PSoC® Creator™ 4.2 Production Release Notes

Overview

The primary purpose of the PSoC Creator 4.2 release is to provide production support for the PSoC 6 MCU. This release includes a new Peripheral Driver Library (PDL) 3.0.1, new and updated Components, as well as new and updated Code Examples. This release also provides production-level support for the PSoC 4100S Plus device and all other previously supported devices.

This release does not replace existing production versions of PSoC Creator (e.g., 4.0 or 4.1); it installs alongside them. We guarantee that your existing designs can be opened in the new software, but please upgrade your components to the latest version. To ensure that you can always return to your previous setup, a backup of your project is automatically created when opening a project in a new version of the tool. It is stored in a folder named "backup" in the project's folder.

If you have technical questions, visit www.cypress.com/go/support or call 1-800-541-4736 and select 3.

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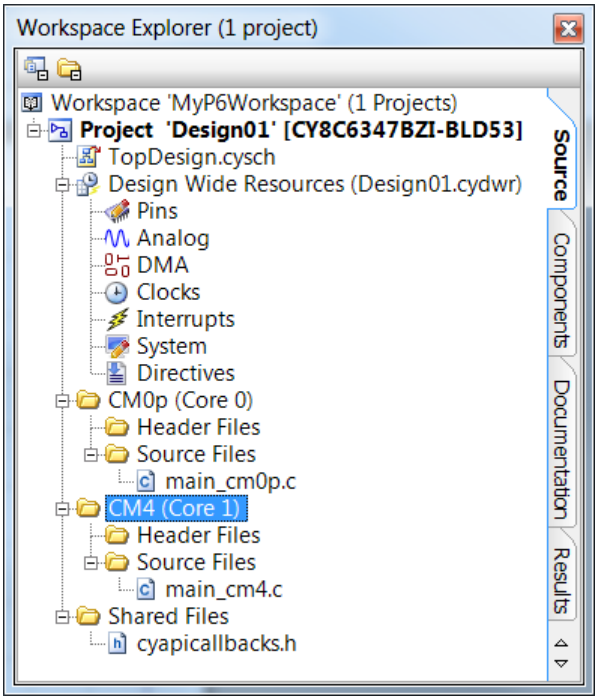
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PSoC Creator 4.2 Features

PSoC 6 Support

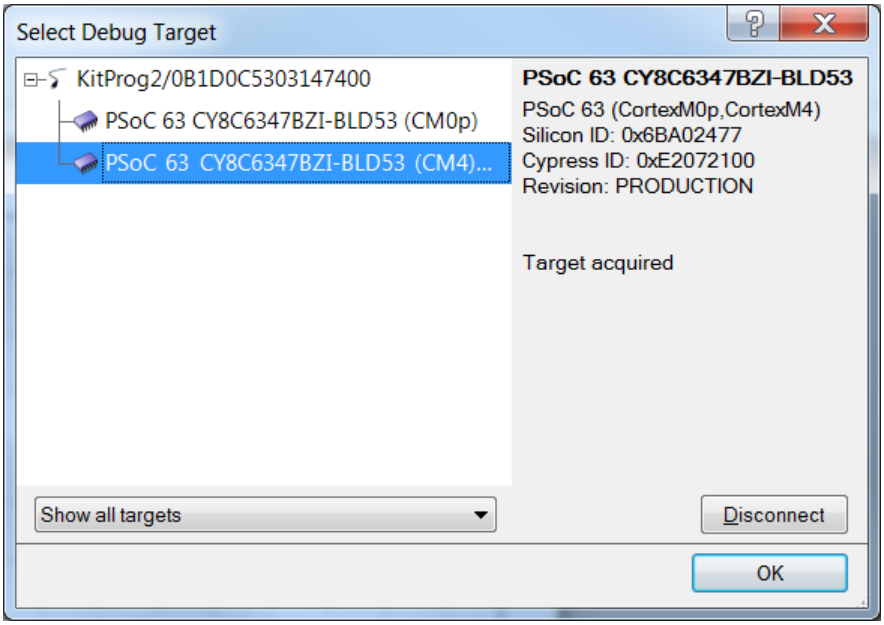
With this release, PSoC Creator provides production support for the PSoC 6 MCU. The PSoC 6 family is available as a single-core 150-MHz Arm Cortex-M4 device or a dual-core version with a 100-MHz Arm Cortex-M0+ core.

Source code for each core is located in separate folders in the Workspace Explorer. You can easily identify the core on which that application source code will execute. Also, both cores have access to all peripherals and memory. You can move functionality around by simply dragging the files to the appropriate core folder.



