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What is "Embedded - Microcontrollers"?

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

Applications of "Embedded - Microcontrollers"

Details	
Product Status	Obsolete
Core Processor	ARM® Cortex®-M0+
Core Size	32-Bit Single-Core
Speed	40MHz
Connectivity	CSIO, I²C, LINbus, SmartCard, UART/USART, USB
Peripherals	I²S, LCD, LVD, POR, PWM, WDT
Number of I/O	82
Program Memory Size	304KB (304K x 8)
Program Memory Type	FLASH
EEPROM Size	-
RAM Size	32K x 8
Voltage - Supply (Vcc/Vdd)	1.65V ~ 3.6V
Data Converters	A/D 23x12b
Oscillator Type	Internal
Operating Temperature	-40°C ~ 105°C (TA)
Mounting Type	Surface Mount
Package / Case	100-LQFP
Supplier Device Package	100-LQFP (14x14)
Purchase URL	https://www.e-xfl.com/product-detail/infineon-technologies/s6e1b84fhagv20000

Pin No.			Pin Name	I/O Circuit Type	Pin State Type
LQFP-120	LQFP-100	LQFP-80			
49	44	34	P4C TIOB2_0 SOT7_1 CEC0_0 INT12_0 SEG29	L	R
50	45	35	P4D TIOB3_0 SCK7_1 INT13_0 WKUP6 SEG28	L	T
51	-	-	P70 TIOA4_2 SCS71_1	F	I
52	-	-	P71 TIOB4_2 SCS72_1 INT13_2	F	J
53	-	-	P72 SIN2_0 TIOA6_0 INT14_2	F	J
54	-	-	P73 SOT2_0 TIOB6_0 INT15_2	F	J
55	-	-	P74 SCK2_0	F	I
56	46	36	PE0 MD1	C	D
57	47	37	MD0	J	M
58	48	38	PE2 X0	A	A
59	49	39	PE3 X1	A	B
60	50	40	VSS	-	-
61	51	41	VCC	-	-
62	52	42	P10 IC1_CLK_1 CTS1_1 AN00 SEG27	P	K
63	53	43	P11 IC1_VCC_1 SIN1_1 FRCK0_2 INT02_1 WKUP1 AN01 SEG26	P	W

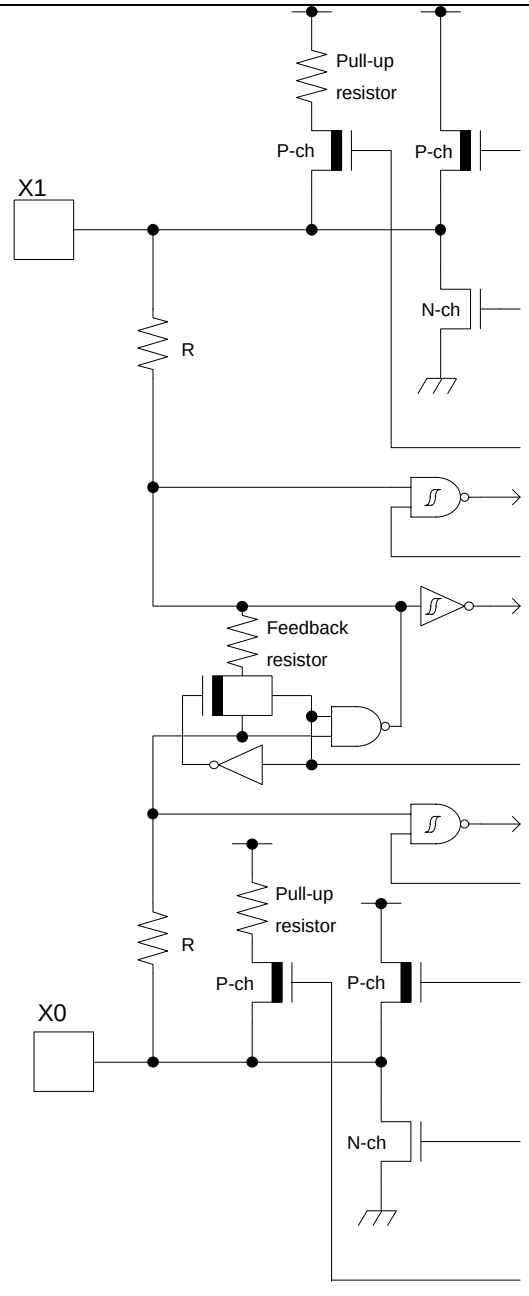
Pin No.			Pin Name	I/O Circuit Type	Pin State Type
LQFP-120	LQFP-100	LQFP-80			
64	54	44	P12 IC1_VPEN_1 SOT1_1 IC00_2 AN02 SEG25	P	K
65	55	45	P13 IC1_RST_1 SCK1_1 RTCCO_1 IC01_2 SUBOUT_1 AN03 SEG24	P	K
66	56	46	P14 IC1_DATA_1 RTS1_1 SIN0_1 IC02_2 INT03_1 AN04 SEG23	P	V
67	57	47	P15 IC1_CIN_1 SOT0_1 IC03_2 INT14_0 AN05 SEG22	P	V
68	58	48	P16 SCK0_1 INT15_0 AN06 SEG21	P	V
69	59	49	P17 SIN2_2 INT04_1 AN07 SEG20	P	V
70	60	50	AVCC	-	-
71	61	51	AVSS	-	-
72	62	52	AVRL	-	-
73	63	53	AVRH	-	-
74	64	54	P18 SOT2_2 AN08 SEG19	P	K
75	65	55	P19 SCK2_2 IC00_1 AN09 SEG18	P	K

