# PSoC® Creator™ Release Notes

**Version 2.0**

Revision Date: November 21, 2011

PSoC Creator 2.0 is a major new release of the Cypress PSoC 3 and PSoC 5 device configuration environment. This release adds support for the Keil Microcontroller Development Kit (MDK), giving you a choice of firmware development environments. You can continue to use PSoC Creator for the whole development cycle or you can integrate into an existing firmware development flow based on the Keil µVision®4 Integrated Development Environment (IDE).

PSoC Creator 2.0 installs as a separate package from PSoC Creator 1.x. This allows you to continue using 1.x and migrate to the new product at your own pace. We guarantee that your existing designs can be opened in the new software. PSoC Creator will make automatic backups of 1.x-based projects so you can always return to your previous setup if necessary.

This document describes general software features and changes since the PSoC Creator 1.x release.

If you have technical questions visit www.cypress.com/go/support or call 1-800-541-4736 and select 8.

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## New Features

### *Keil µVision4 IDE Integration*

PSoC Creator lets you design the perfect 8051 or ARM Cortex-M3 device. With this release, you can now export those designs into the Keil µVision4 IDE to write, debug, and test firmware in the development environment you've used for years.

The Export feature supports the generation of new µVision4 projects, as well as updates to existing ones. You do not have to give up on those last-minute changes to the hardware or spend valuable development time merging code and fiddling with options.

### *PSoC 5 Production Devices*

There are many changes to the PSoC 5 parts catalog in this release. We've qualified the silicon for production and removed the old ES1 parts that we were no longer sampling. We also added 20 new ones that you can target for real production designs.

### *Static Timing Analysis*

A key element of supporting PSoC 5 production is the extension of Static Timing Analysis (STA) to this family of parts. STA is the methodology used by PSoC Creator to determine whether a specific design is able to meet the timing capabilities of the device. It is used to analyze the propagation delays in and out of the chip and the clocking behavior within the chip. In addition to the new devices, we've added support for hold-time analysis and extended temperature range parts.

### *Timing-Driven Routing*

Timing-driven routing (TDR) is a build-time feature that incorporates timing constraints into the routing algorithm. This helps reduce the number of STA violations in digital designs and reduce the variability of

routing solutions (where a small design change has a disproportionate impact on routes found). The new routing algorithm not only recognizes timing problems but re-routes designs to avoid them.

### *Annotation Wires and Terminals*

You can now configure the Pins component to show an annotation terminal. This is a new type of connection for off-chip components. Complementing the new feature is a comprehensive library of annotation components, such as resistors, capacitors, diodes, and power supplies. Use these components to document your PSoC schematics with the board-based features of your design. We're already using annotation components in our Application Notes and Code Examples on the web. Look for the new content in the Component Catalog.

### *Concept Components*

In addition to our usual library of components, we've added some concept components to the Component Catalog. These components range from handy point solutions that solve problems in all kinds of designs up to sophisticated hierarchical solutions for specific applications. They were developed by our Applications team, who work on customer designs and address real-world problems.

You should feel free to try these components in your designs, and take them to production if they are a good fit for you. However, be aware that they have not been validated to the same quality standards as our regular content.

### *Component State Reporting*

To make sure you are aware of the level of content maturity, we have implemented a component state reporting feature. All concept components, as well as versions of our standard components distributed in beta releases, are "watermarked" in schematics. There is also a gentle reminder in the Notice List window that they are "Prototype," as opposed to "Production" components.

### *Live Start Page*

When we introduced PSoC Creator, we populated the Start Page with information about the new devices and an introduction to the tool. In order to provide more up-to-date information, we've made the Start Page Internet-enabled. We'll be publishing weekly news updates for topics such as PSoC kits, software updates, application notes and code examples, fun competitions, trade shows, training courses, online webinars, and more!

