Please note that Cypress is an Infineon Technologies Company.
The document following this cover page is marked as “Cypress” document as this is the company that originally developed the product. Please note that Infineon will continue to offer the product to new and existing customers as part of the Infineon product portfolio.

Continuity of document content
The fact that Infineon offers the following product as part of the Infineon product portfolio does not lead to any changes to this document. Future revisions will occur when appropriate, and any changes will be set out on the document history page.

Continuity of ordering part numbers
Infineon continues to support existing part numbers. Please continue to use the ordering part numbers listed in the datasheet for ordering.

THIS SPEC IS OBSOLETE

Spec No: 002-05259

Spec Title: AN205259 - F2MC - 8FX FAMILY, MB951XX SERIES, SYNCHRONOUS FLASH PROGRAMMING

Replaced By: NONE

AN205259

F²MC - 8FX Family, MB951XX Series, Synchronous Flash Programming

This application note describes how to program the Flash devices of the Cypress F²MC-8FX MB951xx series in serial synchronous mode by use of the BGM adapter MB2146-09.

Contents

1 Introduction

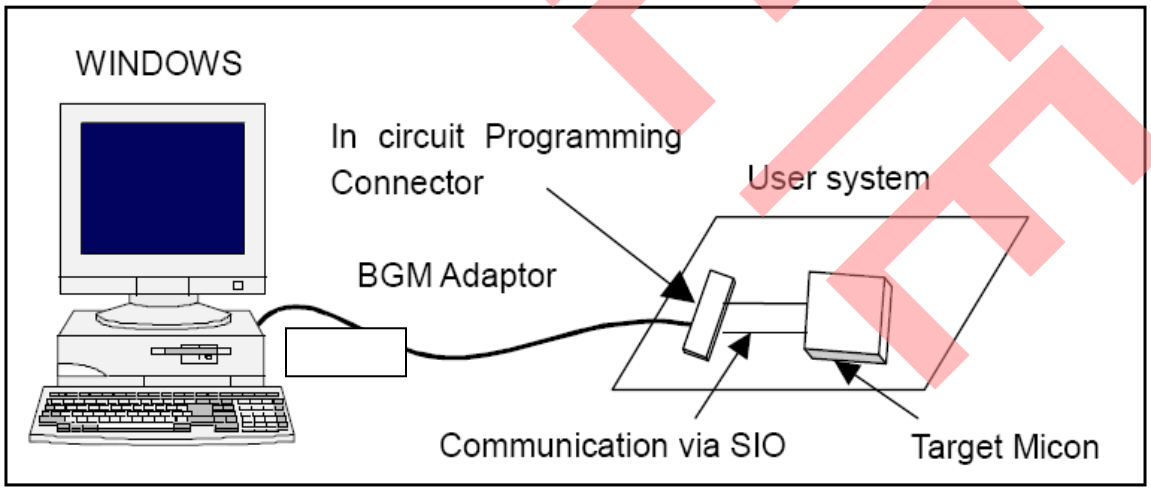
This application note describes how to program the Flash devices of the Cypress F²MC-8FX MB951xx series in serial synchronous mode by use of the BGM adapter MB2146-09.

2 Hardware Setup

This chapter explains how to setup hardware for flash programming.

2.1 System Configuration

Figure 1. Configuration for synchronous programming



Using USB cable connection to the personal computer (Windows PC), flash memory data in the microcontroller mounted in the user system can be reprogrammed. Note that the user system must have a BGM Adapter MB2146-09 for communication with the microcontroller SIO.

2.2 BGM Adapter

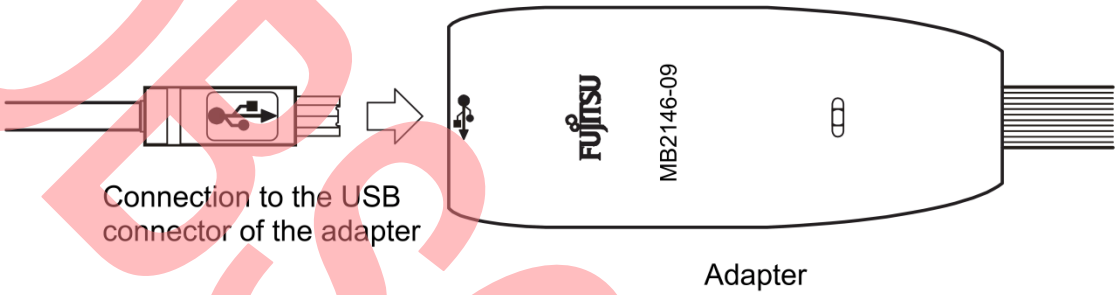
For details, refer the following manual:

- BGM Adapter MB2146-09 Operation Manual

2.2.1 Connection to the Host Machine

Connect the adapter to the host machine using the USB cable.

