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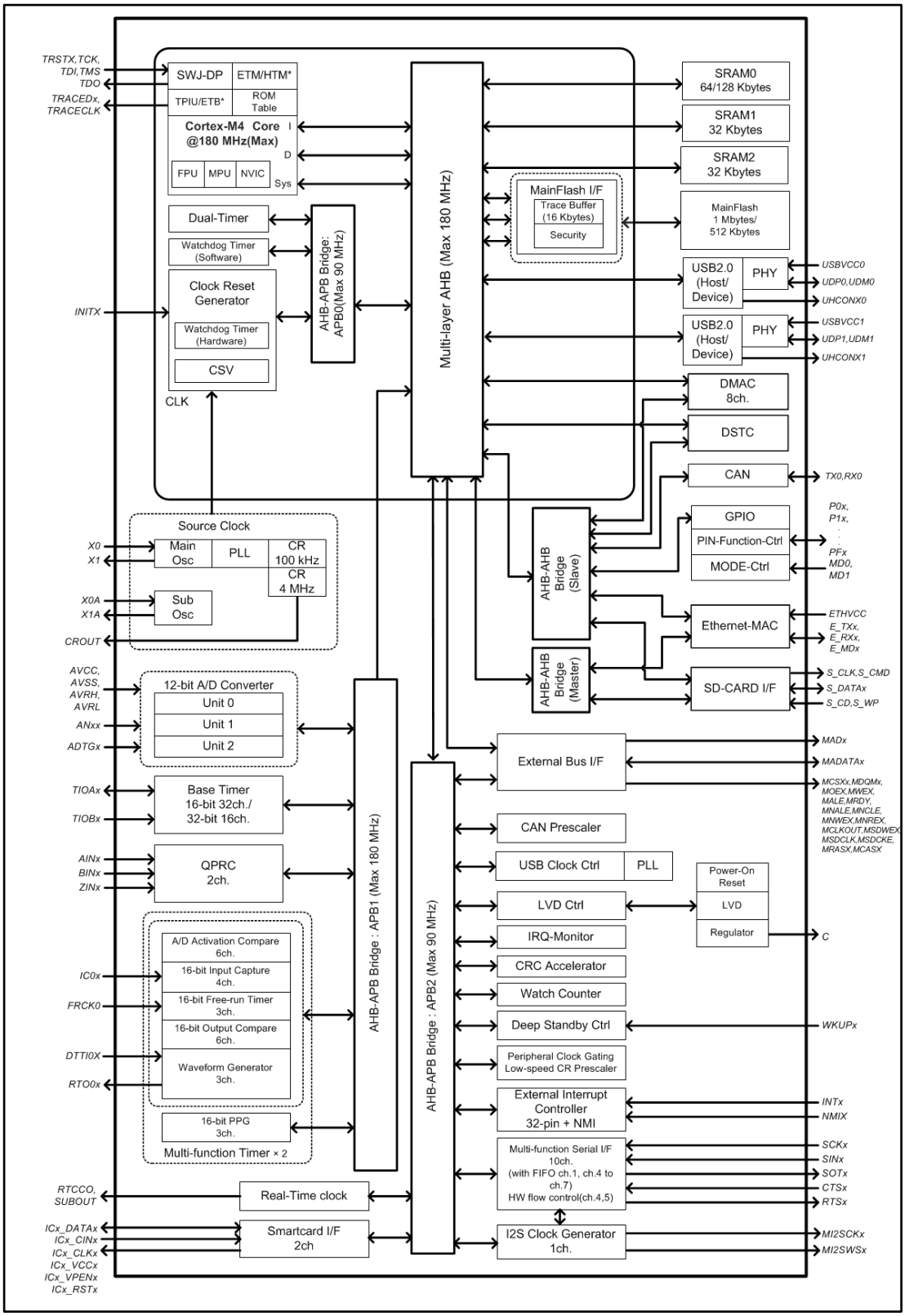
What is "Embedded - Microcontrollers"?

"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	Active
Core Processor	ARM® Cortex®-M4F
Core Size	32-Bit Single-Core
Speed	180MHz
Connectivity	CANbus, CSIO, EBI/EMI, Ethernet, I²C, LINbus, SD, SmartCard, SPI, UART/USART, USB
Peripherals	DMA, I²S, LVD, POR, PWM, WDT
Number of I/O	121
Program Memory Size	1MB (1M x 8)
Program Memory Type	FLASH
EEPROM Size	-
RAM Size	192K x 8
Voltage - Supply (Vcc/Vdd)	2.7V ~ 5.5V
Data Converters	A/D 24x12b
Oscillator Type	Internal
Operating Temperature	-40°C ~ 125°C (TA)
Mounting Type	Surface Mount
Package / Case	144-LQFP
Supplier Device Package	144-LQFP (20x20)
Purchase URL	https://www.e-xfl.com/product-detail/infineon-technologies/s6e2gm8h0agv2000a

1. S6E2G Series Block Diagram

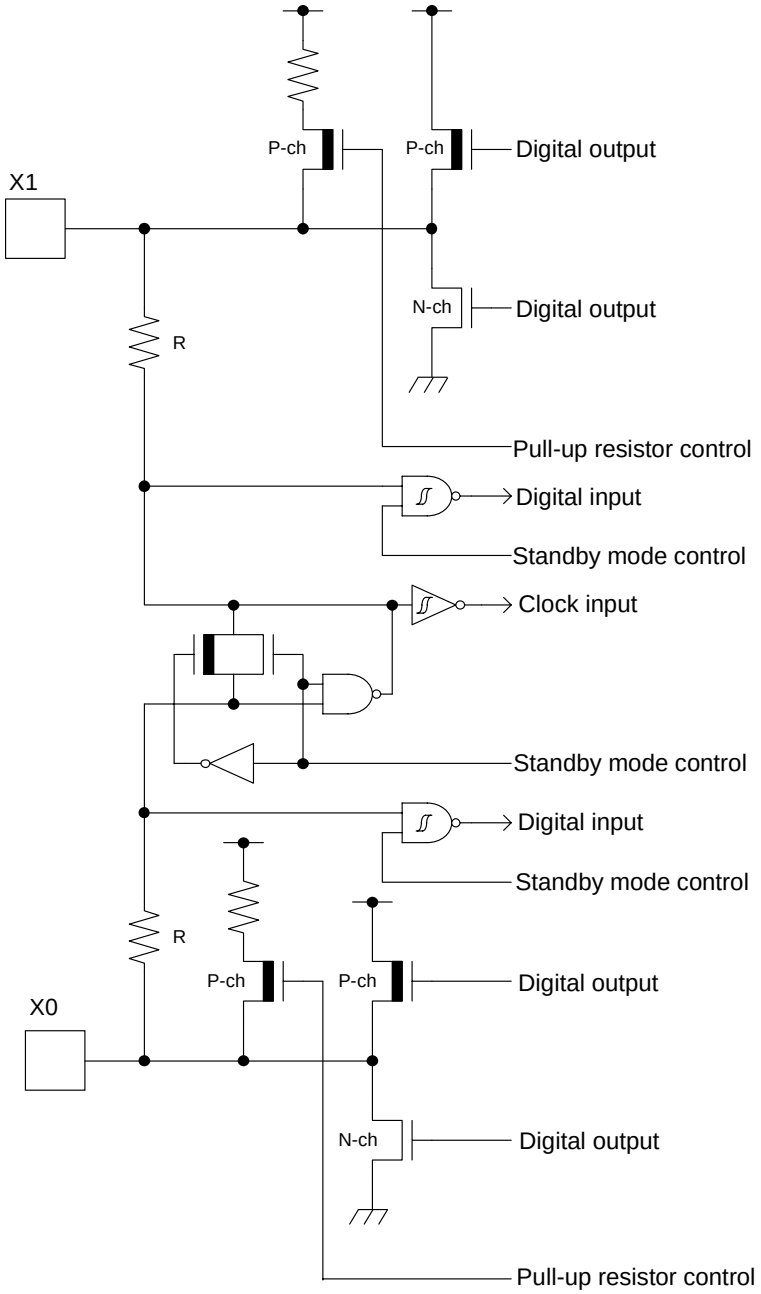
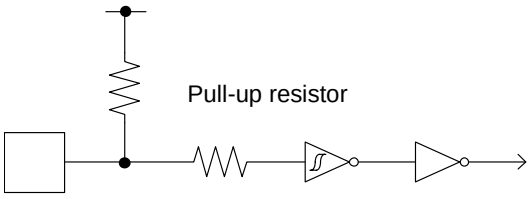