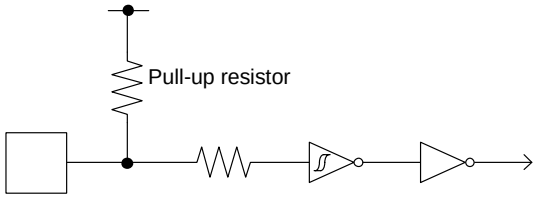
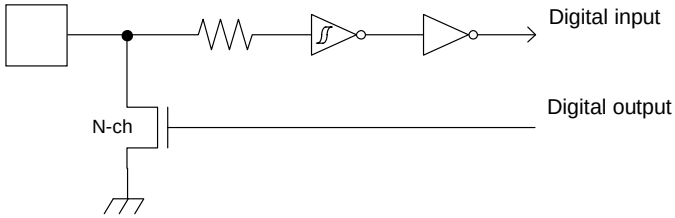
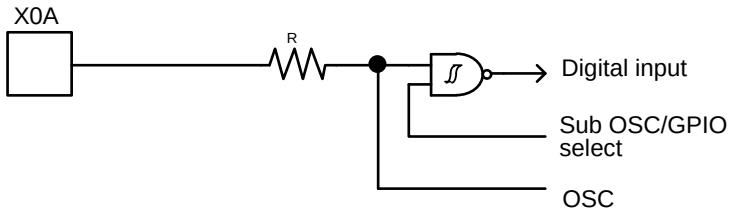
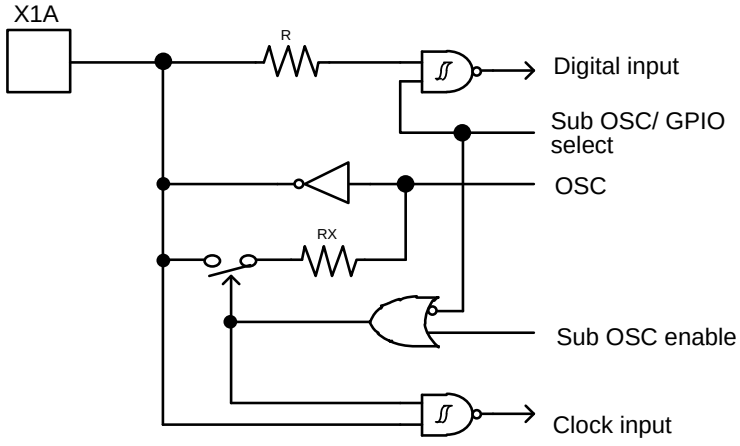
Pin No.			Pin Name	I/O Circuit Type	Pin State Type
LQFP-120	LQFP-100	LQFP-80			
100	85	-	P08 TIOA0_2 CTS4_2 INT16_0 AN23 SEG06	P	V
101	86	-	P09 TIOB0_2 RTS4_2 INT17_0 SEG05	L	S
102	87	67	P0A SIN4_0 INT00_2 WKUP5 IC0_CIN_0 UHCONX0 CEC0_1	I	O
103	88	68	P0B INT18_0 UDM0	K	Q
104	89	69	P0C INT19_0 UDP0	K	Q
105	90	70	P0D RTS4_0 TIOA3_2 INT20_0 SEG04 IC0_VPEN_0	L	S
106	91	71	P0E CTS4_0 TIOB3_2 INT21_0 SEG03 IC0_VCC_0	L	S
107	92	72	P0F CROUT_1 RTCCO_0 SUBOUT_0 MI2SMCK5_0 NMIX WKUP0 IC0_CLK_0 SCK4_0	I	G
108	-	-	P68 SCK3_0 TIOB7_2 INT12_2	F	J
109	-	-	P67 SOT3_0 TIOA7_2 INT22_0	F	J
110	-	-	P66 SIN3_0 INT11_2	F	J

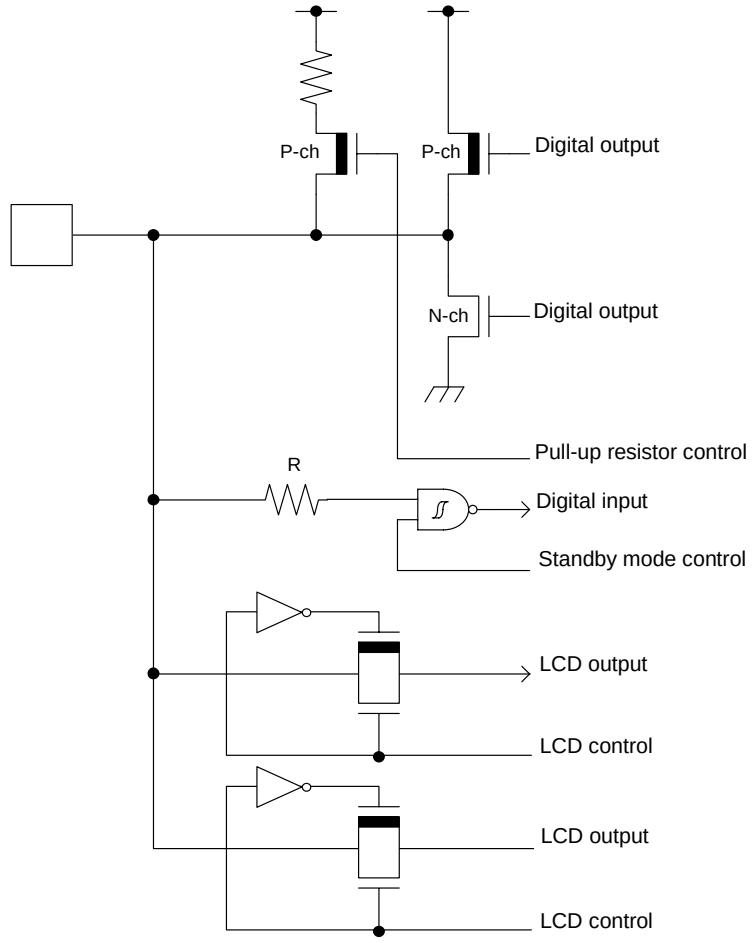
Pin Function	Pin Name	Function Description	Pin No.		
			LQFP-120	LQFP-100	LQFP-80
Multi-function Serial 5	SIN5_0 (MI2SDI5_0)	Multi-function serial interface ch.5 input pin. SIN5_0 pin operates as I2SIN5_0 when used as an I^2S pin (operation mode 2).	116	96	76
	SIN5_1		113	-	-
	SIN5_2		20	15	-
	SOT5_0 (SDA5_0) (MI2SDO5_0)	Multi-function serial interface ch.5 output pin. This pin operates as SOT5 when used as a UART/CSIO/LIN pin (operation mode 0 to 3) and as SDA5 when used as an I^2C pin (operation mode 4). SOT5_0 pin operates as MI2SDO5_0 when used as an I^2S pin (operation mode 2).	115	95	75
	SOT5_1 (SDA5_1)		112	-	-
	SOT5_2 (SDA5_2)		21	16	-
	SCK5_0 (SCL5_0) (MI2SCK5_0)	Multi-function serial interface ch.5 clock I/O pin. This pin operates as SCK5 when used as a CSIO (operation mode 2) and as SCL5 when used as an I^2C pin (operation mode 4). SCK5_0 pin operates as MI2SCK5_0 when used as an I^2S pin (operation mode 2).	114	94	74
	SCK5_1 (SCL5_1)		111	-	-
	SCK5_2 (SCL5_2)		22	17	-
	MI2SWS5_0	I^2S word select (WS) output	113	93	73
Multi-function Serial 6	SIN6_0	Multi-function serial interface ch.6 input pin. SIN6_1 pin operates as I2SIN6_1 when used as an I^2S pin (operation mode 2).	5	5	5
	SIN6_1 (MI2SDI6_1)		17	12	12
	SOT6_0 (SDA6_0)	Multi-function serial interface ch.6 output pin. This pin operates as SOT6 when used as a UART/CSIO/LIN pin (operation mode 0 to 3) and as SDA6 when used as an I^2C pin (operation mode 4). SOT6_1 pin operates as MI2SDO6_1 when used as an I^2S pin (operation mode 2).	6	6	6
	SOT6_1 (SDA6_1) (MI2SDO6_1)		16	11	11
	SCK6_0 (SCL6_0)	Multi-function serial interface ch.6 clock I/O pin. This pin operates as SCK6 when used as a CSIO (operation mode 2) and as SCL6 when used as an I^2C pin (operation mode 4). SCK6_6 pin operates as MI2SCK6_1 when used as an I^2S pin (operation mode 2).	7	7	7
	SCK6_1 (SCL6_1) (MI2SCK6_1)		15	10	10
	SCS60_1	Multi-function serial interface ch.6 serial chip select 0 input/output pin.	14	9	9
	SCS61_1	Multi-function serial interface ch.6 serial chip select 1 input/output pin.	18	13	-
	SCS62_1	Multi-function serial interface ch.6 serial chip select 2 input/output pin.	19	14	-
	MI2SWS6_1	I^2S word select (WS) output	14	9	9

