



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.

Objective

This example demonstrates how to write to the flash memory of a PSoC® 6 MCU device. In this example, the flash write API function blocks the caller until the write is completed.

Requirements

Tool: PSoC Creator™ 4.2 with PDL 3.0.4

Programming Language: C (ARM® GCC 5.4.1 and ARM MDK 5.22)

Associated Parts: All PSoC 6 MCU parts

Related Hardware: CY8CKIT-062-BLE PSoC 6 BLE Pioneer Kit

Overview

This example writes a flash row using a Peripheral Driver Library (PDL) API function. The function blocks the caller until the write is completed.

Hardware Setup

This example uses the CY8CKIT-062-BLE kit's default configuration. Refer to the kit guide to ensure that the kit is configured correctly.

This example uses a green LED to indicate the successful flash write operation; the LED does not operate at 1.8 V. By default, the kit is configured to operate at 3.3 V.

Software Setup

None.

Operation

1. Plug the CY8CKIT-062-BLE kit board into your computer's USB port.
2. Build the project and program it into the PSoC 6 MCU device. Choose **Debug > Program**. For more information on device programming, see PSoC Creator Help. Flash for both CPUs is programmed in a single program operation.
The green LED turns ON if the flash write is successful.
3. Set the value of the macro MAKE_FLASH_WRITE_FAIL in the *main_cm4.c* file to '1', program the device, and observe that the red LED turns ON to indicate that the flash write operation failed.

Design

In this example, the ARM® Cortex®-M0+ core (CM0+) simply enables the Cortex-M4 core (CM4) and enters Deep Sleep. The CM4 core executes the implementation of this example.

The example uses a constant array with size equaling the size of one flash row. The main function places the contents of the array in the flash at an address such that it occupies one complete flash row, by calling the flash write API function. It then verifies the flash data by comparing the flash data with the written data. If the flash write is successful, the green LED turns ON. Otherwise the red LED turns ON.

This example uses the PDL function that blocks the caller until the flash write operation is completed. The PDL also provides functions to perform flash write in a non-blocking manner using the hardware interrupt from the flash block. See [CE221122 – PSoC 6 MCU Non-blocking Flash Write](#) for details.

Components and Settings

Table 1 lists the PSoC Creator Components used in this example, how they are used in the design, and the non-default settings required so they function as intended.

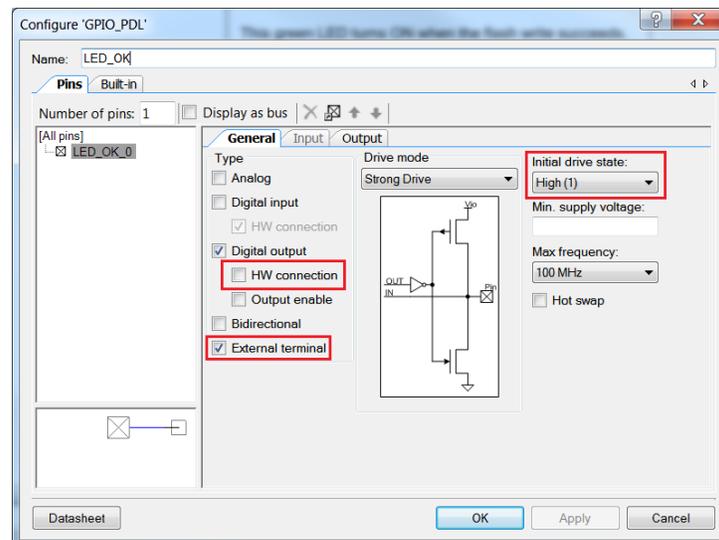
Table 1. PSoC Creator Components

Component	Instance Name	Purpose	Non-default Settings
Digital Output Pin	LED_OK	Provides visual feedback	See Figure 1
Digital Output Pin	LED_ERROR		

For information on the hardware resources used by a Component, see the Component datasheet.