Building projects is fully automated, so you do not need to maintain makefile dependencies and re-build for each core. The result of a build is always the complete application in a single file that you just program and go.

The debugger allows you to connect to either core in seconds; just pick the core you need and start the debugger normally.



Peripheral Driver Library (PDL)

The Peripheral Driver Library (PDL) provides firmware to manage all the digital and analog peripherals included with this release, such as CapSense, USB, Bluetooth Low Energy (BLE), USB, and more. PDL is a suite of highly-efficient, MISRA-compliant drivers for PSoC peripherals with a comprehensive, searchable documentation package that is HTML-based for easy viewing in any browser.

PSoC Creator 4.2 automatically pulls the drivers you need into your project as you add various Components. Plus, it adds the required code to include paths maintained for you.

PSoC 4100S Plus

This release of PSoC Creator provides production-level support for the new PSoC 4100S Plus series, with up to 24 pins that support Cypress' Smart I/O™ functionality. The Plus-series also extends the PSoC 4100S with a variety of valuable features and resources.

Components/Code Examples

This release includes the following new and updated Components, as well as code examples for them. Refer to the Component datasheets and code example documents for more details.

New and Updated Components

The following Components have been added or updated since the previous release to support the PSoC 6 MCU or PSoC 4100S Plus series.

Component Name	Version
ADC_DelSig	3.30
ADC_SAR_SEQ_P4	2.50
ADC_UAB	1.0
AMux	1.80
AMuxSeq	1.80
and	1.0
BLE	3.50
BLE_PDL	2.0
CAN	3.0
CapSense	2.0
CapSense_CSD_P4	2.60
CapSense_P4	5.0
Comp_PDL	1.0
Count7	1.0
CRC	2.50
CSD_Comp_P4	1.0
cy_analog_constraint	1.50
cy_analog_reserve	1.50
cy_boot	5.70
cy_bufoe	1.10
cy_constant	1.0
cy_dffe	1.0
cy_dmac	1.10
cy_gsref	2.10
cy_isr	1.70
cy_mux_constraint	1.50
cy_net_constraint	1.50

Component Name	Version
cy_net_join	1.50
cy_net_tie	1.50
cy_pins	2.20
cy_srff	1.0
cy_stay_awake	1.50
cy_sync	1.0
cy_terminal_reserve	1.50
cy_tff	1.0
cy_UDB_clockenable	1.0
cy_vref	1.70
CyControlReg	1.80
cydff	1.30
CyStatusReg	1.90
demux	1.10
DieTemp_P4	1.0
DMA_Channel_P4	1.0
DMA_PDL	2.0
Em_EEPROM	2.0
EMIF	1.30
GPIO_PDL	1.0
I2S_PDL	2.0
IDAC_P4	1.10
IDAC7_P4	1.10
IDAC7_P6	1.0
LIN	4.0
LPComp_PDL	1.10
MCWDT_PDL	1.10

Component Name	Version
mux	1.10
nand	1.0
nor	1.0
not	1.0
OneTerminal	N/A
OpAmp_PDL	1.0
or	1.0
PDM_PCM_PDL	2.0
PowerMonitor_P4	2.10
RTC_PDL	2.0
RTC_PDL	1.0
Scan_ADC	2.10
SCB_P4	4.0
SCB_EZI2C_PDL	2.0
SCB_I2C_PDL	2.0
SCB_SPI_PDL	2.0
SCB_UART_PDL	2.0

Component Name	Version
SmartIO_PDL	1.0
SMIF_PDL	1.10
SPI_Master	2.50
SPI_Slave	2.70
SysClk_PDL	1.0
SysInt_PDL	1.0
TCPWM_Counter_PDL	1.0
TCPWM_PWM_PDL	1.0
TCPWM_QuadDec_PDL	1.0
TIA	2.0
UAB_VDAC	1.10
UART	2.50
VDAC12_PDL	1.0
xnor	1.0
xor	1.0
ZeroTerminal	N/A

Design Impact

SEGGER J-Link Software Version

When using the SEGGER J-Link Debugger probe with a third-party IDE (e.g., Eclipse) and PSoC 6, make sure to use V6.30 or later. There may be issues with any earlier version.