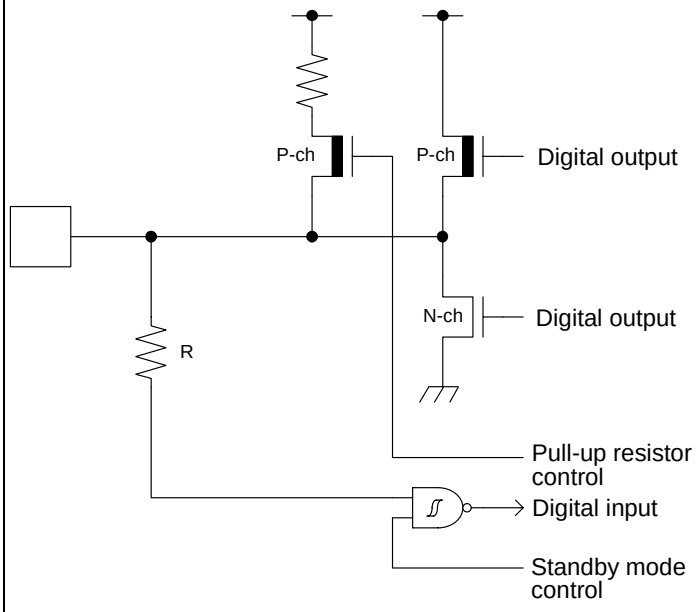
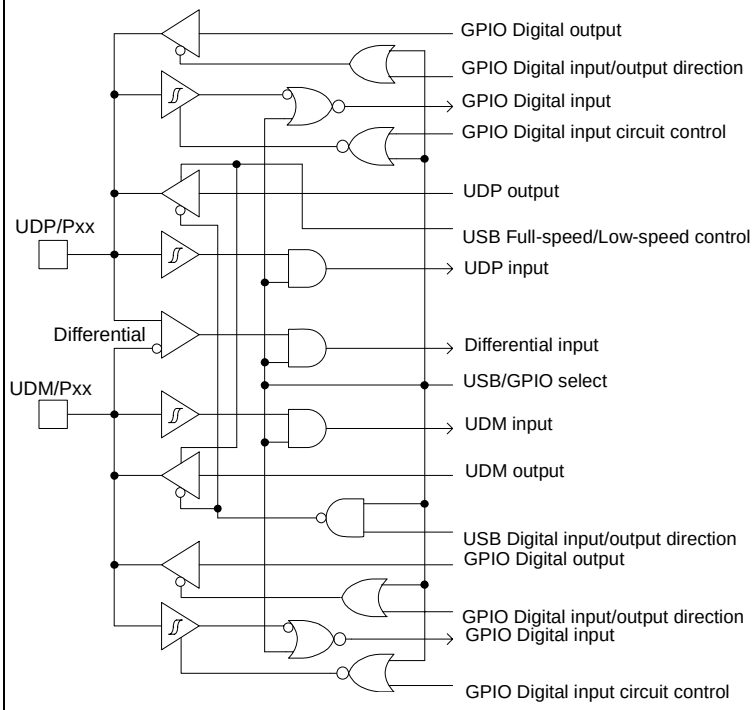
Pin Number		Pin Name	I/O Circuit Type	Pin State Type
LQFP-176	LQFP-144			
127	103	P21	I	K
		ADTG_4		
		SIN0_0		
		INT27_0		
		CROUT_0		
128	104	P20	I	F
		NMIX		
		WKUP0		
129	105	USBVCC1	-	-
130	106	P82	H	R
		UDM1		
131	107	P83	H	R
		UDP1		
132	108	VSS	-	-
133	109	VCC	-	-
134	110	P00	E	G
		TRSTX		
135	111	P01	E	G
		TCK		
		SWCLK		
136	112	P02	E	G
		TDI		
137	113	P03	E	G
		TMS		
		SWDIO		
138	114	P04	E	G
		TDO		
		SWO		
139	-	P90	E	K
		RTO10_1 (PPG10_1)		
		TIOB0_1		
		INT12_1		
		IC0_CLK_1		
140	-	P91	E	K
		SIN5_1		
		RTO11_1 (PPG11_1)		
		TIOB1_1		
		INT13_1		
		IC0_VCC_1		

