Infineon Technologies - MB96F613RBPMC-GS-127E2 Datasheet

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What is "Embedded - Microcontrollers"?

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

Applications of "Embedded - Microcontrollers"

Details	
Product Status	Obsolete
Core Processor	F²MC-16FX
Core Size	16-Bit
Speed	32MHz
Connectivity	CANbus, LINbus, SCI, UART/USART
Peripherals	DMA, LVD, POR, PWM, WDT
Number of I/O	37
Program Memory Size	96KB (96K x 8)
Program Memory Type	FLASH
EEPROM Size	-
RAM Size	10K x 8
Voltage - Supply (Vcc/Vdd)	2.7V ~ 5.5V
Data Converters	A/D 16x8/10b
Oscillator Type	Internal
Operating Temperature	-40°C ~ 125°C (TA)
Mounting Type	Surface Mount
Package / Case	48-LQFP
Supplier Device Package	48-LQFP (7x7)
Purchase URL	https://www.e-xfl.com/product-detail/infineon-technologies/mb96f613rbpmc-gs-127e2

- LIN functionality working either as master or slave LIN device
- Extended support for LIN-Protocol to reduce interrupt load

A/D Converter

- SAR-type
- 8/10-bit resolution
- Signals interrupt on conversion end, single conversion mode, continuous conversion mode, stop conversion mode, activation by software, external trigger, reload timers and PPGs
- Range Comparator Function

Source Clock Timers

- Three independent clock timers (23-bit RC clock timer, 23-bit Main clock timer, 17-bit Sub clock timer)

Hardware Watchdog Timer

- Hardware watchdog timer is active after reset
- Window function of Watchdog Timer is used to select the lower window limit of the watchdog interval

Reload Timers

- 16-bit wide
- 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

Free-Running Timers

- Signals an interrupt on overflow, supports timer clear upon match with Output Compare (0, 4)
- Prescaler with 1, $1/2^1$, $1/2^2$, $1/2^3$, $1/2^4$, $1/2^5$, $1/2^6$, $1/2^7$, $1/2^8$ of peripheral clock frequency

Input Capture Units

- 16-bit wide
- Signals an interrupt upon external event
- Rising edge, Falling edge or Both (rising & falling) edges sensitive

Output Compare Units

- 16-bit wide
- Signals an interrupt when a match with Free-running Timer occurs
- A pair of compare registers can be used to generate an output signal

Programmable Pulse Generator

- 16-bit down counter, cycle and duty setting registers
- Can be used as 2 ×8-bit PPG
- Interrupt at trigger, counter borrow and/or duty match
- PWM operation and one-shot operation
- Internal prescaler allows 1, 1/4, 1/16, 1/64 of peripheral clock as counter clock or of selected Reload timer underflow as clock input
- Can be triggered by software or reload timer
- Can trigger ADC conversion
- Timing point capture

Quadrature Position/Revolution Counter (QPRC)

- Up/down count mode, Phase difference count mode, Count mode with direction
- 16-bit position counter
- 16-bit revolution counter
- Two 16-bit compare registers with interrupt
- Detection edge of the three external event input pins AIN, BIN and ZIN is configurable

Real Time Clock

- Operational on main oscillation (4MHz), sub oscillation (32kHz) or RC oscillation (100kHz/2MHz)
- Capable to correct oscillation deviation of Sub clock or RC oscillator clock (clock calibration)
- Read/write accessible second/minute/hour registers
- Can signal interrupts every half second/second/minute/hour/day
- Internal clock divider and prescaler provide exact 1s clock

External Interrupts

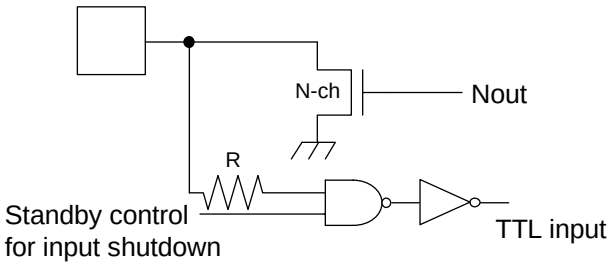
- Edge or Level sensitive
- Interrupt mask bit per channel
- Each available CAN channel RX has an external interrupt for wake-up
- Selected USART channels SIN have an external interrupt for wake-up