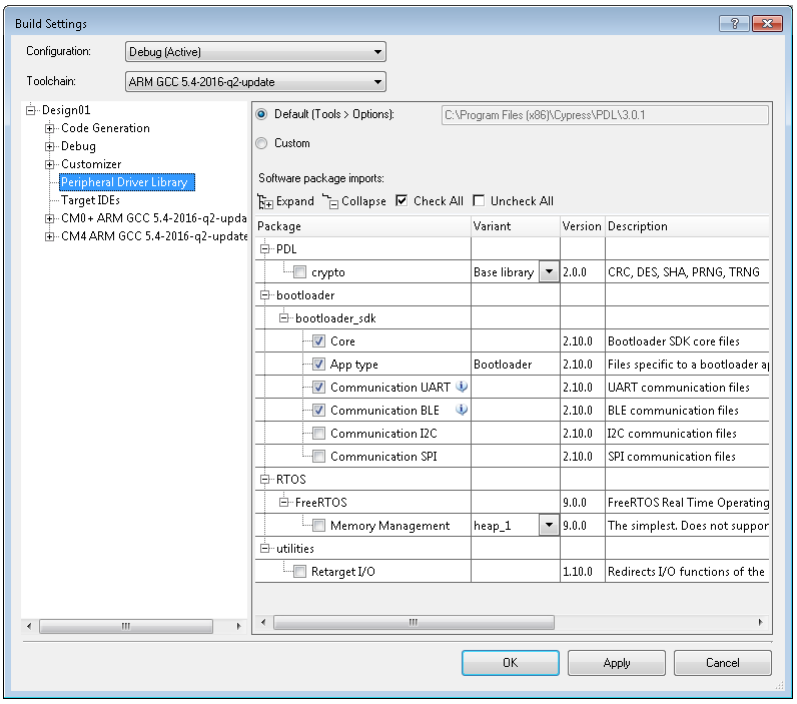
PSoC Analog Coprocessor Support Suspended in PSoC Creator 4.2

Support for the PSoC Analog Coprocessor has been temporarily suspended in PSoC Creator 4.2. You should continue to use PSoC Creator 4.1 instead. If you try to open a PSoC Analog Coprocessor project in PSoC Creator 4.2, an error will display indicating that the device is not supported.

Support for the PSoC Analog Coprocessor will be added in the near future from the Web-Based Content Delivery (WCD) system. Please monitor the PSoC Creator 4.2 Start Page and the PSoC Analog Coprocessor home page (http://www.cypress.com/products/psoc-analog-coprocessor) for an update announcement. Use the **Tools > Find New Devices** dialog to install the new devices.

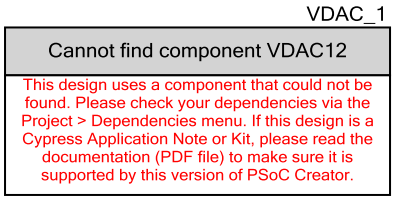
PDL Software Package Imports not Automatically Updated

Some PDL software package imports, such as bootloader_sdk, have been updated to new minor versions (i.e., 2.0.0 to 2.10.0). If you have a design from a Beta version PSoC Creator 4.2 using these packages, the design will not be automatically updated to use the new versions. Open **Build Settings > Peripheral Driver Library** and re-select the desired packages under the “Software package imports” section.



VDAC12 Component Renamed to VDAC12_PDL

The prototype VDAC12 Component has been renamed to VDAC12_PDL to reflect that it is a PDL Component to be used with PSoC 6 MCUs and the PDL. The impact of this change is if you open a design created with PSoC Creator 4.2 Beta, the Component will display an error in the schematic, as follows:



Delete the old Component, and drag the updated VDAC12_PDL Component from the Component Catalog onto the schematic in the location of the old Component. You will likely have to re-adjust any parameters that you configured previously.

System Reserved Resources

The PDL reserves certain system resources for internal use. These resources include IPC resources, like the first 16 IPC semaphores and interrupt lines to the Cortex M0+ CPU. Using any of these resources in your design will lead to unexpected behavior. Please refer to the PDL API Reference Guide for details.

Updated Range for Interrupt Vectors

Cypress has changed the valid range for interrupt vectors assigned to the PSoC 6 Cortex-M0+. In previous releases, the valid vector range in the PSoC Creator Design-Wide Resources Interrupt Editor for Cortex-M0+-serviced interrupts was 0-27. In this production release, the valid range is now 3-29.