Pin Function	Pin Name	Function Description	Pin No.		
			LQFP-120	LQFP-100	LQFP-80
Multi-function Serial 7	SIN7_0	Multi-function serial interface ch.7 input pin	11	-	-
	SIN7_1		48	43	33
	SIN7_2		117	97	77
	SOT7_0 (SDA7_0)	Multi-function serial interface ch.7 output pin. This pin operates as SOT7 when used as a UART/CSIO/LIN pin (operation mode 0 to 3) and as SDA7 when used as an I^2C pin (operation mode 4).	12	-	-
	SOT7_1 (SDA7_1)		49	44	34
	SOT7_2 (SDA7_2)		118	98	78
	SCK7_0 (SCL7_0)	Multi-function serial interface ch.7 clock I/O pin. This pin operates as SCK7 when used as a CSIO (operation mode 2) and as SCL7 when used as an I^2C pin (operation mode 4).	13	-	-
	SCK7_1 (SCL7_1)		50	45	35
	SCK7_2 (SCL7_2)		119	99	79
	SCS70_1	Multi-function serial interface ch.7 serial chip select 0 input/output pin.	47	42	32
	SCS71_1	Multi-function serial interface ch.7 serial chip select 1 input/output pin.	51	-	-
	SCS72_1	Multi-function serial interface ch.7 serial chip select 2 input/output pin.	52	-	-
Smart Card Interface 0	IC0_VCC_0	Smart card ch.0 power enable output pin	106	91	71
	IC0_VCC_1		33	28	-
	IC0_VPEN_0	Smart card ch.0 programming output pin	105	90	70
	IC0_VPEN_1		34	29	-
	IC0_RST_0	Smart card ch.0 reset output pin	114	94	74
	IC0_RST_1		35	30	-
	IC0_CIN_0	Smart card ch.0 insert detection input pin	102	87	67
	IC0_CIN_1		37	32	22
	IC0_CLK_0	Smart card ch.0 serial interface clock output pin	107	92	72
	IC0_CLK_1		32	27	-
	IC0_DATA_0	Smart card ch.0 serial interface data input/output pin	113	93	73
	IC0_DATA_1		36	31	21
Smart Card Interface 1	IC1_VCC_0	Smart card ch.1 power enable output pin	28	23	18
	IC1_VCC_1		63	53	43
	IC1_VPEN_0	Smart card ch.1 programming output pin	27	22	17
	IC1_VPEN_1		64	54	44
	IC1_RST_0	Smart card ch.1 reset output pin	26	21	16
	IC1_RST_1		65	55	45
	IC1_CIN_0	Smart card ch.1 insert detection input pin	24	19	14
	IC1_CIN_1		67	57	47
	IC1_CLK_0	Smart card ch.1 serial interface clock output pin	29	24	19
	IC1_CLK_1		62	52	42
	IC1_DATA_0	Smart card ch.1 serial interface data input/output pin	25	20	15
	IC1_DATA_1		66	56	46
USB	UDM0	USB device/host D – pin	103	88	68
	UDP0	USB device/host D + pin	104	89	69
	UHCONX0	USB external pull-up control pin	102	87	67

5. I/O Circuit Type

Type	Circuit	Remarks
A		It is possible to select the main oscillation / GPIO function When the main oscillation is selected. Oscillation feedback resistor : Approximately 1 MΩ With standby mode control When the GPIO is selected. CMOS level output. CMOS level hysteresis input With pull-up resistor control With standby mode control Pull-up resistor : Approximately 33 kΩ I_{OH} = -4mA, I_{OL}= 4 mA

Type	Circuit	Remarks
B		CMOS level hysteresis input Pull-up resistor : Approximately 33 kΩ
C		Open drain output CMOS level hysteresis input
D		・CMOS level output ・ Please refer to the "VBAT domain" setting of IO in of the “Peripheral Manual main part (MN710-00001)".
E		It is possible to select the sub oscillation / GPIO function When the sub oscillation is selected. ・Oscillation feedback resistor : Approximately 12 MΩ When the GPIO is selected. ・CMOS level hysteresis input ・Please refer to the "VBAT domain" setting of IO in the “Peripheral Manual main part (MN710-00001)" .

Type	Circuit	Remarks
M		・CMOS level output ・CMOS level hysteresis input ・With input control ・5 V tolerant ・LCD common output ・LCD segment output ・With pull-up resistor control ・With standby mode control ・Pull-up resistor : Approximately 33 kΩ ・I_{OH} = -4 mA, I_{OL} = 4 mA ・Available to control of PZR registers. ・When this pin is used as an I^2C pin, the digital output P-ch transistor is always off

Surface Mount Type

Surface mount packaging has longer and thinner leads than lead-insertion packaging, and therefore leads are more easily deformed or bent. The use of packages with higher pin counts and narrower pin pitch results in increased susceptibility to open connections caused by deformed pins, or shorting due to solder bridges.

You must use appropriate mounting techniques. Spansion recommends the solder reflow method, and has established a ranking of mounting conditions for each product. Users are advised to mount packages in accordance with Spansion ranking of recommended conditions.

Lead-Free Packaging

CAUTION: When ball grid array (BGA) packages with Sn-Ag-Cu balls are mounted using Sn-Pb eutectic soldering, junction strength may be reduced under some conditions of use.

Storage of Semiconductor Devices

Because plastic chip packages are formed from plastic resins, exposure to natural environmental conditions will cause absorption of moisture. During mounting, the application of heat to a package that has absorbed moisture can cause surfaces to peel, reducing moisture resistance and causing packages to crack. To prevent, do the following:

(1) Avoid exposure to rapid temperature changes, which cause moisture to condense inside the product.
Store products in locations where temperature changes are slight.

(2) Use dry boxes for product storage. Products should be stored below 70% relative humidity, and at temperatures between 5 ˚C and 30 ˚C.
When you open Dry Package that recommends humidity 40% to 70% relative humidity.

