - Serial Mode Register 5	SMR5		RW
00052BH	LIN USART - Serial Control Register 5	SCR5		RW
00052CH	LIN USART - RX Register 5	TDR5		W
00052CH	LIN USART - TX Register 5	RDR5		R
00052DH	LIN USART - Serial Status 5	SSR5		RW
00052EH	LIN USART - Control/Com. Register 5	ECCR5		RW
00052FH	LIN USART - Ext. Status Register 5	ESCR5		RW
000530H	LIN USART - Baud Rate Generator Register 5 Low	BGRL5	BGR5	RW
000531H	LIN USART - Baud Rate Generator Register 5 High	BGRH5		RW
000534H	LIN USART - Serial Mode Register 6	SMR6		RW
000535H	LIN USART - Serial Control Register 6	SCR6		RW
000536H	LIN USART - Serial TX Register 6	TDR6		W
000536H	LIN USART - Serial RX Register 6	RDR6		R
000537H	LIN USART - Serial Status Register 6	SSR6		RW
000538H	LIN USART - Ext. Control/Com. Register 6	ECCR6		RW
000539H	LIN USART - Ext. Status Com. Register 6	ESCR6		RW
00053AH	LIN USART - Baud Rate Generator Register 6	BGRL6	BGR6	RW
00053BH	LIN USART - Baud Rate Generator Register 6	BGRH6		RW
00053EH	LIN USART - Serial Mode Register 7	SMR7		RW
00053FH	LIN USART - Serial Control Register 7	SCR7		RW
000540H	LIN USART - Serial TX Register 7	TDR7		W
000540H	LIN USART - Serial RX Register 7	RDR7		R
000541H	LIN USART - Serial Status Register 7	SSR7		RW
000542H	LIN USART - Ext. Control/Com. Register 7	ECCR7		RW
000543H	LIN USART - Ext. Status Com. Register 7	ESCR7		RW
000544H	LIN USART - Baud Rate Generator Register 7	BGRL7	BGR7	RW

Table 0-1 I/O map (30 / 53)

Address	Register	Abbreviation 8-bit access	Abbreviation 16-bit access	Access
000545H	LIN USART - Baud Rate Generator Register 7	BGRH7		RW
000548H	LIN USART - Serial Mode Register 8	SMR8		RW
000549H	LIN USART - Serial Control Register 8	SCR8		RW
00054AH	LIN USART - Serial TX Register 8	TDR8		W
00054AH	LIN USART - Serial RX Register 8	RDR8		R
00054BH	LIN USART - Serial Status Register 8	SSR8		RW
00054CH	LIN USART - Ext. Control/Com. Register 8	ECCR8		RW
00054DH	LIN USART - Ext. Status Com. Register 8	ESCR8		RW
00054EH	LIN USART - Baud Rate Generator Register 8	BGRL8	BGR8	RW
00054FH	LIN USART - Baud Rate Generator Register 8	BGRH8		RW
000552H	LIN USART - Serial Mode Register 9	SMR9		RW
000553H	LIN USART - Serial Control Register 9	SCR9		RW
000554H	LIN USART - Serial TX Register 9	TDR9		W
000554H	LIN USART - Serial RX Register 9	RDR9		R
000555H	LIN USART - Serial Status Register 9	SSR9		RW
000556H	LIN USART - Ext. Control/Com. Register 9	ECCR9		RW
000557H	LIN USART - Ext. Status Com. Register 9	ESCR9		RW
000558H	LIN USART - Baud Rate Generator Register 9	BGRL9	BGR9	RW
000559H	LIN USART - Baud Rate Generator Register 9	BGRH9		RW
000560H	Alarm Comparator 0	ACSR0		RW
000561H	Alarm Comparator 0	AECSR0		RW
000562H	Alarm Comparator 1	ACSR1		RW
000563H	Alarm Comparator 1	AECSR1		RW
000564H	PPG - Timer register 6		PTMR6	R
000565H	PPG - Timer register 6			R
000566H	PPG - Period setting register 6		PCSR6	W
000567H	PPG - Period setting register 6			W

Table 0-1 I/O map (31 / 53)

Address	Register	Abbreviation 8-bit access	Abbreviation 16-bit access	Access
000568H	PPG - Duty cycle register 6		PDUT6	W
000569H	PPG - Duty cycle register 6			W
00056AH	PPG - Control status register 6	PCNL6	PCN6	RW
00056BH	PPG - Control status register 6	PCNH6		RW
00056CH	PPG - Timer register 7		PTMR7	R
00056DH	PPG - Timer register 7			R
00056EH	PPG - Period setting register 7		PCSR7	W
00056FH	PPG - Period setting register 7			W
000570H	PPG - Duty cycle register 7		PDUT7	W
000571H	PPG - Duty cycle register 7			W
000572H	PPG - Control status register 7	PCNL7	PCN7	RW
000573H	PPG - Control status register 7	PCNH7		RW
000574H	PPG - General Control register 1 PPG 11-8 Low	GCN1L2	GCN12	RW
000575H	PPG - General Control register 1 PPG 11-8 High	GCN1H2		RW
000576H	PPG - General Control register 2 PPG 11-8 Low	GCN2L2	GCN22	RW
000577H	PPG - General Control register 2 PPG 11-8 High	GCN2H2		RW
000578H	PPG - Timer register 8		PTMR8	R
000579H	PPG - Timer register 8			R
00057AH	PPG - Period setting register 8		PCSR8	W
00057BH	PPG - Period setting register 8			W
00057CH	PPG - Duty cycle register 8		PDUT8	W
00057DH	PPG - Duty cycle register 8			W
00057EH	PPG - Control status register 8	PCNL8	PCN8	RW
00057FH	PPG - Control status register 8	PCNH8		RW
000580H	PPG - Timer register 9		PTMR9	R
000581H	PPG - Timer register 9			R
000582H	PPG - Period setting register 9		PCSR9	W

Table 0-1 I/O map (32 / 53)

Address	Register	Abbreviation 8-bit access	Abbreviation 16-bit access	Access
000583H	PPG - Period setting register 9			W
000584H	PPG - Duty cycle register 9		PDUT9	W
000585H	PPG - Duty cycle register 9			W
000586H	PPG - Control status register 9	PCNL9	PCN9	RW
000587H	PPG - Control status register 9	PCNH9		RW
000588H	PPG - Timer register 10		PTMR10	R
000589H	PPG - Timer register 10			R
00058AH	PPG - Period setting register 10		PCSR10	W
00058BH	PPG - Period setting register 10			W
00058CH	PPG - Duty cycle register 10		PDUT10	W
00058DH	PPG - Duty cycle register 10			W
00058EH	PPG - Control status register 10	PCNL10	PCN10	RW
00058FH	PPG - Control status register 10	PCNH10		RW
000590H	PPG - Timer register 11		PTMR11	R
000591H	PPG - Timer register 11			R
000592H	PPG - Period setting register 11		PCSR11	W
000593H	PPG - Period setting register 11			W
000594H	PPG - Duty cycle register 11		PDUT11	W
000595H	PPG - Duty cycle register 11			W
000596H	PPG - Control status register 11	PCNL11	PCN11	RW
000597H	PPG - Control status register 11	PCNH11		RW
000598H	PPG - General Control rgister 1 PPG 15-12 Low	GCN1L3	GCN13	RW
000599H	PPG - General Control rgister 1 PPG 15-12 High	GCN1H3		RW
00059AH	PPG - General Control rgister 2 PPG 15-12 Low	GCN2L3	GCN23	RW
00059BH	PPG - General Control rgister 2 PPG 15-12 High	GCN2H3		RW
00059CH	PPG - Timer register 12		PTMR12	R
00059DH	PPG - Timer register 12			R

Table 0-1 I/O map (33 / 53)

Address	Register	Abbreviation 8-bit access	Abbreviation 16-bit access	Access
00059EH	PPG - Period setting register 12		PCSR12	W
00059FH	PPG - Period setting register 12			W
0005A0H	PPG - Duty cycle register 12		PDUT12	W
0005A1H	PPG - Duty cycle register 12			W
0005A2H	PPG - Control status register 12	PCNL12	PCN12	RW
0005A3H	PPG - Control status register 12	PCNH12		RW
0005A4H	PPG - Timer register 13		PTMR13	R
0005A5H	PPG - Timer register 13			R
0005A6H	PPG - Period setting register 13		PCSR13	W
0005A7H	PPG - Period setting register 13			W
0005A8H	PPG - Duty cycle register 13		PDUT13	W
0005A9H	PPG - Duty cycle register 13			W
0005AAH	PPG - Control status register 13	PCNL13	PCN13	RW
0005ABH	PPG - Control status register 13	PCNH13		RW
0005ACH	PPG - Timer register 14		PTMR14	R
0005ADH	PPG - Timer register 14			R
0005AEH	PPG - Period setting register 14		PCSR14	W
0005AFH	PPG - Period setting register 14			W
0005B0H	PPG - Duty cycle register 14		PDUT14	W
0005B1H	PPG - Duty cycle register 14			W
0005B2H	PPG - Control status register 14	PCNL14	PCN14	RW
0005B3H	PPG - Control status register 14	PCNH14		RW
0005B4H	PPG - Timer register 15		PTMR15	R
0005B5H	PPG - Timer register 15			R
0005B6H	PPG - Period setting register 15		PCSR15	W
0005B7H	PPG - Period setting register 15			W
0005B8H	PPG - Duty cycle register 15		PDUT15	W
0005B9H	PPG - Duty cycle register 15			W
0005BAH	PPG - Control status register 15	PCNL15	PCN15	RW
0005BBH	PPG - Control status register 15	PCNH15		RW

Table 0-1 I/O map (34 / 53)

Address	Register	Abbreviation 8-bit access	Abbreviation 16-bit access	Access
0005BCH	PPG - General Control rgister 1 PPG 19-16 Low	GCN1L4	GCN14	RW
0005BDH	PPG - General Control rgister 1 PPG 19-16 High	GCN1H4		RW
0005BEH	PPG - General Control rgister 2 PPG 19-16 Low	GCN2L4	GCN24	RW
0005BFH	PPG - General Control rgister 2 PPG 19-16 High	GCN2H4		RW
0005C0H	PPG - Timer register 16		PTMR16	R
0005C1H	PPG - Timer register 16			R
0005C2H	PPG - Period setting register 16		PCSR16	W
0005C3H	PPG - Period setting register 16			W
0005C4H	PPG - Duty cycle register 16		PDUT16	W
0005C5H	PPG - Duty cycle register 16			W
0005C6H	PPG - Control status register 16	PCNL16	PCN16	RW
0005C7H	PPG - Control status register 16	PCNH16		RW
0005C8H	PPG - Timer register 17		PTMR17	R
0005C9H	PPG - Timer register 17			R
0005CAH	PPG - Period setting register 17		PCSR17	W
0005CBH	PPG - Period setting register 17			W
0005CCH	PPG - Duty cycle register 17		PDUT17	W
0005CDH	PPG - Duty cycle register 17			W
0005CEH	PPG - Control status register 17	PCNL17	PCN17	RW
0005CFH	PPG - Control status register 17	PCNH17		RW
0005D0H	PPG - Timer register 18		PTMR18	R
0005D1H	PPG - Timer register 18			R
0005D2H	PPG - Period setting register 18		PCSR18	W
0005D3H	PPG - Period setting register 18			W
0005D4H	PPG - Duty cycle register 18		PDUT18	W
0005D5H	PPG - Duty cycle register 18			W
0005D6H	PPG - Control status register 18	PCNL18	PCN18	RW

Table 0-1 I/O map (35 / 53)

Address	Register	Abbreviation 8-bit access	Abbreviation 16-bit access	Access
0005D7H	PPG - Control status register 18	PCNH18		RW
0005D8H	PPG - Timer register 19		PTMR19	R
0005D9H	PPG - Timer register 19			R
0005DAH	PPG - Period setting register 19		PCSR19	W
0005DBH	PPG - Period setting register 19			W
0005DCH	PPG - Duty cycle register 19		PDUT19	W
0005DDH	PPG - Duty cycle register 19			W
0005DEH	PPG - Control status register 19	PCNL19	PCN19	RW
0005DFH	PPG - Control status register 19	PCNH19		RW
0005E0H	SMC 0 - PWM control register	PWC0		RW
0005E1H	SMC 0 - extended control register (Output enable)	PWEC0		RW
0005E2H	SMC 0 - PWM control register PWM 1		PWC10	RW
0005E3H	SMC 0 - PWM control register PWM 1			RW
0005E4H	SMC 0 - PWM control register PWM 2		PWC20	RW
0005E5H	SMC 0 - PWM control register PWM 2			RW
0005E6H	SMC 0 - PWM Select register	PWS10		RW
0005E7H	SMC 0 - PWM Select register	PWS20		RW
0005EAH	SMC 1 - PWM control register	PWC1		RW
0005EBH	SMC 1 - extended control register (Output enable)	PWEC1		RW
0005ECH	SMC 1 - PWM control register PWM 1		PWC11	RW
0005EDH	SMC 1 - PWM control register PWM 1			RW
0005EEH	SMC 1 - PWM control register PWM 2		PWC21	RW
0005EFH	SMC 1 - PWM control register PWM 2			RW
0005F0H	SMC 1 - PWM Select register	PWS11		RW
0005F1H	SMC 1 - PWM Select register	PWS21		RW
0005F4H	SMC 2 - PWM control register	PWC2		RW
0005F5H	SMC 2 - extended control register (Output enable)	PWEC2		RW
0005F6H	SMC 2 - PWM control register PWM 1		PWC12	RW

Table 0-1 I/O map (36 / 53)

Address	Register	Abbreviation 8-bit access	Abbreviation 16-bit access	Access
0005F7H	SMC 2 - PWM control register PWM 1			RW
0005F8H	SMC 2 - PWM control register PWM 2		PWC22	RW
0005F9H	SMC 2 - PWM control register PWM 2			RW
0005FAH	SMC 2 - PWM Select register	PWS12		RW
0005FBH	SMC 2 - PWM Select register	PWS22		RW
0005FEH	SMC 3 - PWM control register	PWC3		RW
0005FFH	SMC 3 - extended control register (Output enable)	PWEC3		RW
000600H	SMC 3 - PWM control register PWM 1		PWC13	RW
000601H	SMC 3 - PWM control register PWM 1			RW
000602H	SMC 3 - PWM control register PWM 2		PWC23	RW
000603H	SMC 3 - PWM control register PWM 2			RW
000604H	SMC 3 - PWM Select register	PWS13		RW
000605H	SMC 3 - PWM Select register	PWS23		RW
000608H	SMC 4 - PWM control register	PWC4		RW
000609H	SMC 4 - extended control register (Output enable)	PWEC4		RW
00060AH	SMC 4 - PWM control register PWM 1		PWC14	RW
00060BH	SMC 4 - PWM control register PWM 1			RW
00060CH	SMC 4 - PWM control register PWM 2		PWC24	RW
00060DH	SMC 4 - PWM control register PWM 2			RW
00060EH	SMC 4 - PWM Select register	PWS14		RW
00060FH	SMC 4 - PWM Select register	PWS24		RW
000612H	SMC 5 - PWM control register	PWC5		RW
000613H	SMC 5 - extended control register (Output enable)	PWEC5		RW
000614H	SMC 5 - PWM control register PWM 1		PWC15	RW
000615H	SMC 5 - PWM control register PWM 1			RW
000616H	SMC 5 - PWM control register PWM 2		PWC25	RW
000617H	SMC 5 - PWM control register PWM 2			RW
000618H	SMC 5 - PWM Select register	PWS15		RW

Table 0-1 I/O map (37 / 53)

Address	Register	Abbreviation 8-bit access	Abbreviation 16-bit access	Access
000619H	SMC 5 - PWM Select register	PWS25		RW
00061CH	LCD - Output Enable Register 0 (Seg 7-0)	LCDER0		RW
00061DH	LCD - Output Enable Register 1 (Seq 15-8)	LCDER1		RW
00061EH	LCD - Output Enable Register 2 (Seq 23-16)	LCDER2		RW
00061FH	LCD - Output Enable Register 3 (Seq 31-24)	LCDER3		RW
000620H	LCD - Output Enable Register 4 (Seq 39-32)	LCDER4		RW
000621H	LCD - Output Enable Register 5 (Seq 47-40)	LCDER5		RW
000622H	LCD - Output Enable Register 6 (Seq 55-48)	LCDER6		RW
000623H	LCD - Output Enable Register 7 (Seq 63-56)	LCDER7		RW
000624H	LCD - Output Enable Register 8 (Seq 71-64)	LCDER8		RW
000626H	LCD - Output Enable Register 10 (Vx)	LCDVER		RW
000627H	LCD - Extended Control Register	LECR		RW
000628H	LCD - Common pin switching register	LCDCMR		RW
000629H	LCD - Control Register	LCR		RW
00062AH	LCD - Data register for Segment 0-1	VRAM0		RW
00062BH	LCD - Data register for Segment 3-2	VRAM1		RW
00062CH	LCD - Data register for Segment 5-4	VRAM2		RW
00062DH	LCD - Data register for Segment	VRAM3		RW
00062EH	LCD - Data register for Segment	VRAM4		RW
00062FH	LCD - Data register for Segment 11-10	VRAM5		RW
000630H	LCD - Data register for Segment	VRAM6		RW
000631H	LCD - Data register for Segment	VRAM7		RW
000632H	LCD - Data register for Segment	VRAM8		RW
000633H	LCD - Data register for Segment	VRAM9		RW
000634H	LCD - Data register for Segment 21-20	VRAM10		RW

Table 0-1 I/O map (38 / 53)

Address	Register	Abbreviation 8-bit access	Abbreviation 16-bit access	Access
000635H	LCD - Data register for Segment	VRAM11		RW
000636H	LCD - Data register for Segment	VRAM12		RW
000637H	LCD - Data register for Segment	VRAM13		RW
000638H	LCD - Data register for Segment	VRAM14		RW
000639H	LCD - Data register for Segment 31-30	VRAM15		RW
00063AH	LCD - Data register for Segment	VRAM16		RW
00063BH	LCD - Data register for Segment	VRAM17		RW
00063CH	LCD - Data register for Segment	VRAM18		RW
00063DH	LCD - Data register for Segment	VRAM19		RW
00063EH	LCD - Data register for Segment 41-40	VRAM20		RW
00063FH	LCD - Data register for Segment	VRAM21		RW
000640H	LCD - Data register for Segment	VRAM22		RW
000641H	LCD - Data register for Segment	VRAM23		RW
000642H	LCD - Data register for Segment	VRAM24		RW
000643H	LCD - Data register for Segment 51-50	VRAM25		RW
000644H	LCD - Data register for Segment	VRAM26		RW
000645H	LCD - Data register for Segment	VRAM27		RW
000646H	LCD - Data register for Segment	VRAM28		RW
000647H	LCD - Data register for Segment	VRAM29		RW
000648H	LCD - Data register for Segment 61-60	VRAM30		RW
000649H	LCD - Data register for Segment	VRAM31		RW
00064AH	LCD - Data register for Segment	VRAM32		RW
00064BH	LCD - Data register for Segment	VRAM33		RW
00064CH	LCD - Data register for Segment	VRAM34		RW
00064DH	LCD - Data register for Segment 71-70	VRAM35		RW
0006E0H	External bus Area configuration register 0	EACL0	EAC0	RW
0006E1H	External bus Area configuration register 0	EACH0		RW
0006E2H	External bus Area configuration register 1	EACL1	EAC1	RW
0006E3H	External bus Area configuration register 1	EACH1		RW
0006E4H	External bus Area configuration register 2	EACL2	EAC2	RW