### *Multi-Application Bootloading*

The bootloader now supports loading of applications to multiple spaces in flash. This can be used to ensure that a usable image is always available. If, for example, a new image starts to download (which normally overwrites the current image) and the interface becomes unavailable, the alternative application can continue to be used until the hardware failure can be addressed.

### *New Components*

#### LIN Slave (LINS) Component

A Slave implementation of v2.1 of the LIN-Bus (Local Interconnect Network) standard for automotive network architectures.

### Segment Display Component (for PSoC 5)

Drive 3.3-V and 5.0-V LCD glass at multiplex ratios up to 16x on PSoC 5 devices.

### Vector CAN (CAN_Vector) Component

Fully compatible with the Vector GmbH CANbedded environment, this CAN (Controller Area Network) Driver is designed to slot seamlessly and quickly into any CANbedded design flow.

### S/PDIF (SPDIF_Tx) Component

The S/PDIF component consumes incoming audio data and generates a S/PDIF bit stream in a format compatible with consumer grade audio receivers (transmitted via a coaxial or optical cable).

### External Memory Interface (EMIF) Component

Facilitates the setup of the EMIF hardware on PSoC 3 and enables access to external memory ICs from the CPU or DMA.

### Sample/Track&Hold (Sample_Hold)

Samples a continuously varying analog signal and holds its value when triggered by the sample clock.

## *Updates to Existing Components*

The following components have new revisions in PSoC Creator 2.0:

- ADC_DelSig
- ADC_SAR
- BoostConv
- CAN
- CapSense_CSD
- Clock
- Comparator
- Control Register
- Counter
- CRC
- cy_boot
- DieTemp
- EEPROM
- I2C
- I2S
- IDAC8
- Mixer
- Mux/Demux
- Opamp
- PGA
- PGA_Inv
- Pins
- PWM
- QuadDec
- SegLCD
- Shift Register
- SPI_Master
- SPI_Slave
- StaticSegLCD
- Status Register
- TIA
- Timer
- UART
- USBFS
- VDAC8

Please refer to the applicable component datasheets (available in the PSoC Creator distribution and on the web) for details on what changed.

For information about updating existing designs with the new component versions, refer to the *PSoC® Creator™ 2.0 Migration Guide*. This document is located on disk in the installation "documentation" folder and online at http://www.cypress.com/go/creator_migration.

## Design Impact

### *Migration to Production PSoC 5 Devices*

PSoC Creator 2.0 supports production-qualified PSoC 5 devices. For help updating projects that target ES-marked (engineering sample) PSoC 5 devices, refer to *Migrating to PSoC® 5 Production Devices*. This document is located on disk in the installation "documentation" folder and online at http://www.cypress.com/go/creator_migration.

### *Using Projects from PSoC Creator 1.0*

Because this is a major software upgrade, projects saved in PSoC Creator 2.0 cannot be opened in 1.0 versions of the tool. As a result, if you open and save an older project in PSoC Creator 2.0, you will no longer be able to open it in the older software. To enable safe software updates, PSoC Creator 2.0 automatically creates an archive (zip file) of the original project in a backup folder inside the project directory.

### *Support for PSoC 3 ES2 Devices Closing*

This is the final release of PSoC Creator to support the ES2 (engineering sample 2) revision of PSoC 3 devices. The next minor release (that is, PSoC Creator 2.1) will require projects to be re-targeted to production devices. Use the Device Selector (from the Project menu) to switch from the “ES” part to the production alternative.

### *Migration from Obsolete Devices*

Some pre-production (engineering sample) PSoC 3 and PSoC 5 devices have been made obsolete now that the devices are in production. All projects that target these part numbers must be migrated to new parts. On opening the project, PSoC Creator 2.0 will prompt you with the logical alternative part number. You are free to accept the suggestion or open the Device Selector and choose an alternative. For more details, refer to the *PSoC® Creator™ 2.0 Migration Guide*. This document is located on disk in the installation "documentation" folder and online at http://www.cypress.com/go/creator_migration.