(3) When necessary, Spansion packages semiconductor devices in highly moisture-resistant aluminum laminate bags, with a silica gel desiccant. Devices should be sealed in their aluminum laminate bags for storage.

(4) Avoid storing packages where they are exposed to corrosive gases or high levels of dust.

Baking

Packages that have absorbed moisture may be de-moisturized by baking (heat drying). Follow the Spansion recommended conditions for baking.

Condition: 125°C/24 h

Static Electricity

Because semiconductor devices are particularly susceptible to damage by static electricity, you must take the following precautions:

(1) Maintain relative humidity in the working environment between 40% and 70%.
Use of an apparatus for ion generation may be needed to remove electricity.

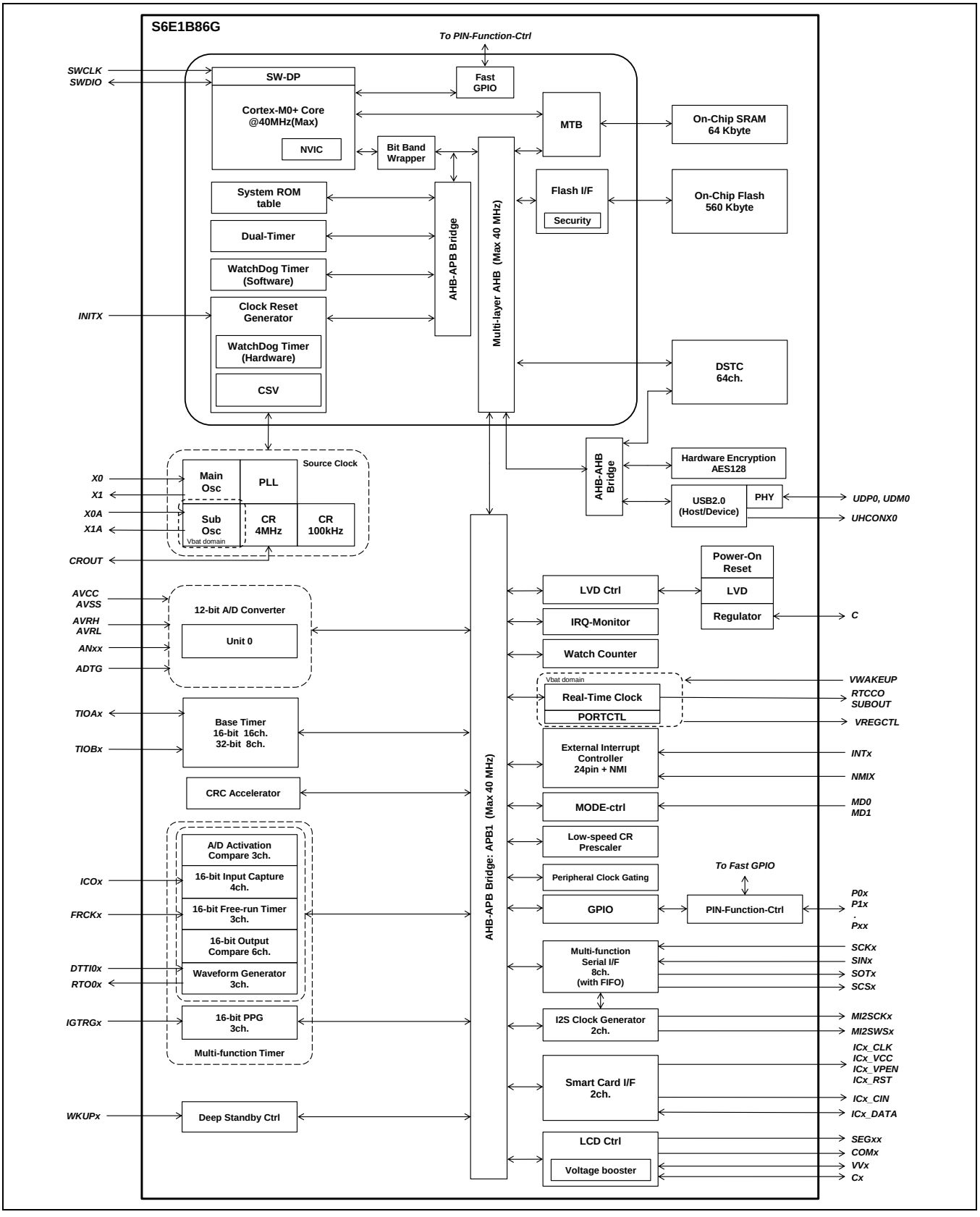
(2) Electrically ground all conveyors, solder vessels, soldering irons and peripheral equipment.

(3) Eliminate static body electricity by the use of rings or bracelets connected to ground through high resistance (on the level of 1 MΩ).
Wearing of conductive clothing and shoes, use of conductive floor mats and other measures to minimize shock loads is recommended.

(4) Ground all fixtures and instruments, or protect with anti-static measures.

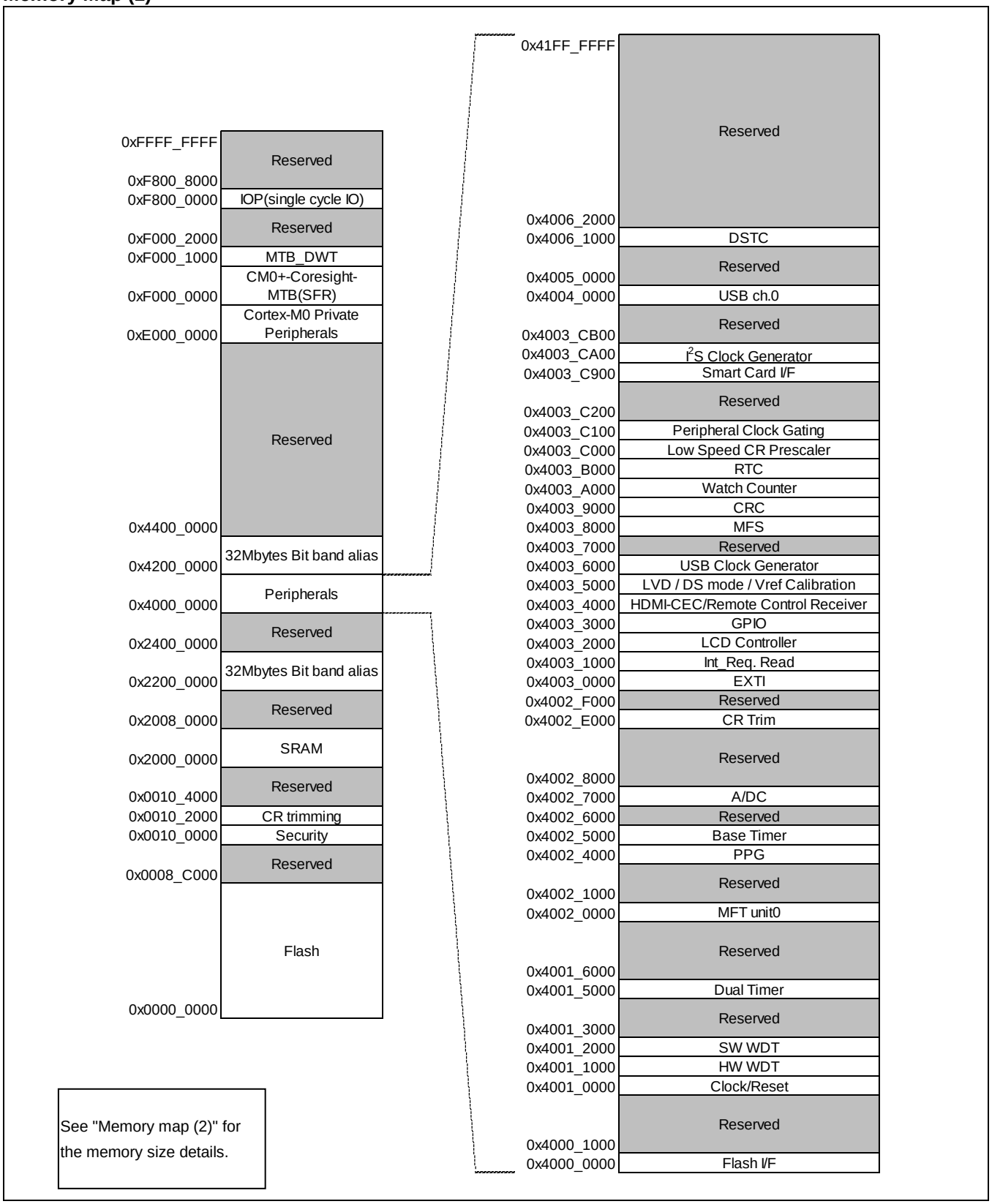
(5) Avoid the use of styrofoam or other highly static-prone materials for storage of completed board assemblies.

