Infineon Technologies - MB96F615RBPMC-GTE1 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	160KB (160K 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/mb96f615rbpmc-gte1

Contents

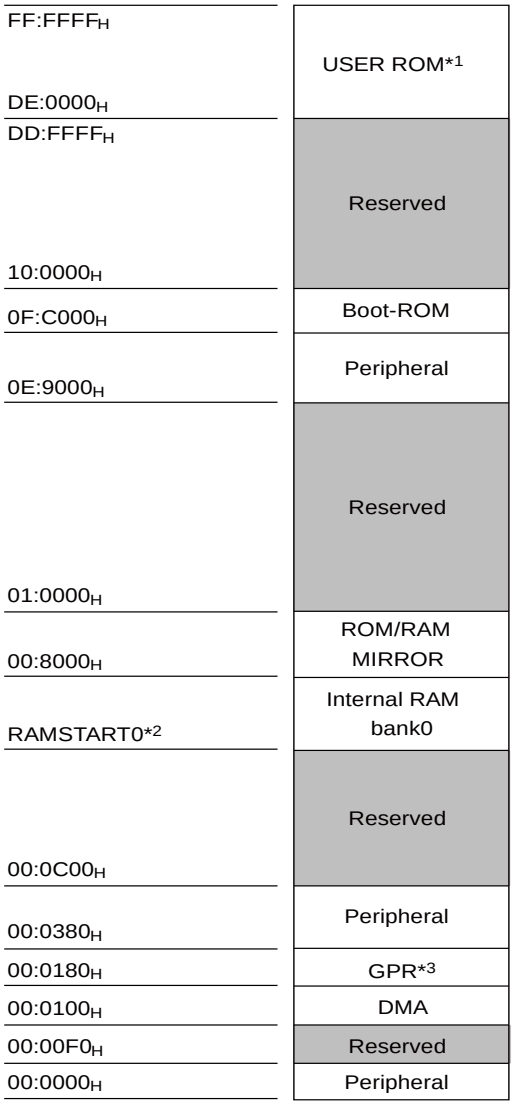
4. Pin Description

Pin Name	Feature	Description
ADTG_R	ADC	Relocated A/D converter trigger input pin
AINn	QPRC	Quadrature Position/Revolution Counter Unit n input pin
ANn	ADC	A/D converter channel n input pin
AVcc	Supply	Analog circuits power supply pin
AVRH	ADC	A/D converter high reference voltage input pin
AVss	Supply	Analog circuits power supply pin
BINn	QPRC	Quadrature Position/Revolution Counter Unit n input pin
C	Voltage regulator	Internally regulated power supply stabilization capacitor pin
CKOTn	Clock Output function	Clock Output function n output pin
CKOTn_R	Clock Output function	Relocated Clock Output function n output pin
CKOTXn	Clock Output function	Clock Output function n inverted output pin
DEBUG I/F	OCD	On Chip Debugger input/output pin
INn	ICU	Input Capture Unit n input pin
INTn	External Interrupt	External Interrupt n input pin
INTn_R	External Interrupt	Relocated External Interrupt n input pin
INTn_R1	External Interrupt	Relocated External Interrupt n input pin
MD	Core	Input pin for specifying the operating mode
NMI	External Interrupt	Non-Maskable Interrupt input pin
OUTn	OCU	Output Compare Unit n waveform output pin
OUTn_R	OCU	Relocated Output Compare Unit n waveform output pin
Pnn_m	GPIO	General purpose I/O pin
PPGn	PPG	Programmable Pulse Generator n output pin (16bit/8bit)
PPGn_B	PPG	Programmable Pulse Generator n output pin (16bit/8bit)
RSTX	Core	Reset input pin
RXn	CAN	CAN interface n RX input pin
SCKn	USART	USART n serial clock input/output pin
SCKn_R	USART	Relocated USART n serial clock input/output pin
SINn	USART	USART n serial data input pin
SINn_R	USART	Relocated USART n serial data input pin
SOTn	USART	USART n serial data output pin
SOTn_R	USART	Relocated USART n serial data output pin
TINn	Reload Timer	Reload Timer n event input pin
TOTn	Reload Timer	Reload Timer n output pin
TTGn	PPG	Programmable Pulse Generator n trigger input pin
TXn	CAN	CAN interface n TX output pin
V_{cc}	Supply	Power supply pin
V_{ss}	Supply	Power supply pin
X0	Clock	Oscillator input pin
X0A	Clock	Subclock Oscillator input pin
X1	Clock	Oscillator output pin
X1A	Clock	Subclock Oscillator output pin