Table 0-1 I/O map (39 / 53)

Address	Register	Abbreviation 8-bit access	Abbreviation 16-bit access	Access
0006E5H	External bus Area configuration register 2	EACH2		RW
0006E6H	External bus Area configuration register 3	EACL3	EAC3	RW
0006E7H	External bus Area configuration register 3	EACH3		RW
0006E8H	External bus Area configuration register 4	EACL4	EAC4	RW
0006E9H	External bus Area configuration register 4	EACH4		RW
0006EAH	External bus Area configuration register 5	EACL5	EAC5	RW
0006EBH	External bus Area configuration register 5	EACH5		RW
0006ECH	External bus Area select register 2	EAS2		RW
0006EDH	External bus Area select register 3	EAS3		RW
0006EEH	External bus Area select register 4	EAS4		RW
0006EFH	External bus Area select register 5	EAS5		RW
0006F0H	External bus Mode register	EBM		RW
0006F1H	External bus Clock and Function register	EBCF		RW
0006F2H	External bus Address output enable register 0	EBAE0		RW
0006F3H	External bus Address output enable register 1	EBAE1		RW
0006F4H	External bus Address output enable register 2	EBAE2		RW
0006F5H	External bus Control signal register	EBCS		RW
000700H	CAN 0 - Control register	CTRLRL0	CTRLR0	RW
000701H	CAN 0 - Control register (reserved)	CTRLRH0		R
000702H	CAN 0 - Status register	STATRL0	STATR0	RW
000703H	CAN 0 - Status register (reserved)	STATRH0		R
000704H	CAN 0 - Error Counter (Transmit)	ERRCNTL0	ERRCNT0	R
000705H	CAN 0 - Error Counter (Receive)	ERRCNTH0		R
000706H	CAN 0 - Bit Timing Register	BTRL0	BTR0	RW
000707H	CAN 0 - Bit Timing Register	BTRH0		RW
000708H	CAN 0 - Interrupt Register	INTRL0	INTR0	R
000709H	CAN 0 - Interrupt Register	INTRH0		R
00070AH	CAN 0 - Test Register	TESTRL0	TESTR0	RW

Table 0-1 I/O map (40 / 53)

Address	Register	Abbreviation 8-bit access	Abbreviation 16-bit access	Access
00070BH	CAN 0 - Test Register (reserved)	TESTRH0		R
00070CH	CAN 0 - BRP Extension register	BRPERL0	BRPER0	RW
00070DH	CAN 0 - BRP Extension register (reserved)	BRPERH0		R
000710H	CAN 0 - IF1 Command request register	IF1CREQL0	IF1CREQ0	RW
000711H	CAN 0 - IF1 Command request register	IF1CREQH0		RW
000712H	CAN 0 - IF1 Command Mask register	IF1CMSKL0	IF1CMSK0	RW
000713H	CAN 0 - IF1 Command Mask register (reserved)	IF1CMSKH0		R
000714H	CAN 0 - IF1 Mask Register	IF1MSK1L0	IF1MSK10	RW
000715H	CAN 0 - IF1 Mask Register	IF1MSK1H0		RW
000716H	CAN 0 - IF1 Mask Register	IF1MSK2L0	IF1MSK20	RW
000717H	CAN 0 - IF1 Mask Register	IF1MSK2H0		RW
000718H	CAN 0 - IF1 Arbitration register	IF1ARB1L0	IF1ARB10	RW
000719H	CAN 0 - IF1 Arbitration register	IF1ARB1H0		RW
00071AH	CAN 0 - IF1 Arbitration register	IF1ARB2L0	IF1ARB20	RW
00071BH	CAN 0 - IF1 Arbitration register	IF1ARB2H0		RW
00071CH	CAN 0 - IF1 Message Control Register	IF1MCTRL0	IF1MCTR0	RW
00071DH	CAN 0 - IF1 Message Control Register	IF1MCTRH0		RW
00071EH	CAN 0 - IF1 Data A1	IF1DTA1L0	IF1DTA10	RW
00071FH	CAN 0 - IF1 Data A1	IF1DTA1H0		RW
000720H	CAN 0 - IF1 Data A2	IF1DTA2L0	IF1DTA20	RW
000721H	CAN 0 - IF1 Data A2	IF1DTA2H0		RW
000722H	CAN 0 - IF1 Data B1	IF1DTB1L0	IF1DTB10	RW
000723H	CAN 0 - IF1 Data B1	IF1DTB1H0		RW
000724H	CAN 0 - IF1 Data B2	IF1DTB2L0	IF1DTB20	RW
000725H	CAN 0 - IF1 Data B2	IF1DTB2H0		RW
000740H	CAN 0 - IF2 Command request register	IF2CREQL0	IF2CREQ0	RW
000741H	CAN 0 - IF2 Command request register	IF2CREQH0		RW
000742H	CAN 0 - IF2 Command Mask register	IF2CMSKL0	IF2CMSK0	RW

Table 0-1 I/O map (41 / 53)

Address	Register	Abbreviation 8-bit access	Abbreviation 16-bit access	Access
000743H	CAN 0 - IF2 Command Mask register (reserved	IF2CMSKH0		R
000744H	CAN 0 - IF2 Mask Register	IF2MSK1L0	IF2MSK10	RW
000745H	CAN 0 - IF2 Mask Register	IF2MSK1H0		RW
000746H	CAN 0 - IF2 Mask Register	IF2MSK2L0	IF2MSK20	RW
000747H	CAN 0 - IF2 Mask Register	IF2MSK2H0		RW
000748H	CAN 0 - IF2 Arbitration register	IF2ARB1L0	IF2ARB10	RW
000749H	CAN 0 - IF2 Arbitration register	IF2ARB1H0		RW
00074AH	CAN 0 - IF2 Arbitration register	IF2ARB2L0	IF2ARB20	RW
00074BH	CAN 0 - IF2 Arbitration register	IF2ARB2H0		RW
00074CH	CAN 0 - IF2 Message Control Register	IF2MCTRL0	IF2MCTR0	RW
00074DH	CAN 0 - IF2 Message Control Register	IF2MCTRH0		RW
00074EH	CAN 0 - IF2 Data A1	IF2DTA1L0	IF2DTA10	RW
00074FH	CAN 0 - IF2 Data A1	IF2DTA1H0		RW
000750H	CAN 0 - IF2 Data A2	IF2DTA2L0	IF2DTA20	RW
000751H	CAN 0 - IF2 Data A2	IF2DTA2H0		RW
000752H	CAN 0 - IF2 Data B1	IF2DTB1L0	IF2DTB10	RW
000753H	CAN 0 - IF2 Data B1	IF2DTB1H0		RW
000754H	CAN 0 - IF2 Data B2	IF2DTB2L0	IF2DTB20	RW
000755H	CAN 0 - IF2 Data B2	IF2DTB2H0		RW
000780H	CAN 0 - Transmission Request Register	TREQR1L0	TREQR10	R
000781H	CAN 0 - Transmission Request Register	TREQR1H0		R
000782H	CAN 0 - Transmission Request Register	TREQR2L0	TREQR20	R
000783H	CAN 0 - Transmission Request Register	TREQR2H0		R
000790H	CAN 0 - New Data Register	NEWDT1L0	NEWDT10	R
000791H	CAN 0 - New Data Register	NEWDT1H0		R
000792H	CAN 0 - New Data Register	NEWDT2L0	NEWDT20	R
000793H	CAN 0 - New Data Register	NEWDT2H0		R
0007A0H	CAN 0 - Interrupt Pending Register	INTPND1L0	INTPND10	R
0007A1H	CAN 0 - Interrupt Pending Register	INTPND1H0		R

Table 0-1 I/O map (42 / 53)

Address	Register	Abbreviation 8-bit access	Abbreviation 16-bit access	Access
0007A2H	CAN 0 - Interrupt Pending Register	INTPND2L0	INTPND20	R
0007A3H	CAN 0 - Interrupt Pending Register	INTPND2H0		R
0007B0H	CAN 0 - Message Valid Register	MSGVAL1L0	MSGVAL10	R
0007B1H	CAN 0 - Message Valid Register	MSGVAL1H0		R
0007B2H	CAN 0 - Message Valid Register	MSGVAL2L0	MSGVAL20	R
0007B3H	CAN 0 - Message Valid Register	MSGVAL2H0		R
0007CEH	CAN 0 - Output enable register	COER0		RW
0007D0H	Sound Generator 0 - Control Register Low	SGCRL0	SGCR0	RW
0007D1H	Sound Generator 0 - Control Register High	SGCRH0		RW
0007D2H	Sound Generator 0 - Frequency Register	SGFR0		RW
0007D3H	Sound Generator 0 - Amplitude Register	SGAR0		RW
0007D4H	Sound Generator 0 - Decrement Register	SGDR0		RW
0007D5H	Sound Generator 0 - Tone Register	SGTR0		RW
0007D6H	Sound Generator 1 - Control Register Low	SGCRL1	SGCR1	RW
0007D7H	Sound Generator 1 - Control Register High	SGCRH1		RW
0007D8H	Sound Generator 1 - Frequency Register	SGFR1		RW
0007D9H	Sound Generator 1 - Amplitude Register	SGAR1		RW
0007DAH	Sound Generator 1 - Decrement Register	SGDR1		RW
0007DBH	Sound Generator 1 - Tone Register	SGTR1		RW
000800H	CAN 1 - Control register	CTRLRL1	CTRLR1	RW
000801H	CAN 1 - Control register (reserved)	CTRLRH1		R
000802H	CAN 1 - Status register	STATRL1	STATR1	RW
000803H	CAN 1 - Status register (reserved)	STATRH1		R
000804H	CAN 1 - Error Counter (Transmit)	ERRCNTL1	ERRCNT1	R
000805H	CAN 1 - Error Counter (Receive)	ERRCNTH1		R
000806H	CAN 1 - Bit Timing Register	BTRL1	BTR1	RW
000807H	CAN 1 - Bit Timing Register	BTRH1		RW
000808H	CAN 1 - Interrupt Register	INTRL1	INTR1	R

Table 0-1 I/O map (43 / 53)

Address	Register	Abbreviation 8-bit access	Abbreviation 16-bit access	Access
000809H	CAN 1 - Interrupt Register	INTRH1		R
00080AH	CAN 1 - Test Register	TESTRL1	TESTR1	RW
00080BH	CAN 1 - Test Register (reserved)	TESTRH1		R
00080CH	CAN 1 - BRP Extension register	BRPERL1	BRPER1	RW
00080DH	CAN 1 - BRP Extension register (reserved)	BRPERH1		R
000810H	CAN 1 - IF1 Command request register	IF1CREQL1	IF1CREQ1	RW
000811H	CAN 1 - IF1 Command request register	IF1CREQH1		RW
000812H	CAN 1 - IF1 Command Mask register	IF1CMSKL1	IF1CMSK1	RW
000813H	CAN 1 - IF1 Command Mask register (reserved)	IF1CMSKH1		R
000814H	CAN 1 - IF1 Mask Register	IF1MSK1L1	IF1MSK11	RW
000815H	CAN 1 - IF1 Mask Register	IF1MSK1H1		RW
000816H	CAN 1 - IF1 Mask Register	IF1MSK2L1	IF1MSK21	RW
000817H	CAN 1 - IF1 Mask Register	IF1MSK2H1		RW
000818H	CAN 1 - IF1 Arbitration register	IF1ARB1L1	IF1ARB11	RW
000819H	CAN 1 - IF1 Arbitration register	IF1ARB1H1		RW
00081AH	CAN 1 - IF1 Arbitration register	IF1ARB2L1	IF1ARB21	RW
00081BH	CAN 1 - IF1 Arbitration register	IF1ARB2H1		RW
00081CH	CAN 1 - IF1 Message Control Register	IF1MCTRL1	IF1MCTR1	RW
00081DH	CAN 1 - IF1 Message Control Register	IF1MCTRH1		RW
00081EH	CAN 1 - IF1 Data A1	IF1DTA1L1	IF1DTA11	RW
00081FH	CAN 1 - IF1 Data A1	IF1DTA1H1		RW
000820H	CAN 1 - IF1 Data A2	IF1DTA2L1	IF1DTA21	RW
000821H	CAN 1 - IF1 Data A2	IF1DTA2H1		RW
000822H	CAN 1 - IF1 Data B1	IF1DTB1L1	IF1DTB11	RW
000823H	CAN 1 - IF1 Data B1	IF1DTB1H1		RW
000824H	CAN 1 - IF1 Data B2	IF1DTB2L1	IF1DTB21	RW
000825H	CAN 1 - IF1 Data B2	IF1DTB2H1		RW
000840H	CAN 1 - IF2 Command request register	IF2CREQL1	IF2CREQ1	RW

Table 0-1 I/O map (44 / 53)

Address	Register	Abbreviation 8-bit access	Abbreviation 16-bit access	Access
000841H	CAN 1 - IF2 Command request register	IF2CREQH1		RW
000842H	CAN 1 - IF2 Command Mask register	IF2CMSKL1	IF2CMSK1	RW
000843H	CAN 1 - IF2 Command Mask register (reserved	IF2CMSKH1		R
000844H	CAN 1 - IF2 Mask Register	IF2MSK1L1	IF2MSK11	RW
000845H	CAN 1 - IF2 Mask Register	IF2MSK1H1		RW
000846H	CAN 1 - IF2 Mask Register	IF2MSK2L1	IF2MSK21	RW
000847H	CAN 1 - IF2 Mask Register	IF2MSK2H1		RW
000848H	CAN 1 - IF2 Arbitration register	IF2ARB1L1	IF2ARB11	RW
000849H	CAN 1 - IF2 Arbitration register	IF2ARB1H1		RW
00084AH	CAN 1 - IF2 Arbitration register	IF2ARB2L1	IF2ARB21	RW
00084BH	CAN 1 - IF2 Arbitration register	IF2ARB2H1		RW
00084CH	CAN 1 - IF2 Message Control Register	IF2MCTRL1	IF2MCTR1	RW
00084DH	CAN 1 - IF2 Message Control Register	IF2MCTRH1		RW
00084EH	CAN 1 - IF2 Data A1	IF2DTA1L1	IF2DTA11	RW
00084FH	CAN 1 - IF2 Data A1	IF2DTA1H1		RW
000850H	CAN 1 - IF2 Data A2	IF2DTA2L1	IF2DTA21	RW
000851H	CAN 1 - IF2 Data A2	IF2DTA2H1		RW
000852H	CAN 1 - IF2 Data B1	IF2DTB1L1	IF2DTB11	RW
000853H	CAN 1 - IF2 Data B1	IF2DTB1H1		RW
000854H	CAN 1 - IF2 Data B2	IF2DTB2L1	IF2DTB21	RW
000855H	CAN 1 - IF2 Data B2	IF2DTB2H1		RW
000880H	CAN 1 - Transmission Request Register	TREQR1L1	TREQR11	R
000881H	CAN 1 - Transmission Request Register	TREQR1H1		R
000882H	CAN 1 - Transmission Request Register	TREQR2L1	TREQR21	R
000883H	CAN 1 - Transmission Request Register	TREQR2H1		R
000890H	CAN 1 - New Data Register	NEWDT1L1	NEWDT11	R
000891H	CAN 1 - New Data Register	NEWDT1H1		R
000892H	CAN 1 - New Data Register	NEWDT2L1	NEWDT21	R
000893H	CAN 1 - New Data Register	NEWDT2H1		R

Table 0-1 I/O map (45 / 53)

Address	Register	Abbreviation 8-bit access	Abbreviation 16-bit access	Access
0008A0H	CAN 1 - Interrupt Pending Register	INTPND1L1	INTPND11	R
0008A1H	CAN 1 - Interrupt Pending Register	INTPND1H1		R
0008A2H	CAN 1 - Interrupt Pending Register	INTPND2L1	INTPND21	R
0008A3H	CAN 1 - Interrupt Pending Register	INTPND2H1		R
0008B0H	CAN 1 - Message Valid Register	MSGVAL1L1	MSGVAL11	R
0008B1H	CAN 1 - Message Valid Register	MSGVAL1H1		R
0008B2H	CAN 1 - Message Valid Register	MSGVAL2L1	MSGVAL21	R
0008B3H	CAN 1 - Message Valid Register	MSGVAL2H1		R
0008CEH	CAN 1 - Output enable register	COER1		RW
000900H	CAN 2 - Control register	CTRLRL2	CTRLR2	RW
000901H	CAN 2 - Control register (reserved)	CTRLRH2		R
000902H	CAN 2 - Status register	STATRL2	STATR2	RW
000903H	CAN 2 - Status register (reserved)	STATRH2		R
000904H	CAN 2 - Error Counter (Transmit)	ERRCNTL2	ERRCNT2	R
000905H	CAN 2 - Error Counter (Receive)	ERRCNTH2		R
000906H	CAN 2 - Bit Timing Register	BTRL2	BTR2	RW
000907H	CAN 2 - Bit Timing Register	BTRH2		RW
000908H	CAN 2 - Interrupt Register	INTRL2	INTR2	R
000909H	CAN 2 - Interrupt Register	INTRH2		R
00090AH	CAN 2 - Test Register	TESTRL2	TESTR2	RW
00090BH	CAN 2 - Test Register (reserved)	TESTRH2		R
00090CH	CAN 2 - BRP Extension register	BRPERL2	BRPER2	RW
00090DH	CAN 2 - BRP Extension register (reserved)	BRPERH2		R
000910H	CAN 2 - IF1 Command request register	IF1CREQL2	IF1CREQ2	RW
000911H	CAN 2 - IF1 Command request register	IF1CREQH2		RW
000912H	CAN 2 - IF1 Command Mask register	IF1CMSKL2	IF1CMSK2	RW
000913H	CAN 2 - IF1 Command Mask register (reserved)	IF1CMSKH2		R
000914H	CAN 2 - IF1 Mask Register	IF1MSK1L2	IF1MSK12	RW

Table 0-1 I/O map (46 / 53)