### *Symbol Changes for Cypress Components*

To add functionality, it was necessary to update the symbols of every component. Specifically, Cypress components now display a watermark for Prototype and Obsolete versions. In addition, a new property was added to components to identify a landing page on the Cypress web site. If the property is set by the component author, there will be menu items to open a web browser to the URL provided.

Rather than adding an uninformative and repetitive note to all patched component datasheet change logs, we made these changes silently. The implementations were not changed and the behavior of patched components is unaffected.

### *Auto-Clocks May Solve Differently*

For PSoC Creator 2.0, the auto-clock mechanism has been optimized to prefer a 50% duty cycle. As a result of this change, local (auto) clocks in PSoC Creator 1.x projects opened in version 2.0 may be assigned to different sources. For example, a clock solved using the PLL in a previous version, may be solved using the IMO in PSoC Creator 2.0 (if both satisfy the frequency and tolerance expectations of the local clock).

If you want to maintain how local clocks were solved in the previous version of the tool, open the project in PSoC Creator 1.x. Observe how the clock was solved in the Design-Wide Resources Clock Editor. Then, manually configure the clock as appropriate.

Clocks configured with explicit sources in a previous version will not be altered in PSoC Creator 2.0.

## Supported Devices

The design flow and tools available in PSoC Creator 2.0 support the following PSoC 3 (CY8C3x) and PSoC 5 (CY8C5x) families of devices:

| | | | | |
|---|---|---|---|---|
| **PSoC 3:** | CY8C32* | CY8C34* | CY8C36* | CY8C38* |
| **PSoC 5:** | CY8C52* | CY8C53* | CY8C54* | CY8C55* |

## Supported Toolchains

### *Toolchains for PSoC 3 (8051)*

1. **DP8051 Keil™ 9.03**

   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 compiler 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 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 upon expiration.

2. **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 and 9.03.

### *Toolchains for PSoC 5 (ARM)*

1. **ARM GCC 4.4.1**

   The CodeSourcery Sourcery G++ Lite for ARM is installed with PSoC Creator. It has no use restrictions and does not require license activation. It is distributed under the terms of the GNU Public License.

2. **ARM GCC Generic**

   This option can be used to select a separately-installed version of the Sourcery G++ toolchain.

3. **ARM RVDS Generic**

   This option can be used to select a separately-installed version of the ARM RealView Development System. The officially supported versions are 4.0 (build 529) and 4.1 (build 791).

4. **ARM MDK Generic**

   This option can be used to select a separately-installed version of the ARM Microcontroller Development Kit. The officially supported versions are 4.0 (build 524) and 4.1 (build 713).

# Installation

## *Minimum and Recommended System Requirements*

The following are system requirements to install and use PSoC Creator 2.0. 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 slowly the first time after installation or a Windows® reboot. This is not indicative of a problem or a long-term performance degradation.

### Summary

| Hardware/Operation System Requirements | Minimum |
|---|---|
| ▪ Processor | Pentium 4 |
| ▪ Processor Speed | 1 GHz |
| ▪ RAM | 512 MB (1 GB preferred) |
| ▪ Free Hard Drive Space | 2 GB |
| ▪ Screen Resolution | 1024x768 |
| ▪ USB | 2.0 |

| Software Prerequisites * | Minimum Version |
|---|---|
| ▪ Microsoft Internet Explorer (not IE8 beta) | 7 |
| ▪ .NET Framework | 2.0 SP1 |
| ▪ Adobe Reader (for viewing PDF Documentation) | 6 |
| ▪ Windows Installer | 3.1 |
| ▪ PSoC Programmer | 3.13.3 |
| ▪ Keil Compiler | 8.16 (9.03 provided) |

* 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.

### Processor

An Intel Pentium 4 (or compatible), or higher, is required. The minimum processor speed is 1 GHz.