8. Block Diagram



9. Memory Map

Memory Map (1)



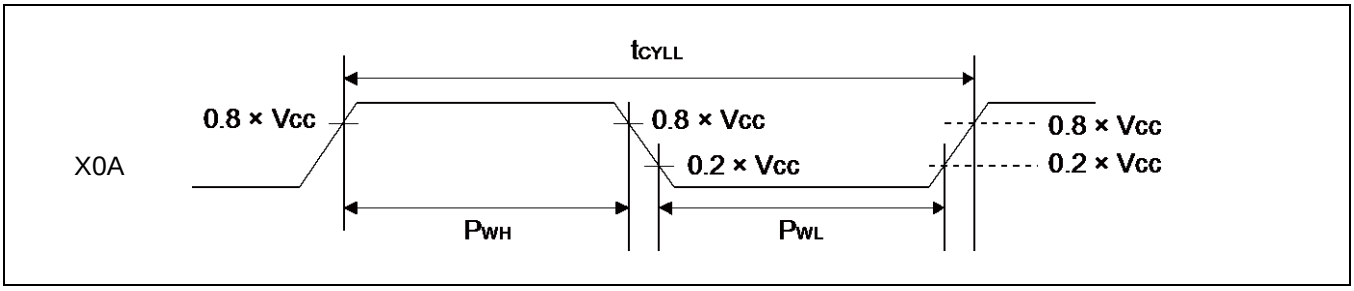
Pin Status Type	Function Group	State Upon Power-on Reset or Low-Voltage Detection	State at INITX Input	State Upon Device Internal Reset	State in Run Mode or Sleep Mode	State in Timer Mode, RTC Mode, or Stop Mode		State in Deep Standby RTC Mode or Deep Standby Stop Mode State		State when Return from Deep Standby Mode State
		Power Supply Unstable	Power Supply Stable	Power Supply Stable	Power Supply Stable	Power Supply Stable		Power Supply Stable		Power Supply Stable
		-	INITX=0	INITX=1	INITX=1	INITX=1		INITX=1		INITX=1
		-	-	-	-	SPL=0	SPL=1	SPL=0	SPL=1	-
O	CEC enabled	Setting disabled	Setting disabled	Setting disabled	Maintain previous state	Maintain previous state	Maintain previous state	Maintain previous state	Maintain previous state	Maintain previous state
	WKUP enabled	Setting disabled	Setting disabled	Setting disabled	Maintain previous state	Maintain previous state	Maintain previous state	WKUP input enabled	Hi-Z / WKUP input enabled	GPIO selected / Internal input fixed at 0
	External interrupt enabled selected							GPIO selected / Internal input fixed at 0	Hi-Z / Internal input fixed at 0	
	Resource other than above selected	Hi-Z	Hi-Z / Input enabled	Hi-Z / Input enabled			Hi-Z / Internal input fixed at 0			
	GPIO selected									
P	Resource selected	Hi-Z	Hi-Z / Input enabled	Hi-Z / Input enabled	Maintain previous State	Maintain previous State	Hi-Z / Internal input fixed at 0	GPIO selected / Internal input fixed at 0	Hi-Z / Internal input fixed at 0	GPIO selected
	GPIO selected									
Q	External interrupt enabled selected	Setting disabled	Setting disabled	Setting disabled	Maintain previous state	Maintain previous state	Maintain previous state	GPIO selected / Internal input fixed at 0	Hi-Z / Internal input fixed at 0	GPIO selected
	USB IO					Hi/-Z/Input enabled	Hi/-Z/Input enabled	Hi-Z/Input enabled	Hi-Z/Input enabled	Hi-Z/Input enabled
	GPIO selected	Hi-Z	Hi-Z/Input enabled	Hi-Z/Input enabled		Maintain previous state	Hi-Z	GPIO	Hi-Z	GPIO

11.4.2 Sub Clock Input Characteristics

(V_{CC}=AV_{CC}=1.65 V to 3.6 V, V_{SS}=AV_{SS}=0 V, T_A=- 40°C to +105°C)

Parameter	Symbol	Pin Name	Conditions	Value			Unit	Remarks
				Min	Typ	Max		
Input frequency	f_{CL}	X0A, X1A	-	-	32.768	-	kHz	When the crystal oscillator is connected*
			-	32	-	100	kHz	When the external clock is used
Input clock cycle	t_{CYLL}		-	10	-	31.25	µs	When the external clock is used
Input clock pulse width	-		P_{WH}/t_{CYLL}, P_{WL}/t_{CYLL}	45	-	55	%	When the external clock is used

*: See "Sub crystal oscillator" in "7. Handling Devices" for the crystal oscillator used.