Pin No.	I/O Circuit Type*	Pin Name
33	C	RSTX
34	A	X1
35	A	X0
36	Supply	Vss
37	Supply	Vcc
38	F	C
39	H	P02_5 / BIN0 / IN1 / TTG1 / ADTG_R
40	K	P03_0 / AIN1 / IN4 / TTG4 / TTG12 / AN24
41	K	P03_1 / BIN1 / IN5 / TTG5 / TTG13 / AN25
42	M	P03_2 / INT10_R / RX2
43	H	P03_3 / TX2
44	K	P03_6 / ZIN1 / OUT6 / AN30
45	K	P03_7 / OUT7 / AN31
46	K	P06_0 / AN0 / PPG0
47	K	P06_1 / AN1 / PPG1
48	Supply	AVcc

*: See I/O Circuit Type" for details on the I/O circuit types.

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

12. Handling Precautions

Any semiconductor devices have inherently a certain rate of failure. The possibility of failure is greatly affected by the conditions in which they are used (circuit conditions, environmental conditions, etc.). This page describes precautions that must be observed to minimize the chance of failure and to obtain higher reliability from your Cypress semiconductor devices.

12.1 Precautions for Product Design

This section describes precautions when designing electronic equipment using semiconductor devices.

■ Absolute Maximum Ratings

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

■ Recommended Operating Conditions

Recommended operating conditions are normal operating ranges for the semiconductor device. All the device's electrical characteristics are warranted when operated within these ranges.

Always use semiconductor devices within the recommended operating conditions. 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 sales representative beforehand.

■ Processing and Protection of Pins

These precautions must be followed when handling the pins which connect semiconductor devices to power supply and input/output functions.

1. Preventing Over-Voltage and Over-Current Conditions

Exposure to voltage or current levels in excess of maximum ratings at any pin is likely to cause deterioration within the device, and in extreme cases leads to permanent damage of the device. Try to prevent such overvoltage or over-current conditions at the design stage.

2. Protection of Output Pins

Shorting of output pins to supply pins or other output pins, or connection to large capacitance can cause large current flows. Such conditions if present for extended periods of time can damage the device.
Therefore, avoid this type of connection.

3. Handling of Unused Input Pins

Unconnected input pins with very high impedance levels can adversely affect stability of operation. Such pins should be connected through an appropriate resistance to a power supply pin or ground pin.

■ Latch-up

Semiconductor devices are constructed by the formation of P-type and N-type areas on a substrate. When subjected to abnormally high voltages, internal parasitic PNPN junctions (called thyristor structures) may be formed, causing large current levels in excess of several hundred mA to flow continuously at the power supply pin. This condition is called latch-up.

CAUTION:
The occurrence of latch-up not only causes loss of reliability in the semiconductor device, but can cause injury or damage from high heat, smoke or flame. To prevent this from happening, do the following:

1. *Be sure that voltages applied to pins do not exceed the absolute maximum ratings. This should include attention to abnormal noise, surge levels, etc.*
2. *Be sure that abnormal current flows do not occur during the power-on sequence.*

■ Observance of Safety Regulations and Standards
Most countries in the world have established standards and regulations regarding safety, protection from electromagnetic interference, etc. Customers are requested to observe applicable regulations and standards in the design of products.

■ Fail-Safe Design
Any semiconductor devices have inherently a certain rate of failure. You must protect against injury, damage or loss from such failures by incorporating safety design measures into your facility and equipment such as redundancy, fire protection, and prevention of over-current levels and other abnormal operating conditions.

■ Precautions Related to Usage of Devices
Cypress semiconductor devices are intended for use in standard applications (computers, office automation and other office equipment, industrial, communications, and measurement equipment, personal or household devices, etc.).
CAUTION:
Customers considering the use of our products in special applications where failure or abnormal operation may directly affect human lives or cause physical injury or property damage, or where extremely high levels of reliability are demanded (such as aerospace systems, atomic energy controls, sea floor repeaters, vehicle operating controls, medical devices for life support, etc.) are requested to consult with sales representatives before such use. The company will not be responsible for damages arising from such use without prior approval.