Figure 2. Connecting the USB Cable



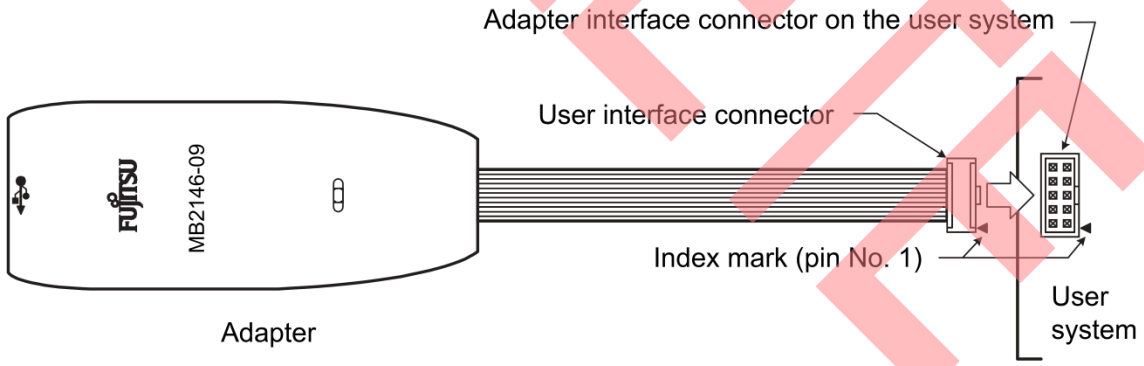
If the BGM adapter is connected the first time to the host machine, it is possible the operation system searches for a valid device driver. This driver can be found in your Softune installation directory in subfolder [Drivers], for example “C:\Softune\Drivers\ SiUSBdB.inf”.

2.2.2 Connection to the User System

Connect the adapter to the user system. Plug the user interface connector of the adapter into the adapter interface connector on the user system.

When plugging the user interface connector, align its index mark (pin no. 1) with the adapter interface connector's counterpart.

Figure 3. Connection to the User System



2.2.3 Adapter Interface Specifications

Table 1 shows the pin out of the adapter interface connector to be mounted on the user system. Figure 4 shows the connector pins. Table 2 shows a list of recommended interface connectors. Use one of the devices or similar connector on your target hardware.

Table 1. Adapter Interface Connector Pin out

Connector pin No.	MCU Pin Name	Input/output	Remarks
1	VCC	BGMA ← MCU	User power supply input
2	VSS	—	MCU GND
3	RSTX	BGMA → MCU	Tool reset output
4	N.C		Not connected
5	UO0	BGMA ← MCU	Serial data input (BGMA)
6	UCK0	BGMA → MCU	Synchronous Clock Output (BGMA)
7	UI0	BGMA → MCU	Serial data output (BGMA)
8	N.C	—	Not connected
9	GND	—	MCU GND (can be unconnected)
10	VCC	—	User power supply input (can be unconnected)

*: “BGMA” in the “Input/output” column in the table indicates the BGM adapter.