Figure 1 highlights the non-default settings for the LED_OK instance of the Digital Output Pin Component. This setting also applies to the other instance of the Component, LED_ERROR.

Figure 1. Digital Output Pin Configuration



Reusing This Example

This example is designed for the supported kit(s). To port the design to a different PSoC 6 MCU device and/or kit, change the target device using the Device Selector and update the pin assignments in the **Design Wide Resources Pins** settings as needed. For single-core PSoC 6 MCU devices, port the code from *main_cm4.c* to *main.c*. If you change the device or design, you may need to adjust the source files that come with the example. These are not automatically generated and may not work with a modified design.

In some cases, a resource used by a code example (for example, an IP block) is not supported on another device. In that case the example will not work. If you build the code targeted at such a device, you will get errors. See the device datasheet for information on what a particular device supports.

This code example uses a green LED to indicate the successful flash write operation; the LED does not operate at 1.8 V.

Related Documents

For a comprehensive list of PSoC 6 MCU resources, see [KBA223067](#) in the Cypress community.

Application Notes	
AN221774 – Getting Started with PSoC 6 MCU	Describes PSoC 6 MCU architecture, development tools, and how to build your first PSoC Creator project
AN210781 – Getting Started with PSoC 6 MCU with Bluetooth Low Energy (BLE) Connectivity	Describes PSoC 6 MCU with BLE Connectivity devices and how to build your first PSoC Creator project
AN215656 – PSoC 6 MCU: Dual-CPU System Design	Describes the dual-CPU architecture in PSoC 6 MCU, and shows how to build a simple dual-CPU design
AN219434 – Importing PSoC Creator Code into an IDE for a PSoC 6 MCU Project	Describes how to import the code generated by PSoC Creator into your preferred IDE
Code Examples	
CE221122 – PSoC 6 MCU Non-blocking Flash Write	Shows how to implement a non-blocking flash write using the PDL function
PSoC Creator Component Datasheets	
Pins	Supports connection of hardware resources to physical pins
Device Documentation	
PSoC 6 MCU Datasheets	PSoC 6 Technical Reference Manuals
Development Kit Documentation	
CY8CKIT-062-BLE PSoC 6 BLE Pioneer Kit	
CY8CKIT-062-WiFi-BT PSoC 6 WiFi-BT Pioneer Kit	
Tool Documentation	
PSoC Creator	Look in the downloads tab for Quick Start and User Guides
Peripheral Driver Library (PDL)	Get the latest version for use with PSoC Creator. Look in the <PDL install folder>/doc for the User Guide and the API Reference

Document History

Document Title: CE220120 - PSoC 6 MCU: Blocking Mode Flash Write

Document Number: 002-20120

Revision	ECN	Orig. of Change	Submission Date	Description of Change
*A	5859184	VAIR	08/21/2017	Initial public release
*B	6770556	VAIR	01/13/2020	Updated the PDL version to 3.0.4, matched with the latest template, and minor edits for clarity.

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
Internet of Things	cypress.com/iot
Memory	cypress.com/memory
Microcontrollers	cypress.com/mcu
PSoC	cypress.com/psoc
Power Management ICs	cypress.com/pmic
Touch Sensing	cypress.com/touch
USB Controllers	cypress.com/usb
Wireless Connectivity	cypress.com/wireless

PSoC® Solutions

[PSoC 1](#) | [PSoC 3](#) | [PSoC 4](#) | [PSoC 5LP](#) | [PSoC 6 MCU](#)

Cypress Developer Community

[Community](#) | [Code Examples](#) | [Projects](#) | [Videos](#) | [Blogs](#)
| [Training](#) | [Components](#)

Technical Support

cypress.com/support

All other trademarks or registered trademarks referenced herein are the property of their respective owners.