12.2 Precautions for Package Mounting

Package mounting may be either lead insertion type or surface mount type. In either case, for heat resistance during soldering, you should only mount under Cypress's recommended conditions. For detailed information about mount conditions, contact your sales representative.

■ Lead Insertion Type
Mounting of lead insertion type packages onto printed circuit boards may be done by two methods: direct soldering on the board, or mounting by using a socket.

Direct mounting onto boards normally involves processes for inserting leads into through-holes on the board and using the flow soldering (wave soldering) method of applying liquid solder. In this case, the soldering process usually causes leads to be subjected to thermal stress in excess of the absolute ratings for storage temperature. Mounting processes should conform to Cypress recommended mounting conditions.

If socket mounting is used, differences in surface treatment of the socket contacts and IC lead surfaces can lead to contact deterioration after long periods. For this reason it is recommended that the surface treatment of socket contacts and IC leads be verified before mounting.

■ 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

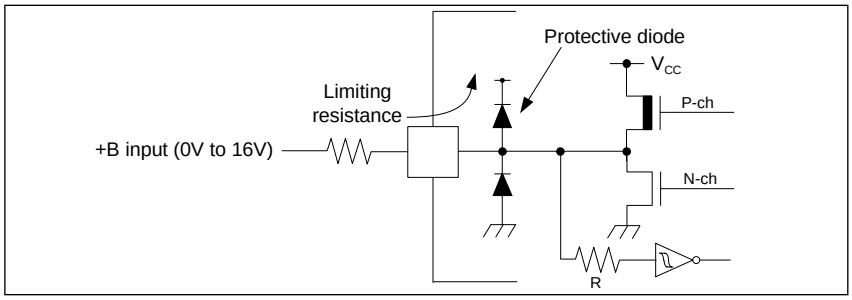
CAUTION:

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.

- 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 0V), 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.
- The DEBUG I/F pin has only a protective diode against VSS. Hence it is only permitted to input a negative clamping current (4mA). For protection against positive input voltages, use an external clamping diode which limits the input voltage to maximum 6.0V.

Sample recommended circuits:



[5]: The maximum permitted power dissipation depends on the ambient temperature, the air flow velocity and the thermal conductance of the package on the PCB.
The actual power dissipation depends on the customer application and can be calculated as follows:
$P_D = P_{IO} + P_{INT}$
$P_{IO} = \Sigma (V_{OL} \times I_{OL} + V_{OH} \times I_{OH})$ (I/O load power dissipation, sum is performed on all I/O ports)
$P_{INT} = V_{CC} \times (I_{CC} + I_A)$ (internal power dissipation)
I_{CC} is the total core current consumption into V_{CC} as described in the “DC characteristics” and depends on the selected operation mode and clock frequency and the usage of functions like Flash programming.
I_A is the analog current consumption into AV_{CC}.

[6]: Worst case value for a package mounted on single layer PCB at specified T_A without air flow.

[7]: Write/erase to a large sector in flash memory is warranted with $T_A \leq +105°C$.

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.

14.2 Recommended Operating Conditions

(V_{SS} = AV_{SS} = 0V)

Parameter	Symbol	Value			Unit	Remarks
		Min	Typ	Max		
Power supply voltage	V_{CC}, AV_{CC}	2.7	-	5.5	V	
		2.0	-	5.5	V	Maintains RAM data in stop mode
Smoothing capacitor at C pin	C_S	0.5	1.0 to 3.9	4.7	µF	1.0µF (Allowance within ± 50%) 3.9µF (Allowance within ± 20%) Please use the ceramic capacitor or the capacitor of the frequency response of this level. The smoothing capacitor at V_{CC} must use the one of a capacity value that is larger than C_S.

WARNING:

The recommended operating conditions are required in order to ensure the normal operation of the semiconductor device. All of the device's 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 representatives beforehand.

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.