Non Maskable Interrupt

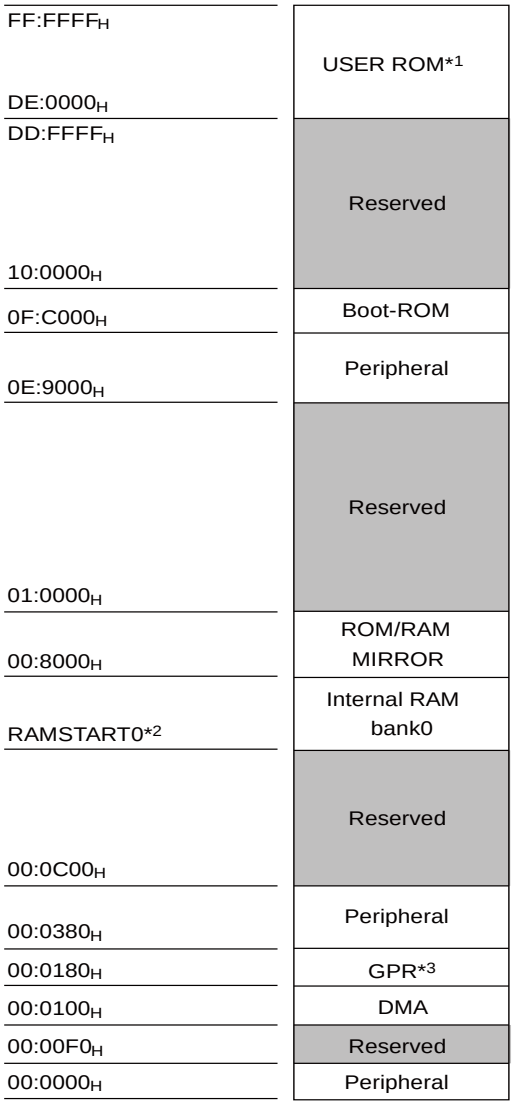
- Disabled after reset, can be enabled by Boot-ROM depending on ROM configuration block
- Once enabled, can not be disabled other than by reset
- High or Low level sensitive
- Pin shared with external interrupt 0

I/O Ports

- Most of the external pins can be used as general purpose I/O
- All push-pull outputs
- Bit-wise programmable as input/output or peripheral signal
- Bit-wise programmable input enable
- One input level per GPIO-pin (either Automotive or CMOS hysteresis)
- Bit-wise programmable pull-up resistor

Type	Circuit	Remarks
O		■ Open-drain I/O ■ Output 25mA, Vcc = 2.7V ■ TTL input

7. Memory Map



*1: For details about USER ROM area, see “
User ROM Memory Map for Flash Devices” on the following pages.

*2: For RAMSTART addresses, see the table on the next page.

*3: Unused GPR banks can be used as RAM area.

GPR: General-Purpose Register

The DMA area is only available if the device contains the corresponding resource.

The available RAM and ROM area depends on the device.

8. RAMstart Addresses

Devices	Bank 0 RAM Size	RAMSTART0
CY96F612	4KB	$00:7200_H$
CY96F613, CY96F615	10KB	$00:5A00_H$

10. Serial Programming Communication Interface

USART pins for Flash serial programming (MD = 0, DEBUG I/F = 0, Serial Communication mode)

CY96610		
Pin Number	**USART Number**	**Normal Function**
7	USART2	SIN2
8		SOT2
9		SCK2
20	USART7	SIN7_R
19		SOT7_R
18		SCK7_R
22	USART8	SIN8_R
21		SOT8_R
23		SCK8_R

Vector Number	Offset in Vector Table	Vector Name	Cleared by DMA	Index in ICR to Program	Description
40	$35C_H$	-	-	40	Reserved
41	358_H	PPG3	Yes	41	Programmable Pulse Generator 3
42	354_H	PPG4	Yes	42	Programmable Pulse Generator 4
43	350_H	-	-	43	Reserved
44	$34C_H$	PPG6	Yes	44	Programmable Pulse Generator 6
45	348_H	PPG7	Yes	45	Programmable Pulse Generator 7
46	344_H	-	-	46	Reserved
47	340_H	-	-	47	Reserved
48	$33C_H$	-	-	48	Reserved
49	338_H	-	-	49	Reserved
50	334_H	PPG12	Yes	50	Programmable Pulse Generator 12
51	330_H	-	-	51	Reserved
52	$32C_H$	PPG14	Yes	52	Programmable Pulse Generator 14
53	328_H	-	-	53	Reserved
54	324_H	-	-	54	Reserved
55	320_H	-	-	55	Reserved
56	$31C_H$	-	-	56	Reserved
57	318_H	-	-	57	Reserved
58	314_H	-	-	58	Reserved
59	310_H	RLT1	Yes	59	Reload Timer 1
60	$30C_H$	-	-	60	Reserved
61	308_H	RLT3	Yes	61	Reload Timer 3
62	304_H	-	-	62	Reserved
63	300_H	-	-	63	Reserved
64	$2FC_H$	RLT6	Yes	64	Reload Timer 6
65	$2F8_H$	ICU0	Yes	65	Input Capture Unit 0
66	$2F4_H$	ICU1	Yes	66	Input Capture Unit 1
67	$2F0_H$	-	-	67	Reserved
68	$2EC_H$	-	-	68	Reserved
69	$2E8_H$	ICU4	Yes	69	Input Capture Unit 4
70	$2E4_H$	ICU5	Yes	70	Input Capture Unit 5
71	$2E0_H$	ICU6	Yes	71	Input Capture Unit 6
72	$2DC_H$	-	-	72	Reserved
73	$2D8_H$	-	-	73	Reserved
74	$2D4_H$	ICU9	Yes	74	Input Capture Unit 9
75	$2D0_H$	ICU10	Yes	75	Input Capture Unit 10
76	$2CC_H$	-	-	76	Reserved
77	$2C8_H$	OCU0	Yes	77	Output Compare Unit 0
78	$2C4_H$	OCU1	Yes	78	Output Compare Unit 1
79	$2C0_H$	-	-	79	Reserved
80	$2BC_H$	-	-	80	Reserved