Address	Register	Abbreviation 8-bit access	Abbreviation 16-bit access	Access
000915H	CAN 2 - IF1 Mask Register	IF1MSK1H2		RW
000916H	CAN 2 - IF1 Mask Register	IF1MSK2L2	IF1MSK22	RW
000917H	CAN 2 - IF1 Mask Register	IF1MSK2H2		RW
000918H	CAN 2 - IF1 Arbitration register	IF1ARB1L2	IF1ARB12	RW
000919H	CAN 2 - IF1 Arbitration register	IF1ARB1H2		RW
00091AH	CAN 2 - IF1 Arbitration register	IF1ARB2L2	IF1ARB22	RW
00091BH	CAN 2 - IF1 Arbitration register	IF1ARB2H2		RW
00091CH	CAN 2 - IF1 Message Control Register	IF1MCTRL2	IF1MCTR2	RW
00091DH	CAN 2 - IF1 Message Control Register	IF1MCTRH2		RW
00091EH	CAN 2 - IF1 Data A1	IF1DTA1L2	IF1DTA12	RW
00091FH	CAN 2 - IF1 Data A1	IF1DTA1H2		RW
000920H	CAN 2 - IF1 Data A2	IF1DTA2L2	IF1DTA22	RW
000921H	CAN 2 - IF1 Data A2	IF1DTA2H2		RW
000922H	CAN 2 - IF1 Data B1	IF1DTB1L2	IF1DTB12	RW
000923H	CAN 2 - IF1 Data B1	IF1DTB1H2		RW
000924H	CAN 2 - IF1 Data B2	IF1DTB2L2	IF1DTB22	RW
000925H	CAN 2 - IF1 Data B2	IF1DTB2H2		RW
000940H	CAN 2 - IF2 Command request register	IF2CREQL2	IF2CREQ2	RW
000941H	CAN 2 - IF2 Command request register	IF2CREQH2		RW
000942H	CAN 2 - IF2 Command Mask register	IF2CMSKL2	IF2CMSK2	RW
000943H	CAN 2 - IF2 Command Mask register (reserved	IF2CMSKH2		R
000944H	CAN 2 - IF2 Mask Register	IF2MSK1L2	IF2MSK12	RW
000945H	CAN 2 - IF2 Mask Register	IF2MSK1H2		RW
000946H	CAN 2 - IF2 Mask Register	IF2MSK2L2	IF2MSK22	RW
000947H	CAN 2 - IF2 Mask Register	IF2MSK2H2		RW
000948H	CAN 2 - IF2 Arbitration register	IF2ARB1L2	IF2ARB12	RW
000949H	CAN 2 - IF2 Arbitration register	IF2ARB1H2		RW
00094AH	CAN 2 - IF2 Arbitration register	IF2ARB2L2	IF2ARB22	RW
00094BH	CAN 2 - IF2 Arbitration register	IF2ARB2H2		RW

Table 0-1 I/O map (47 / 53)

Address	Register	Abbreviation 8-bit access	Abbreviation 16-bit access	Access
00094CH	CAN 2 - IF2 Message Control Register	IF2MCTRL2	IF2MCTR2	RW
00094DH	CAN 2 - IF2 Message Control Register	IF2MCTRH2		RW
00094EH	CAN 2 - IF2 Data A1	IF2DTA1L2	IF2DTA12	RW
00094FH	CAN 2 - IF2 Data A1	IF2DTA1H2		RW
000950H	CAN 2 - IF2 Data A2	IF2DTA2L2	IF2DTA22	RW
000951H	CAN 2 - IF2 Data A2	IF2DTA2H2		RW
000952H	CAN 2 - IF2 Data B1	IF2DTB1L2	IF2DTB12	RW
000953H	CAN 2 - IF2 Data B1	IF2DTB1H2		RW
000954H	CAN 2 - IF2 Data B2	IF2DTB2L2	IF2DTB22	RW
000955H	CAN 2 - IF2 Data B2	IF2DTB2H2		RW
000980H	CAN 2 - Transmission Request Register	TREQR1L2	TREQR12	R
000981H	CAN 2 - Transmission Request Register	TREQR1H2		R
000982H	CAN 2 - Transmission Request Register	TREQR2L2	TREQR22	R
000983H	CAN 2 - Transmission Request Register	TREQR2H2		R
000990H	CAN 2 - New Data Register	NEWDT1L2	NEWDT12	R
000991H	CAN 2 - New Data Register	NEWDT1H2		R
000992H	CAN 2 - New Data Register	NEWDT2L2	NEWDT22	R
000993H	CAN 2 - New Data Register	NEWDT2H2		R
0009A0H	CAN 2 - Interrupt Pending Register	INTPND1L2	INTPND12	R
0009A1H	CAN 2 - Interrupt Pending Register	INTPND1H2		R
0009A2H	CAN 2 - Interrupt Pending Register	INTPND2L2	INTPND22	R
0009A3H	CAN 2 - Interrupt Pending Register	INTPND2H2		R
0009B0H	CAN 2 - Message Valid Register	MSGVAL1L2	MSGVAL12	R
0009B1H	CAN 2 - Message Valid Register	MSGVAL1H2		R
0009B2H	CAN 2 - Message Valid Register	MSGVAL2L2	MSGVAL22	R
0009B3H	CAN 2 - Message Valid Register	MSGVAL2H2		R
0009CEH	CAN 2 - Output enable register	COER2		RW
000A00H	CAN 3 - Control register	CTRLRL3	CTRLR3	RW
000A01H	CAN 3 - Control register (reserved)	CTRLRH3		R
000A02H	CAN 3 - Status register	STATRL3	STATR3	RW

Table 0-1 I/O map (48 / 53)

Address	Register	Abbreviation 8-bit access	Abbreviation 16-bit access	Access
000A03H	CAN 3 - Status register (reserved)	STATRH3		R
000A04H	CAN 3 - Error Counter (Transmit)	ERRCNTL3	ERRCNT3	R
000A05H	CAN 3 - Error Counter (Receive)	ERRCNTH3		R
000A06H	CAN 3 - Bit Timing Register	BTRL3	BTR3	RW
000A07H	CAN 3 - Bit Timing Register	BTRH3		RW
000A08H	CAN 3 - Interrupt Register	INTRL3	INTR3	R
000A09H	CAN 3 - Interrupt Register	INTRH3		R
000A0AH	CAN 3 - Test Register	TESTRL3	TESTR3	RW
000A0BH	CAN 3 - Test Register (reserved)	TESTRH3		R
000A0CH	CAN 3 - BRP Extension register	BRPERL3	BRPER3	RW
000A0DH	CAN 3 - BRP Extension register (reserved)	BRPERH3		R
000A10H	CAN 3 - IF1 Command request register	IF1CREQL3	IF1CREQ3	RW
000A11H	CAN 3 - IF1 Command request register	IF1CREQH3		RW
000A12H	CAN 3 - IF1 Command Mask register	IF1CMSKL3	IF1CMSK3	RW
000A13H	CAN 3 - IF1 Command Mask register (reserved)	IF1CMSKH3		R
000A14H	CAN 3 - IF1 Mask Register	IF1MSK1L3	IF1MSK13	RW
000A15H	CAN 3 - IF1 Mask Register	IF1MSK1H3		RW
000A16H	CAN 3 - IF1 Mask Register	IF1MSK2L3	IF1MSK23	RW
000A17H	CAN 3 - IF1 Mask Register	IF1MSK2H3		RW
000A18H	CAN 3 - IF1 Arbitration register	IF1ARB1L3	IF1ARB13	RW
000A19H	CAN 3 - IF1 Arbitration register	IF1ARB1H3		RW
000A1AH	CAN 3 - IF1 Arbitration register	IF1ARB2L3	IF1ARB23	RW
000A1BH	CAN 3 - IF1 Arbitration register	IF1ARB2H3		RW
000A1CH	CAN 3 - IF1 Message Control Register	IF1MCTRL3	IF1MCTR3	RW
000A1DH	CAN 3 - IF1 Message Control Register	IF1MCTRH3		RW
000A1EH	CAN 3 - IF1 Data A1	IF1DTA1L3	IF1DTA13	RW
000A1FH	CAN 3 - IF1 Data A1	IF1DTA1H3		RW
000A20H	CAN 3 - IF1 Data A2	IF1DTA2L3	IF1DTA23	RW

Table 0-1 I/O map (49 / 53)

Address	Register	Abbreviation 8-bit access	Abbreviation 16-bit access	Access
000A21H	CAN 3 - IF1 Data A2	IF1DTA2H3		RW
000A22H	CAN 3 - IF1 Data B1	IF1DTB1L3	IF1DTB13	RW
000A23H	CAN 3 - IF1 Data B1	IF1DTB1H3		RW
000A24H	CAN 3 - IF1 Data B2	IF1DTB2L3	IF1DTB23	RW
000A25H	CAN 3 - IF1 Data B2	IF1DTB2H3		RW
000A40H	CAN 3 - IF2 Command request register	IF2CREQL3	IF2CREQ3	RW
000A41H	CAN 3 - IF2 Command request register	IF2CREQH3		RW
000A42H	CAN 3 - IF2 Command Mask register	IF2CMSKL3	IF2CMSK3	RW
000A43H	CAN 3 - IF2 Command Mask register (reserved	IF2CMSKH3		R
000A44H	CAN 3 - IF2 Mask Register	IF2MSK1L3	IF2MSK13	RW
000A45H	CAN 3 - IF2 Mask Register	IF2MSK1H3		RW
000A46H	CAN 3 - IF2 Mask Register	IF2MSK2L3	IF2MSK23	RW
000A47H	CAN 3 - IF2 Mask Register	IF2MSK2H3		RW
000A48H	CAN 3 - IF2 Arbitration register	IF2ARB1L3	IF2ARB13	RW
000A49H	CAN 3 - IF2 Arbitration register	IF2ARB1H3		RW
000A4AH	CAN 3 - IF2 Arbitration register	IF2ARB2L3	IF2ARB23	RW
000A4BH	CAN 3 - IF2 Arbitration register	IF2ARB2H3		RW
000A4CH	CAN 3 - IF2 Message Control Register	IF2MCTRL3	IF2MCTR3	RW
000A4DH	CAN 3 - IF2 Message Control Register	IF2MCTRH3		RW
000A4EH	CAN 3 - IF2 Data A1	IF2DTA1L3	IF2DTA13	RW
000A4FH	CAN 3 - IF2 Data A1	IF2DTA1H3		RW
000A50H	CAN 3 - IF2 Data A2	IF2DTA2L3	IF2DTA23	RW
000A51H	CAN 3 - IF2 Data A2	IF2DTA2H3		RW
000A52H	CAN 3 - IF2 Data B1	IF2DTB1L3	IF2DTB13	RW
000A53H	CAN 3 - IF2 Data B1	IF2DTB1H3		RW
000A54H	CAN 3 - IF2 Data B2	IF2DTB2L3	IF2DTB23	RW
000A55H	CAN 3 - IF2 Data B2	IF2DTB2H3		RW
000A80H	CAN 3 - Transmission Request Register	TREQR1L3	TREQR13	R
000A81H	CAN 3 - Transmission Request Register	TREQR1H3		R

Table 0-1 I/O map (50 / 53)

Address	Register	Abbreviation 8-bit access	Abbreviation 16-bit access	Access
000A82H	CAN 3 - Transmission Request Register	TREQR2L3	TREQR23	R
000A83H	CAN 3 - Transmission Request Register	TREQR2H3		R
000A90H	CAN 3 - New Data Register	NEWDT1L3	NEWDT13	R
000A91H	CAN 3 - New Data Register	NEWDT1H3		R
000A92H	CAN 3 - New Data Register	NEWDT2L3	NEWDT23	R
000A93H	CAN 3 - New Data Register	NEWDT2H3		R
000AA0H	CAN 3 - Interrupt Pending Register	INTPND1L3	INTPND13	R
000AA1H	CAN 3 - Interrupt Pending Register	INTPND1H3		R
000AA2H	CAN 3 - Interrupt Pending Register	INTPND2L3	INTPND23	R
000AA3H	CAN 3 - Interrupt Pending Register	INTPND2H3		R
000AB0H	CAN 3 - Message Valid Register	MSGVAL1L3	MSGVAL13	R
000AB1H	CAN 3 - Message Valid Register	MSGVAL1H3		R
000AB2H	CAN 3 - Message Valid Register	MSGVAL2L3	MSGVAL23	R
000AB3H	CAN 3 - Message Valid Register	MSGVAL2H3		R
000ABEH	CAN 3 - Output enable register	COER3		RW
000B00H	CAN 4 - Control register	CTRLRL4	CTRLR4	RW
000B01H	CAN 4 - Control register (reserved)	CTRLRH4		R
000B02H	CAN 4 - Status register	STATRL4	STATR4	RW
000B03H	CAN 4 - Status register (reserved)	STATRH4		R
000B04H	CAN 4 - Error Counter (Transmit)	ERRCNTL4	ERRCNT4	R
000B05H	CAN 4 - Error Counter (Receive)	ERRCNTH4		R
000B06H	CAN 4 - Bit Timing Register	BTRL4	BTR4	RW
000B07H	CAN 4 - Bit Timing Register	BTRH4		RW
000B08H	CAN 4 - Interrupt Register	INTRL4	INTR4	R
000B09H	CAN 4 - Interrupt Register	INTRH4		R
000B0AH	CAN 4 - Test Register	TESTRL4	TESTR4	RW
000B0BH	CAN 4 - Test Register (reserved)	TESTRH4		R
000B0CH	CAN 4 - BRP Extension register	BRPERL4	BRPER4	RW
000B0DH	CAN 4 - BRP Extension register (reserved)	BRPERH4		R

Table 0-1 I/O map (51 / 53)

Address	Register	Abbreviation 8-bit access	Abbreviation 16-bit access	Access
000B10H	CAN 4 - IF1 Command request register	IF1CREQL4	IF1CREQ4	RW
000B11H	CAN 4 - IF1 Command request register	IF1CREQH4		RW
000B12H	CAN 4 - IF1 Command Mask register	IF1CMSKL4	IF1CMSK4	RW
000B13H	CAN 4 - IF1 Command Mask register (reserved)	IF1CMSKH4		R
000B14H	CAN 4 - IF1 Mask Register	IF1MSK1L4	IF1MSK14	RW
000B15H	CAN 4 - IF1 Mask Register	IF1MSK1H4		RW
000B16H	CAN 4 - IF1 Mask Register	IF1MSK2L4	IF1MSK24	RW
000B17H	CAN 4 - IF1 Mask Register	IF1MSK2H4		RW
000B18H	CAN 4 - IF1 Arbitration register	IF1ARB1L4	IF1ARB14	RW
000B19H	CAN 4 - IF1 Arbitration register	IF1ARB1H4		RW
000B1AH	CAN 4 - IF1 Arbitration register	IF1ARB2L4	IF1ARB24	RW
000B1BH	CAN 4 - IF1 Arbitration register	IF1ARB2H4		RW
000B1CH	CAN 4 - IF1 Message Control Register	IF1MCTRL4	IF1MCTR4	RW
000B1DH	CAN 4 - IF1 Message Control Register	IF1MCTRH4		RW
000B1EH	CAN 4 - IF1 Data A1	IF1DTA1L4	IF1DTA14	RW
000B1FH	CAN 4 - IF1 Data A1	IF1DTA1H4		RW
000B20H	CAN 4 - IF1 Data A2	IF1DTA2L4	IF1DTA24	RW
000B21H	CAN 4 - IF1 Data A2	IF1DTA2H4		RW
000B22H	CAN 4 - IF1 Data B1	IF1DTB1L4	IF1DTB14	RW
000B23H	CAN 4 - IF1 Data B1	IF1DTB1H4		RW
000B24H	CAN 4 - IF1 Data B2	IF1DTB2L4	IF1DTB24	RW
000B25H	CAN 4 - IF1 Data B2	IF1DTB2H4		RW
000B40H	CAN 4 - IF2 Command request register	IF2CREQL4	IF2CREQ4	RW
000B41H	CAN 4 - IF2 Command request register	IF2CREQH4		RW
000B42H	CAN 4 - IF2 Command Mask register	IF2CMSKL4	IF2CMSK4	RW
000B43H	CAN 4 - IF2 Command Mask register (reserved	IF2CMSKH4		R
000B44H	CAN 4 - IF2 Mask Register	IF2MSK1L4	IF2MSK14	RW
000B45H	CAN 4 - IF2 Mask Register	IF2MSK1H4		RW

Table 0-1 I/O map (52 / 53)

Address	Register	Abbreviation 8-bit access	Abbreviation 16-bit access	Access
000B46H	CAN 4 - IF2 Mask Register	IF2MSK2L4	IF2MSK24	RW
000B47H	CAN 4 - IF2 Mask Register	IF2MSK2H4		RW
000B48H	CAN 4 - IF2 Arbitration register	IF2ARB1L4	IF2ARB14	RW
000B49H	CAN 4 - IF2 Arbitration register	IF2ARB1H4		RW
000B4AH	CAN 4 - IF2 Arbitration register	IF2ARB2L4	IF2ARB24	RW
000B4BH	CAN 4 - IF2 Arbitration register	IF2ARB2H4		RW
000B4CH	CAN 4 - IF2 Message Control Register	IF2MCTRL4	IF2MCTR4	RW
000B4DH	CAN 4 - IF2 Message Control Register	IF2MCTRH4		RW
000B4EH	CAN 4 - IF2 Data A1	IF2DTA1L4	IF2DTA14	RW
000B4FH	CAN 4 - IF2 Data A1	IF2DTA1H4		RW
000B50H	CAN 4 - IF2 Data A2	IF2DTA2L4	IF2DTA24	RW
000B51H	CAN 4 - IF2 Data A2	IF2DTA2H4		RW
000B52H	CAN 4 - IF2 Data B1	IF2DTB1L4	IF2DTB14	RW
000B53H	CAN 4 - IF2 Data B1	IF2DTB1H4		RW
000B54H	CAN 4 - IF2 Data B2	IF2DTB2L4	IF2DTB24	RW
000B55H	CAN 4 - IF2 Data B2	IF2DTB2H4		RW
000B80H	CAN 4 - Transmission Request Register	TREQR1L4	TREQR14	R
000B81H	CAN 4 - Transmission Request Register	TREQR1H4		R
000B82H	CAN 4 - Transmission Request Register	TREQR2L4	TREQR24	R
000B83H	CAN 4 - Transmission Request Register	TREQR2H4		R
000B90H	CAN 4 - New Data Register	NEWDT1L4	NEWDT14	R
000B91H	CAN 4 - New Data Register	NEWDT1H4		R
000B92H	CAN 4 - New Data Register	NEWDT2L4	NEWDT24	R
000B93H	CAN 4 - New Data Register	NEWDT2H4		R
000BA0H	CAN 4 - Interrupt Pending Register	INTPND1L4	INTPND14	R
000BA1H	CAN 4 - Interrupt Pending Register	INTPND1H4		R
000BA2H	CAN 4 - Interrupt Pending Register	INTPND2L4	INTPND24	R
000BA3H	CAN 4 - Interrupt Pending Register	INTPND2H4		R
000BB0H	CAN 4 - Message Valid Register	MSGVAL1L4	MSGVAL14	R
000BB1H	CAN 4 - Message Valid Register	MSGVAL1H4		R