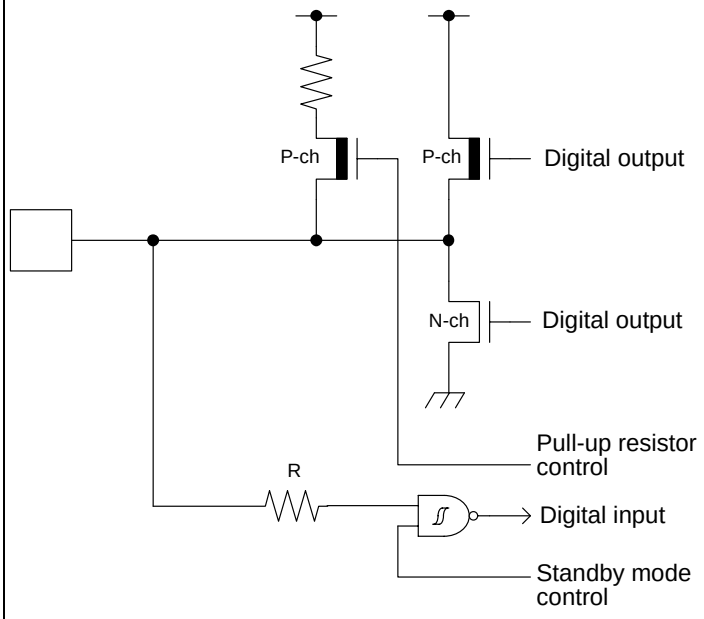
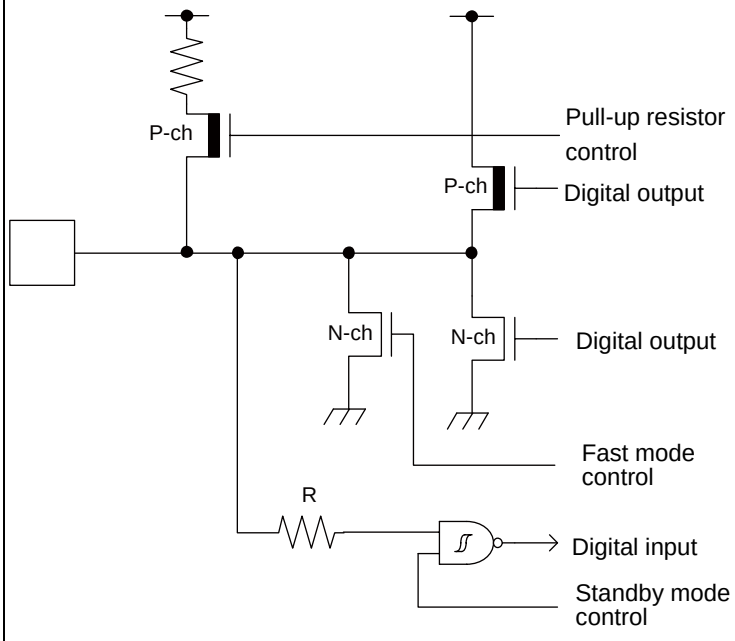
Module	Pin Name	Function	Pin Number	
			LQFP 176	LQFP 144
GPIO	P70	General-purpose I/O port 7	67	57
	P71		68	58
	P72		69	59
	P73		70	60
	P74		71	61
	P75		72	62
	P76		73	63
	P77		74	64
	P78		75	65
	P79		76	66
	P7A		77	67
	P80	General-purpose I/O port 8	174	142
	P81		175	143
	P82		130	106
	P83		131	107
	P90	General-purpose I/O port 9	139	-
	P91		140	-
	P92		141	-
	P93		142	-
	P94		143	-
	P95		144	-
	PA0	General-purpose I/O port A	2	2
	PA1		3	3
	PA2		4	4
	PA3		5	5
	PA4		6	6
	PA5		7	7
	PA6		8	8
	PA7		9	9
	PA8		13	10
	PA9		14	11
	PAA		15	12
	PAB		16	13
	PAC		17	14
	PAD		18	15
	PAE		19	16
	PAF		20	17

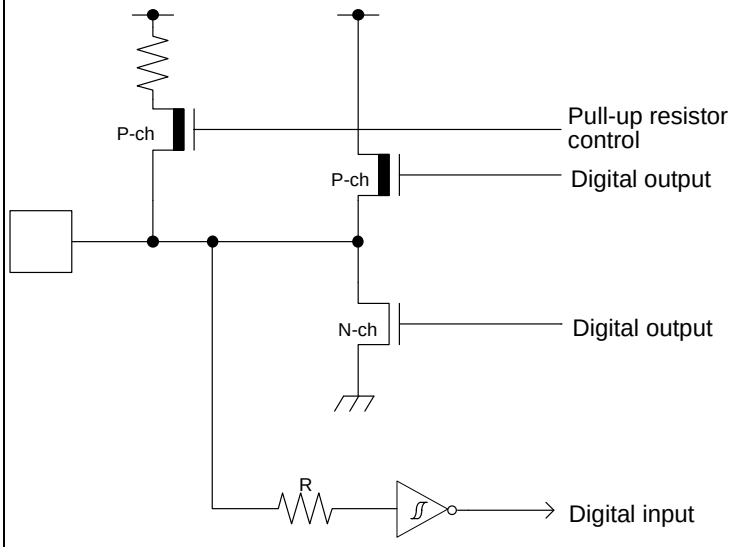
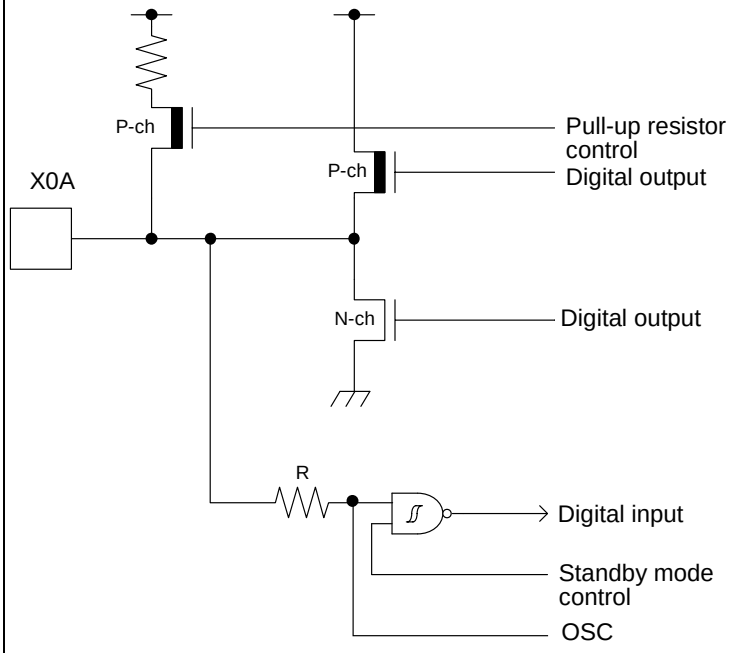
Module	Pin Name	Function	Pin Number	
			LQFP 176	LQFP 144
Quadrature Position/ Revolution Counter 0	AIN0_0	QPRC ch 0 AIN input pin	46	38
	AIN0_1		75	65
	AIN0_2		103	-
	BIN0_0	QPRC ch 0 BIN input pin	47	39
	BIN0_1		76	66
	BIN0_2		104	-
	ZIN0_0	QPRC ch 0 ZIN input pin	48	40
	ZIN0_1		77	67
	ZIN0_2		105	-
Quadrature Position/ Revolution Counter 1	AIN1_0	QPRC ch 1 AIN input pin	35	30
	AIN1_1		14	11
	AIN1_2		111	-
	BIN1_0	QPRC ch 1 BIN input pin	36	31
	BIN1_1		15	12
	BIN1_2		112	-
	ZIN1_0	QPRC ch 1 ZIN input pin	37	32
	ZIN1_1		16	13
	ZIN1_2		113	-
Real-time clock	RTCCO_0	0.5 seconds pulse output pin of real-time clock	171	139
	RTCCO_1		9	9
	SUBOUT_0	Sub-clock output pin	171	139
	SUBOUT_1		9	9
USB0	UDM0	USB ch 0 device/host D – pin	174	142
	UDP0	USB ch 0 device/host D + pin	175	143
	UHCONX0	USB ch 0 external pull-up control pin	171	139
USB1	UDM1	USB ch 1 device/host D – pin	130	106
	UDP1	USB ch 1 device/host D + pin	131	107
	UHCONX1	USB ch 1 external pull-up control pin	125	101
Low power consump-tion mode	WKUP0	Deep standby mode return signal input pin 0	128	104
	WKUP1	Deep standby mode return signal input pin 1	13	10
	WKUP2	Deep standby mode return signal input pin 2	66	56
	WKUP3	Deep standby mode return signal input pin 3	172	140