Vector Number	Offset in Vector Table	Vector Name	Cleared by DMA	Index in ICR to Program	Description
122	214_H	-	-	122	Reserved
123	210_H	-	-	123	Reserved
124	$20C_H$	-	-	124	Reserved
125	208_H	-	-	125	Reserved
126	204_H	-	-	126	Reserved
127	200_H	-	-	127	Reserved
128	$1FC_H$	-	-	128	Reserved
129	$1F8_H$	-	-	129	Reserved
130	$1F4_H$	-	-	130	Reserved
131	$1F0_H$	-	-	131	Reserved
132	$1EC_H$	-	-	132	Reserved
133	$1E8_H$	FLASHA	Yes	133	Flash memory A interrupt
134	$1E4_H$	-	-	134	Reserved
135	$1E0_H$	-	-	135	Reserved
136	$1DC_H$	-	-	136	Reserved
137	$1D8_H$	QPRC0	Yes	137	Quad Position/Revolution counter 0
138	$1D4_H$	QPRC1	Yes	138	Quad Position/Revolution counter 1
139	$1D0_H$	ADCRC0	No	139	A/D Converter 0 - Range Comparator
140	$1CC_H$	-	-	140	Reserved
141	$1C8_H$	-	-	141	Reserved
142	$1C4_H$	-	-	142	Reserved
143	$1C0_H$	-	-	143	Reserved

■ 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. Cypress 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 Cypress 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, Cypress 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 Cypress 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 styro foam or other highly static-prone materials for storage of completed board assemblies.

12.3 Precautions for Use Environment

Reliability of semiconductor devices depends on ambient temperature and other conditions as described above.

For reliable performance, do the following:

1. Humidity

Prolonged use in high humidity can lead to leakage in devices as well as printed circuit boards. If high humidity levels are anticipated, consider anti-humidity processing.

2. Discharge of Static Electricity

When high-voltage charges exist close to semiconductor devices, discharges can cause abnormal operation. In such cases, use anti-static measures or processing to prevent discharges.

3. Corrosive Gases, Dust, or Oil

Exposure to corrosive gases or contact with dust or oil may lead to chemical reactions that will adversely affect the device. If you use devices in such conditions, consider ways to prevent such exposure or to protect the devices.

4. Radiation, Including Cosmic Radiation

Most devices are not designed for environments involving exposure to radiation or cosmic radiation. Users should provide shielding as appropriate.

5. Smoke, Flame

CAUTION:

Plastic molded devices are flammable, and therefore should not be used near combustible substances. If devices begin to smoke or burn, there is danger of the release of toxic gases.

Customers considering the use of Cypress products in other special environmental conditions should consult with sales representatives.

14.3 DC Characteristics

14.3.1 *Current Rating*

(V_{CC} = AV_{CC} = 2.7V to 5.5V, V_{SS} = AV_{SS} = 0V, T_A = - 40°C to + 125°C)

Parameter	Symbol	Pin Name	Conditions	Value			Unit	Remarks
				Min	Typ	Max		
Power supply current in Run modes[1]	I_{CCPLL}	Vcc	PLL Run mode with CLKS1/2 = CLKB = CLKP1/2 = 32MHz Flash 0 wait (CLKRC and CLKSC stopped)	-	25	-	mA	T_A = +25°C
				-	-	34	mA	T_A = +105°C
				-	-	35	mA	T_A = +125°C
	I_{CCMAIN}		Main Run mode with CLKS1/2 = CLKB = CLKP1/2 = 4MHz Flash 0 wait (CLKPLL, CLKSC and CLKRC stopped)	-	3.5	-	mA	T_A = +25°C
				-	-	7.5	mA	T_A = +105°C
				-	-	8.5	mA	T_A = +125°C
	I_{CCRCH}		RC Run mode with CLKS1/2 = CLKB = CLKP1/2 = CLKRC = 2MHz Flash 0 wait (CLKMC, CLKPLL and CLKSC stopped)	-	1.7	-	mA	T_A = +25°C
				-	-	5.5	mA	T_A = +105°C
				-	-	6.5	mA	T_A = +125°C
	I_{CCRCL}		RC Run mode with CLKS1/2 = CLKB = CLKP1/2 = CLKRC = 100kHz Flash 0 wait (CLKMC, CLKPLL and CLKSC stopped)	-	0.15	-	mA	T_A = +25°C
				-	-	3.2	mA	T_A = +105°C
				-	-	4.2	mA	T_A = +125°C
	I_{CCSUB}		Sub Run mode with CLKS1/2 = CLKB = CLKP1/2 = 32kHz Flash 0 wait (CLKMC, CLKPLL and CLKRC stopped)	-	0.1	-	mA	T_A = +25°C
				-	-	3	mA	T_A = +105°C
				-	-	4	mA	T_A = +125°C