Table 0-1 I/O map (53 / 53)

Address	Register	Abbreviation 8-bit access	Abbreviation 16-bit access	Access
000BB2H	CAN 4 - Message Valid Register	MSGVAL2L4	MSGVAL24	R
000BB3H	CAN 4 - Message Valid Register	MSGVAL2H4		R
000BCEH	CAN 4 - Output enable register	COER4		RW
000C00H	External bus area (16-bit address up to 000FFFH)	EXTBUS1		RW

■ INTERRUPT VECTOR TABLE MB96V300

Vector number	Offset in vector table	Vector name	DMA can clear	Index in ICR to program IL	Description
0	3FC	CALLV0	No	-	
1	3F8	CALLV1	No	-	
2	3F4	CALLV2	No	-	
3	3F0	CALLV3	No	-	
4	3EC	CALLV4	No	-	
5	3E8	CALLV5	No	-	
6	3E4	CALLV6	No	-	
7	3E0	CALLV7	No	-	
8	3DC	RESET	No	-	
9	3D8	INT9	No	-	
10	3D4	EXCEPTION	No	-	
11	3D0	NMI	No	-	Non-Maskable Interrupt
12	3CC	DLY	No	12	Delayed Interrupt
13	3C8	RC_TIMER	No	13	RC Timer
14	3C4	MC_TIMER	No	14	Main Clock Timer
15	3C0	SC_TIMER	No	15	Sub Clock Timer
16	3BC	RESERVED	No	16	Reserved
17	3B8	EXTINT0	Yes	17	External Interrupt 0
18	3B4	EXTINT1	Yes	18	External Interrupt 1
19	3B0	EXTINT2	Yes	19	External Interrupt 2
20	3AC	EXTINT3	Yes	20	External Interrupt 3
21	3A8	EXTINT4	Yes	21	External Interrupt 4
22	3A4	EXTINT5	Yes	22	External Interrupt 5
23	3A0	EXTINT6	Yes	23	External Interrupt 6
24	39C	EXTINT7	Yes	24	External Interrupt 7
25	398	EXTINT8	Yes	25	External Interrupt 8
26	394	EXTINT9	Yes	26	External Interrupt 9
27	390	EXTINT10	Yes	27	External Interrupt 10
28	38C	EXTINT11	Yes	28	External Interrupt 11
29	388	EXTINT12	Yes	29	External Interrupt 12
30	384	EXTINT13	Yes	30	External Interrupt 13
31	380	EXTINT14	Yes	31	External Interrupt 14
32	37C	EXTINT15	Yes	32	External Interrupt 15

Vector number	Offset in vector table	Vector name	DMA can clear	Index in ICR to program IL	Description
33	378	CAN0	No	33	CAN Controller 0
34	374	CAN1	No	34	CAN Controller 1
35	370	CAN2	No	35	CAN Controller 2
36	36C	CAN3	No	36	CAN Controller 3
37	368	CAN4	No	37	CAN Controller 4
38	364	PPG0	Yes	38	Programmable Pulse Generator 0
39	360	PPG1	Yes	39	Programmable Pulse Generator 1
40	35C	PPG2	Yes	40	Programmable Pulse Generator 2
41	358	PPG3	Yes	41	Programmable Pulse Generator 3
42	354	PPG4	Yes	42	Programmable Pulse Generator 4
43	350	PPG5	Yes	43	Programmable Pulse Generator 5
44	34C	PPG6	Yes	44	Programmable Pulse Generator 6
45	348	PPG7	Yes	45	Programmable Pulse Generator 7
46	344	PPG8	Yes	46	Programmable Pulse Generator 8
47	340	PPG9	Yes	47	Programmable Pulse Generator 9
48	33C	PPG10	Yes	48	Programmable Pulse Generator 10
49	338	PPG11	Yes	49	Programmable Pulse Generator 11
50	334	PPG12	Yes	50	Programmable Pulse Generator 12
51	330	PPG13	Yes	51	Programmable Pulse Generator 13
52	32C	PPG14	Yes	52	Programmable Pulse Generator 14
53	328	PPG15	Yes	53	Programmable Pulse Generator 15
54	324	PPG16	Yes	54	Programmable Pulse Generator 16
55	320	PPG17	Yes	55	Programmable Pulse Generator 17
56	31C	PPG18	Yes	56	Programmable Pulse Generator 18
57	318	PPG19	Yes	57	Programmable Pulse Generator 19
58	314	RLT0	Yes	58	Reload Timer 0
59	310	RLT1	Yes	59	Reload Timer 1
60	30C	RLT2	Yes	60	Reload Timer 2
61	308	RLT3	Yes	61	Reload Timer 3
62	304	RLT4	Yes	62	Reload Timer 4
63	300	RLT5	Yes	63	Reload Timer 5
64	2FC	PPGRLT	Yes	64	Reload Timer 6 - dedicated for PPG
65	2F8	ICU0	Yes	65	Input Capture Unit 0
66	2F4	ICU1	Yes	66	Input Capture Unit 1
67	2F0	ICU2	Yes	67	Input Capture Unit 2

Vector number	Offset in vector table	Vector name	DMA can clear	Index in ICR to program IL	Description
68	2EC	ICU3	Yes	68	Input Capture Unit 3
69	2E8	ICU4	Yes	69	Input Capture Unit 4
70	2E4	ICU5	Yes	70	Input Capture Unit 5
71	2E0	ICU6	Yes	71	Input Capture Unit 6
72	2DC	ICU7	Yes	72	Input Capture Unit 7
73	2D8	ICU8	Yes	73	Input Capture Unit 8
74	2D4	ICU9	Yes	74	Input Capture Unit 9
75	2D0	ICU10	Yes	75	Input Capture Unit 10
76	2CC	ICU11	Yes	76	Input Capture Unit 11
77	2C8	OCU0	Yes	77	Output Compare Unit 0
78	2C4	OCU1	Yes	78	Output Compare Unit 1
79	2C0	OCU2	Yes	79	Output Compare Unit 2
80	2BC	OCU3	Yes	80	Output Compare Unit 3
81	2B8	OCU4	Yes	81	Output Compare Unit 4
82	2B4	OCU5	Yes	82	Output Compare Unit 5
83	2B0	OCU6	Yes	83	Output Compare Unit 6
84	2AC	OCU7	Yes	84	Output Compare Unit 7
85	2A8	OCU8	Yes	85	Output Compare Unit 8
86	2A4	OCU9	Yes	86	Output Compare Unit 9
87	2A0	OCU10	Yes	87	Output Compare Unit 10
88	29C	OCU11	Yes	88	Output Compare Unit 11
89	298	FRT0	Yes	89	Free Running Timer 0
90	294	FRT1	Yes	90	Free Running Timer 1
91	290	FRT2	Yes	91	Free Running Timer 2
92	28C	FRT3	Yes	92	Free Running Timer 3
93	288	RTC0	No	93	Real Timer Clock
94	284	CAL0	No	94	Clock Calibration Unit
95	280	SG0	No	95	Sound Generator
96	27C	IIC0	Yes	96	I2C interface
97	278	IIC1	Yes	97	I2C interface
98	274	ADC0	Yes	98	A/D Converter
99	270	ALARM0	No	99	Alarm Comparator 0
100	26C	ALARM1	No	100	Alarm Comparator 1
101	268	LINR0	Yes	101	LIN USART 0 RX
102	264	LINT0	Yes	102	LIN USART 0 TX

Vector number	Offset in vector table	Vector name	DMA can clear	Index in ICR to program IL	Description
103	260	LINR1	Yes	103	LIN USART 1 RX
104	25C	LINT1	Yes	104	LIN USART 1 TX
105	258	LINR2	Yes	105	LIN USART 2 RX
106	254	LINT2	Yes	106	LIN USART 2 TX
107	250	LINR3	Yes	107	LIN USART 3 RX
108	24C	LINT3	Yes	108	LIN USART 3 TX
109	248	LINR4	Yes	109	LIN USART 4 RX
110	244	LINT4	Yes	110	LIN USART 4 TX
111	240	LINR5	Yes	111	LIN USART 5 RX
112	23C	LINT5	Yes	112	LIN USART 5 TX
113	238	LINR6	Yes	113	LIN USART 6 RX
114	234	LINT6	Yes	114	LIN USART 6 TX
115	230	LINR7	Yes	115	LIN USART 7 RX
116	22C	LINT7	Yes	116	LIN USART 7 TX
117	228	LINR8	Yes	117	LIN USART 8 RX
118	224	LINT8	Yes	118	LIN USART 8 TX
119	220	LINR9	Yes	119	LIN USART 9 RX
120	21C	LINT9	Yes	120	LIN USART 9 TX

■ INTERRUPT VECTOR TABLE MB96(F)32x

Vector number	Offset in vector table	Vector name	Cleared by DMA	Index in ICR to program	Description
0	3FC	CALLV0	No	-	
1	3F8	CALLV1	No	-	
2	3F4	CALLV2	No	-	
3	3F0	CALLV3	No	-	
4	3EC	CALLV4	No	-	
5	3E8	CALLV5	No	-	
6	3E4	CALLV6	No	-	
7	3E0	CALLV7	No	-	
8	3DC	RESET	No	-	
9	3D8	INT9	No	-	
10	3D4	EXCEPTION	No	-	
11	3D0	NMI	No	-	Non-Maskable Interrupt
12	3CC	DLY	No	12	Delayed Interrupt
13	3C8	RC_TIMER	No	13	RC Timer
14	3C4	MC_TIMER	No	14	Main Clock Timer
15	3C0	SC_TIMER	No	15	Sub Clock Timer
16	3BC	PLL_UNLOCK	No	16	Reserved
17	3B8	EXTINT0	Yes	17	External Interrupt 0
18	3B4	EXINT1	Yes	18	External Interrupt 1
19	3B0	EXTINT2	Yes	19	External Interrupt 2
20	3AC	EXTINT3	Yes	20	External Interrupt 3
21	3A8	EXTINT4	Yes	21	External Interrupt 4
22	3A4	EXTINT5	Yes	22	External Interrupt 5
23	3A0	EXTINT7	Yes	23	External Interrupt 7
24	39C	EXTINT8	Yes	24	External Interrupt 8
25	398	EXTINT9	Yes	25	External Interrupt 9
26	394	EXTINT10	Yes	26	External Interrupt 10
27	390	EXTINT11	Yes	27	External Interrupt 11
28	38C	EXTINT12	Yes	28	External Interrupt 12
29	388	EXTINT13	Yes	29	External Interrupt 13
30	384	EXTINT14	Yes	30	External Interrupt 14
31	380	EXTINT15	Yes	31	External Interrupt 15
32	37C	CAN1	No	32	CAN Controller 1
33	378	CAN2	No	33	CAN Controller 2

Vector number	Offset in vector table	Vector name	Cleared by DMA	Index in ICR to program	Description
34	374	PPG0	Yes	34	Programmable Pulse Generator 0
35	370	PPG1	Yes	35	Programmable Pulse Generator 1
36	36C	PPG2	Yes	36	Programmable Pulse Generator 2
37	368	PPG3	Yes	37	Programmable Pulse Generator 3
38	364	PPG4	Yes	38	Programmable Pulse Generator 4
39	360	PPG5	Yes	39	Programmable Pulse Generator 5
40	35C	PPG6	Yes	40	Programmable Pulse Generator 6
41	358	PPG7	Yes	41	Programmable Pulse Generator 7
42	354	PPG8	Yes	42	Programmable Pulse Generator 8
43	350	PPG9	Yes	43	Programmable Pulse Generator 9
44	34C	PPG10	Yes	44	Programmable Pulse Generator 10
45	348	PPG11	Yes	45	Programmable Pulse Generator 11
46	344	PPG12	Yes	46	Programmable Pulse Generator 12
47	340	PPG13	Yes	47	Programmable Pulse Generator 13
48	33C	PPG14	Yes	48	Programmable Pulse Generator 14
49	338	PPG15	Yes	49	Programmable Pulse Generator 15
50	334	PPG16	Yes	50	Programmable Pulse Generator 16
51	330	PPG17	Yes	51	Programmable Pulse Generator 17
52	32C	PPG18	Yes	52	Programmable Pulse Generator 18
53	328	PPG19	Yes	53	Programmable Pulse Generator 19
54	324	RLT0	Yes	54	Reload Timer 0
55	320	RLT1	Yes	55	Reload Timer 1
56	31C	RLT2	Yes	56	Reload Timer 2
57	318	RLT3	Yes	57	Reload Timer 3
58	314	PPGRLT	Yes	58	Reload Timer 6 - dedicated for PPG
59	310	ICU0	Yes	59	Input Capture Unit 0
60	30C	ICU1	Yes	60	Input Capture Unit 1
61	308	ICU2	Yes	61	Input Capture Unit 2
62	304	ICU3	Yes	62	Input Capture Unit 3
63	300	ICU4	Yes	63	Input Capture Unit 4
64	2FC	ICU5	Yes	64	Input Capture Unit 5
65	2F8	ICU6	Yes	65	Input Capture Unit 6
66	2F4	ICU7	Yes	66	Input Capture Unit 7
67	2F0	ICU8	Yes	67	Input Capture Unit 8
68	2EC	ICU9	Yes	68	Input Capture Unit 9
69	2E8	ICU10	Yes	69	Input Capture Unit 10

Vector number	Offset in vector table	Vector name	Cleared by DMA	Index in ICR to program	Description
70	2E4	ICU11	Yes	70	Input Capture Unit 11
71	2E0	OCU4	Yes	71	Output Compare Unit 4
72	2DC	OCU5	Yes	72	Output Compare Unit 5
73	2D8	OCU6	Yes	73	Output Compare Unit 6
74	2D4	OCU7	Yes	74	Output Compare Unit 7
75	2D0	OCU10	Yes	75	Output Compare Unit 10
76	2CC	OCU11	Yes	76	Output Compare Unit 11
77	2C8	FRT0	Yes	77	Free Running Timer 0
78	2C4	FRT1	Yes	78	Free Running Timer 1
79	2C0	FRT2	Yes	79	Free Running Timer 2
80	2BC	FRT3	Yes	80	Free Running Timer 3
81	2B8	RTC0	No	81	Real Timer Clock
82	2B4	CAL0	No	82	Clock Calibration Unit
83	2B0	IIC0	Yes	83	I2C interface
84	2AC	ADC0	Yes	84	A/D Converter
85	2A8	LINR2	Yes	85	LIN USART 2 RX
86	2A4	LINT2	Yes	86	LIN USART 2 TX
87	2A0	LINR3	Yes	87	LIN USART 3 RX
88	29C	LINT3	Yes	88	LIN USART 3 TX
89	298	LINR7	Yes	89	LIN USART 7 RX
90	294	LINT7	Yes	90	LIN USART 7 TX
91	290	LINR8	Yes	91	LIN USART 8 RX
92	28C	LINT8	Yes	92	LIN USART 8 TX
93	288	MAIN_FLASH	No	93	Main Flash memory interrupt

■ INTERRUPT VECTOR TABLE MB96(F)34x

Vector number	Offset in vector table	Vector name	Cleared by DMA	Index in ICR to program	Description
0	3FC	CALLV0	No	-	
1	3F8	CALLV1	No	-	
2	3F4	CALLV2	No	-	
3	3F0	CALLV3	No	-	
4	3EC	CALLV4	No	-	
5	3E8	CALLV5	No	-	
6	3E4	CALLV6	No	-	
7	3E0	CALLV7	No	-	
8	3DC	RESET	No	-	
9	3D8	INT9	No	-	
10	3D4	EXCEPTION	No	-	
11	3D0	NMI	No	-	Non-Maskable Interrupt
12	3CC	DLY	No	12	Delayed Interrupt
13	3C8	RC_TIMER	No	13	RC Timer
14	3C4	MC_TIMER	No	14	Main Clock Timer
15	3C0	SC_TIMER	No	15	Sub Clock Timer
16	3BC	RESERVED	No	16	Reserved
17	3B8	EXTINT0	Yes	17	External Interrupt 0
18	3B4	EXTINT1	Yes	18	External Interrupt 1
19	3B0	EXTINT2	Yes	19	External Interrupt 2
20	3AC	EXTINT3	Yes	20	External Interrupt 3
21	3A8	EXTINT4	Yes	21	External Interrupt 4
22	3A4	EXTINT5	Yes	22	External Interrupt 5
23	3A0	EXTINT6	Yes	23	External Interrupt 6
24	39C	EXTINT7	Yes	24	External Interrupt 7
25	398	EXTINT8	Yes	25	External Interrupt 8
26	394	EXTINT9	Yes	26	External Interrupt 9
27	390	EXTINT10	Yes	27	External Interrupt 10
28	38C	EXTINT11	Yes	28	External Interrupt 11
29	388	EXTINT12	Yes	29	External Interrupt 12
30	384	EXTINT13	Yes	30	External Interrupt 13
31	380	EXTINT14	Yes	31	External Interrupt 14
32	37C	EXTINT15	Yes	32	External Interrupt 15

Vector number	Offset in vector table	Vector name	Cleared by DMA	Index in ICR to program	Description
33	378	CAN0	No	33	CAN Controller 0
34	374	CAN1	No	34	CAN Controller 1
35	370	PPG0	Yes	35	Programmable Pulse Generator 0
36	36C	PPG1	Yes	36	Programmable Pulse Generator 1
37	368	PPG2	Yes	37	Programmable Pulse Generator 2
38	364	PPG3	Yes	38	Programmable Pulse Generator 3
39	360	PPG4	Yes	39	Programmable Pulse Generator 4
40	35C	PPG5	Yes	40	Programmable Pulse Generator 5
41	358	PPG6	Yes	41	Programmable Pulse Generator 6
42	354	PPG7	Yes	42	Programmable Pulse Generator 7
43	350	PPG8	Yes	43	Programmable Pulse Generator 8
44	34C	PPG9	Yes	44	Programmable Pulse Generator 9
45	348	PPG10	Yes	45	Programmable Pulse Generator 10
46	344	PPG11	Yes	46	Programmable Pulse Generator 11
47	340	PPG12	Yes	47	Programmable Pulse Generator 12
48	33C	PPG13	Yes	48	Programmable Pulse Generator 13
49	338	PPG14	Yes	49	Programmable Pulse Generator 14
50	334	PPG15	Yes	50	Programmable Pulse Generator 15
51	330	RLT0	Yes	51	Reload Timer 0
52	32C	RLT1	Yes	52	Reload Timer 1
53	328	RLT2	Yes	53	Reload Timer 2
54	324	RLT3	Yes	54	Reload Timer 3
55	320	PPGRLT	Yes	55	Reload Timer 6 - dedicated for PPG
56	31C	ICU0	Yes	56	Input Capture Unit 0
57	318	ICU1	Yes	57	Input Capture Unit 1
58	314	ICU2	Yes	58	Input Capture Unit 2
59	310	ICU3	Yes	59	Input Capture Unit 3
60	30C	ICU4	Yes	60	Input Capture Unit 4
61	308	ICU5	Yes	61	Input Capture Unit 5
62	304	ICU6	Yes	62	Input Capture Unit 6
63	300	ICU7	Yes	63	Input Capture Unit 7
64	2FC	OCU0	Yes	64	Output Compare Unit 0
65	2F8	OCU1	Yes	65	Output Compare Unit 1
66	2F4	OCU2	Yes	66	Output Compare Unit 2
67	2F0	OCU3	Yes	67	Output Compare Unit 3
68	2EC	OCU4	Yes	68	Output Compare Unit 4