Figure 4. Adapter Interface Connector Pins

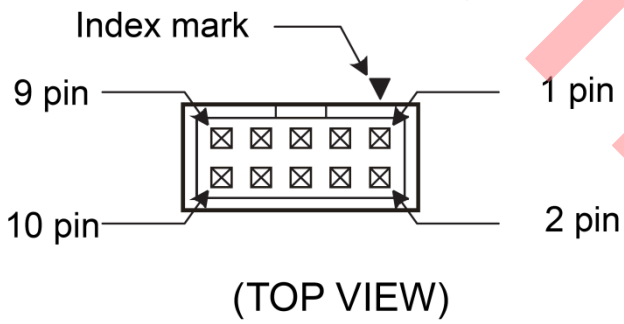


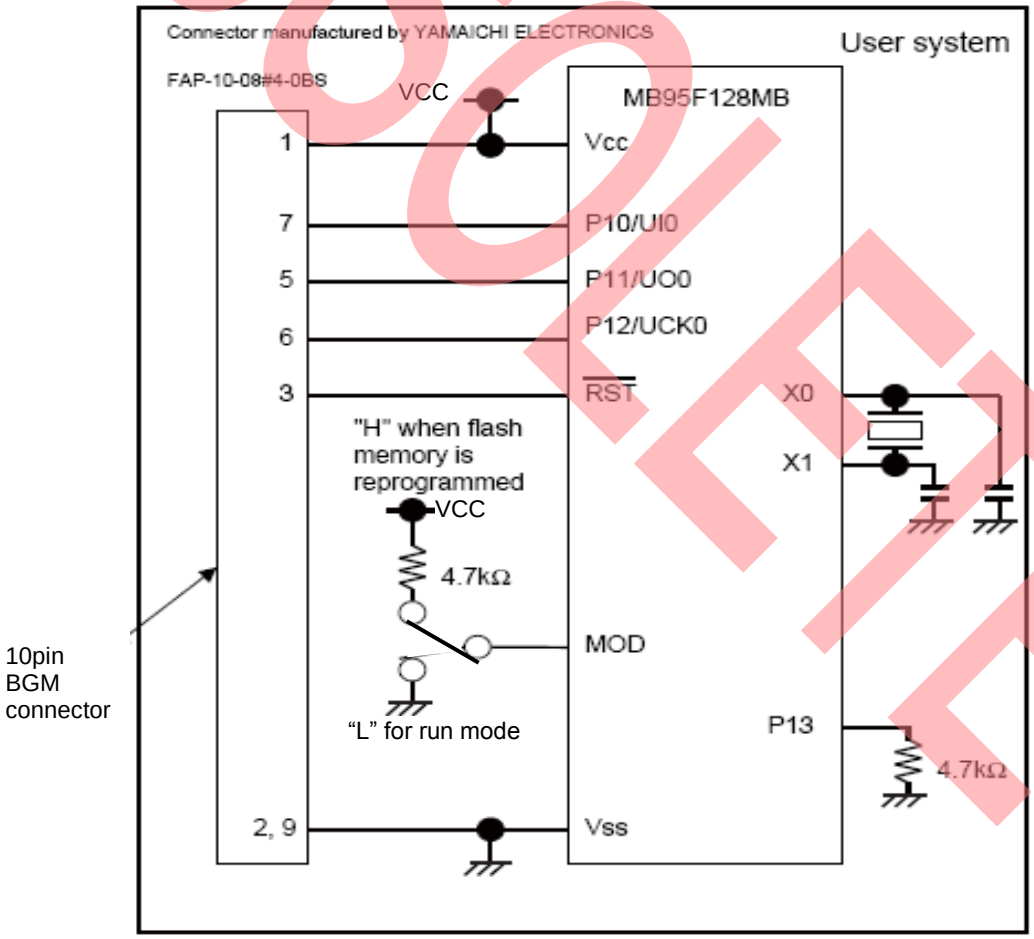
Table 2. Recommended adapter interface connectors

Part number	Specifications		Manufacturer
FAP-1001-2202-0BF	Right-angle solder dip	Housing provided, Middle latch provided	YAMAICHI ELECTRONICS Co., Ltd.
FAP-1001-2204-0BF	Straight solder dip	Housing provided, Middle latch provided	
FAP-10-08#2-0BF	Right-angle solder dip	Housing provided, Latch not provided	
FAP-10-08#4-0BF	Straight solder dip	Housing provided, Latch not provided	

2.3 Connection to Microcontroller

Use following connection of 10pin BGM connector to MB95F1xx MCU (MB95F128MB shown, but same for other 8FX flash devices).

Figure 5. Connection of 10pin BGM connector to MCU



To set the microcontroller into serial asynchronous programming mode the following pins have to be set according to the following table:

Table 3. Configuration for serial synchronous programming mode

Pin name	Pin description	Logical level
P12 / UCK0	UART/SIO clock input	Direct connection to BGMA
MOD	Operation mode specification	High
P13		Low
P10 / UI0	Serial input	Direct connection to BGMA
P11 / UO0	Serial output	Direct connection to BGMA

If using CONCERTO-Kit from Cypress please make sure that on-board RS232 driver on starter kit does not drive against BGM adapter signals. Therefore make sure jumpers JP4 TXD and JP5 RXD are not closed in position 3-4!