Parameter	Symbol	Pin Name	Conditions	Value			Unit	Remarks
				Min	Typ	Max		
Power supply current in Timer modes[2]	I_{CCTPLL}	Vcc	PLL Timer mode with CLKPLL = 32MHz (CLKRC and CLKSC stopped)	-	1800	2245	µA	T_A = +25°C
				-	-	3165	µA	T_A = +105°C
				-	-	3975	µA	T_A = +125°C
	$I_{CCTMAIN}$		Main Timer mode with CLKMC = 4MHz, SMCR:LPMSS = 0 (CLKPLL, CLKRC and CLKSC stopped)	-	285	325	µA	T_A = +25°C
				-	-	1085	µA	T_A = +105°C
				-	-	1930	µA	T_A = +125°C
	I_{CCTRCH}		RC Timer mode with CLKRC = 2MHz, SMCR:LPMSS = 0 (CLKPLL, CLKMC and CLKSC stopped)	-	160	210	µA	T_A = +25°C
				-	-	1025	µA	T_A = +105°C
				-	-	1840	µA	T_A = +125°C
	I_{CCTRCL}		RC Timer mode with CLKRC = 100kHz (CLKPLL, CLKMC and CLKSC stopped)	-	35	75	µA	T_A = +25°C
				-	-	855	µA	T_A = +105°C
				-	-	1640	µA	T_A = +125°C
	I_{CCTSUB}		Sub Timer mode with CLKSC = 32kHz (CLKMC, CLKPLL and CLKRC stopped)	-	25	65	µA	T_A = +25°C
				-	-	830	µA	T_A = +105°C
				-	-	1620	µA	T_A = +125°C
Power supply current in Stop mode[3]	I_{CCH}	Vcc	-	-	20	55	µA	T_A = +25°C
				-	-	825	µA	T_A = +105°C
				-	-	1615	µA	T_A = +125°C
Flash Power Down current	$I_{CCFLASHPD}$		-	-	36	70	µA	
Power supply current for active Low Voltage detector[4]	I_{CCLVD}		Low voltage detector enabled	-	5	-	µA	T_A = +25°C
				-	-	12.5	µA	T_A = +125°C
Flash Write/ Erase current[5]	$I_{CCFLASH}$		-	-	12.5	-	mA	T_A = +25°C
				-	-	20	mA	T_A = +125°C

[1]: 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. See chapter “Standby mode and voltage regulator control circuit” of the Hardware Manual for further details about voltage regulator control. Current for "On Chip Debugger" part is not included. Power supply current in Run mode does not include Flash Write / Erase current.

[2]: The power supply current in Timer mode is the value when Flash is in Power-down / reset mode.

When Flash is not in Power-down / reset mode, $I_{CCFLASHPD}$ must be added to the Power supply current.

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. The current for "On Chip Debugger" part is not included.

[3]: The power supply current in Stop mode is the value when Flash is in Power-down / reset mode.

When Flash is not in Power-down / reset mode, $I_{CCFLASHPD}$ must be added to the Power supply current.

[4]: When low voltage detector is enabled, I_{CCLVD} must be added to Power supply current.

[5]: When Flash Write / Erase program is executed, $I_{CCFLASH}$ must be added to Power supply current.

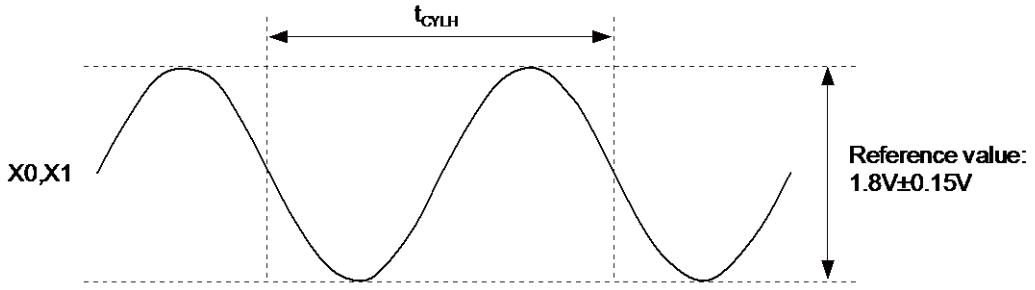
14.4 AC Characteristics

14.4.1 *Main Clock Input Characteristics*

(V_{CC} = AV_{CC} = 2.7V to 5.5V, VD=1.8V±0.15V, V_{SS} = AV_{SS} = 0V, T_A = - 40°C to + 125°C)