Vector number	Offset in vector table	Vector name	Cleared by DMA	Index in ICR to program	Description
69	2E8	OCU5	Yes	69	Output Compare Unit 5
70	2E4	OCU6	Yes	70	Output Compare Unit 6
71	2E0	OCU7	Yes	71	Output Compare Unit 7
72	2DC	FRT0	Yes	72	Free Running Timer 0
73	2D8	FRT1	Yes	73	Free Running Timer 1
74	2D4	IIC0	Yes	74	I2C interface
75	2D0	IIC1	Yes	75	I2C interface
76	2CC	ADC0	Yes	76	A/D Converter
77	2C8	ALARM0	No	77	Alarm Comparator 0
78	2C4	ALARM1	No	78	Alarm Comparator 1
79	2C0	LINR0	Yes	79	LIN USART 0 RX
80	2BC	LINT0	Yes	80	LIN USART 0 TX
81	2B8	LINR1	Yes	81	LIN USART 1 RX
82	2B4	LINT1	Yes	82	LIN USART 1 TX
83	2B0	LINR2	Yes	83	LIN USART 2 RX
84	2AC	LINT2	Yes	84	LIN USART 2 TX
85	2A8	LINR3	Yes	85	LIN USART 3 RX
86	2A4	LINT3	Yes	86	LIN USART 3 TX
87	2A0	MAIN_FLASH	No	87	Main Flash memory
88	29C	SAT_FLASH	No	88	Satellite Flash memory (only MB96F348H/T)
89	298	LINR7	Yes	89	LIN USART 7 RX (only MB96F34(6/7/8)R/Y)
90	294	LINT7	Yes	90	LIN USART 7 TX (only MB96F34(6/7/8)R/Y)
91	290	LINR8	Yes	91	LIN USART 8 RX (only MB96F34(6/7/8)R/Y)
92	28C	LINT8	Yes	92	LIN USART 8 TX (only MB96F34(6/7/8)R/Y)
93	288	LINR9	Yes	93	LIN USART 9 RX (only MB96F34(6/7/8)R/Y)
94	284	LINT9	Yes	94	LIN USART 9 TX (only MB96F34(6/7/8)R/Y)
95	280	RTC0	No	95	Real Timer Clock (only MB96F34(6/7/8)R/Y)
96	27C	CAL0	No	96	Clock Calibration Unit (only MB96F34(6/7/8)R/Y)

■ INTERRUPT VECTOR TABLE MB96(F)35x

Vector number	Offset in vector table	Vector name	Cleared by DMA	Index in ICR to program	Description
0	3FC	CALLV0	No	-	
1	3F8	CALLV1	No	-	
2	3F4	CALLV2	No	-	
3	3F0	CALLV3	No	-	
4	3EC	CALLV4	No	-	
5	3E8	CALLV5	No	-	
6	3E4	CALLV6	No	-	
7	3E0	CALLV7	No	-	
8	3DC	RESET	No	-	
9	3D8	INT9	No	-	
10	3D4	EXCEPTION	No	-	
11	3D0	NMI	No	-	Non-Maskable Interrupt
12	3CC	DLY	No	12	Delayed Interrupt
13	3C8	RC_TIMER	No	13	RC Timer
14	3C4	MC_TIMER	No	14	Main Clock Timer
15	3C0	SC_TIMER	No	15	Sub Clock Timer
16	3BC	PLL_UNLOCK	No	16	Reserved
17	3B8	EXTINT0	Yes	17	External Interrupt 0
19	3B0	EXTINT2	Yes	19	External Interrupt 2
21	3A8	EXTINT4	Yes	21	External Interrupt 4
23	3A0	EXTINT7	Yes	23	External Interrupt 7
24	39C	EXTINT8	Yes	24	External Interrupt 8
25	398	EXTINT9	Yes	25	External Interrupt 9
26	394	EXTINT10	Yes	26	External Interrupt 10
27	390	EXTINT11	Yes	27	External Interrupt 11
28	38C	EXTINT12	Yes	28	External Interrupt 12
29	388	EXTINT13	Yes	29	External Interrupt 13
30	384	EXTINT14	Yes	30	External Interrupt 14
31	380	EXTINT15	Yes	31	External Interrupt 15
32	37C	CAN1	No	32	CAN Controller 1

Vector number	Offset in vector table	Vector name	Cleared by DMA	Index in ICR to program	Description
33	378	CAN2	No	33	CAN Controller 2
34	374	PPG0	Yes	34	Programmable Pulse Generator 0
35	370	PPG1	Yes	35	Programmable Pulse Generator 1
36	36C	PPG2	Yes	36	Programmable Pulse Generator 2
37	368	PPG3	Yes	37	Programmable Pulse Generator 3
38	364	PPG4	Yes	38	Programmable Pulse Generator 4
39	360	PPG5	Yes	39	Programmable Pulse Generator 5
40	35C	PPG6	Yes	40	Programmable Pulse Generator 6
41	358	PPG7	Yes	41	Programmable Pulse Generator 7
42	354	PPG8	Yes	42	Programmable Pulse Generator 8
43	350	PPG9	Yes	43	Programmable Pulse Generator 9
44	34C	PPG10	Yes	44	Programmable Pulse Generator 10
45	348	PPG11	Yes	45	Programmable Pulse Generator 11
46	344	PPG12	Yes	46	Programmable Pulse Generator 12
47	340	PPG13	Yes	47	Programmable Pulse Generator 13
48	33C	PPG14	Yes	48	Programmable Pulse Generator 14
49	338	PPG15	Yes	49	Programmable Pulse Generator 15
50	334	PPG16	Yes	50	Programmable Pulse Generator 16
51	330	PPG17	Yes	51	Programmable Pulse Generator 17
52	32C	PPG18	Yes	52	Programmable Pulse Generator 18
53	328	PPG19	Yes	53	Programmable Pulse Generator 19
54	324	RLT0	Yes	54	Reload Timer 0
55	320	RLT1	Yes	55	Reload Timer 1
56	31C	RLT2	Yes	56	Reload Timer 2
57	318	RLT3	Yes	57	Reload Timer 3
58	314	PPGRLT	Yes	58	Reload Timer 6 - dedicated for PPG
59	310	ICU0	Yes	59	Input Capture Unit 0
60	30C	ICU1	Yes	60	Input Capture Unit 1
63	300	ICU4	Yes	63	Input Capture Unit 4
64	2FC	ICU5	Yes	64	Input Capture Unit 5
65	2F8	ICU6	Yes	65	Input Capture Unit 6
66	2F4	ICU7	Yes	66	Input Capture Unit 7

Vector number	Offset in vector table	Vector name	Cleared by DMA	Index in ICR to program	Description
71	2E0	OCU4	Yes	71	Output Compare Unit 4
72	2DC	OCU5	Yes	72	Output Compare Unit 5
73	2D8	OCU6	Yes	73	Output Compare Unit 6
74	2D4	OCU7	Yes	74	Output Compare Unit 7
77	2C8	FRT0	Yes	77	Free Running Timer 0
78	2C4	FRT1	Yes	78	Free Running Timer 1
81	2B8	RTC0	No	81	Real Timer Clock
82	2B4	CAL0	No	82	Clock Calibration Unit
83	2B0	IIC0	Yes	83	I2C interface
84	2AC	ADC0	Yes	84	A/D Converter
85	2A8	LINR2	Yes	85	LIN USART 2 RX
86	2A4	LINT2	Yes	86	LIN USART 2 TX
87	2A0	LINR3	Yes	87	LIN USART 3 RX
88	29C	LINT3	Yes	88	LIN USART 3 TX
89	298	LINR7	Yes	89	LIN USART 7 RX
90	294	LINT7	Yes	90	LIN USART 7 TX
91	290	LINR8	Yes	91	LIN USART 8 RX
92	28C	LINT8	Yes	92	LIN USART 8 TX
93	288	MAIN_FLASH	No	93	Main Flash memory interrupt

■ INTERRUPT VECTOR TABLE MB96(F)36x

Vector number	Offset in vector table	Vector name	Cleared by DMA	Index in ICR to program IL	Description
0	3FC	CALLV0	No	-	
1	3F8	CALLV1	No	-	
2	3F4	CALLV2	No	-	
3	3F0	CALLV3	No	-	
4	3EC	CALLV4	No	-	
5	3E8	CALLV5	No	-	
6	3E4	CALLV6	No	-	
7	3E0	CALLV7	No	-	
8	3DC	RESET	No	-	
9	3D8	INT9	No	-	
10	3D4	EXCEPTION	No	-	
11	3D0	NMI	No	-	Non-Maskable Interrupt
12	3CC	DLY	No	12	Delayed Interrupt
13	3C8	RC_TIMER	No	13	RC Timer
14	3C4	MC_TIMER	No	14	Main Clock Timer
15	3C0	SC_TIMER	No	15	Sub Clock Timer
16	3BC	RESERVED	No	16	Reserved
17	3B8	EXTINT0	Yes	17	External Interrupt 0
18	3B4	EXTINT1	Yes	18	External Interrupt 1
19	3B0	EXTINT2	Yes	19	External Interrupt 2
20	3AC	EXTINT3	Yes	20	External Interrupt 3
21	3A8	EXTINT4	Yes	21	External Interrupt 4
22	3A4	EXTINT5	Yes	22	External Interrupt 5
23	3A0	EXTINT9	Yes	23	External Interrupt 9
24	39C	EXTINT12	Yes	24	External Interrupt 12
25	398	EXTINT14	Yes	25	External Interrupt 14
26	394	CAN1	No	26	CAN Controller 1
27	390	PPG4	Yes	27	Programmable Pulse Generator 4
28	38C	PPG5	Yes	28	Programmable Pulse Generator 5
29	388	PPG6	Yes	29	Programmable Pulse Generator 6
30	384	PPG7	Yes	30	Programmable Pulse Generator 7
31	380	PPG12	Yes	31	Programmable Pulse Generator 12
32	37C	PPG13	Yes	32	Programmable Pulse Generator 13

Vector number	Offset in vector table	Vector name	Cleared by DMA	Index in ICR to program IL	Description
33	378	PPG14	Yes	33	Programmable Pulse Generator 14
34	374	PPG15	Yes	34	Programmable Pulse Generator 15
35	370	RLT2	Yes	35	Reload Timer 2
36	36C	RLT3	Yes	36	Reload Timer 3
37	368	PPGRLT	Yes	37	Reload Timer 6 - dedicated for PPG
38	364	ICU0	Yes	38	Input Capture Unit 0
39	360	ICU1	Yes	39	Input Capture Unit 1
40	35C	ICU2	Yes	40	Input Capture Unit 2
41	358	ICU3	Yes	41	Input Capture Unit 3
42	354	FRT0	Yes	42	Free Running Timer 0
43	350	ADC0	Yes	43	A/D Converter
44	34C	LINR0	No	44	LIN USART 0 RX
45	348	LINT0	No	45	LIN USART 0 TX
46	344	LINR1	No	46	LIN USART 1 RX
47	340	LINT1	No	47	LIN USART 1 TX
48	33C	MAIN_FLASH	No	48	Main Flash memory

■ INTERRUPT VECTOR TABLE MB96(F)38x

Vector number	Offset in vector table	Vector name	Cleared by DMA	Index in ICR to program	Description
0	3FC	CALLV0	No	-	
1	3F8	CALLV1	No	-	
2	3F4	CALLV2	No	-	
3	3F0	CALLV3	No	-	
4	3EC	CALLV4	No	-	
5	3E8	CALLV5	No	-	
6	3E4	CALLV6	No	-	
7	3E0	CALLV7	No	-	
8	3DC	RESET	No	-	
9	3D8	INT9	No	-	
10	3D4	EXCEPTION	No	-	
11	3D0	NMI	No	-	Non-Maskable Interrupt
12	3CC	DLY	No	12	Delayed Interrupt
13	3C8	RC_TIMER	No	13	RC Timer
14	3C4	MC_TIMER	No	14	Main Clock Timer
15	3C0	SC_TIMER	No	15	Sub Clock Timer
16	3BC	RESERVED	No	16	Reserved
17	3B8	EXTINT0	Yes	17	External Interrupt 0
18	3B4	EXTINT1	Yes	18	External Interrupt 1
19	3B0	EXTINT2	Yes	19	External Interrupt 2
20	3AC	EXTINT3	Yes	20	External Interrupt 3
21	3A8	EXTINT4	Yes	21	External Interrupt 4
22	3A4	EXTINT5	Yes	22	External Interrupt 5
23	3A0	EXTINT6	Yes	23	External Interrupt 6
24	39C	EXTINT7	Yes	24	External Interrupt 7
25	398	CAN0	No	25	CAN Controller 0
26	394	CAN1	No	26	CAN Controller 1
27	390	PPG0	Yes	27	Programmable Pulse Generator 0
28	38C	PPG1	Yes	28	Programmable Pulse Generator 1
29	388	PPG2	Yes	29	Programmable Pulse Generator 2
30	384	PPG3	Yes	30	Programmable Pulse Generator 3
31	380	PPG4	Yes	31	Programmable Pulse Generator 4
32	37C	PPG5	Yes	32	Programmable Pulse Generator 5

Vector number	Offset in vector table	Vector name	Cleared by DMA	Index in ICR to program	Description
33	378	PPG6	Yes	33	Programmable Pulse Generator 6
34	374	PPG7	Yes	34	Programmable Pulse Generator 7
35	370	RLT0	Yes	35	Reload Timer 0
36	36C	RLT1	Yes	36	Reload Timer 1
37	368	RLT2	Yes	37	Reload Timer 2
38	364	RLT3	Yes	38	Reload Timer 3
39	360	PPGRLT	Yes	39	Reload Timer 6 - dedicated for PPG
40	35C	ICU0	Yes	40	Input Capture Unit 0
41	358	ICU1	Yes	41	Input Capture Unit 1
42	354	ICU2	Yes	42	Input Capture Unit 2
43	350	ICU3	Yes	43	Input Capture Unit 3
44	34C	ICU4	Yes	44	Input Capture Unit 4
45	348	ICU5	Yes	45	Input Capture Unit 5
46	344	ICU6	Yes	46	Input Capture Unit 6
47	340	ICU7	Yes	47	Input Capture Unit 7
48	33C	OCU0	Yes	48	Output Compare Unit 0
49	338	OCU1	Yes	49	Output Compare Unit 1
50	334	OCU2	Yes	50	Output Compare Unit 2
51	330	OCU3	Yes	51	Output Compare Unit 3
52	32C	FRT0	Yes	52	Free Running Timer 0
53	328	FRT1	Yes	53	Free Running Timer 1
54	324	RTC0	No	54	Real Timer Clock
55	320	CAL0	No	55	Clock Calibration Unit
56	31C	SG0	No	56	Sound Generator 0
57	318	SG1	No	57	Sound Generator 1
58	314	IIC0	Yes	58	I2C interface
59	310	ADC0	Yes	59	A/D Converter
60	30C	ALARM0	No	60	Alarm Comparator 0
61	308	ALARM1	No	61	Alarm Comparator 1
62	304	LINR0	Yes	62	LIN USART 0 RX
63	300	LINT0	Yes	63	LIN USART 0 TX
64	2FC	LINR1	Yes	64	LIN USART 1 RX
65	2F8	LINT1	Yes	65	LIN USART 1 TX
66	2F4	LINR2	Yes	66	LIN USART 2 RX
67	2F0	LINT2	Yes	67	LIN USART 2 TX
68	2EC	LINR4	Yes	68	LIN USART 4 RX

Vector number	Offset in vector table	Vector name	Cleared by DMA	Index in ICR to program	Description
69	2E8	LINT4	Yes	69	LIN USART 4 TX
70	2E4	LINR5	Yes	70	LIN USART 5 RX
71	2E0	LINT5	Yes	71	LIN USART 5 TX
72	2DC	MAIN_FLASH	No	72	Main Flash memory interrupt