3 Software Setup

This chapter explains how to setup Cypress Flash BGM Programmer software.

3.1 Installation

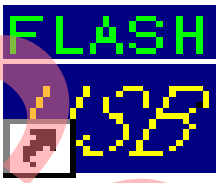
To install the Cypress Flash BGM Programming Software you have to execute the setup program “BGMsetup.exe”. Then follow the steps of the setup dialog.

After successful installation you will find the Flash Programmer in folder:

“C:\Program Files\Cypress\ USB PROGRAMMER \flash.exe”

To start Flash Programmer click ‘Windows Start button’ => ‘Programs’ => ‘USB Programmer’ => ‘USB Programmer’

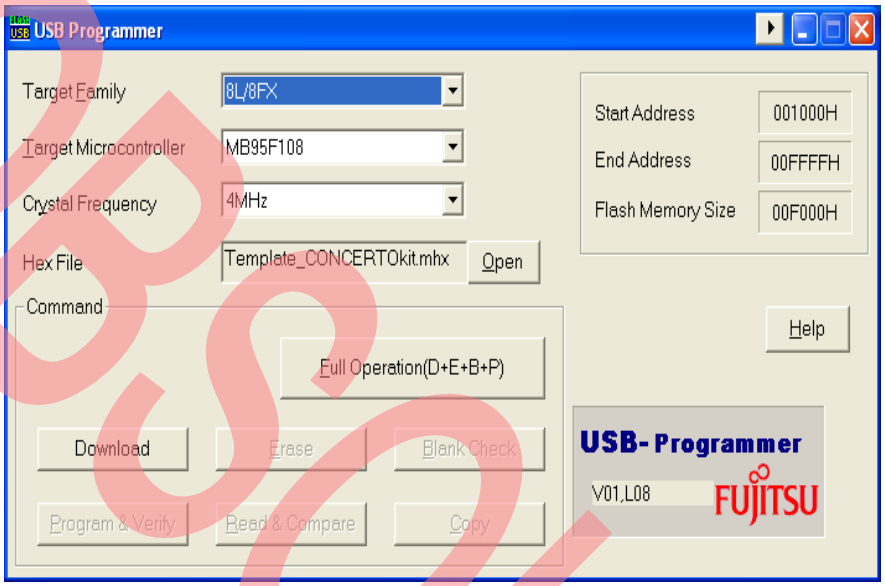
The symbol of this tool looks like the following picture:



4 Flash Programmer

This chapter explains how to use Cypress Flash BGM Programmer Software.

When the Cypress Flash BGM Programmer is executed the following window occurs:



Select the target family, target microcontroller and crystal frequency from the shortlist.

Following entries can be chosen for the 8FX family:

Product type	Crystal frequency
MB95F108	2MHz, 3MHz, 3.58 MHz, 4MHz, 4.92MHz, 5MHz, 6MHz, 8MHz, 10MHz, 12MHz, 16MHz, 20MHz
MB95F118	
MB95F128	
MB95F136	
MB95F146	
MB95F156/M	
MB95F168/M	
MB95F176J	

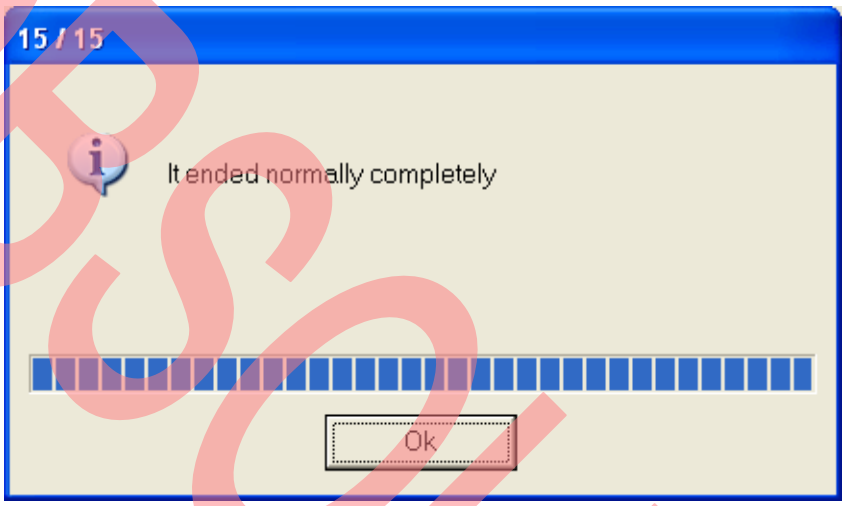
4.1 Programming

4.1.1 Full Operation

Flash Programmer can execute all needed steps like download, blank check, erase and program with only one button to be pressed.