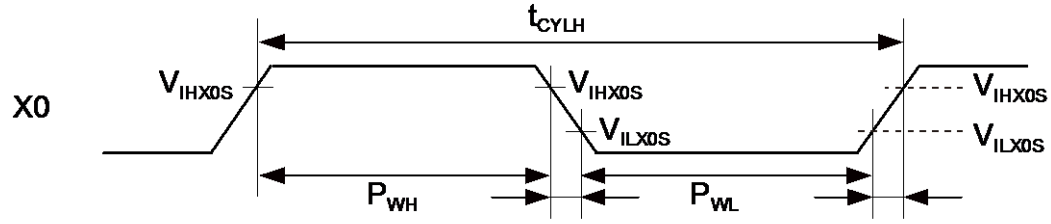
Parameter	Symbol	Pin Name	Value			Unit	Remarks
			Min	Typ	Max		
Input frequency	f_C	X0, X1	4	-	8	MHz	When using a crystal oscillator, PLL off
			-	-	8	MHz	When using an opposite phase external clock, PLL off
			4	-	8	MHz	When using a crystal oscillator or opposite phase external clock, PLL on
Input frequency	f_{FCI}	X0	-	-	8	MHz	When using a single phase external clock in “Fast Clock Input mode”, PLL off
			4	-	8	MHz	When using a single phase external clock in “Fast Clock Input mode”, PLL on
Input clock cycle	t_{CYLH}	-	125	-	-	ns	
Input clock pulse width	P_{WH}, P_{WL}	-	55	-	-	ns	

When using the crystal oscillator



The amplitude changes by resistance, capacity which added outside or the difference of the device.