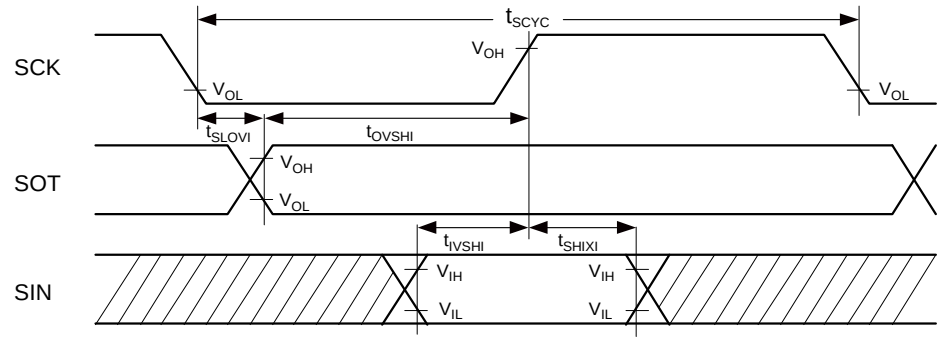
The power supply current is measured with a 4MHz external clock connected to the Main oscillator and a 32kHz external clock connected to the Sub oscillator. The current for "On Chip Debugger" part is not included.

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

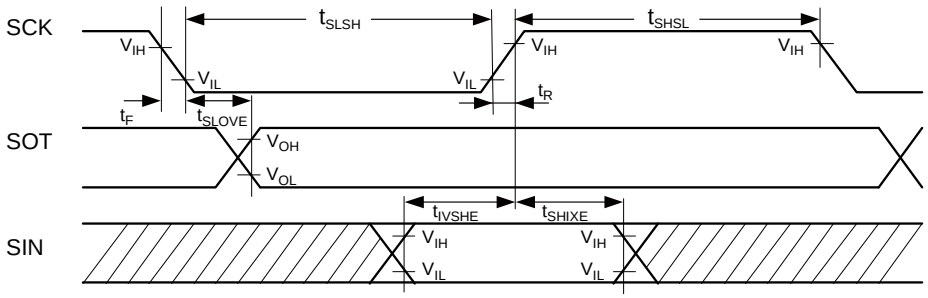
When Flash is not in Power-down / reset mode, $I_{CCFLASHPD}$ must be added to the Power supply current.

[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.



Internal shift clock mode



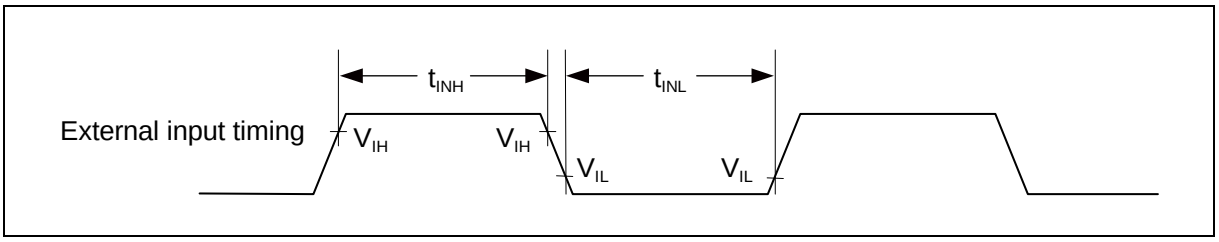
External shift clock mode

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.



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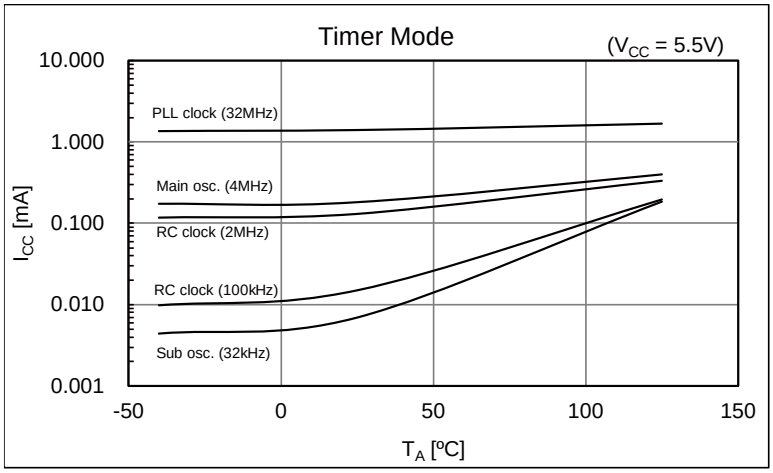
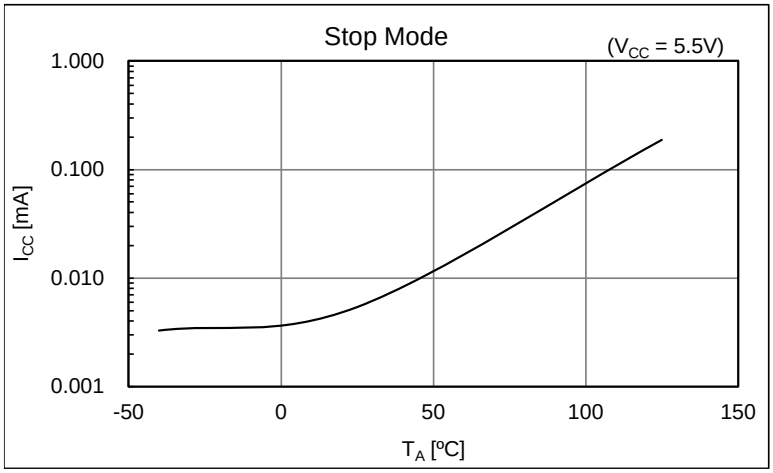
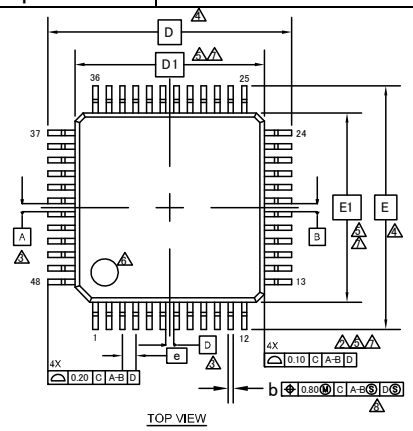