■ ELECTRICAL CHARACTERISTICS

1. Absolute Maximum Ratings

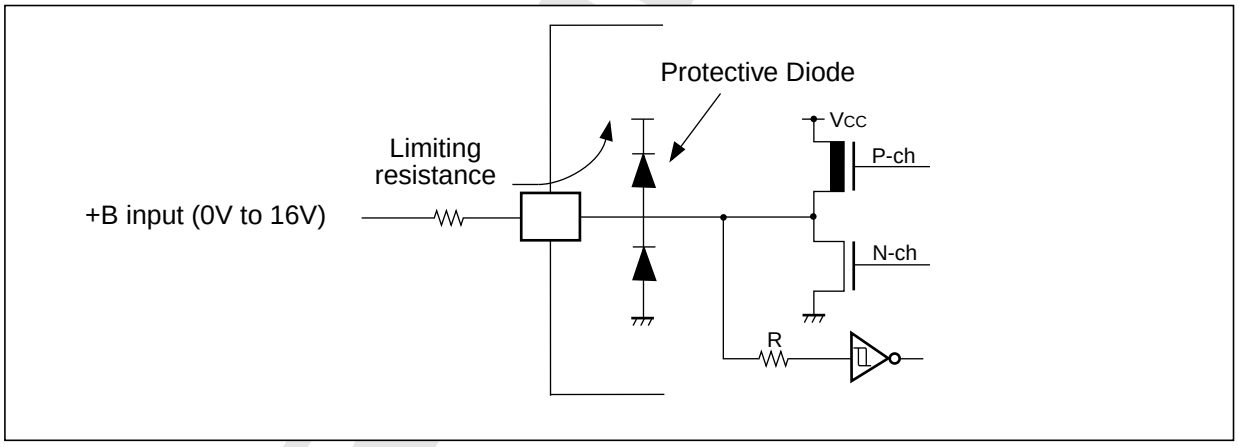
Parameter	Symbol	Rating		Unit	Remarks
		Min	Max		
Power supply voltage	V_{CC}	V_{SS} - 0.3	V_{SS} + 6.0	V	
	AV_{CC}	V_{SS} - 0.3	V_{SS} + 6.0	V	V_{CC} = AV_{CC} *1
	AVRH, AVRL	V_{SS} - 0.3	V_{SS} + 6.0	V	$AV_{CC} \geq$ AVRH, $AV_{CC} \geq$ AVRL, AVRH > AVRL, AVRL $\geq AV_{SS}$
	DV_{CC}	V_{SS} - 0.3	V_{SS} + 6.0	V	*2
Input voltage	V_I	V_{SS} - 0.3	V_{SS} + 6.0	V	$\leq$ (D)V_{CC} + 0.3V *3
Output voltage	V_O	V_{SS} - 0.3	V_{SS} + 6.0	V	$\leq$ (D)V_{CC} + 0.3V *3
Maximum Clamp Current	I_{CLAMP}	-4.0	+4.0	mA	Applicable to general purpose I/O pins *4
Total Maximum Clamp Current	$\Sigma\|I_{CLAMP}\|$	-	40	mA	Applicable to general purpose I/O pins *4
“L” level maximum output current	I_{OL1}	-	15	mA	Normal outputs
“L” level average output current	I_{OLAV1}	-	5	mA	Normal outputs
“L” level maximum output current	I_{OL2}	-	40	mA	High current outputs
“L” level average output current	I_{OLAV2}	-	30	mA	High current outputs
“L” level maximum overall output current	ΣI_{OL1}	-	100	mA	Normal outputs
“L” level maximum overall output current	ΣI_{OL2}	-	330	mA	High current outputs
“L” level average overall output current	ΣI_{OLAV1}	-	50	mA	Normal outputs
“L” level average overall output current	ΣI_{OLAV2}	-	250	mA	High current outputs
“H” level maximum output current	I_{OH1}	-	-15	mA	Normal outputs
“H” level average output current	I_{OHAV1}	-	-5	mA	Normal outputs
“H” level maximum output current	I_{OH2}	-	-40	mA	High current outputs
“H” level average output current	I_{OHAV2}	-	-30	mA	High current outputs
“H” level maximum overall output current	ΣI_{OH1}	-	-100	mA	Normal outputs
“H” level maximum overall output current	ΣI_{OH2}	-	-330	mA	High current outputs
“H” level average overall output current	ΣI_{OHAV1}	-	-50	mA	Normal outputs
“H” level average overall output current	ΣI_{OHAV2}	-	-250	mA	High current outputs
Power consumption	P_D	-	600	mW	MB96F348H/T
Operating temperature	T_A	0	+70	C	MB96V300
		-40	+105	C	MB96F348H/T
		-40	+125	C	other devices
Operating temperature at Flash erase/ write	T_{AF}	-40	+105	C	
Storage temperature	T_{STG}	-55	+150	C	

*1: Set AV_{CC} and V_{CC} to the same voltage. Make sure that AV_{CC} does not exceed V_{CC} and that the voltage at the analog inputs does not exceed AV_{CC} when the power is switched on.

*2: If DV_{CC} is powered before V_{CC}, then SMC I/O pin state is undefined. To avoid this, we recommend to always power V_{CC} before DV_{CC}. It is not necessary to set V_{CC} and DV_{CC} to the same value.

*3: V_I and V_O should not exceed (D)V_{CC} + 0.3 V. V_I should not exceed the specified ratings. However if the maximun current to/from a input is limited by some means with external components, the I_{CLAMP} rating supercedes the V_I rating. Input/output voltages of high current ports depend on DV_{CC}, of other ports on V_{CC}.

*4:
- Applicable to all general purpose I/O pins (GP00_0 to GP17_7)
- Use within recommended operating conditions.
- Use at DC voltage (current)
- The +B signal should always be applied a limiting resistance placed between the +B signal and the microcontroller.
- The value of the limiting resistance should be set so that when the +B signal is applied the input current to the microcontroller pin does not exceed rated values, either instantaneously or for prolonged periods.
- Note that when the microcontroller drive current is low, such as in the power saving modes, the +B input potential may pass through the protective diode and increase the potential at the VCC pin, and this may affect other devices.
- Note that if a +B signal is input when the microcontroller power supply is off (not fixed at 0 V) , the power supply is provided from the pins, so that incomplete operation may result.
- Note that if the +B input is applied during power-on, the power supply is provided from the pins and the resulting supply voltage may not be sufficient to operate the Power reset (except devices with persitant low voltage reset in internal vector mode).
- When using the LCD controller, No +B signal must be applied to any LCD I/O pin (including unused SEG/COM pins).
- Sample recommended circuits:



WARNING: Semiconductor devices can be permanently damaged by application of stress (voltage, current, temperature, etc.) in excess of absolute maximum ratings. Do not exceed these ratings.

2. Recommended Conditions

Parameter	Symbol	Value			Unit	Remarks
		Min	Typ	Max		
Power supply voltage	V_{CC}	3.0	-	5.5	V	
Smoothing capacitor at C pin	C_S	4.7	-	10	µF	Use a X7R Ceramic Capacitor
Operating temperature	T_A	0	-	+70	C	MB96V300
		-40	-	+105	C	MB96F348H/T
		-40	-	+125	C	MB96F3xx, MB963xx

WARNING: The recommended operating conditions are required in order to ensure the normal operation of the semiconductor device. All of the devices electrical characteristics are warranted when the device is operated within these ranges.

Always use semiconductor devices within their recommended operating condition ranges. Operation outside these ranges may adversely affect reliability and could result in device failure.

No warranty is made with respect to uses, operating conditions, or combinations not represented on the data sheet. Users considering application outside the listed conditions are advised to contact their FUJITSU representatives beforehand.

3. DC characteristics

(T_A = -40˚C to 125˚C, V_{CC} = AV_{CC}= 3.0V to 5.5V, DV_{CC} = 3.0V to 5.5V, V_{SS} = AV_{SS} = DV_{SS} = 0V)

Parameter	Symbol	Pin	Condition	Value			Unit	Remarks
				Min	Typ	Max		
Input “H” voltage	V_{IHS08}	-	-	0.8 V_{CC}	-	(D)V_{CC} + 0.3	V	Port inputs if CMOS Hysteresis 0.8/0.2 input is selected
	V_{IHS07}			0.7 V_{CC}	-	(D)V_{CC} + 0.3	V	Port inputs if CMOS Hysteresis 0.7/0.3 input is selected
	V_{IHSA}	-	-	0.8 V_{CC}	-	(D)V_{CC} + 0.3	V	Port inputs if AUTOMOTIVE Hysteresis input is selected
	V_{IHTTL}	-	-	2.0	-	(D)V_{CC} + 0.3	V	Port inputs if TTL input is selected
	V_{IHR}	-	-	0.8 V_{CC}	-	V_{CC} + 0.3	V	RSTX input pin (CMOS Hysteresis)
	V_{IHM}	-	-	V_{CC} - 0.3	-	V_{CC} + 0.3	V	MD input pin
Input “L” voltage	V_{ILS08}	-	-	V_{SS} - 0.3	-	0.2 (D)V_{CC}	V	Port inputs if CMOS Hysteresis 0.8/0.2 input is selected
	V_{ILS07}			V_{SS} - 0.3	-	0.3 (D)V_{CC}	V	Port inputs if CMOS Hysteresis 0.7/0.3 input is selected
	V_{ILSA}	-	-	V_{SS} - 0.3	-	0.5 (D)V_{CC}	V	Port inputs if AUTOMOTIVE Hysteresis input is selected
	V_{ILTTL}	-	-	V_{SS} - 0.3	-	0.8	V	Port inputs if TTL input is selected
	V_{ILR}	-	-	V_{SS} - 0.3	-	0.2 V_{CC}	V	RSTX input pin (CMOS Hysteresis)
	V_{ILM}	-	-	V_{SS} - 0.3	-	V_{SS} + 0.3	V	MD input pin

(T_A = -40˚C to 125˚C, V_{CC} = AV_{CC}= 3.0V to 5.5V, DV_{CC} = 3.0V to 5.5V, V_{SS} = AV_{SS} = DV_{SS} = 0V)

Parameter	Symbol	Pin	Condition	Value			Unit	Remarks
				Min	Typ	Max		
Output "H" voltage	V_{OH2}	Normal and High Current outputs	4.5V ≤ (D)V_{CC} ≤ 5.5V I_{OH} = -2mA 3.0V ≤ (D)V_{CC} < 4.5V I_{OH} = -1.6mA	(D)V_{CC} - 0.5	-	-	V	Driving strength set to 2mA
	V_{OH5}	Normal and High Current outputs	4.5V ≤ (D)V_{CC} ≤ 5.5V I_{OH} = -5mA 3.0V ≤ (D)V_{CC} < 4.5V I_{OH} = -3mA	(D)V_{CC} - 0.5	-	-	V	Driving strength set to 5mA
	V_{OH30}	High current outputs	4.5V ≤ DV_{CC} ≤ 5.5V I_{OH} = -30mA 3.0V ≤ DV_{CC} < 4.5V I_{OH} = -20mA	DV_{CC} - 0.5	-	-	V	Driving strength set to 30mA
	V_{OH3}	I^2C outputs	4.5V ≤ V_{CC} ≤ 5.5V I_{OH} = -3mA 3.0V ≤ V_{CC} < 4.5V I_{OH} = -2mA	V_{CC} - 0.5	-	-	V	
Output "L" voltage	V_{OL2}	Normal and High Current outputs	4.5V ≤ (D)V_{CC} ≤ 5.5V I_{OL} = +2mA 3.0V ≤ (D)V_{CC} < 4.5V I_{OL} = +1.6mA	-	-	0.4	V	Driving strength set to 2mA
	V_{OL5}	Normal and High Current outputs	4.5V ≤ (D)V_{CC} ≤ 5.5V I_{OL} = +5mA 3.0V ≤ (D)V_{CC} < 4.5V I_{OL} = +3mA	-	-	0.4	V	Driving strength set to 5mA
	V_{OL30}	High current outputs	4.5V ≤ DV_{CC} ≤ 5.5V I_{OL} = +30mA 3.0V ≤ DV_{CC} < 4.5V I_{OL} = +20mA	-	-	0.4	V	Driving strength set to 30mA
	V_{OL3}	I^2C outputs	4.5V ≤ V_{CC} ≤ 5.5V I_{OL} = +3mA 3.0V ≤ V_{CC} < 4.5V I_{OL} = +2mA	-	-	0.4	V	
Input leak current	I_{IL}	GPnn_m	DV_{CC} = V_{CC} = 5.5V V_{SS} < V_I < V_{CC}	-1	-	+1	µA	
Pull-up resistance	R_{UP}	GPnn_m, RSTX	-	25	50	100	kΩ	

(T_A = -40˚C to 125˚C, V_{CC} = AV_{CC}= 3.0V to 5.5V, DV_{CC} = 3.0V to 5.5V, V_{SS} = AV_{SS} = DV_{SS} = 0V)

Parameter	Symbol	Pin	Condition	Value			Unit	Remarks
				Min	Typ	Max		
Power supply current in Run modes*	I_{CCPLL}	V_{CC}	PLL Run mode with CLKB = CLKP1 = 56MHz, CLKP2 = 28MHz	-	45	60	mA	CLKMC, CLKRC and CLKSC active
			PLL Run mode with CLKB = CLKP1 = CLKP2 = 24MHz	-	20	26	mA	CLKMC, CLKRC and CLKSC active
			Writing/erasing FLASH memory in PLL Run mode with CLKB = CLKP1 = 56MHz, CLKP2 = 28MHz	-	60	100	mA	CLKMC, CLKRC and CLKSC active, programming of one Flash macro at a time only
	I_{CCMAIN}		Main Run mode with CLKB = CLKP1 = CLKP2 = 4MHz	-	5	8	mA	CLKPLL and CLKRC stopped
			Writing/erasing FLASH memory in Main Run mode with CLKB = CLKP1 = CLKP2 = 4MHz	-	20	48	mA	CLKPLL and CLKRC stopped, programming of one Flash macro at a time only
	I_{CCRCH}		RC Run mode with CLKB = CLKP1 = CLKP2 = 2MHz	-	3	6	mA	CLKMC, CLKPLL and CLKSC stopped
			Writing/erasing FLASH memory in RC Run mode with CLKB = CLKP1 = CLKP2 = 2MHz	-	18	46	mA	CLKMC, CLKPLL and CLKSC stopped, programming of one Flash macro at a time only
	I_{CCRCL}		RC Run mode with CLKB = CLKP1 = CLKP2 = 100kHz	-	0.5	3.5	mA	CLKMC, CLKPLL and CLKSC stopped
			Writing/erasing FLASH memory in RC Run mode with CLKB = CLKP1 = CLKP2 = 100kHz	-	15.5	43.5	mA	CLKMC, CLKPLL and CLKSC stopped, programming of one Flash macro at a time only
	I_{CCSUB}		Sub Run mode with CLKB = CLKP1 = CLKP2 = 32kHz	-	0.15	2.5	mA	CLKMC, CLKPLL and CLKRC stopped, no Flash programming/erasing allowed.

(T_A = -40˚C to 125˚C, V_{CC} = AV_{CC}= 3.0V to 5.5V, DV_{CC} = 3.0V to 5.5V, V_{SS} = AV_{SS} = DV_{SS} = 0V)

Parameter	Symbol	Pin	Condition	Value			Unit	Remarks
				Min	Typ	Max		
Power supply current in Sleep modes*	I_{CCSPLL}	V_{CC}	PLL Sleep mode with CLKP1 = 56MHz, CLKP2 = 28MHz, T_A=+25˚C	-	10	15	mA	CLKRC and CLKSC stopped
	$I_{CCSMAIN}$		Main Sleep mode with CLKP1 = CLKP2 = 4MHz, T_A=+25˚C	-	1.1	2	mA	CLKPLL CLKRC and CLKSC stopped
	I_{CCSRCH}		RC Sleep mode with CLKP1 = CLKP2 = 2MHz, T_A=+25˚C	-	0.8	1.5	mA	CLKMC, CLKPLL and CLKSC stopped
	I_{CCSRCL}		RC Sleep mode with CLKP1 = CLKP2 = 100kHz, T_A=+25˚C	-	0.35	0.7	mA	CLKMC, CLKPLL and CLKSC stopped
	I_{CCSSUB}		Sub Sleep mode with CLKP1 = CLKP2 = 32kHz, T_A=+25˚C	-	0.08	0.2	mA	CLKMC, CLKPLL and CLKRC stopped
Power supply current in Timer modes*	I_{CCTPLL}	V_{CC}	PLL Timer mode with CLKMC = 4MHz, CLKPLL = 56MHz, T_A=+25˚C	-	1.5	2.5	mA	CLKRC and CLKSC stopped
	$I_{CCTMAIN}$		Main Timer mode with CLKMC = 4MHz, T_A=+25˚C	-	0.35	0.6	mA	CLKPLL CLKRC and CLKSC stopped
	I_{CCTRCH}		RC Timer mode with CLKRC = 2MHz, T_A=+25˚C	-	0.35	0.6	mA	CLKMC, CLKPLL and CLKSC stopped
	I_{CCTRCL}		RC Timer mode with CLKRC = 100kHz, T_A=+25˚C	-	0.3	0.55	mA	CLKMC, CLKPLL and CLKSC stopped
	I_{CCTSUB}		Sub Timer mode with CLKSC = 32kHz, T_A=+25˚C	-	0.05	0.15	mA	CLKMC, CLKPLL and CLKRC stopped
Power supply current in Stop mode*	I_{CCH}	V_{CC}	At Stop Mode, T_A=+25˚C	-	0.04	0.1	mA	
Input capacitance	C_{IN}	Other than C, AV_{CC}, AV_{SS}, AVRH, AVRL, V_{CC}, V_{SS}, DV_{CC}, DV_{SS}	-	-	5	15	pF	

* The power supply current is measured with a 4MHz external clock connected to the Main oscillator and a 32kHz external clock connected to the Sub oscillator, low voltage detector disabled.

Input/output voltages of high current ports depend on DV_{CC}, of other ports on V_{CC}.

Note: Certain devices of MB96F348 have a higher current consumption than stated in the table above:

- MB96F348HSA and MB96F348TWA: additional ~140 µA in all operation modes
- MB96F348HWA: additional ~280 µA in all operation modes

4. AC Characteristics

(1) Clock timing

(T_A = -40°C to 125°C, V_{CC} = AV_{CC}= 3.0V to 5.5V, DV_{CC} = 3.0V to 5.5V, V_{SS} = AV_{SS} = DV_{SS} = 0V)

Parameter	Symbol	Pin	Value			Unit	Remarks
			Min	Typ	Max		
Clock frequency	f_C	X0, X1	3	-	16	MHz	When using an oscillation circuit, PLL off
			3.5	-	16	MHz	When using an oscillation circuit, PLL on
		X0, X1	3	-	32	MHz	When using an external clock, PLL off
			3.5	-	32	MHz	When using an external clock, PLL on
	f_{CL}	X0A, X1A	-	32.768	100	kHz	
	f_{CR}	-	50	100	200	kHz	When using slow frequency of RC oscillator
			1	2	4	MHz	When using fast frequency of RC oscillator
Input clock pulse width	P_{WH}, P_{WL}	X0	10	-	-	ns	Duty ratio is about 30% to 70%
	P_{WHL}, P_{WLL}	X0A	5	-	-	µs	
Input clock rise and falltime	t_{CR}, t_{CF}	X0	-	-	5	ns	When using external clock
Internal CPU clock frequency (Clock CLKB), internal peripheral clock frequency (Clock CLKP1)	f_{CLKB}, f_{CLKP1}	-	-	-	56	MHz	
Internal peripheral clock frequency (Clock CLKP2)	f_{CLKP2}	-	-	-	32	MHz	
Internal operating clock cycle time	t_{CP}	-	16.125	-	-	ns	

(2) External Reset timing

TBD

(3) Power On Reset timing

TBD

(4) Clock Output timing

TBD

(5) External Bus timing

TBD

(6) USART timing

TBD

(7) External Interrupt timing

TBD

(8) Timer related resource input timing

TBD

(9) Timer related resource output timing

TBD

(10) I2C Timing

TBD

5. A/D Converter

(T_A = -40 ˚C to +125 ˚C, 3.0 V ≤ AVRH - AVRL, V_{CC} = AV_{CC} = 3.0V - 5.5V, V_{SS} = AV_{SS} = 0V)