To choose program file click ***[Open]*** and browse to the file (mhx, cnv or ahx format is possible) you want to program to the 8FX microcontroller.

Click the ***[Full Operation]*** button. Now all necessary steps are executed. After successful programming, following message appears in screen.

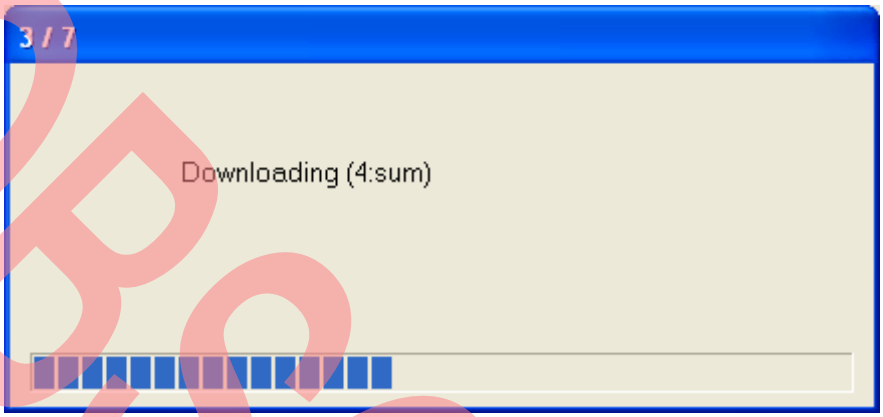


Click ***[OK]***, set MOD pin of the microcontroller to low level to enter run mode and reset your microcontroller to start your application.

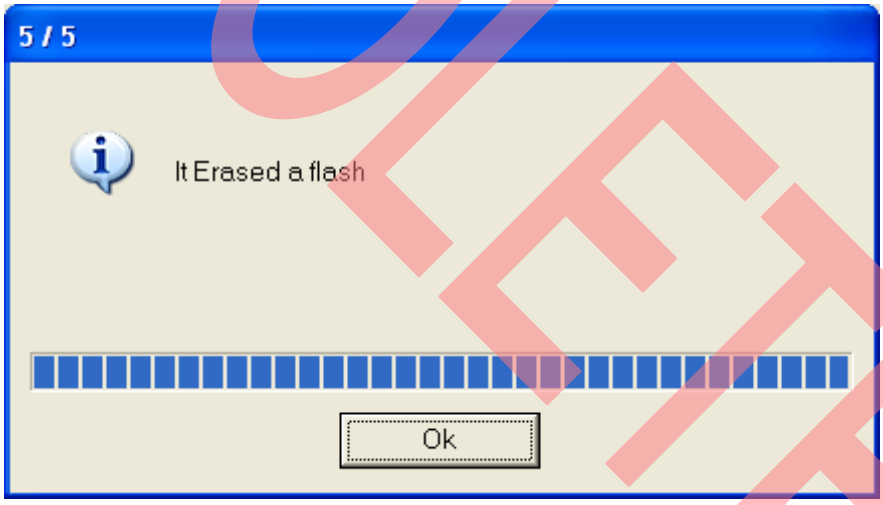
4.1.2 Single Steps

To choose program file click ***[Open]*** and browse to the file (mhx, cnv or ahx format is possible) you want to program to the 8FX microcontroller.

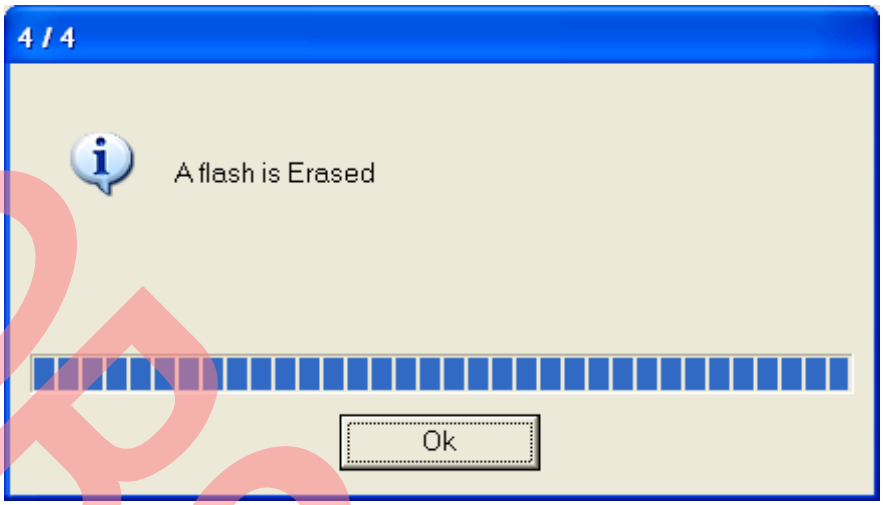
Click the ***[Download]*** button. Now a connection to the microcontroller is started and a control program is transferred.