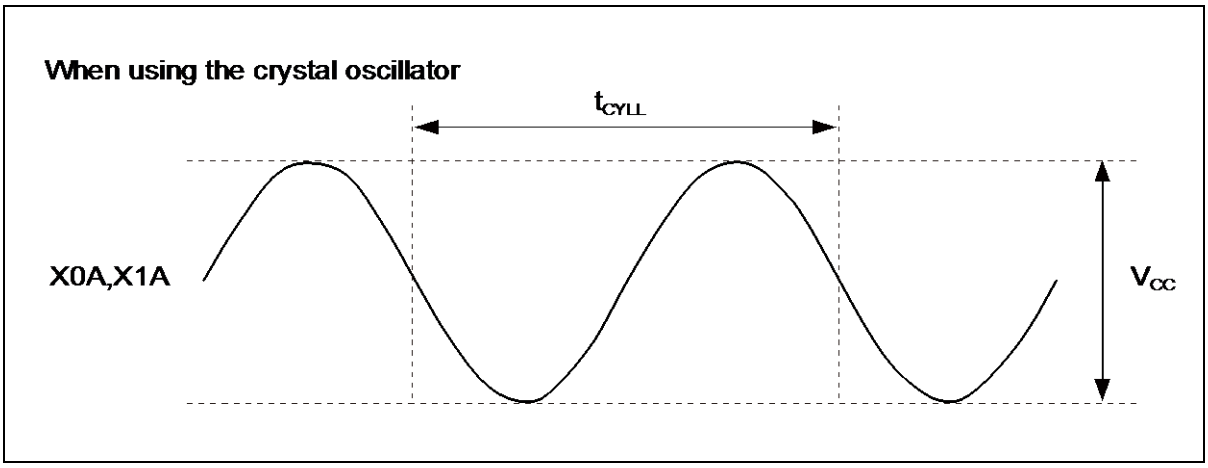
When using the external clock

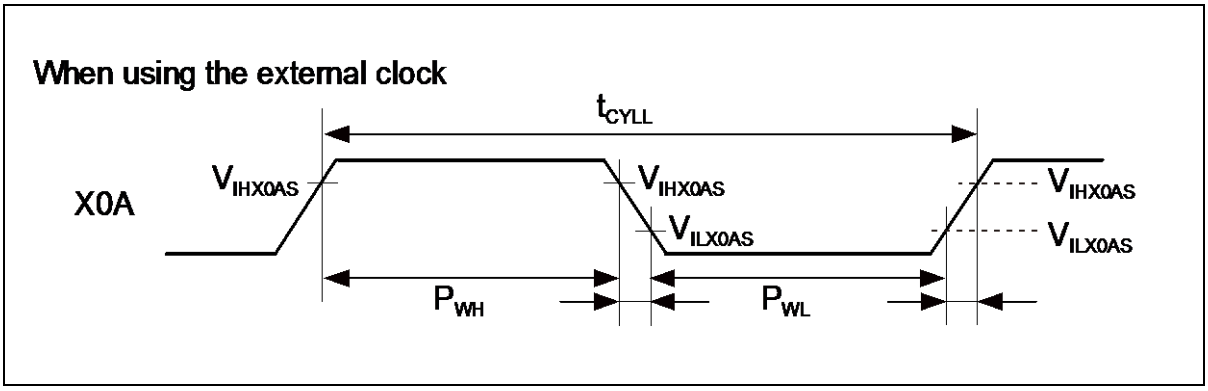


14.4.2 *Sub Clock Input Characteristics*

(V_{CC} = AV_{CC} = 2.7V to 5.5V, V_{SS} = AV_{SS} = 0V, T_A = - 40°C to + 125°C)

Parameter	Symbol	Pin Name	Conditions	Value			Unit	Remarks
				Min	Typ	Max		
Input frequency	f_{CL}	X0A, X1A	-	-	32.768	-	kHz	When using an oscillation circuit
			-	-	-	100	kHz	When using an opposite phase external clock
		X0A	-	-	-	50	kHz	When using a single phase external clock
Input clock cycle	t_{CYLL}	-	-	10	-	-	µs	
Input clock pulse width	-	-	P_{WH}/t_{CYLL}, P_{WL}/t_{CYLL}	30	-	70	%	





14.4.3 *Built-in RC Oscillation Characteristics*

(V_{CC} = AV_{CC} = 2.7V to 5.5V, V_{SS} = AV_{SS} = 0V, T_A = - 40°C to + 125°C)

Parameter	Symbol	Value			Unit	Remarks
		Min	Typ	Max		
Clock frequency	f_{RC}	50	100	200	kHz	When using slow frequency of RC oscillator
		1	2	4	MHz	When using fast frequency of RC oscillator
RC clock stabilization time	t_{RCSTAB}	80	160	320	µs	When using slow frequency of RC oscillator (16 RC clock cycles)
		64	128	256	µs	When using fast frequency of RC oscillator (256 RC clock cycles)

14.4.4 *Internal Clock Timing*

(V_{CC} = AV_{CC} = 2.7V to 5.5V, V_{SS} = AV_{SS} = 0V, T_A = - 40°C to + 125°C)

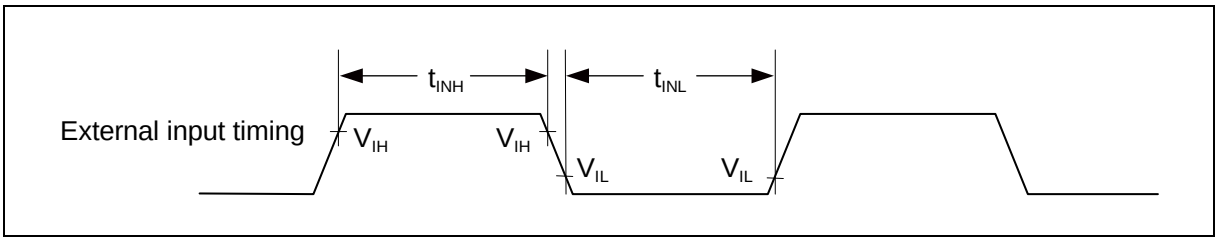
Parameter	Symbol	Value		Unit
		Min	Max	
Internal System clock frequency (CLKS1 and CLKS2)	f_{CLKS1}, f_{CLKS2}	-	54	MHz
Internal CPU clock frequency (CLKB), Internal peripheral clock frequency (CLKP1)	f_{CLKB}, f_{CLKP1}	-	32	MHz
Internal peripheral clock frequency (CLKP2)	f_{CLKP2}	-	32	MHz