Parameter	Symbol	Pin	Value			Unit	Remarks
			Min	Typ	Max		
Resolution	-	-	-	-	10	bit	
Total error	-	-	-3	-	+3	LSB	
Nonlinearity error	-	-	-2.5	-	+2.5	LSB	
Differential nonlinearity error	-	-	-1.9	-	+1.9	LSB	
Zero reading voltage	V_{OT}	ANn	AVRL - 1.5	AVRL+ 0.5	AVRL + 2.5	LSB	
Full scale reading voltage	V_{FST}	ANn	AVRH - 3.5	AVRH - 1.5	AVRH + 0.5	LSB	
Compare time	-	-	1.0	-	16,500	µs	4.5V ≤ AV_{CC} ≤ 5.5V
			2.0	-	-	µs	3.0V ≤ AV_{CC} < 4.5V
Sampling time	-	-	0.5	-	-	µs	4.5V ≤ AV_{CC} ≤ 5.5V
			1.2	-	-	µs	3.0V ≤ AV_{CC} < 4.5V
Analog port input current	I_{AIN}	ANn	-1	-	+1	µA	T_A = 25 ˚C
			-3	-	+3	µA	T_A = 125 ˚C
Analog input voltage range	V_{AIN}	ANn	AVRL	-	AVRH	V	
Reference voltage range	AVRH	AVRH/ AVRH2	0.75 AVcc	-	AVcc	V	
	AVRL	AVRL	AV_{SS}	-	0.25 AV_{CC}	V	
Power supply current	I_A	AVcc	-	2.5	5	mA	AC Converter active
	I_{AH}	AVcc	-	-	5	µA	AD Converter not operated
Reference voltage current	I_R	AVRH	-	0.7	1	mA	AC Converter active
	I_{RH}	AVRH	-	-	5	µA	AD Converter not operated
Offset between input channels	-	ANn	-	-	TBD	LSB	

6. Low Voltage Detector

(T_A = -40 ˚C to +125 ˚C, V_{CC} = 3.0V - 5.5V, V_{SS} = 0V)

Parameter	Symbol	Pin	Value			Unit	Remarks
			Min	Typ	Max		
Power supply current	I_{CCLVD}	V_{CC}	-	70	100	µA	Low voltage detector enabled (RCR:LVDE='1')

7. Alarm Comparator

(T_A = -40 ˚C to +125 ˚C, V_{CC} = AV_{CC} = 3.0V - 5.5V, V_{SS} = AV_{SS} = 0V)

Parameter	Symbol	Pin	Value			Unit	Remarks
			Min	Typ	Max		
Power supply current	I_{A5ALMF}	AV_{CC}	-	20	70	µA	Alarm comparator enabled in fast mode (one channel)
	I_{A5ALMS}		-	3	10	µA	Alarm comparator enabled in slow mode (one channel)
	I_{A5ALMH}		-	-	5	µA	Alarm comparator disabled

8. LCD

TBD

■ EXAMPLE CHARACTERISTICS

TBD

■ ORDERING INFORMATION

MCU with CAN controller

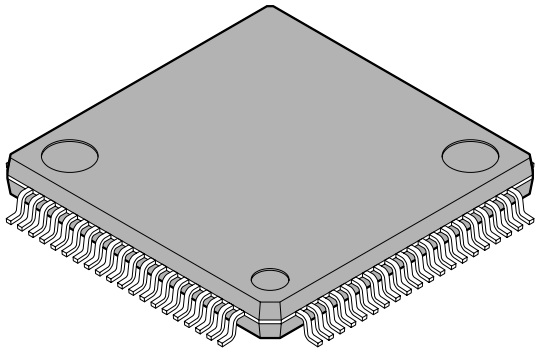
Part number	Satellite flash memory	Subclock	Persistant Low Voltage Reset	Package	Remarks
MB96F326YSA PMC-G(S)E2	No	No	Yes	80 pin Plastic LQFP (FPT-80P-M21)	
MB96F326RSA PMC-G(S)E2			No		
MB96F326YWA PMC-G(S)E2		Yes	Yes		
MB96F326RWA PMC-G(S)E2			No		
MB96F346YSA PQC-G(S)E2	No	No	Yes	100 pin Plastic QFP (FPT-100P-M22)	
MB96F346RSA PQC-G(S)E2			No		
MB96F346YWA PQC-G(S)E2		Yes	Yes		
MB96F346RWA PQC-G(S)E2			No		
MB96F346YSA PMC-G(S)E2		No	Yes	100 pin Plastic LQFP (FPT-100P-M20)	
MB96F346RSA PMC-G(S)E2			No		
MB96F346YWA PMC-G(S)E2		Yes	Yes		
MB96F346RWA PMC-G(S)E2			No		
MB96F347YSA PQC-G(S)E2	No	No	Yes	100 pin Plastic QFP (FPT-100P-M22)	
MB96F347RSA PQC-G(S)E2			No		
MB96F347YWA PQC-G(S)E2		Yes	Yes		
MB96F347RWA PQC-G(S)E2			No		
MB96F347YSA PMC-G(S)E2		No	Yes	100 pin Plastic LQFP (FPT-100P-M20)	
MB96F347RSA PMC-G(S)E2			No		
MB96F347YWA PMC-G(S)E2		Yes	Yes		
MB96F347RWA PMC-G(S)E2			No		
MB96F348YSA PQC-G(S)E2	No	No	Yes	100 pin Plastic QFP (FPT-100P-M22)	
MB96F348RSA PQC-G(S)E2			No		
MB96F348YWA PQC-G(S)E2		Yes	Yes		
MB96F348RWA PQC-G(S)E2			No		
MB96F348YSA PMC-G(S)E2		No	Yes	100 pin Plastic LQFP (FPT-100P-M20)	
MB96F348RSA PMC-G(S)E2			No		
MB96F348YWA PMC-G(S)E2		Yes	Yes		
MB96F348RWA PMC-G(S)E2			No		

Part number	Satellite flash memory	Subclock	Persistant Low Voltage Reset	Package	Remarks
MB96F348TSA PQC-G(S)E2	Yes	No	Yes	100 pin Plastic QFP (FPT-100P-M22)	
MB96F348HSA PQC-G(S)E2			No		
MB96F348TWA PQC-G(S)E2		Yes	Yes		
MB96F348HWA PQC-G(S)E2			No		
MB96F348TSA PMC-G(S)E2		No	Yes	100 pin Plastic LQFP (FPT-100P-M20)	
MB96F348HSA PMC-G(S)E2			No		
MB96F348TWA PMC-G(S)E2		Yes	Yes		
MB96F348HWA PMC-G(S)E2			No		
MB96F356YSA PMC-G(S)E2	No	No	Yes	64 pin Plastic LQFP (FPT-64P-M23)	
MB96F356RSA PMC-G(S)E2			No		
MB96F356YWA PMC-G(S)E2		Yes	Yes		
MB96F356RWA PMC-G(S)E2			No		
MB96F356YSA PMC1-G(S)E2		No	Yes	64 pin Plastic LQFP (FPT-64P-M24)	
MB96F356RSA PMC1-G(S)E2			No		
MB96F356YWA PMC1-G(S)E2		Yes	Yes		
MB96F356RWA PMC1-G(S)E2			No		
MB96F386YSA PMC-G(S)E2	No	No	Yes	120 pin Plastic LQFP (FPT-120P-M21)	
MB96F386RSA PMC-G(S)E2			No		
MB96F386YWA PMC-G(S)E2		Yes	Yes		
MB96F386RWA PMC-G(S)E2			No		
MB96F387YSA PMC-G(S)E2		No	Yes		
MB96F387RSA PMC-G(S)E2			No		
MB96F387YWA PMC-G(S)E2		Yes	Yes		
MB96F387RWA PMC-G(S)E2			No		
MB96V300RB-ES	Emulated by ext. RAM	Yes	No	416 pin Plastic BGA (BGA416-M02)	For evaluation

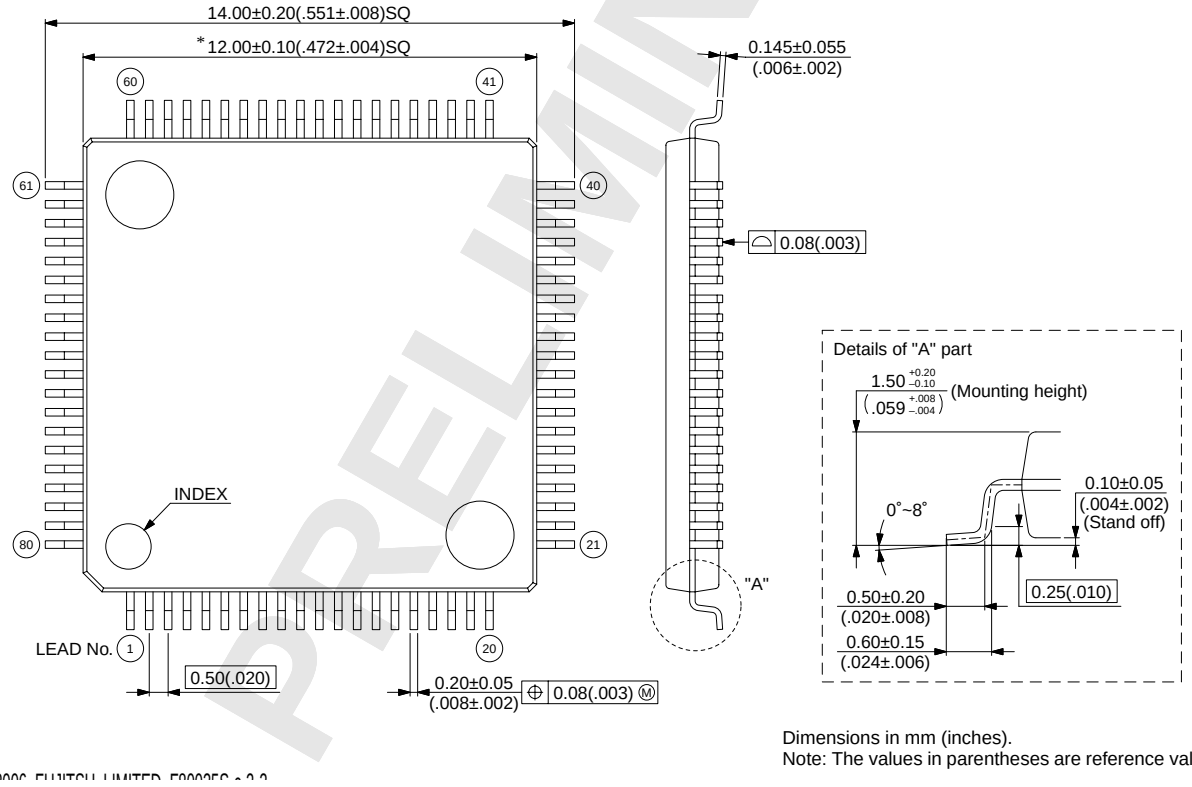
MCU without CAN controller

Part number	Satellite flash memory	Subclock	Package	Remarks
MB96F326ASA PMC-G(S)E2	No	No	80 pin Plastic LQFP (FPT-80P-M21)	
MB96F326AWA PMC-G(S)E2		Yes		
MB96F346ASA PQC-G(S)E2	No	No	100 pin Plastic QFP (FPT-100P-M22)	
MB96F346AWA PQC-G(S)E2		Yes		
MB96F346ASA PMC-G(S)E2		No	100 pin Plastic LQFP (FPT-100P-M20)	
MB96F346AWA PMC-G(S)E2		Yes		
MB96F347ASA PQC-G(S)E2	No	No	100 pin Plastic QFP (FPT-100P-M22)	
MB96F347AWA PQC-G(S)E2		Yes		
MB96F347ASA PMC-G(S)E2		No	100 pin Plastic LQFP (FPT-100P-M20)	
MB96F347AWA PMC-G(S)E2		Yes		
MB96F348ASA PQC-G(S)E2	No	No	100 pin Plastic QFP (FPT-100P-M22)	
MB96F348AWA PQC-G(S)E2		Yes		
MB96F348ASA PMC-G(S)E2		No	100 pin Plastic LQFP (FPT-100P-M20)	
MB96F348AWA PMC-G(S)E2		Yes		
MB96F348CSA PQC-G(S)E2	Yes	No	100 pin Plastic QFP (FPT-100P-M22)	
MB96F348CWA PQC-G(S)E2		Yes		
MB96F348CSA PMC-G(S)E2		No	100 pin Plastic LQFP (FPT-100P-M20)	
MB96F348CWA PMC-G(S)E2		Yes		
MB96F356ASA PMC-G(S)E2	No	No	64 pin Plastic QFP (FPT-64P-M23)	
MB96F356AWA PMC-G(S)E2		Yes		
MB96F356ASA PMC1-G(S)E2		No	64 pin Plastic LQFP (FPT-64P-M24)	
MB96F356AWA PMC1-G(S)E2		Yes		

■ Package dimensions of MB96(F)32x LQFP 80P

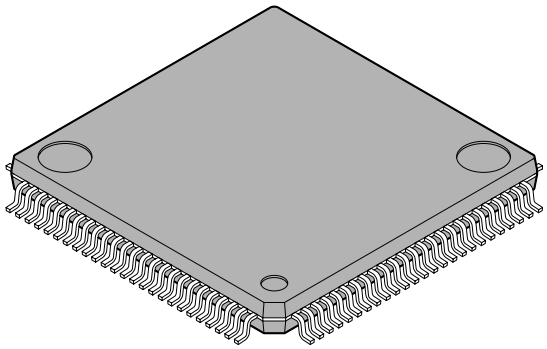
80-pin plastic LQFP		
	Lead pitch	0.50 mm
	Package width × package length	12 mm × 12 mm
	Lead shape	Gullwing
	Sealing method	Plastic mold
	Mounting height	1.70 mm Max
	Weight	0.47 g
(FPT-80P-M21)	Code (Reference)	P-LFQFP80-12×12-0.50

80-pin plastic LQFP
(FPT-80P-M21)

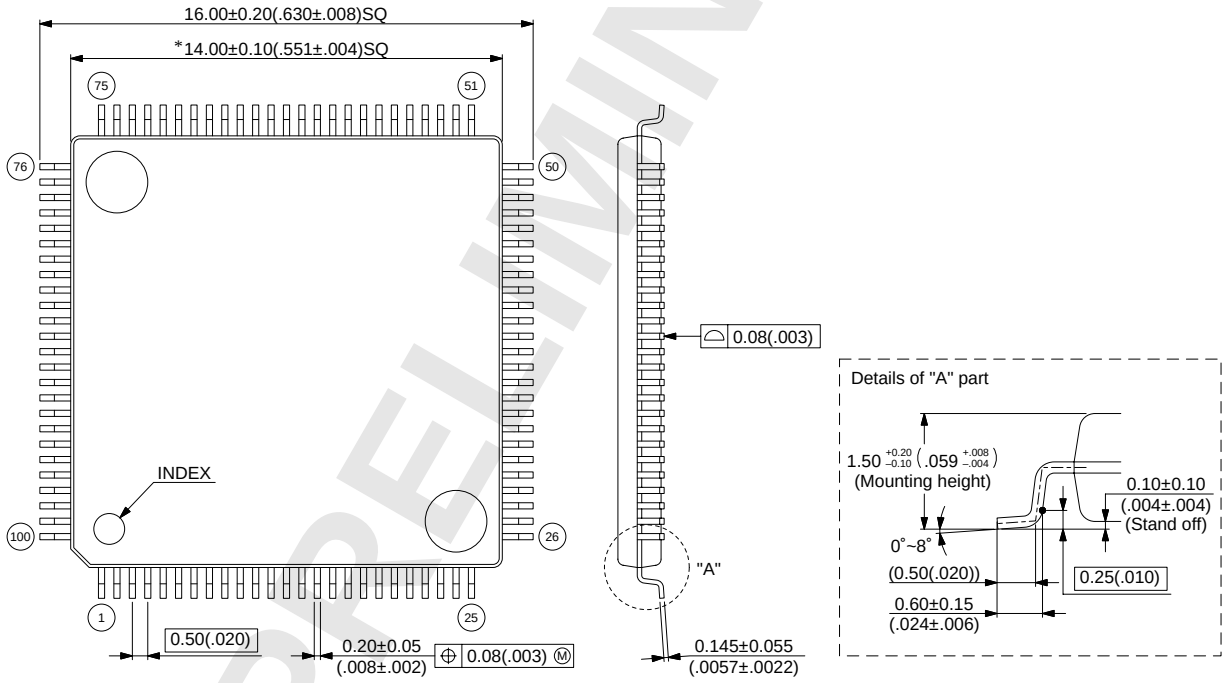


Dimensions in mm (inches).
Note: The values in parentheses are reference values.