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 XP SP2 or SP3
- Windows Vista (32- and 64-bit supported) and SP1
- Windows 7 (32- and 64-bit supported) and SP1
- Mac OS X with Parallels Desktop v6 running Windows XP SP3

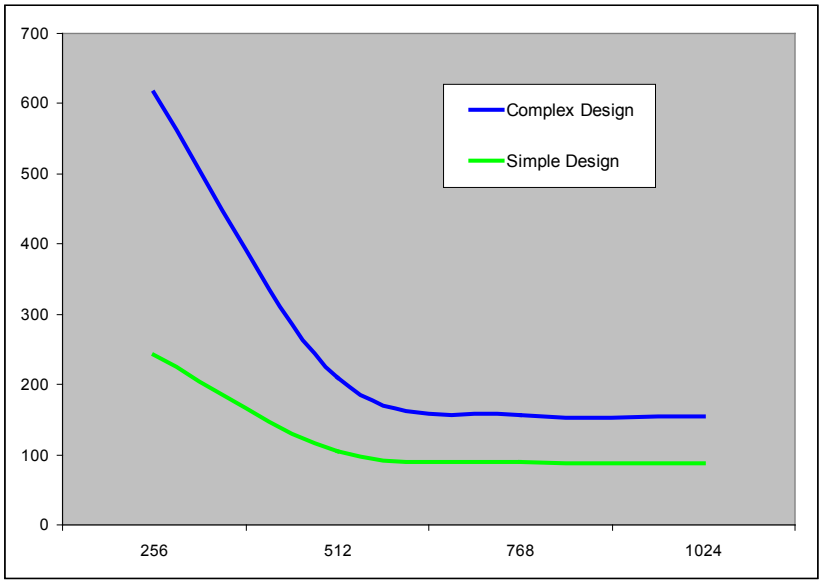
### Memory

A minimum of 512 MB of RAM is required, but 1 GB is recommended.

**Note** Cypress does extensive performance testing on every PSoC Creator release. The minimum RAM configuration used in these tests is 1 GB. No guarantees of system performance are given below 1 GB.

With no other applications running, the minimum system configuration will ensure that the tool launches quickly, creates and opens projects in a few seconds, and responds to user input without feeling sluggish.

System RAM has the most direct impact on PSoC Creator build times. The following chart shows how insufficient RAM (i.e., below 512 MB) causes an excessive increase in build time, even for “empty” designs.




The graph shows that performance is heavily degraded below the threshold where memory paging is required but extra memory above that level does not generate a significant improvement.

### Free Disk Space

PSoC Creator requires 2 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 also require at least as much free disk space as you have RAM in your system, resulting in a minimum free disk space requirement of 2 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 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 programs you have installed when updates for them become available.

### *Open Source*

Portions of this software package are licensed under free and/or open source licenses such as the GNU General Public License. Such free and/or open source software is subject to the applicable license agreement and not the Cypress license agreement covering this software package. The applicable license terms will accompany each source code package. You may obtain the source code of such free and/or open source software at no charge from the following web site: www.cypress.com/go/opensource.

### *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 or from a CD. There are slight differences in the process, based on the medium used to install the software.

The CDs provide the necessary prerequisites and the wizards to guide you through installing the appropriate software. The following sections contain more specific installation details.

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

#### PSoC Creator CD Installation

The PSoC Creator CD contains PSoC Creator and PSoC Programmer, as well as various prerequisites.

1. Load the CD. The main installer program should run automatically. If not, double-click the cyautorun.exe file to launch it.
2. On the main installer, click the **Install Software for PSoC…** button to launch the PSoC Creator InstallShield Wizard.

3. Follow the prompts on the wizard. The CyInstaller for PSoC Creator opens and displays steps to install PSoC Creator.
4. Click the hyperlink for any software that is not installed as indicated (such as, Acrobat Reader, etc.). Run the installer for that program as needed.
5. Continue following the prompts to install PSoC Creator.