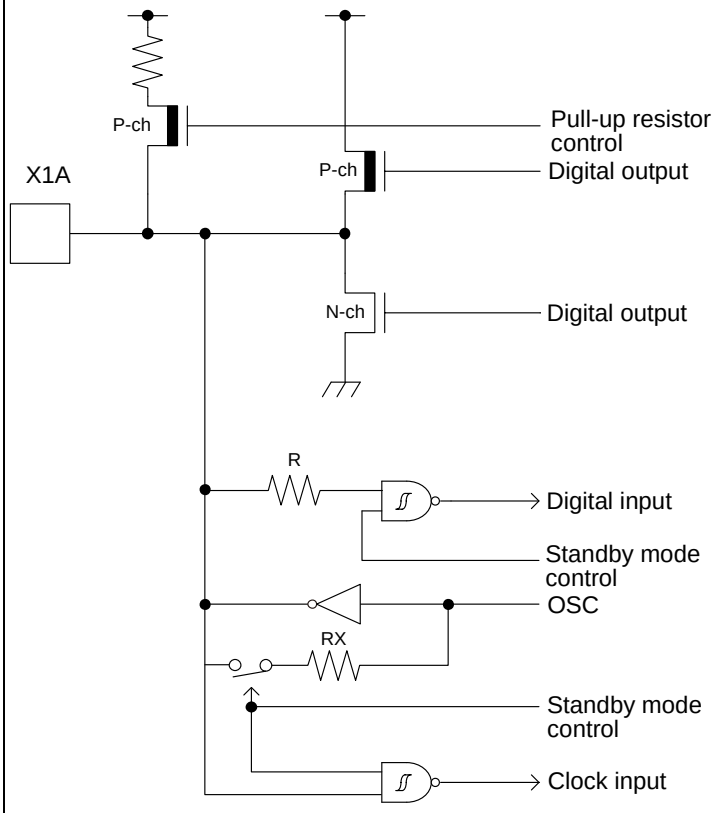
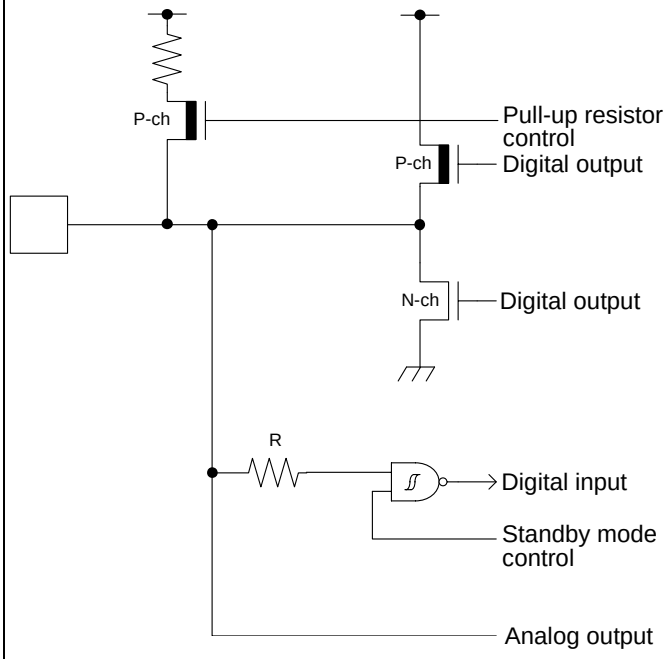
7. I/O Circuit Type

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 ・ Standby mode control When the GPIO is selected: ・ CMOS level output. ・ CMOS level hysteresis input ・ Pull-up resistor control ・ Standby mode control ・ Pull-up resistor: approximately 50 kΩ ・ I_{OH} = -4 mA, I_{OL} = 4 mA
B		・ CMOS level hysteresis input ・ Pull-up resistor: approximately 50 kΩ

Type	Circuit	Remarks
G		・ CMOS level output ・ CMOS level hysteresis input ・ Pull-up resistor control ・ Standby mode control ・ Pull-up resistor: approximately 50 kΩ ・ I_{OH} = -12 mA, I_{OL} = 12 mA ・ When this pin is used as an I^2C pin, the digital output P-ch transistor is always off.
H		It is possible to select either USB I/O or GPIO function. When the USB I/O is selected: ・ Full-speed, low-speed control When the GPIO is selected: ・ CMOS level output ・ CMOS level hysteresis input ・ Standby mode control ・ I_{OH} = -20.5 mA, I_{OL} = 18.5 mA

Type	Circuit	Remarks
L		・ CMOS level output ・ CMOS level hysteresis input ・ Pull-up resistor control ・ Standby mode control ・ Pull-up resistor: approximately 50 kΩ ・ I_{OH} = -8 mA, I_{OL} = 8 mA ・ When this pin is used as an I^2C pin, the digital output P-ch transistor is always off.
N		・ CMOS level output ・ CMOS level hysteresis input ・ 5V tolerant ・ Pull-up resistor control ・ Standby mode control ・ Pull-up resistor: approximately 50 kΩ ・ I_{OH} = -4 mA, I_{OL} = 4 mA (GPIO) ・ I_{OL} = 20mA (Fast mode Plus) ・ Available to control of PZR register (pseudo-open drain control) ・ For PZR registers, refer to GPIO in the FM4 Family Peripheral Manual Main Part (002-04856). ・ When this pin is used as an I^2C pin, the digital output P-ch transistor is always off.