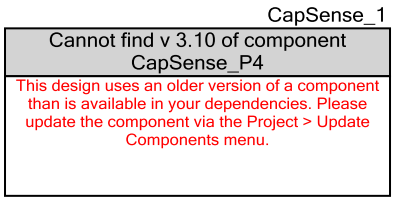
This change was made to move the Cypress interrupts for SysCall, IPC Pipe endpoint 0, and Crypto to Deep-Sleep capable interrupts. It is expected that most users will benefit from this setup, since these capabilities are often necessary in the Deep-Sleep state. If you previously assigned interrupts to the Cortex-M0+ vectors 0, 1, or 2, you will now receive an error in PSoC Creator and need to change your vector assignments to valid vectors. If you wish to override these defaults, you can do so in firmware by editing your *cy_ipc_config.h* header file. For more information, refer to the PDL Documentation accessible from the Workspace Explorer, under the Documentation tab for a PSoC 6- based design.

IMO Enable/Disable Removed from Design-Wide Resources Clock Editor

In previous releases of PSoC Creator, the Clock Editor contained a check box to disable the PSoC 6 IMO. This check box has been removed and the IMO can no longer be disabled. The associated PDL APIs have also been removed. If your project used this setting, PSoC Creator will overwrite your choice and you will have to remove any usage of the PDL APIs for disabling/enabling the IMO.

PSoC Creator 4.2 will not Find Some Older Component Versions

As mentioned in the previous PSoC Creator 4.1 Release Notes, only the latest versions of Components now ship with the product. Older Component versions are available from the WCD system. If you are working on a project and update your software to PSoC Creator 4.2, you will see the following symbol in the schematic file for impacted Components.



To resolve this issue, you have the choice between the following:

- Download the original versions using WCD tools.
- Update to the latest versions, which are always included in the distribution.

For more information about WCD tools, refer to the PSoC Creator Help.

Supported Devices

The design flow and tools available in this release of PSoC Creator support the following:

Family/Series/Product Line	Part Numbers
PSoC 6000, PSoC 6100, PSoC 6200, PSoC 6300	CY8C6*
PSoC 5LP	CY8C52*LP CY8C54*LP CY8C56*LP CY8C58*LP
PRoC BLE	CYBL1*
EZ-BLE modules	CYBLE*
PSoC 4200, PSoC 4200L, PSoC 4200M, PSoC 4200 BLE, PSoC 4200DS	CY8C42* CY8C42*L CY8C42*M CY8C42*BL CY8C42*DS
PSoC 4100, PSoC 4100M, PSoC 4100S, PSoC 4100S Plus, PSoC 4100 BLE	CY8C41* CY8C41*M CY8C41*S CY8C41*BL
PSoC 4000, PSoC 4000S, PSoC 4000DS	CY8C40* CY8C40*S CY8C40*DS
PSoC 3	CY8C32* CY8C34* CY8C36* CY8C38*
FM0+	S6E1A* S6E1C1* S6E1C3*
System Hardware Manager (SHM)	CYSHM*

Supported Tool Chains

Toolchains for PSoC 4, PSoC 5LP, and PSoC 6 (ARM)

- **ARM GCC –** The GCC ARM Embedded toolchain GCC 5.4-2016-q2-update is installed with PSoC Creator. This toolchain has no use restrictions and does not require license activation (it is distributed under the terms of the GNU Public License).
- **ARM GCC Generic –** This option can be used to select a separately-installed version of the ARM GCC toolchain.
- **ARM MDK Generic –** This option can be used to select a separately-installed version of the ARM Microcontroller Development Kit. The officially supported version is 4.72a.

Toolchains for PSoC 3 (8051)

DP8051 Keil™ 9.51

The Keil PK51 Professional Developers Kit for PSoC is installed with PSoC Creator. It supports optimization levels 0 through 5. If you would like to use the compiler optimization levels above level 5, you should purchase the standard PK51 product by contacting Keil.

- In North, Central, or South America... sales.us@keil.com
- In Europe, Asia, Africa, or Australia... sales.intl@keil.com

The free Keil toolchain comes with a 30-day evaluation license. You can extend the license, without cost, by registering the product from within PSoC Creator (**Help > Register > Keil…**). Note that the extended license is for one year and that you will need to re-register it each year.

DP8051 Keil Generic

This option can be used to select a separately-installed version of the Keil toolchain. While any version can be selected, the only officially supported versions are 8.16, 9.03, 9.51.

Installation

Minimum and Recommended System Requirements

The following are system requirements to install and use PSoC Creator. Each requirement specifies a minimum that your system must meet or exceed.

PSoC Creator will execute correctly in highly resource-constrained systems. However, performance (startup time, project creation and opening, build times, and so on) may be impacted when resources are scarce. The most directly impacted performance metric is build time. The following sections provide examples of the resource scarcity impact.