### Cypress PSoC Kit CD Installation

A kit CD contains PSoC Creator and PSoC Programmer, as well as projects, documentation, and prerequisites needed for the associated kit. Refer to kit instructions.

### Web Installation

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

1. Double-click the PSoC Creator executable file to launch the installer.
2. If a non-Cypress prerequisite is missing (like .Net and Windows Installer, etc), a webpage with a download link will pop up. Download and install the prerequisites. Run the installer of those programs as needed.
3. 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.
4. 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
- Known Problems and Solutions (KP&S)
- System Reference Guide
- Component Author Guide

The PSoC Creator KP&S document is a snapshot of the Knowledge Base issues available on online at the Cypress web site: http://www.cypress.com/go/creatoronlinekps.

Even more information is provided online at www.cypress.com/go/creator, including:

- PSoC 3, PSoC 5 Architecture Technical Reference Manual (TRM)
- PSoC 3 and PSoC 5 Registers TRM
- PSoC 3 and PSoC 5 Device Datasheets
- Migration Guides
- Application Notes
- Training

Contact your Cypress representative, as needed.

## Defects Fixed

The following defects were fixed in this release. These defects are separated into different categories.

### *Framework*

| Cypress ID | Defect | Fix and Impact |
|---|---|---|
| 49573 | Source based customizers aren't rebuilt when the project's configuration is changed from Release to Debug and vice versa. | The background checker was not looking for errors in customizer code and so the build would fail silently. These errors are now correctly propagated through the system and reported. |
| 74523 | No notification is given to the user that an analog terminal on a placed component is unconnected. | While it is legal to leave an analog "input" unattached in a schematic, it is an unusual design situation. The tool now detects unconnected analog pins and reports note sdb.M0065 (Analog terminal <term> on <schematic> is unconnected). |
| 83001 | The Keil License Registration dialog can give an unhandled exception when the license cannot be properly obtained. | Exception handling has been added to the dialog to ensure useful error messages are produced when Internet connections are not robust. |
| 83865 | The Find Examples dialog returns different search results when launched from a component instance and the component catalog. | The defect was fixed so that the correct results are always returned, and the "All" selection was relocated to the top of the pull-down list, for convenience. |
| 83965 | The Component Update dialog only shows the latest System Reference Guide as the cy_boot datasheet. | All versions of the document are now shipped and the tool now displays the correct version of the datasheet (System Reference Guide). |
| 88227 | Renaming a short-named symbol modifies the file extension so that the file is no longer recognized as a symbol. Renaming a symbol 'c.cysym' to 'd' replaces the 'c' in the extension as well as the body - 'd.dysym'. | Replaced the pattern-matching code with a simpler, more robust generation of the extension. This is based on the new name only (no string manipulation). |
| 88470 | Updating component versions while a build is in progress generates a message that the update was successful, when in fact nothing changed. | The menu is now disabled while building. |
| 88512 | The component update tool does not show the instance name of a component if only one if present in the design. User sees only the component name. | The dialog now displays the component row even if there is only one instance of the component on the schematic. |
| 88554 | The popup menus for filtering columns in the Device Selector drift to the right when more columns are displayed. | The calculation was being done with bounds from the wrong coordinate system. Pop-ups now appear in the right place. |
| 89326 | Opening the component datasheet from the pull-right menu on an instance sometimes displays the wrong datasheet. | The tool was opening the datasheet for the component selected in the Component Catalog, rather than the selected instance. It now shows the correct document. |
| 89363 | The search field in the Component Catalog does not search for words in Component Summary | Valid search results were missed, making it hard to find components whose names the user does not already know. Added support to search in the component summary. |
| 89566 | File > Page Setup option is disabled for text files. | The tool now allows page settings on text files and document printing code was cleaned up. |