11.4.4 Operating Conditions of Main PLL (In the Case of Using the Main Clock as the Input Clock of the PLL)

(V_{CC}=AV_{CC}=1.65 V to 3.6 V, V_{SS}=AV_{SS}=0 V, T_A=- 40°C to +105°C)

Parameter	Symbol	Value			Unit	Remarks
		Min	Typ	Max		
PLL oscillation stabilization wait time*1 (LOCK UP time)	t_{LOCK}	100	-	-	µs	
PLL input clock frequency	f_{PLLI}	4	-	16	MHz	
PLL multiple rate	-	5	-	37	multiple	
PLL macro oscillation clock frequency	f_{PLLO}	75	-	150	MHz	
Main PLL clock frequency*2	f_{CLKPLL}	-	-	40.8	MHz	
USB clock frequency*3	$f_{CLKSPLL}$	-	-	48	MHz	

*1: The wait time is the time it takes for PLL oscillation to stabilize.

*2: For details of the main PLL clock (CLKPLL), refer to "Chapter: Clock" in "FM0+ Family Peripheral Manual".

*3: For more information about USB clock, see "Chapter: USB Clock Generation" in "FM0+ Family Peripheral Manual Communication Macro Part".

11.4.5 Operating Conditions of Main PLL (In the Case of Using the Built-in High-Speed CR Clock as the Input Clock of the Main PLL)

(V_{CC}=AV_{CC}=1.65 V to 3.6 V, V_{SS}=AV_{SS}=0 V, T_A=- 40°C to +105°C)

Parameter	Symbol	Value			Unit	Remarks
		Min	Typ	Max		
PLL oscillation stabilization wait time*1 (LOCK UP time)	t_{LOCK}	100	-	-	µs	
PLL input clock frequency	f_{PLLI}	3.8	4	4.2	MHz	
PLL multiple rate	-	19	-	35	multiple	
PLL macro oscillation clock frequency	f_{PLLO}	72	-	150	MHz	
Main PLL clock frequency*2	f_{CLKPLL}	-	-	40.8	MHz	

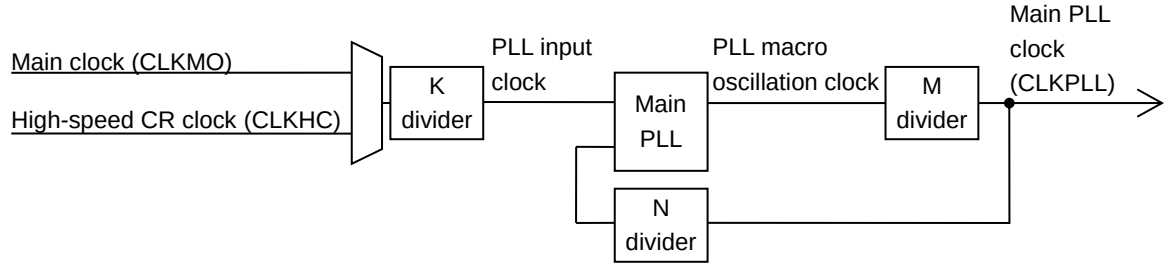
*1: The wait time is the time it takes for PLL oscillation to stabilize.

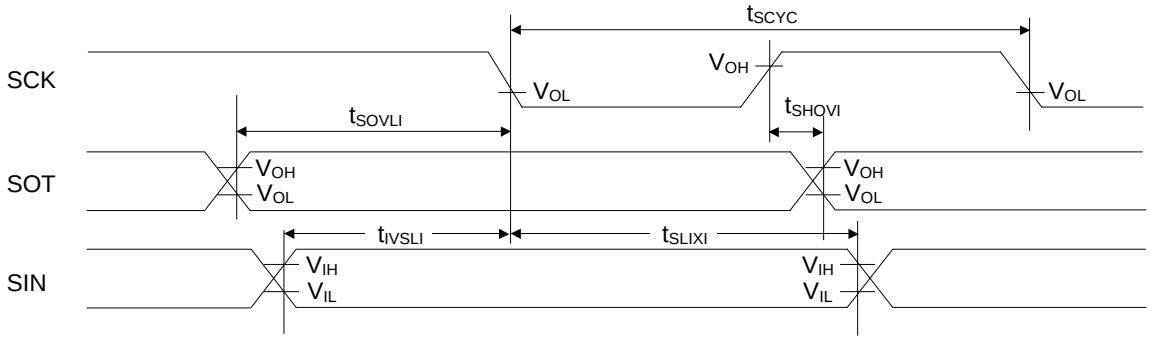
*2: For details of the main PLL clock (CLKPLL), refer to "Chapter: Clock" in "FM0+ Family Peripheral Manual".

Note:

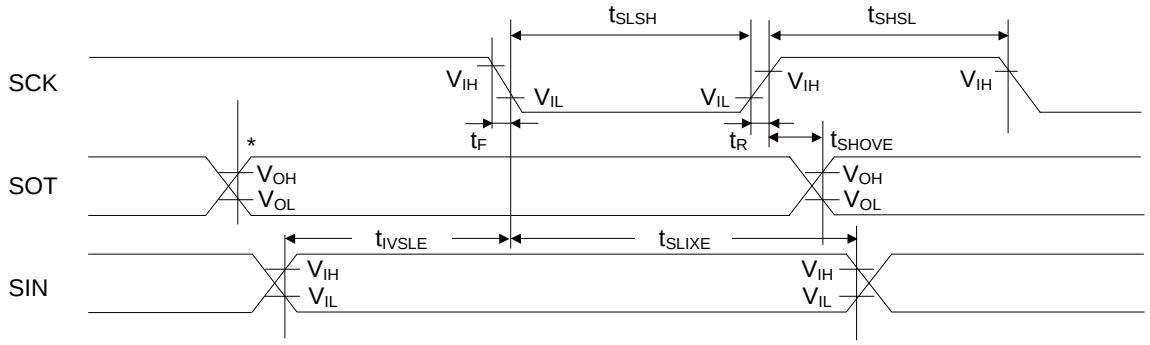
- *For the main PLL source clock, input the high-speed CR clock (CLKHC) whose frequency has been trimmed. When setting PLL multiple rate, please take the accuracy of the built-in High-speed CR clock into account and prevent the master clock from exceeding the maximum frequency.*