Timer Mode
(V_{CC} = 5.5V)
10.000
1.000
0.100
0.010
0.001
I_{CC} [mA]
PLL clock (32MHz)
Main osc. (4MHz)
RC clock (2MHz)
RC clock (100kHz)
Sub osc. (32kHz)
-50
0
50
100
150
T_A [ºC]

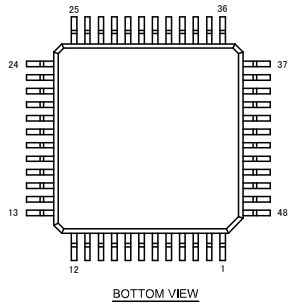

Stop Mode
(V_{CC} = 5.5V)
1.000
0.100
0.010
0.001
I_{CC} [mA]
-50
0
50
100
150
T_A [ºC]

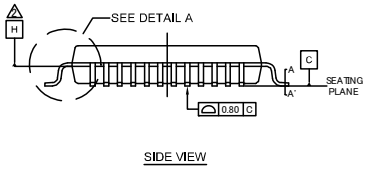
17. Package Dimension

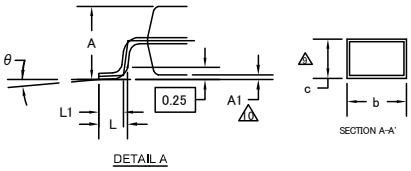
LQA048, 48 Lead Plastic Low Profile Quad Flat Package

Package Type	Package Code
LQFP 48pin	LQA048









SYMBOL	DIMENSIONS		
	MIN.	NOM.	MAX.
A	—	—	1.70
A1	0.00	—	0.20
b	0.15	—	0.27
c	0.09	—	0.20
D	9.00 BSC		
D1	7.00 BSC		
e	0.50 BSC		
E	9.00 BSC		
E1	7.00 BSC		
L	0.45	0.60	0.75
L1	0.30	0.50	0.70
θ	0°	—	8°

NOTES

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

002-13731 **

PACKAGE OUTLINE, 48 LEAD LQFP
7.0X7.0X1.7 MM LQA048 REV**

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

Document History

Document Title: CY96610 Series, F²MC, 16FX, 16-bit Proprietary Microcontroller
Document Number: 002-04709

Revision	ECN	Orig. of Change	Submission Date	Description of Change
**	–	KSUN	01/31/2014	Migrated to Cypress and assigned document number 002-04709. No change to document contents or format.
*A	5146534	KSUN	02/29/2016	Updated to Cypress template
*B	5735123	KUME	05/15/2017	Updated the Ordering Information and the Package Dimension For details, please see 18. Major Changes.
*C	5809040	MIYH	07/11/2017	Updated the Ordering Information For details, please see 18. Major Changes.
*D	5978072	MIYH	11/30/2017	Revised the following items: Marketing Part Numbers changed from an MB prefix to a CY prefix. 16. Ordering Information For details, please see 18. Major Changes.

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