| Cypress ID | Defect | Fix and Impact |
|---|---|---|
| 89574 | Print preview for a symbol is incorrect if page orientation is portrait. | The tool now allows page settings on text files and document printing code was cleaned up. |
| 89734 | When attempting to add a project with the same name (different directory) as an existing project in the workspace, the 'Pick sheet template' dialog opens up before project creation. | Workspaces do not support two projects with the same name. The tool now verifies that the new project name is legal before creating/adding it to the workspace. |
| 90363 | The Find Example Project dialog shows all available projects when actually none match the keyword. | Failed searches now replace the keyword that generated no matches with "All", and all projects are listed. |
| 93351 | Unhandled exception when creating a workspace bundle on machines with non-English speaking locales. | The archiver tool now performs floating point operations based on English when accessing the device data base, instead of the local language. |
| 93568 | Dependencies get broken when bundling the system libraries in the archiver. The resulting archive has some mismatched dependencies, and ends up pointing to the real system libraries, instead of the bundled copies. | This was fixed by saving files relative to an anchor directory, even when that anchor directory is in the Cypress installation tree. |
| 94468 | The tool generates an invalid command line when the Memory Layout options are used. | The Linker/Memory Layout interface was removed. Users can add the commands to the command line. |
| 94490 | Sometimes, when opening a project, a white window appears on the top left corner of PSoC Creator, covering part of the workspace explorer. There is no way to close the window without closing the project first. | The Find dialog was erroneously adding to the PSoC Creator main form. This was unnecessary and has been resolved. |
| 95651 | In some situations, workspaces that were created in previous software releases always generate "prj.M0170: A workspace is being opened in a newer version of this tool than it was last saved in." | The logic that determines when and what to update now ensures that workspaces, as well as projects, are marked as updated when opened in the 2.0 release, so the error message will not be generated. |
| 96580 | A library project when built with, say, the Keil Toolchain, gets changed to ARM GCC after the build. | The toolchain edit was not marking the project as edited and so no save occurred (or was prompted). Build setting edits are now recognized and prompt a save. |
| 97134 | PSoC Creator errors on a project name that is too long, even when it is not. The tool complains about the 260 character limit when the given (offending) path is less than that. | The calculation was not referring to the created directories beneath the project directory. The error message now includes these extra characters and shows the directory name. |
| 97169 | Renaming a project doesn't change the cydwr file name, and the project fails to build as a result. | The rename operation now does this for projects and there is no longer a need to manually rename the file. |
| 97746 | On a dual screen configuration with PSoC Creator running on screen 2, the debugger GUI clips off a significant portion of the mouse-over pop-up when you mouse over a variable. | The code was combining screen coordinates with client coordinates. Added the correct conversions to work in a single coordinate system. |
| 98476 | The button to clear a search in the Component Catalog leaves the last search result semi-highlighted. The green background is cleared but the text retains its white font, making it unreadable. | The code now resets the internal counter value even if the search results are "old", which correctly cleans up the last search result highlighting. A refresh is no longer required to make the search item viewable again. |