Type	Circuit	Remarks
O		・ CMOS level output ・ CMOS level hysteresis input ・ 5 V tolerant ・ Pull-up resistor control ・ Pull-up resistor: approximately 50 kΩ ・ I_{OH} = -4 mA, I_{OL} = 4 mA ・ Available to control of PZR register (pseudo-open drain control) ・ For PZR registers, refer to GPIO in the FM4 Family Peripheral Manual Main Part (002-04856).
P		・ CMOS level output ・ CMOS level hysteresis input ・ Pull-up resistor control ・ Pull-up resistor: approximately 50 kΩ ・ I_{OH} = -4 mA, I_{OL} = 4 mA

Type	Circuit	Remarks
Q		It is possible to select the sub oscillation/GPIO function. When the sub oscillation is selected: ・ Oscillation feedback resistor: approximately 10 MΩ When the GPIO is selected: ・ CMOS level output. ・ CMOS level hysteresis input ・ Pull-up resistor control ・ Pull-up resistor: approximately 50 kΩ ・ I_{OH} = -4 mA, I_{OL} = 4 mA
R		・ CMOS level output ・ CMOS level hysteresis input ・ Analog output ・ Pull-up resistor control ・ Standby mode control ・ Pull-up resistor: approximately 50 kΩ ・ I_{OH} = -4 mA, I_{OL} = 4 mA (4.5V to 5.5V) ・ I_{OH} = -2 mA, I_{OL} = 2 mA (2.7V to 4.5V)

Pin Status Type	Function Group	Power-On Reset or Low-Voltage Detection State	INITX Input State	Device Internal Reset State	Run mode or Sleep mode State	Timer mode, RTC mode, or Stop mode State		Deep Standby RTC mode or Deep Standby Stop mode State		Return from Deep Standby mode State
		Power Supply Unstable	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	-
J	Analog output selected	Hi-Z	Hi-Z/ input enabled	Hi-Z/ input enabled	Maintain previous state	*2	*3	GPIO selected, internal input fixed at 0	Hi-Z/internal input fixed at 0	GPIO selected
	External interrupt enable selected					Maintain previous state	Maintain previous state			
	Resource other than above selected						Hi-Z/internal input fixed at 0			
	GPIO selected									
K	External interrupt enable 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
	Resource other than above selected	Hi-Z	Hi-Z/ input enabled	Hi-Z/ input enabled			Hi-Z/internal input fixed at 0			
	GPIO selected									
L	Analog input selected	Hi-Z	Hi-Z/ internal input fixed at 0/ analog input enabled	Hi-Z/ internal input fixed at 0/ analog input enabled	Hi-Z/ internal input fixed at 0/ analog input enabled	Hi-Z/ internal input fixed at 0/ analog input enabled	Hi-Z/ internal input fixed at 0/ analog input enabled	Hi-Z/ internal input fixed at 0/ analog input enabled	Hi-Z/ internal input fixed at 0/ analog input enabled	Hi-Z/ internal input fixed at 0/ analog input enabled
	Resource other than above selected	Setting disabled	Setting disabled	Setting disabled	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									

Pin Status Type	Function Group	Power-On Reset or Low-Voltage Detection State	INITX Input State	Device Internal Reset State	Run mode or Sleep mode State	Timer mode, RTC mode, or Stop mode State		Deep Standby RTC mode or Deep Standby Stop mode State		Return from Deep Standby mode State
		Power Supply Unstable	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	-
T	GPIO selected	Setting disabled	Setting disabled	Setting disabled	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
	External main clock input selected	Setting disabled	Setting disabled	Setting disabled	Maintain previous state	Maintain previous state	Hi-Z/internal input fixed at 0	Maintain previous state	Hi-Z/internal input fixed at 0	Maintain previous State
	Sub crystal oscillator output pin	Hi-Z/ internal input fixed at 0/ or input enabled	Hi-Z/ internal input fixed at 0	Hi-Z/ internal input fixed at 0	Maintain previous state while oscillator active/ When oscillation stops*5, it will be Hi-Z/ Internal input fixed at 0					
V	Ethernet I/O selected *4	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
	Resource other than above selected	Hi-Z	Hi-Z/ input enabled	Hi-Z/ input enabled			Hi-Z/internal input fixed at 0			
	GPIO selected									

2: V_{CC} must not drop below V_{SS} - 0.5 V.

3: $USBV_{CC}0$, $USBV_{CC}1$ must not drop below V_{SS} - 0.5 V.

4: $ETHV_{CC}$ must not drop below V_{SS} - 0.5 V.

5: Ensure that the voltage does not exceed V_{CC} + 0.5V, for example, when the power is turned on.

6: The maximum output current is defined as the value of the peak current flowing through any one of the corresponding pins.

7: The average output current is defined as the average current value flowing through any one of the corresponding pins for a 100-ms period.

8: The total average output current is defined as the average current value flowing through all of corresponding pins for a 100-ms period.

WARNING:

- *Semiconductor devices may be permanently damaged by application of stress (including, without limitation, voltage, current or temperature) in excess of absolute maximum ratings. Do not exceed any of these ratings.*

Table 12-7 Typical and Maximum Current Consumption in Sleep Operation (Other than PLL), when PCLK0 = PCLK1 = PCLK2 = HCLK/2

Parameter	Symbol	Pin Name	Conditions	Frequency*4	Value		Unit	Remarks
					Typ*1	Max*2		
Power supply current	I_{CCS}	VCC	Sleep operation*5 (main oscillation)	4 MHz	2.6	60	mA	*3 When all peripheral clocks are on
					2.0	60	mA	*3 When all peripheral clocks are off
			Sleep operation (built-in High-speed CR)	4 MHz	2.0	60	mA	*3 When all peripheral clocks are on
					1.3	59	mA	*3 When all peripheral clocks are off
			Sleep operation*6 (sub oscillation)	32 kHz	0.46	58	mA	*3 When all peripheral clocks are on
					0.45	58	mA	*3 When all peripheral clocks are off
			Sleep operation (built-in low-speed CR)	100 kHz	0.47	58	mA	*3 When all peripheral clocks are on
					0.46	58	mA	*3 When all peripheral clocks are off

1: T_A = +25 °C, V_{CC} = 3.3 V

2: T_J = +125 °C, V_{CC} = 5.5 V

3: When all ports are input and are fixed at 0.