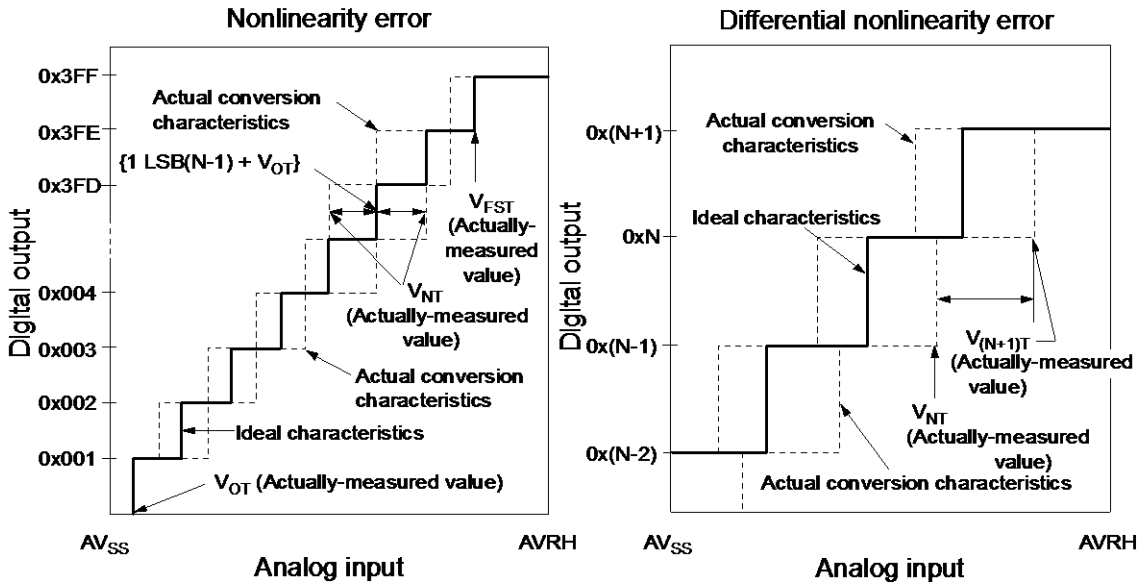
14.4.9 *External Input Timing*

(V_{CC} = AV_{CC} = 2.7V to 5.5V, V_{SS} = AV_{SS} = 0V, T_A = - 40°C to + 125°C)

Parameter	Symbol	Pin Name	Value		Unit	Remarks
			Min	Max		
Input pulse width	t_{INH}, t_{INL}	Pnn_m	$2t_{CLKP1}$ +200 (t_{CLKP1}=1/f_{CLKP1})*	-	ns	General Purpose I/O
		ADTG_R				A/D Converter trigger input
		TINn				Reload Timer
		TTGn				PPG trigger input
		INn				Input Capture
		AINn, BINn, ZINn				Quadrature Position/Revolution Counter
		INTn, INTn_R, INTn_R1	200	-	ns	External Interrupt
		NMI				Non-Maskable Interrupt

*: t_{CLKP1} indicates the peripheral clock1 (CLKP1) cycle time except stop when in stop mode.





Nonlinearity error of digital output N = $\frac{V_{NT} - \{1LSB \times (N - 1) + V_{OT}\}}{1LSB}$ [LSB]

Differential nonlinearity error of digital output N = $\frac{V_{(N+1)T} - V_{NT}}{1LSB} - 1$ [LSB]

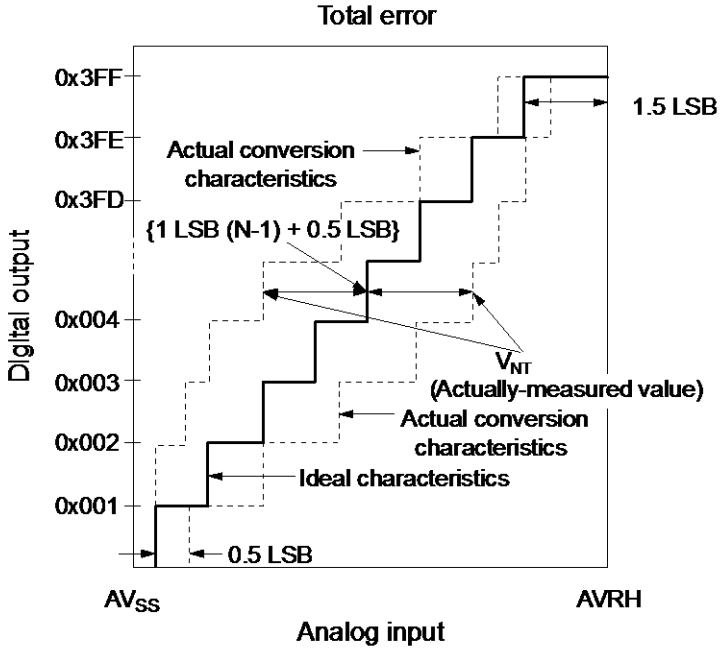
$1LSB = \frac{V_{FST} - V_{OT}}{1022}$

N : A/D converter digital output value.

V_O : Voltage at which the digital output changes from 0x000 to 0x001.

V_{FST} : Voltage at which the digital output changes from 0x3FE to 0x3FF.