Main PLL connection



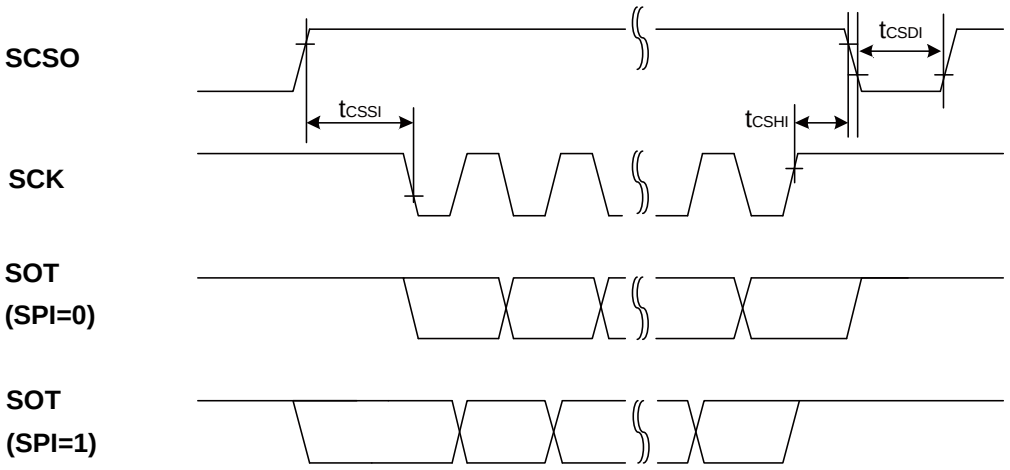


Master mode

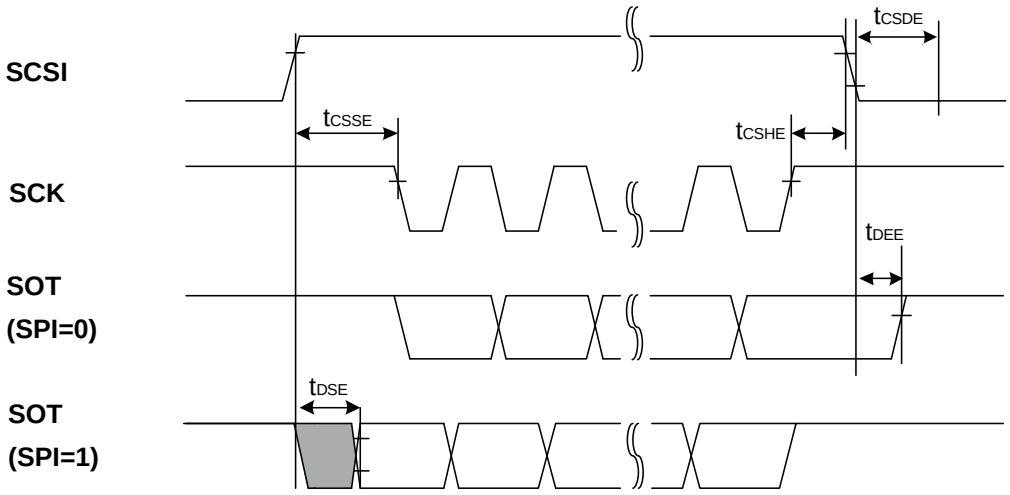


Slave mode

*: Changes when writing to TDR register



Master mode



Slave mode

11.4.13 Smart Card Interface Characteristics

(V_{CC}=1.65 V to 3.3 V, V_{SS}=0 V, T_A=- 40°C to +105°C)

Parameter	Symbol	Pin Name	Conditions	Value		Unit	Remarks
				Min	Max		
Output rising time	t_R	ICx_VCC, ICx_RST, ICx_CLK, ICx_DATA	C_L=30 pF	4	20	ns	
Output falling time	t_F			4	20	ns	
Output clock frequency	f_{CLK}	ICx_CLK		-	20	MHz	
Duty cycle	Δ			45%	55%		

■External pull-up resistor (20 kΩ to 50 kΩ) must be applied to ICx_CIN pin when it's used as smart card reader function.

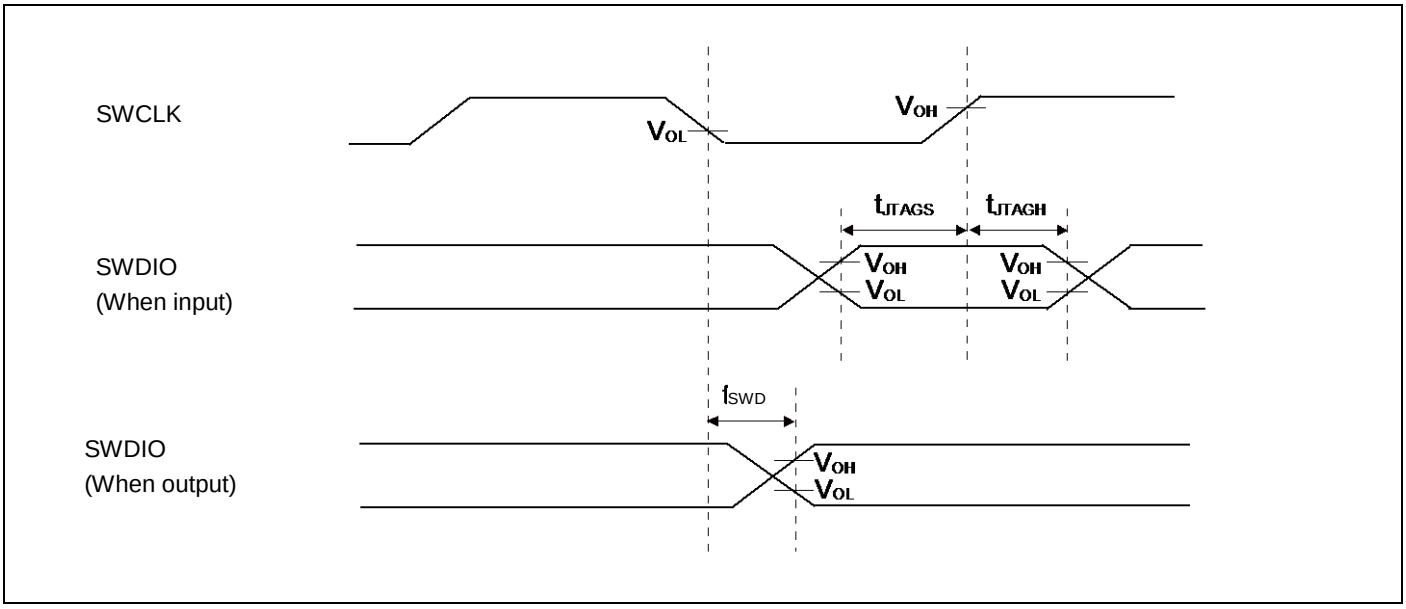
11.4.14 SW-DP Timing

(V_{CC}=AV_{CC}=1.65 V to 3.6 V, V_{SS}=AV_{SS}=0 V, T_A=- 40°C to +105°C)

Parameter	Symbol	Pin Name	Conditions	Value		Unit	Remarks
				Min	Max		
SWDIO setup time	t_{SWS}	SWCLK, SWDIO	-	15	-	ns	
SWDIO hold time	t_{SWH}	SWCLK, SWDIO	-	15	-	ns	
SWDIO delay time	t_{SWD}	SWCLK, SWDIO	-	-	45	ns	

Note:

- *External load capacitance C_L=30 pF*

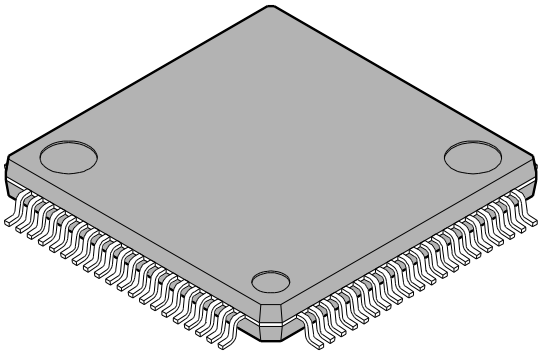


11.7.2 Low-Voltage Detection Interrupt

(T_A=-40°C to +105°C)