4: Frequency is a value of HCLK when PCLK0 = PCLK1 = PCLK2 = HCLK/2

5: When using the crystal oscillator of 4 MHz (including the current consumption of the oscillation circuit)

6: When using the crystal oscillator of 32 kHz (including the current consumption of the oscillation circuit)

Table 12-8 Typical and Maximum Current Consumption in Stop Mode, Timer Mode and RTC Mode

Parameter	Symbol	Pin Name	Conditions	Frequency	Value		Unit	Remarks
					Typ*1	Max*2		
Power supply current	I_{CCH}	VCC	Stop mode	-	0.41	1.9	mA	*3, *4 T_A = +25°C
					-	18	mA	*3, *4 T_A = +85°C
					-	26	mA	*3, *4 T_A = +105°C
	I_{CCT}		Timer mode*5 (main oscillation)	4 MHz	1.4	2.9	mA	*3, *4 T_A = +25°C
					-	19	mA	*3, *4 T_A = +85°C
					-	27	mA	*3, *4 T_A = +105°C
			Timer mode (built-in High-speed CR)	4 MHz	0.71	2.2	mA	*3, *4 T_A = +25°C
					-	19	mA	*3, *4 T_A = +85°C
					-	27	mA	*3, *4 T_A = +105°C
			Timer mode*6 (sub oscillation)	32 kHz	0.41	1.9	mA	*3, *4 T_A = +25°C
					-	18	mA	*3, *4 T_A = +85°C
					-	27	mA	*3, *4 T_A = +105°C
			Timer mode (built-in low-speed CR)	100 kHz	0.42	1.9	mA	*3, *4 T_A = +25°C
					-	18	mA	*3, *4 T_A = +85°C
					-	27	mA	*3, *4 T_A = +105°C
	I_{CCR}		RTC mode*6 (sub oscillation)	32 kHz	0.42	1.9	mA	*3, *4 T_A = +25°C
					-	18	mA	*3, *4 T_A = +85°C
					-	27	mA	*3, *4 T_A = +105°C

1: V_{CC} = 3.3 V

2: V_{CC} = 5.5 V

3: When all ports are input and are fixed at 0

4: When LVD is off

5: When using the crystal oscillator of 4 MHz (including the current consumption of the oscillation circuit)

6: When using the crystal oscillator of 32 kHz (including the current consumption of the oscillation circuit)

12.4.12 CSIO (SPI) Timing

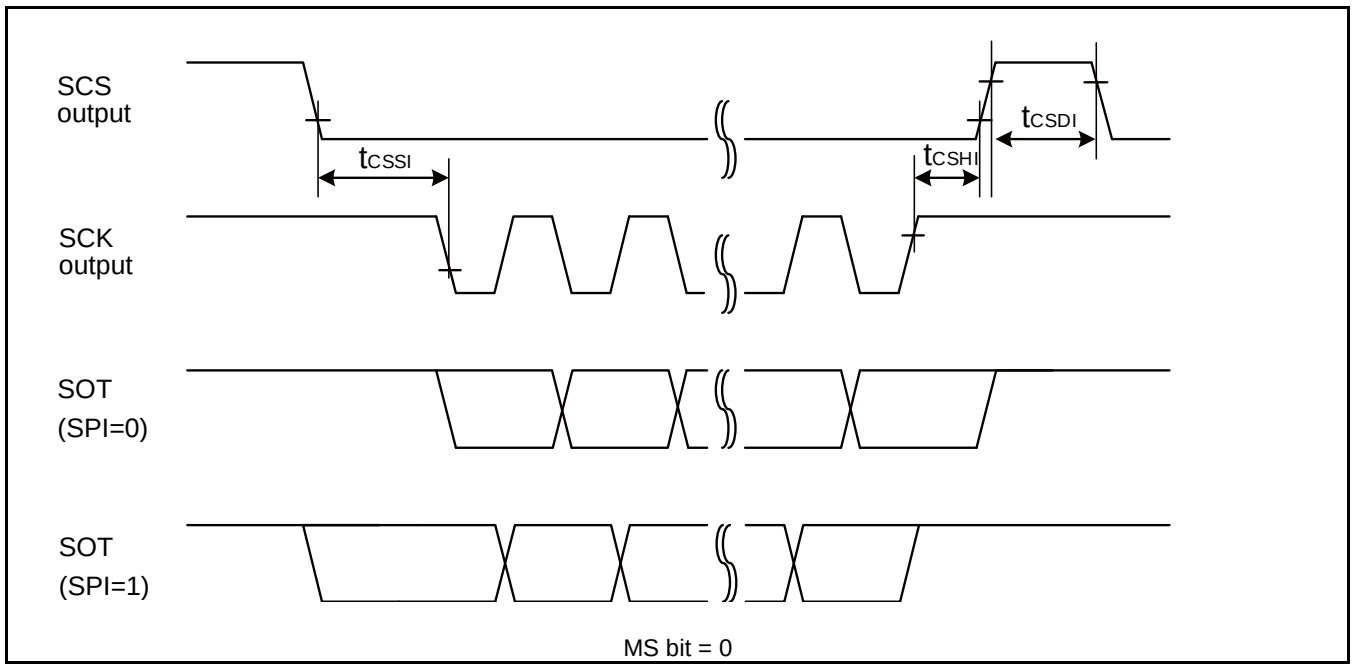
Synchronous Serial (SPI = 0, SCINV = 0)

(V_{CC} = 2.7V to 5.5V, V_{SS} = 0V)