V_{NT} : Voltage at which the digital output changes from 0x(N − 1) to 0xN.



$$1LSB\ (Ideal\ value) = \frac{AVRH - AV_{SS}}{1024}\ [V]$$

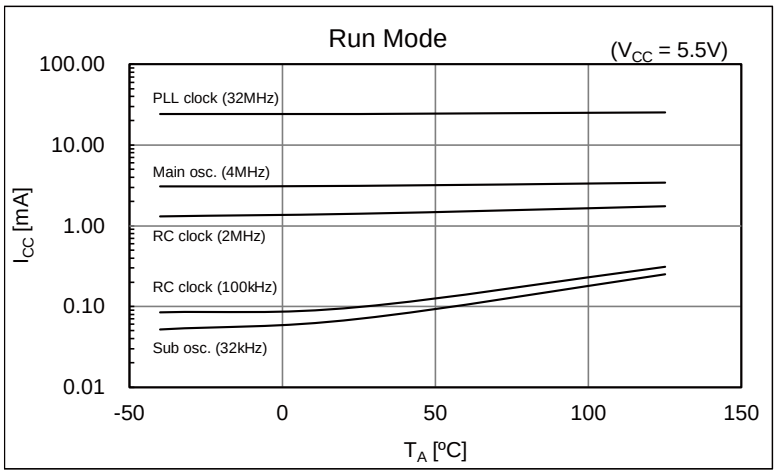
$$Total\ error\ of\ digital\ output\ N = \frac{V_{NT} - \{1LSB \times (N - 1) + 0.5LSB\}}{1LSB}$$

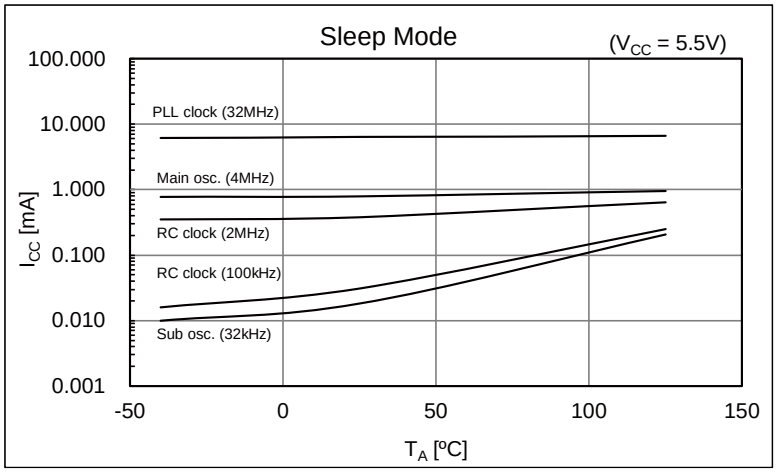
N : A/D converter digital output value.
V_{NT} : Voltage at which the digital output changes from 0x(N + 1) to 0xN.
V_{OT} (Ideal value) = AV_{SS} + 0.5LSB[V]
V_{FST} (Ideal value) = AVRH - 1.5LSB[V]

15. Example Characteristics

This characteristic is an actual value of the arbitrary sample. It is not the guaranteed value.

CY96F615





Page	Section	Change Results
58	16. Ordering Information	Revised Marketing Part Numbers as follows: Before) **MCU with CAN Controller** MB96F612RBPMC-GSE1 MB96F612RBPMC-GS-UJE1 MB96F612RBPMC-GSE2 MB96F612RBPMC-GS-UJE2 MB96F612RBPMC-GTE1 MB96F613RBPMC-GSE1 MB96F613RBPMC-GS-UJE1 MB96F613RBPMC-GSE2 MB96F613RBPMC-GS-UJE2 MB96F613RBPMC-GTE1 MB96F615RBPMC-GSE1 MB96F615RBPMC-GS-UJE1 MB96F615RBPMC-GSE2 MB96F615RBPMC-GS-UJE2 MB96F615RBPMC-GTE1 **MCU without CAN Controller** MB96F612ABPMC-GSE1 MB96F612ABPMC-GS-UJE1 MB96F612ABPMC-GSE2 MB96F612ABPMC-GS-UJE2 MB96F612ABPMC-GTE1 MB96F613ABPMC-GSE1 MB96F613ABPMC-GS-UJE1 MB96F613ABPMC-GSE2 MB96F613ABPMC-GS-UJE2 MB96F613ABPMC-GTE1 MB96F615ABPMC-GSE1 MB96F615ABPMC-GS-UJE1 MB96F615ABPMC-GSE2 MB96F615ABPMC-GTE1
58	16. Ordering Information	After) **MCU with CAN Controller** CY96F612RBPMC-GS-UJE1 CY96F612RBPMC-GS-UJE2 CY96F613RBPMC-GS-UJE1 CY96F613RBPMC-GS-UJE2 CY96F613RBPMC-GS-UJERE2 CY96F615RBPMC-GS-UJE1 CY96F615RBPMC-GS-UJE2 CY96F615RBPMC-GS-UJERE2 **MCU without CAN Controller** CY96F612ABPMC-GS-UJE1 CY96F612ABPMC-GS-UJE2 CY96F613ABPMC-GS-UJE1 CY96F613ABPMC-GS-UJE2 CY96F615ABPMC-GS-UJE1

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