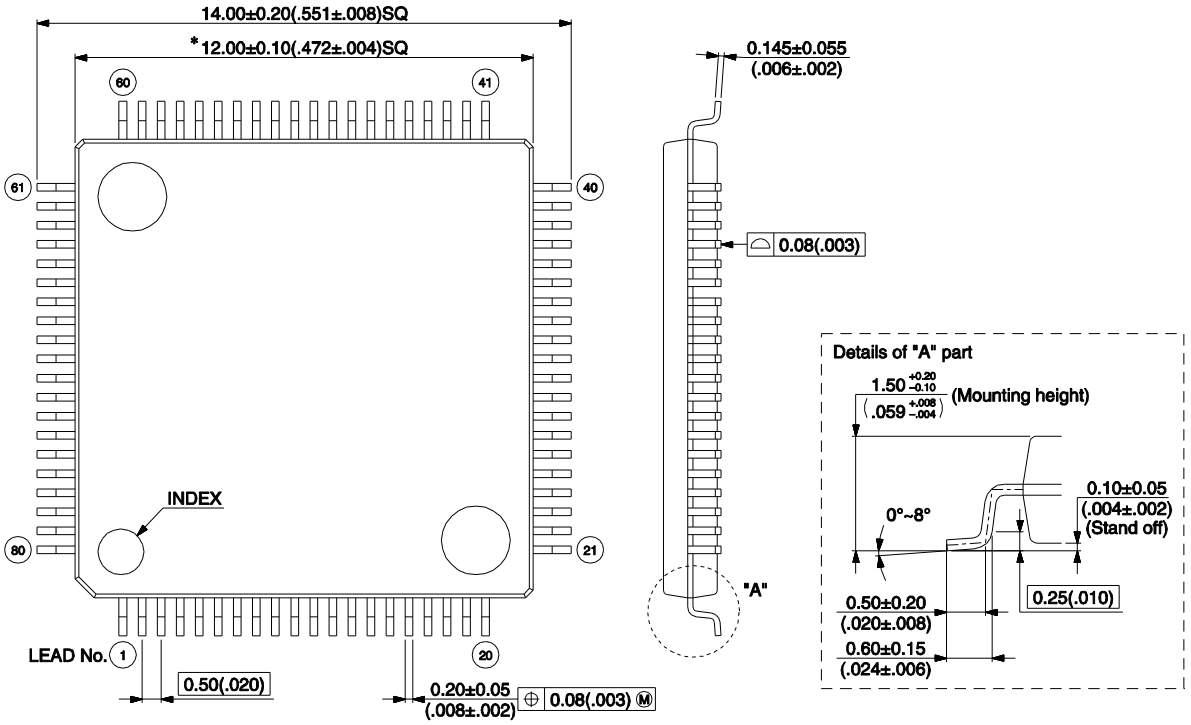
Parameter	Symbol	Conditions	Value			Unit	Remarks
			Min	Typ	Max		
Detected voltage	VDL	SVHI=00100	1.56	1.70	1.84	V	When voltage drops
Released voltage	VDH	SVHRLI=00100	1.61	1.75	1.89	V	When voltage rises
Detected voltage	VDL	SVHI=00101	1.61	1.75	1.89	V	When voltage drops
Released voltage	VDH	SVHRLI=00101	1.66	1.80	1.94	V	When voltage rises
Detected voltage	VDL	SVHI=00110	1.66	1.80	1.94	V	When voltage drops
Released voltage	VDH	SVHRLI=00110	1.70	1.85	2.00	V	When voltage rises
Detected voltage	VDL	SVHI=00111	1.70	1.85	2.00	V	When voltage drops
Released voltage	VDH	SVHRLI=00111	1.75	1.90	2.05	V	When voltage rises
Detected voltage	VDL	SVHI=01000	1.75	1.90	2.05	V	When voltage drops
Released voltage	VDH	SVHRLI=01000	1.79	1.95	2.11	V	When voltage rises
Detected voltage	VDL	SVHI=01001	1.79	1.95	2.11	V	When voltage drops
Released voltage	VDH	SVHRLI=01001	1.84	2.00	2.16	V	When voltage rises
Detected voltage	VDL	SVHI=01010	1.84	2.00	2.16	V	When voltage drops
Released voltage	VDH	SVHRLI=01010	1.89	2.05	2.21	V	When voltage rises
Detected voltage	VDL	SVHI=01011	1.89	2.05	2.21	V	When voltage drops
Released voltage	VDH	SVHRLI=01011	1.93	2.10	2.27	V	When voltage rises
Detected voltage	VDL	SVHI=01100	2.30	2.50	2.70	V	When voltage drops
Released voltage	VDH	SVHRLI=01100	2.39	2.60	2.81	V	When voltage rises
Detected voltage	VDL	SVHI=01101	2.39	2.60	2.81	V	When voltage drops
Released voltage	VDH	SVHRLI=01101	2.48	2.70	2.92	V	When voltage rises
Detected voltage	VDL	SVHI=01110	2.48	2.70	2.92	V	When voltage drops
Released voltage	VDH	SVHRLI=01110	2.58	2.80	3.02	V	When voltage rises
Detected voltage	VDL	SVHI=01111	2.58	2.80	3.02	V	When voltage drops
Released voltage	VDH	SVHRLI=01111	2.67	2.90	3.13	V	When voltage rises
Detected voltage	VDL	SVHI=10000	2.67	2.90	3.13	V	When voltage drops
Released voltage	VDH	SVHRLI=10000	2.76	3.00	3.24	V	When voltage rises
Detected voltage	VDL	SVHI=10001	2.76	3.00	3.24	V	When voltage drops
Released voltage	VDH	SVHRLI=10001	2.85	3.10	3.35	V	When voltage rises
Detected voltage	VDL	SVHI=10010	2.85	3.10	3.35	V	When voltage drops
Released voltage	VDH	SVHRLI=10010	2.94	3.20	3.46	V	When voltage rises
Detected voltage	VDL	SVHI=10011	2.94	3.20	3.46	V	When voltage drops
Released voltage	VDH	SVHRLI=10011	3.04	3.30	3.56	V	When voltage rises
LVD stabilization wait time	t_{LVDW}	-	-	-	8160 × t_{CYCP}*	µs	
LVD detection delay time	t_{LVDDL}	-	-	-	200	µs	

*: t_{CYCP} represents the APB1 bus clock cycle time.

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)

Note 1) * : These dimensions do not include resin protrusion.
Note 2) Pins width and pins thickness include plating thickness.
Note 3) Pins width do not include tie bar cutting remainder.



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