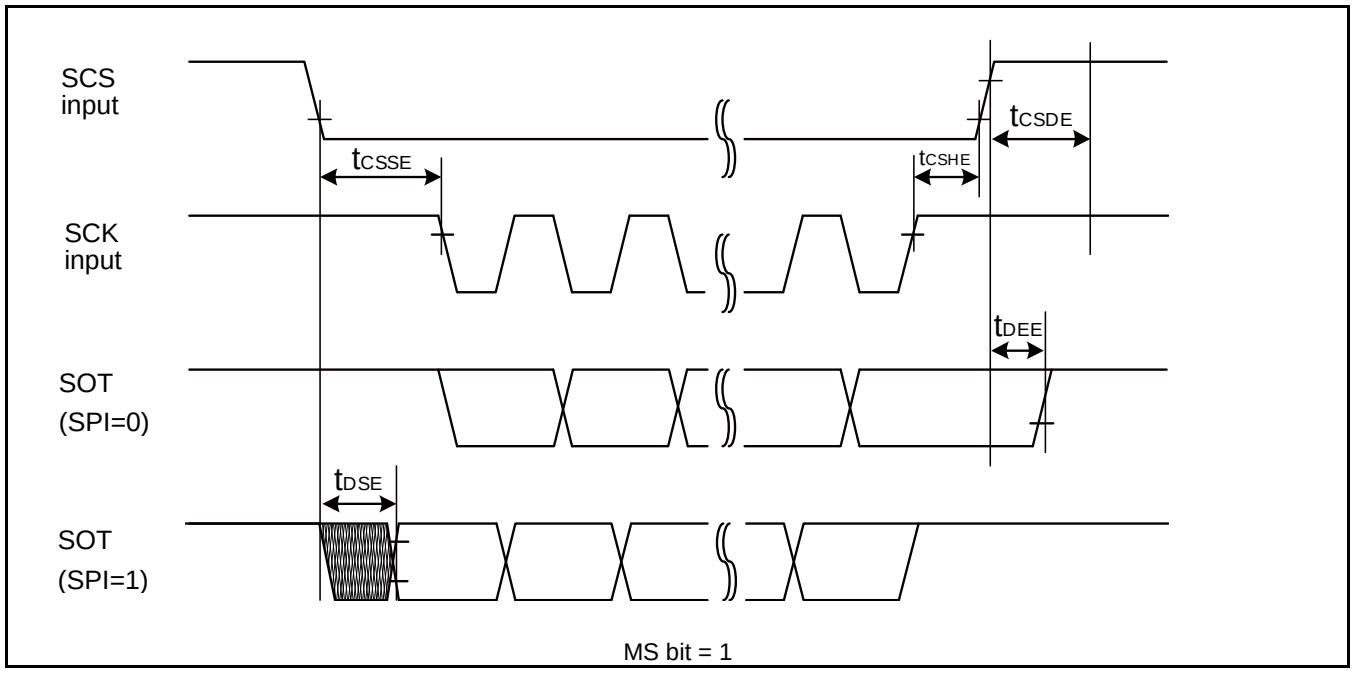
Parameter	Symbol	Pin Name	Conditions	V_{CC} < 4.5 V		V_{CC} ≥ 4.5 V		Unit
				Min	Max	Min	Max	
Baud rate	-	-	-	-	8	-	8	Mbps
Serial clock cycle time	t_{SCYC}	SCKx	Internal shift clock operation	$4t_{CYCP}$	-	$4t_{CYCP}$	-	ns
SCK↓→SOT delay time	t_{SLOVI}	SCKx, SOTx		- 30	+ 30	- 20	+ 20	ns
SIN→SCK↑ setup time	t_{IVSHI}	SCKx, SINx		50	-	30	-	ns
SCK↑→SIN hold time	t_{SHIXI}	SCKx, SINx		0	-	0	-	ns
Serial clock L pulse width	t_{SLSH}	SCKx	External shift clock operation	$2t_{CYCP}$ - 10	-	$2t_{CYCP}$ - 10	-	ns
Serial clock H pulse width	t_{SHSL}	SCKx		t_{CYCP} + 10	-	t_{CYCP} + 10	-	ns
SCK↓→SOT delay time	t_{SLOVE}	SCKx, SOTx		-	50	-	30	ns
SIN→SCK↑ setup time	t_{IVSHE}	SCKx, SINx		10	-	10	-	ns
SCK↑→SIN hold time	t_{SHIXE}	SCKx, SINx		20	-	20	-	ns
SCK fall time	t_F	SCKx		-	5	-	5	ns
SCK rise time	t_R	SCKx		-	5	-	5	ns

Notes:

- *The above characteristics apply to CLK synchronous mode.*
- *t_{CYCP} indicates the APB bus clock cycle time. For more information about the APB bus number to which the multi-function serial is connected, see 1. S6E2G Series Block Diagram in this data sheet.*
- *These characteristics only guarantee the same relocate port number; for example, the combination of SCLKx_0 and SOTx_1 is not guaranteed.*
- *When the external load capacitance C_L = 30 pF.*



MS bit = 0



MS bit = 1

Notes:

- *The Card Input corresponds to the Host Output and the Card Output corresponds to the Host Input because this model is the Host.*
- *For more information about clock frequency (f_{PP}), see Chapter 15: SD card Interface in FM4 Family Peripheral Manual Main Part (002-04856).*

High-speed Mode

■ Clock CLK (All values are referred to V_{IH} and V_{IL})

(V_{CC} = 2.7V to 3.6V, V_{SS} = 0V)

Parameter	Symbol	Pin Name	Conditions	Value		Remarks
				Min	Max	
Clock frequency Data Transfer mode	f_{PP}	S_CLK	C_{CARD} ≤ 10 pF (1 card)	0	45	MHz
Clock low time	t_{WL}	S_CLK		7	-	ns
Clock high time	t_{WH}	S_CLK		7	-	ns
Clock rise time	t_{TLH}	S_CLK		-	3	ns
Clock fall time	t_{THL}	S_CLK		-	3	ns

■ Card Inputs CMD, DAT (referenced to Clock CLK)

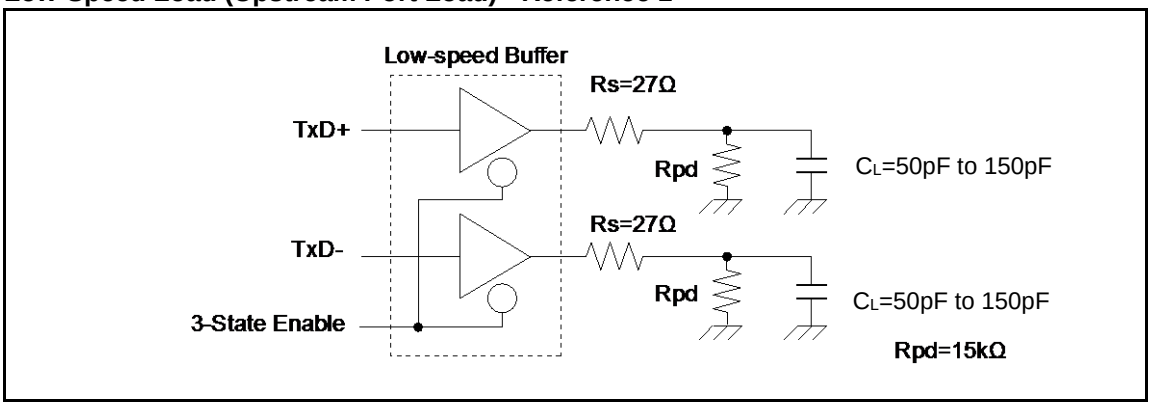
Parameter	Symbol	Pin Name	Conditions	Value		Remarks
				Min	Max	
Input set-up time	t_{ISU}	S_CMD, S_DATA3: 0	C_{CARD} ≤ 10 pF (1 card)	6	-	ns
Input hold time	t_{IH}	S_CMD, S_DATA3: 0		2	-	ns

■ Card Outputs CMD, DAT (referenced to Clock CLK)