Note During initial startup, PSoC Creator builds and caches component DLL files used to display the component parameter editors. As a result, the tool will launch less quickly the first time after a new installation or a Windows® reboot.

Summary

Hardware/Operation System Requirements	Minimum
▪ Processor	1.3 GHz or faster 32-bit (x86) or Intel 64/ AMD64 64-bit
▪ RAM	1.5 GB
▪ Free Hard Drive Space	5 GB
▪ Screen Resolution	1024x768
▪ USB	2.0

Software Prerequisites *	Minimum Version
▪ Microsoft Internet Explorer (not IE8 beta)	7
▪ .NET Framework	4.0
▪ Adobe Reader (for viewing PDF Documentation)	9.2 **
▪ Windows Installer	3.1
▪ PSoC Programmer	3.27 (included with PSoC Creator)
▪ Keil Compiler (For PSoC 3 Only)	8.16 (9.51 provided)
▪ PDL	3.0.1 for PSoC 6, 2.1.0 for FM0+

* To install and run PSoC Creator, you may also need to install additional software. The Cypress Installer will guide you through the process if the additional programs are not already installed.

** For Windows 7, the minimum required version of Adobe Reader is version 9.2. You can download the latest version here: http://get.adobe.com/reader/. You can also use a non-Adobe PDF reader if you prefer; however, Cypress has no recommendations for any particular non-Adobe reader or version.

Processor

1.3 GHz or faster 32-bit (x86) or Intel 64/AMD64 64-bit processor is required.

PSoC Creator exhibits a predictable relationship between CPU speed and build time above 1 GHz. Doubling the CPU speed, e.g., from 1 GHz to 2 GHz or 1.5 GHz to 3 GHz, almost halves the build time.

On a fast (3 GHz) PC, simple designs can build in about one minute. At low speeds even designs that fill the device and generate complex routing solutions will build in under 5 minutes.

Operating System

One of the following Windows platforms is required:

- Windows 7 and Windows 7 SP1 (32- and 64-bit supported)
- Windows 8 and Windows 8.1 (32- and 64-bit supported)
- Windows 10 (32- and 64-bit supported)

Memory

A minimum of 1.5 GB of RAM is required.

Free Disk Space

PSoC Creator requires 5 GB of free disk space. PSoC Creator will install and run with just 1 GB of free disk space. However, in order to allow Windows to do memory paging, we recommend a minimum free disk space requirement of 5 GB.

If your disk is highly fragmented it will severely impact memory paging time and can result in very long build times. Disks that are nearly full are particularly prone to fragmentation. We recommend de-fragmenting your disk if you experience excessively long build times (10 minutes or more).

USB

PSoC Creator requires a USB 2.0-compliant or newer host to program and debug.

Screen

A resolution of 1024x768 pixels or higher is required.

Note The build time examples given above were obtained with new product installations on minimally fragmented disks with no other applications running. If your build times exceed these expectations we recommend closing unnecessary applications, adding RAM to the system (to reduce paging) and ensuring that there is sufficient free and unfragmented disk space.

Software Update Instructions

As part of the installation process, the Cypress Update Manager utility will also be installed and located on the Start menu. You can use this utility to update all Cypress programs you have installed when updates for them become available.

Open Source

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Installation Notes

The installation process is a set of wizards that walk you through installing various components. You can install PSoC Creator and various prerequisites from the web. The installation provides all the necessary prerequisites, and the wizards to guide you through installing the appropriate software.

Note Do **NOT** plug in your Miniprog3 until all software installation is complete **AND** the PSoC Creator application has been opened.

Web Installation

After downloading the software from the web (www.cypress.com/creator), run the PSoC Creator single package executable.

1. Double-click the PSoC Creator executable file to launch the installer.
2. Follow the prompts to install PSoC Creator. The CyInstaller for PSoC Creator opens and displays a series of steps to install PSoC Creator, and it will perform pre-requisite checks and install the prerequisites.
3. When complete, close the installer.

Further Reading

The primary documentation for PSoC Creator is provided in the Help, which you can open from the **Help** menu or by pressing [**F1**]. Other documents included with this release are also available from the **Help** menu, under **Documentation**. These documents include (but are not limited to):

- Quick Start Guide
- System Reference Guide
- Component Author Guide

Cypress provides a web page specifically for PSoC Creator at www.cypress.com/creator.

Other documentation includes (but is not limited to):

- Device Datasheets
- Device Architecture Technical Reference Manual (TRM)
- Device Registers TRM
- Application Notes
- Training

Contact your Cypress representative, as needed.

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