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

© Cypress Semiconductor Corporation, 2017-2020. This document is the property of Cypress Semiconductor Corporation and its subsidiaries ("Cypress"). This document, including any software or firmware included or referenced in this document ("Software"), is owned by Cypress under the intellectual property laws and treaties of the United States and other countries worldwide. Cypress reserves all rights under such laws and treaties and does not, except as specifically stated in this paragraph, grant any license under its patents, copyrights, trademarks, or other intellectual property rights. If the Software is not accompanied by a license agreement and you do not otherwise have a written agreement with Cypress governing the use of the Software, then Cypress hereby grants you a personal, non-exclusive, nontransferable license (without the right to sublicense) (1) under its copyright rights in the Software (a) for Software provided in source code form, to modify and reproduce the Software solely for use with Cypress hardware products, only internally within your organization, and (b) to distribute the Software in binary code form externally to end users (either directly or indirectly through resellers and distributors), solely for use on Cypress hardware product units, and (2) under those claims of Cypress's patents that are infringed by the Software (as provided by Cypress, unmodified) to make, use, distribute, and import the Software solely for use with Cypress hardware products. Any other use, reproduction, modification, translation, or compilation of the Software is prohibited.

TO THE EXTENT PERMITTED BY APPLICABLE LAW, CYPRESS MAKES NO WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, WITH REGARD TO THIS DOCUMENT OR ANY SOFTWARE OR ACCOMPANYING HARDWARE, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. No computing device can be absolutely secure. Therefore, despite security measures implemented in Cypress hardware or software products, Cypress shall have no liability arising out of any security breach, such as unauthorized access to or use of a Cypress product. CYPRESS DOES NOT REPRESENT, WARRANT, OR GUARANTEE THAT CYPRESS PRODUCTS, OR SYSTEMS CREATED USING CYPRESS PRODUCTS, WILL BE FREE FROM CORRUPTION, ATTACK, VIRUSES, INTERFERENCE, HACKING, DATA LOSS OR THEFT, OR OTHER SECURITY INTRUSION (collectively, "Security Breach"). Cypress disclaims any liability relating to any Security Breach, and you shall and hereby do release Cypress from any claim, damage, or other liability arising from any Security Breach. In addition, the products described in these materials may contain design defects or errors known as errata which may cause the product to deviate from published specifications. To the extent permitted by applicable law, Cypress reserves the right to make changes to this document without further notice. Cypress does not assume any liability arising out of the application or use of any product or circuit described in this document. Any information provided in this document, including any sample design information or programming code, is provided only for reference purposes. It is the responsibility of the user of this document to properly design, program, and test the functionality and safety of any application made of this information and any resulting product. "High-Risk Device" means any device or system whose failure could cause personal injury, death, or property damage. Examples of High-Risk Devices are weapons, nuclear installations, surgical implants, and other medical devices. "Critical Component" means any component of a High-Risk Device whose failure to perform can be reasonably expected to cause, directly or indirectly, the failure of the High-Risk Device, or to affect its safety or effectiveness. Cypress is not liable, in whole or in part, and you shall and hereby do release Cypress from any claim, damage, or other liability arising from any use of a Cypress product as a Critical Component in a High-Risk Device. You shall indemnify and hold Cypress, its directors, officers, employees, agents, affiliates, distributors, and assigns harmless from and against all claims, costs, damages, and expenses, arising out of any claim, including claims for product liability, personal injury or death, or property damage arising from any use of a Cypress product as a Critical Component in a High-Risk Device. Cypress products are not intended or authorized for use as a Critical Component in any High-Risk Device except to the limited extent that (i) Cypress's published data sheet for the product explicitly states Cypress has qualified the product for use in a specific High-Risk Device, or (ii) Cypress has given you advance written authorization to use the product as a Critical Component in the specific High-Risk Device and you have signed a separate indemnification agreement.

Cypress, the Cypress logo, Spansion, the Spansion logo, and combinations thereof, WICED, PSoC, CapSense, EZ-USB, F-RAM, and Traveo are trademarks or registered trademarks of Cypress in the United States and other countries. For a more complete list of Cypress trademarks, visit cypress.com. Other names and brands may be claimed as property of their respective owners.