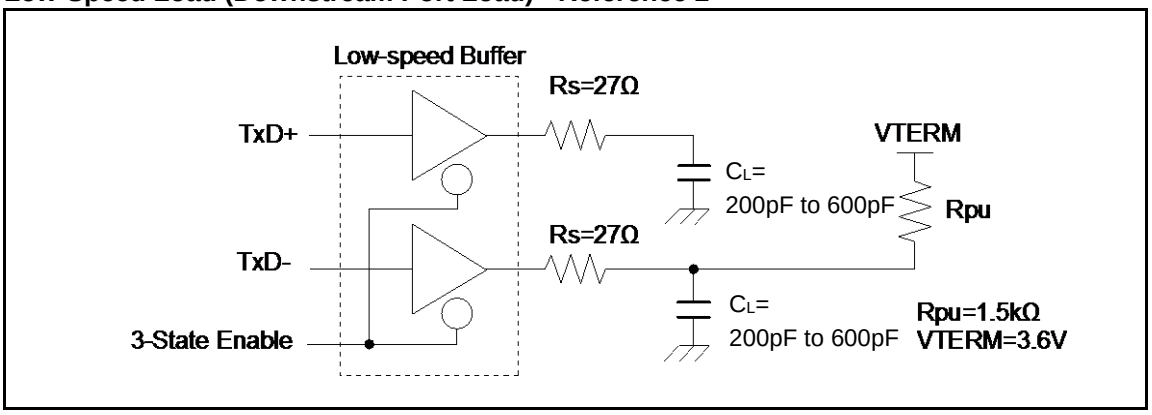
Parameter	Symbol	Pin Name	Conditions	Value		Remarks
				Min	Max	
Output delay time during data transfer mode	t_{ODLY}	S_CMD, S_DATA3: 0	C_L ≤ 40 pF (1 card)	0	14	ns
Output hold time	t_{OH}	S_CMD, S_DATA3: 0	C_L ≥ 15 pF (1 card)	2.5	-	ns
Total system capacitance for each line*	C_L	-	1 card	-	40	pF

*: In order to satisfy severe timing, host shall drive only one card.

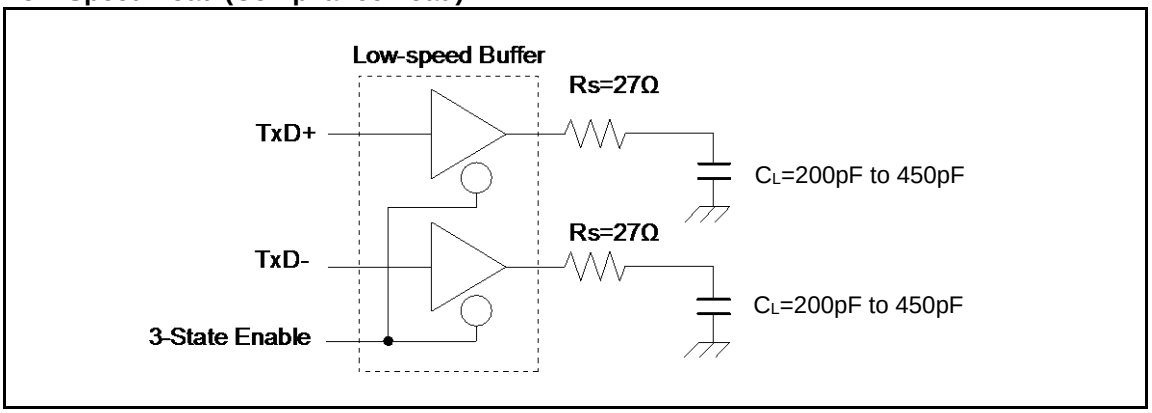
Low-Speed Load (Upstream Port Load) - Reference 1



Low-Speed Load (Downstream Port Load) - Reference 2



Low-Speed Load (Compliance Load)



12.7 Low-Voltage Detection Characteristics

12.7.1 Low-Voltage Detection Reset

Parameter	Symbol	Conditions	Value			Unit	Remarks
			Min	Typ	Max		
Detected voltage	VDL	-	2.46	2.55	2.64	V	When voltage drops
Released voltage	VDH	-	2.51	2.60	2.69	V	When voltage rises

12.7.2 Interrupt of Low-Voltage Detection

Parameter	Symbol	Conditions	Value			Unit	Remarks
			Min	Typ	Max		
Detected voltage	VDL	SVHI = 00111	2.80	2.90	3.00	V	When voltage drops
Released voltage	VDH		2.90	3.00	3.11	V	When voltage rises
Detected voltage	VDL	SVHI = 00100	2.99	3.10	3.21	V	When voltage drops
Released voltage	VDH		3.09	3.20	3.31	V	When voltage rises
Detected voltage	VDL	SVHI = 01100	3.18	3.30	3.42	V	When voltage drops
Released voltage	VDH		3.28	3.40	3.52	V	When voltage rises
Detected voltage	VDL	SVHI = 01111	3.67	3.80	3.93	V	When voltage drops
Released voltage	VDH		3.76	3.90	4.04	V	When voltage rises
Detected voltage	VDL	SVHI = 01110	3.76	3.90	4.04	V	When voltage drops
Released voltage	VDH		3.86	4.00	4.14	V	When voltage rises
Detected voltage	VDL	SVHI = 01001	4.05	4.20	4.35	V	When voltage drops
Released voltage	VDH		4.15	4.30	4.45	V	When voltage rises
Detected voltage	VDL	SVHI = 01000	4.15	4.30	4.45	V	When voltage drops
Released voltage	VDH		4.25	4.40	4.55	V	When voltage rises
Detected voltage	VDL	SVHI = 11000	4.25	4.40	4.55	V	When voltage drops
Released voltage	VDH		4.34	4.50	4.66	V	When voltage rises
LVD stabilization wait time	t_{LVDW}	-	-	-	6000×t_{CYCP}*	µs	

*: t_{CYCP} indicates the APB2 bus clock cycle time.

12.8 MainFlash Memory Write/Erase Characteristics

(V_{CC} = 2.7V to 5.5V)

Parameter		Value			Unit	Remarks
		Min	Typ	Max		
Sector erase time	Large Sector	-	0.7	3.7	s	Includes write time prior to internal erase
	Small Sector	-	0.3	1.1	s	
Half word (16-bit) write time	Write cycles ≤ 100 times	-	12	100	µs	Not including system-level overhead time
	Write cycles > 100 times			200		
Chip erase time*		-	13.6	68	s	Includes write time prior to internal erase

*: It indicates the chip erase time of 1MB MainFlash memory

For devices with 1.5 MB or 2 MB of MainFlash memory, two erase cycles are required.

See 3.2.2 Command Operating Explanations and 3.3.3 Flash Erase Operation in this product's Flash Programming Manual for the detail.

Write Cycles and Data Retention Time

Erase/Write Cycles (Cycle)	Data Retention Time (Year)
1,000	20*
10,000	10*
100,000	5*

*: This value comes from the technology qualification (using Arrhenius equation to translate high temperature acceleration test result into average temperature value at + 85°C).