■ PACKAGE DIMENSION MB96(F)34x LQFP 100P

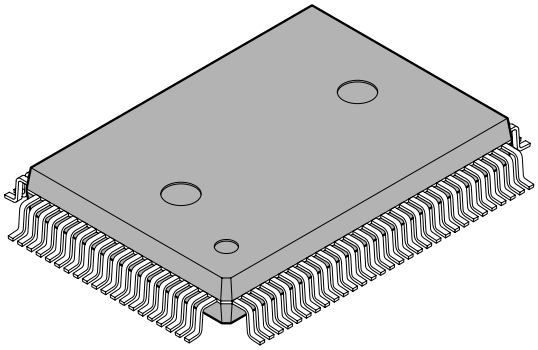
100-pin plastic LQFP		
 (FPT-100P-M20)	Lead pitch	0.50 mm
	Package width × package length	14.0 mm × 14.0 mm
	Lead shape	Gullwing
	Sealing method	Plastic mold
	Mounting height	1.70 mm Max
	Weight	0.65 g
	Code (Reference)	P-LFQFP100-14×14-0.50

100-pin plastic LQFP
(FPT-100P-M20)

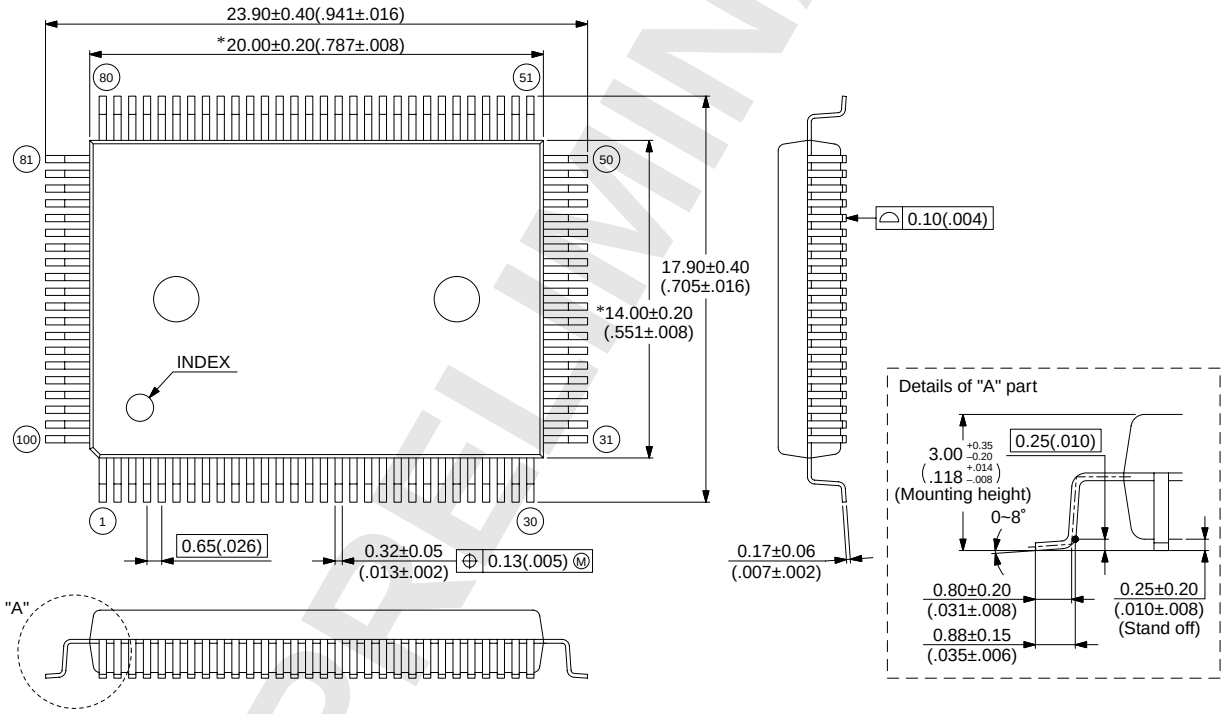


Dimensions in mm (inches).
Note: The values in parentheses are reference values

■ PACKAGE DIMENSION MB96(F)34x QFP 100P

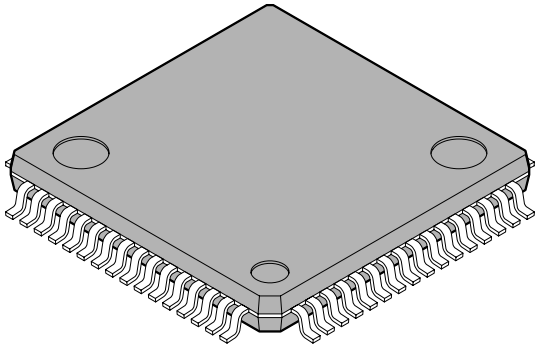
100-pin plastic QFP		
 (FPT-100P-M22)	Lead pitch	0.65 mm
	Package width × package length	14.00 × 20.00 mm
	Lead shape	Gullwing
	Sealing method	Plastic mold
	Mounting height	3.35 mm MAX
	Code (Reference)	P-QFP100-14×20-0.65

100-pin plastic QFP
(FPT-100P-M22)

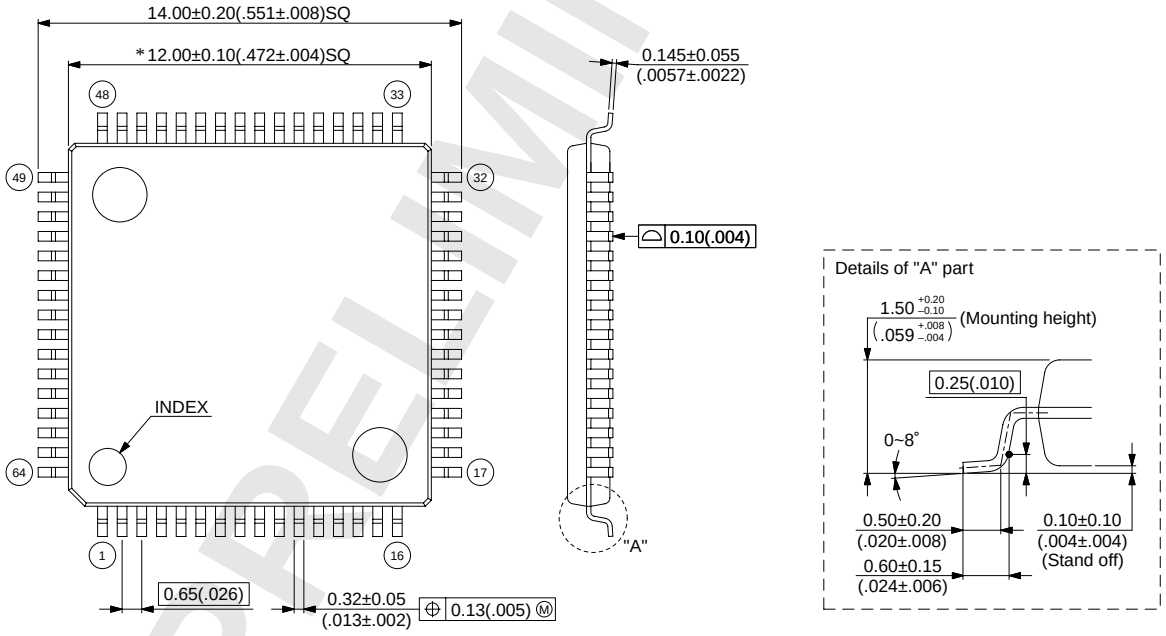


Dimensions in mm (inches).
Note: The values in parentheses are reference values.

■ PACKAGE DIMENSION MB96(F)35x LQFP 64P - M23

64-pin plastic LQFP		
 (FPT-64P-M23)	Lead pitch	0.65 mm
	Package width × package length	12 × 12 mm
	Lead shape	Gullwing
	Sealing method	Plastic mold
	Mounting height	1.70 mm MAX
	Code (Reference)	P-LQFP64-12×12-0.65

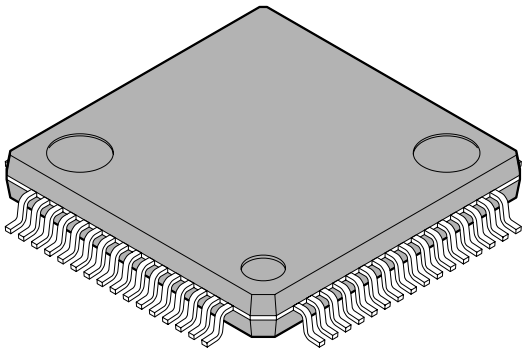
64-pin plastic LQFP
(FPT-64P-M23)



Dimensions in mm (inches).
Note: The values in parentheses are reference values.

■ PACKAGE DIMENSION MB96(F)35x LQFP 64P- M24

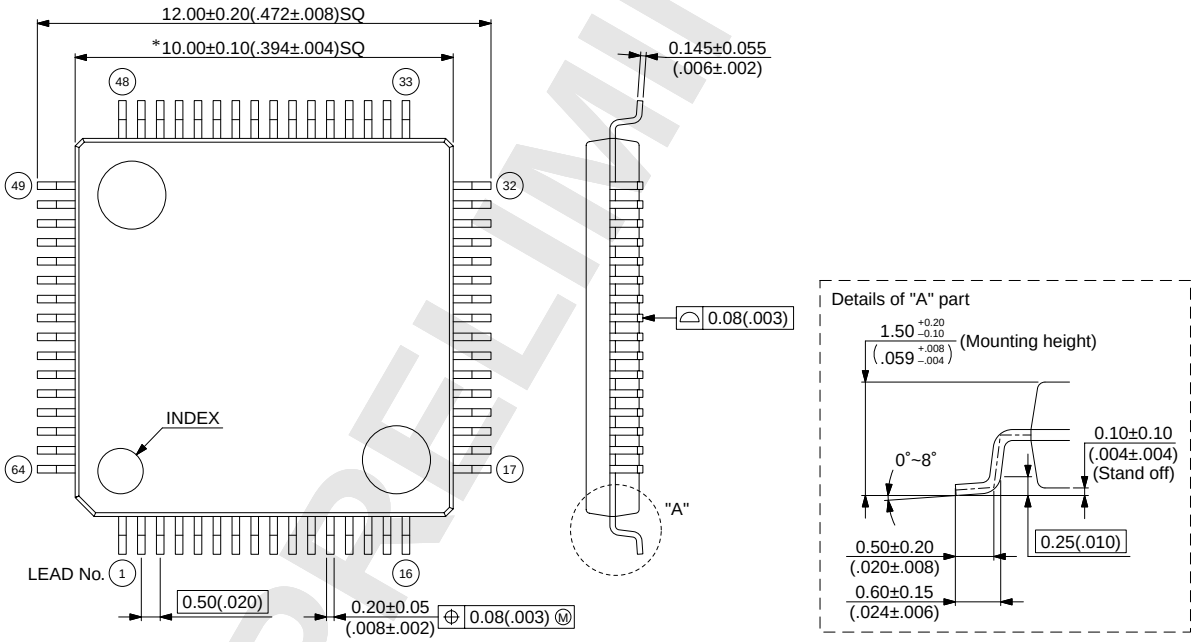
64-pin plastic LQFP



(FPT-64P-M24)

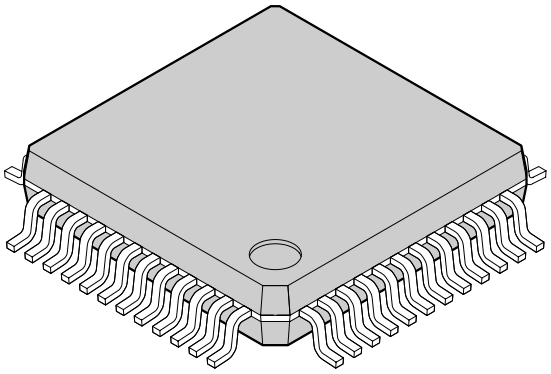
Lead pitch	0.50 mm
Package width × package length	10.0 × 10.0 mm
Lead shape	Gullwing
Sealing method	Plastic mold
Mounting height	1.70 mm MAX
Weight	0.32 g
Code (Reference)	P-LFQFP64-10×10-0.50

64-pin plastic LQFP
(FPT-64P-M24)

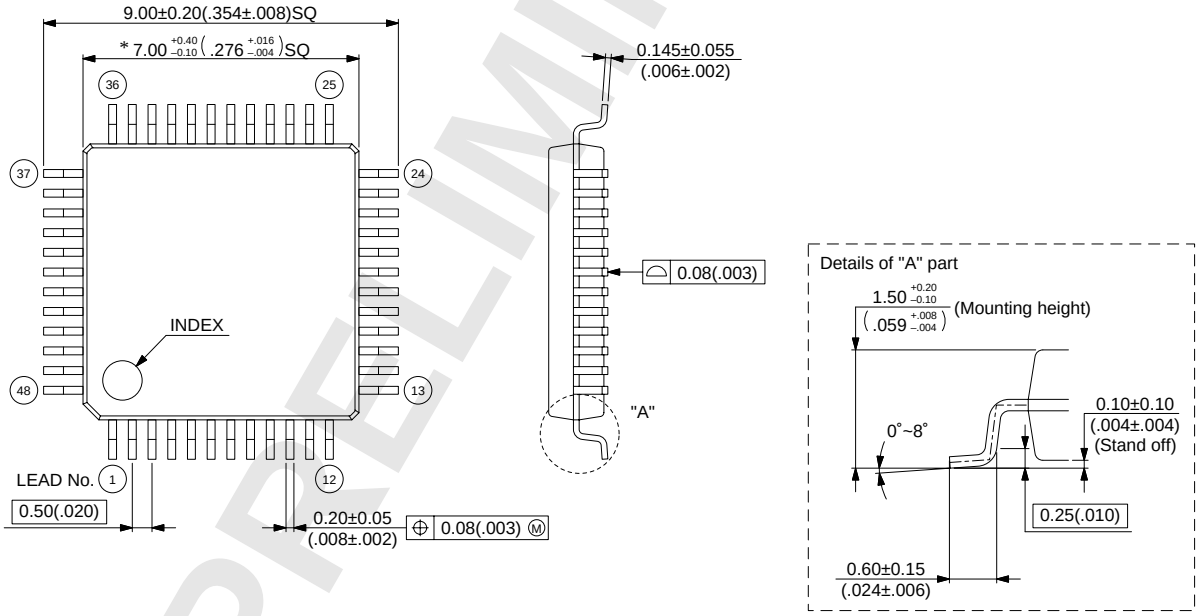


Dimensions in mm (inches).
Note: The values in parentheses are reference values

■ PACKAGE DIMENSION MB96(F)36x LQFP 48P

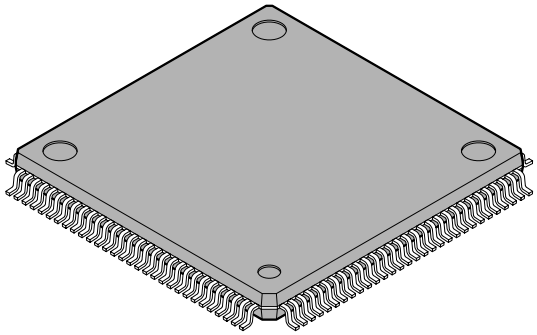
48-pin plastic LQFP		
 (FPT-48P-M26)	Lead pitch	0.50 mm
	Package width × package length	7 × 7 mm
	Lead shape	Gullwing
	Sealing method	Plastic mold
	Mounting height	1.70 mm MAX
	Weight	0.17 g
	Code (Reference)	P-LFQFP48-7×7-0.50

48-pin plastic LQFP
(FPT-48P-M26)

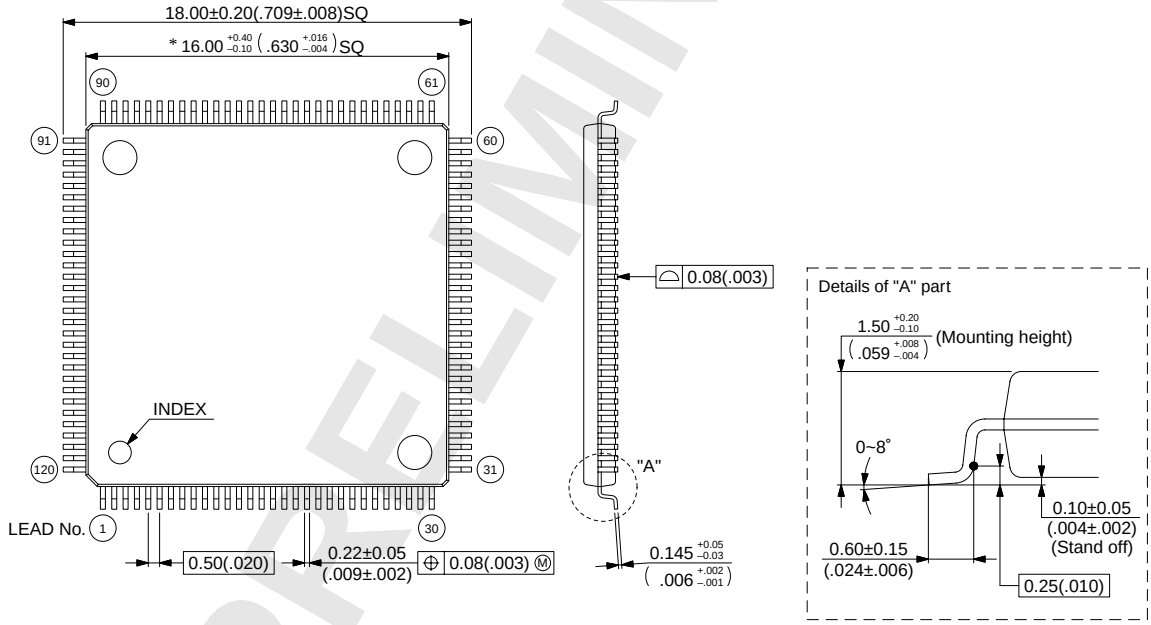


Dimensions in mm (inches).
Note: The values in parentheses are reference values.

■ PACKAGE DIMENSION MB96(F)38x LQFP 120P

120-pin plastic LQFP		
 (FPT-120P-M21)	Lead pitch	0.50 mm
	Package width × package length	16.0 × 16.0 mm
	Lead shape	Gullwing
	Sealing method	Plastic mold
	Mounting height	1.70 mm MAX
	Weight	0.88 g
	Code (Reference)	P-LFQFP120-16×16-0.50

120-pin plastic LQFP
(FPT-120P-M21)



Dimensions in mm (inches).
Note: The values in parentheses are reference values.

■ Revision History

Revision	Date	Modification
11	2006-09-27	“Description” and “Features”: “64MHz” replaced by “up to 64MHz”
11	2006-09-27	“Pin Description”: New circuit type “N” for I2C pins added. Cicruit types I, J, K and L: driving strength corrected from 4mA to 5/2mA
11	2006-09-27	“AD Converter”: Conversion and Sampling time definitions added
11	2006-09-29	Electrical characteristics updated
11	2006-10-01	In Memory map: bank configuration record are added
11	2006-10-04	MB96(F)38X pin description: Pin 93 and pin 103 corrected
12	2006-11-01	INT3_R1 function added, INTxR function renamed to INTx_R
12	2006-11-01	Electrical characteristics for RC clock modes updated (reduced values). Note for additional current of certain MB96F348 devices added
12	2006-11-15	changed max. frequence on cover page and feature list from 64MHz/15.6ns to 56MHz / 17.8ns to avoid confusion
13	2006-11-29	Made PLL unlock interrupt RESERVED.
13	2006-12-07	C-Pin Capacitor spec added (4.7-10uF X7R cap); Bank0/1 Flash -> Main/Sat Flash, ICC values slightly modified after corner sample review.
13	2006-12-11	F35X: 2 -> 4 UARTS, 0 -> 1 Real time clock
13	2006-12-11	IAIN=3uA max at high temp
13	2006-12-11	Max operating temperature for Flash erase/write 105 deg, 10.000 cycles
13	2006-12-11	64 pin package is “FPT-64P-M09” (wrong package was stated in lineup)
13	2006-12-11	All reloacated pin functions renamed from xxxR to xxx_R
14	2006-12-12	Removed small RAM size devices from RAMSTART table.
15	2006-12-13	Ordering information: All part numbers changed from “-HE2” to “E2”
15	2006-12-13	Block diagrams corrected: External bus pin names corrected, mode pins added, clock output pin names corrected. External bus address name changed: A0-A23 -> A00 - A23, AD0 - AD7 -> AD00 - AD07.
16	2007-01-22	Added MB96320. Modified pin-out and interrupt vector table of MB9635x. Modified pin out of MB9636x.
17	2007-01-23	Added package dimension MB96(F)356 LQFP 64P - M24
17	2007-01-26	Updated product line-up. Added MB96F326 and MB96F356 ordering information
18	2007-01-29	Corrected ordering information: MB96F326 PQC -> MB96F326 PMC

Revision	Date	Modification
19	2007-02-07	added MB96384, MB96385 to product lineup added line for ADC-Reference switch to product line up Pinout MB96(F)38x: added exception for MB96384/5
20	2007-02-12	Features: added 80-pin Product line up: removed MB96xxxA fixed formating for RTC Pin description MB96(F)326...: TTG10_R -> TTG11_R IO-Map: removed DMA-Turbo Register