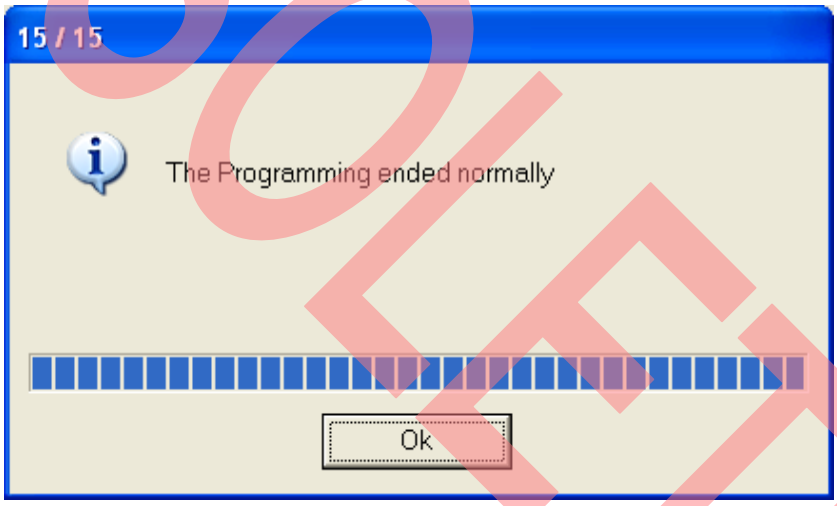
To start next step click ***[Erase]*** button. A complete chip erase is executed.



After a completed erase click ***[OK]***. Now a ***[Blank Check]*** can to be started. If flash is completely erased, the following window occurs.



Click ***[OK]*** to close window and start programming by clicking to ***[Program & Verify]*** button. If there are no errors, the following message is displayed.



Click ***[OK]***, set MOD pin of the microcontroller to low level to enter run mode and reset your microcontroller to start your application.

There are two additionally functions available:

Read & Compare: Compare Hex File with data in flash memory of microcontroller

Copy: Save data in flash memory of microcontroller to file

Document History

Document Title: AN205259 – F²MC - 8FX Family, MB951XX Series, Synchronous Flash Programming

Document Number: 002-05259

Revision	ECN	Orig. of Change	Submission Date	Description of Change
**	-	WOFR	11/05/2007	V 1.0; Markus Vogel
*A	5267403	WOFR	05/11/2016	Migrated Spansion Application Note “MCU-AN-300050-E-V10” to Cypress format.
*B	5612359	WOFR	01/31/2017	Spec obsoleted, no further updates planned.

Worldwide Sales and Design Support

Cypress maintains a worldwide network of offices, solution centers, manufacturer's representatives, and distributors. To find the office closest to you, visit us at Cypress Locations.

Products

ARM® Cortex® Microcontrollers	cypress.com/arm
Automotive	cypress.com/automotive
Clocks & Buffers	cypress.com/clocks
Interface	cypress.com/interface
Lighting & Power Control	cypress.com/powerpsoc
Memory	cypress.com/memory
PSoC	cypress.com/psoc
Touch Sensing	cypress.com/touch
USB Controllers	cypress.com/usb
Wireless/RF	cypress.com/wireless

PSoC® Solutions

PSoC 1 | PSoC 3 | PSoC 4 | PSoC 5LP

Cypress Developer Community

Forums | Projects | Videos | Blogs | Training | Components

Technical Support

cypress.com/support

Cypress Semiconductor
198 Champion Court
San Jose, CA 95134-1709

Phone : 408-943-2600
Fax : 408-943-4730
Website : www.cypress.com