| Cypress ID | Defect | Fix and Impact |
|---|---|---|
| 98592 | In the default Customizer dialog the parameter pull-down only works the first time | In order to support the cancel-edit operation a call to focus on the cell was being invoked, which was blocking the ability to open the pull-down menu. The focus was only there for the case that Esc was pressed so the code was reworked to remove the call and only do it on Esc. |
| 99505 | Creating a new project in PSoC Creator creates a file "device.h" which is not safe for multiple inclusion. | To prevent multiple definition messages from the compiler, the header file uses macros to detect, and avoid, multiple inclusion. |
| 99539 | Changing the source project in the Archiver dialog does not update the archive name. | The dialog behavior has been corrected. It is no longer easy to over-write archives by mistake. |
| 99551 | Adding a directive to a project causes all projects to add the directive. | The tool now checks the project being edited and prevents undesired directives from being added silently to other projects. |
| 100132 | Warnings and errors about the use of old cy_boot components fail to clear after the component is updated and the workspace closed. | This occurs if the background DRC elaborator has not had time to clear the messages before the workspace is closed. The cache of messages is now explicitly cleared when a workspace is closed to ensure the stale messages are removed. |
| 100751 | When opening a datasheet from the schematic the tool errors with "gde.M0025: Cannot launch PDF reader" | This occurred when there was no datasheet to open, not because of a missing reader. Added a check and popup for an invalid datasheet when "Open Datasheet" is called from schematic |
| 107277 | Using File > New > File > Html File gives the error "Unable to open file from disk" | This is because HTML files now use an external editor and our external editor factory refuses to create new instances of that file type. The HTML file type has been removed from the new file dialog. |
| 107385 | PSoC Creator reports errors on component instances that cannot be found in the dependency tree for the project. If those dependencies are changed such that the component is now found, the error messages do not go away (project still builds). | The background checker was looking for "shape changes" and has been extended to check dependency changes as well as schematic edits. |
| 109444 | Editing the parameters for a buried component (one that is part of a component used in your design) can alter the behavior of the higher-level component in ALL user designs because it is silently editing the library project containing the component. | The issue is that the user can silently edit the component implementation in a library, with the result that all designs using the library are impacted by the edit. This is particularly problematical when the library is part of the PSoC Creator installation. This was corrected by creating a lock for files saved under the Creator install directory. A message is displayed to indicate that the change is not allowed. The save button is disabled and any global save operations will fail with a message. |
| 110213 | The print feature for schematics only fills roughly two thirds of the page in landscape mode. | The printed image is based on a portrait layout. The print feature now calculates the image size based on the chosen orientation. |
| 110529 | Get error prj.M0190 (There is no workspace open) when searching for a component example project. | The error is real but the message is misleading. The correct message is now "No example project is found". |
| 111338 | The properties, e.g. style and end shape, of a line drawn on the schematic change without the user committing the specific edit. | If the user changes the line color all other properties are reset to their default state. The tool now commits only the desired - line color - edit. |

### *Editors*

| Cypress ID | Defect | Fix and Impact |
|---|---|---|
| 55407 | Tool allows a user to choose BUS_CLK and MASTER_CLK frequencies that are greater than their sources. | Only the PLL may have an output frequency above its source. Other clocks generate a DRC if their outputs are higher than can be attained. |
| 57334 | PSoC Creator doesn't show every available IMO frequency. | It is now possible to select any legal IMO frequency, as published in the PSoC 3 and 5 datasheets IMO frequencies. |
| 63088 | PSoC 5 users have access to a data cache setting in system DWR which has no effect. | There is no data cache on PSoC 5 devices and this setting has been disabled. |
| 75814 | The "Flip Vertical" command on selections misplaces text in annotations. | The command has been fixed in order to keep annotations the right way up and appropriately moved in relation to the rest of the flipped selection. |
| 76866 | The source editor highlights some Cypress typedefs (which are not part of C), but not some types that are defined by C/C++. | Keyword coloring was reviewed and the tool is now more consistent in its interpretation of keywords, standard defines, and so on. |
| 78704 | Giving a local (schematic) clock the same name as a pre-existing design-wide clock generates an assertion (crash). | The editor now checks for name space collisions against other clocks. |
| 81208 | The tool generates a spurious warning message related to Vref when connected to an analog Mux input - "pft.M0035: warning: Voltage Reference Warning: Vref '0.256V' is connected to terminal 'AoutTerm' of 'AMux_1' but no direct hardware connection exists." | This message discourages the user from making a legal connection of the Vref to another component through a mux. The design-rule checker has been updated to "look through" the mux and determine if the connection is, or is not, actually possible. |
| 89098 | Tool allows you to delete the name of a terminal, independently of the terminal, but does not create a no-name terminal. | Symbols now check whether the delete operation is legal. In this case it is not because deleting a symbol name has no good use cases. |
| 89455 | Local Clocks report erroneous warnings about IMO accuracy when it is USB mode. | When locked to USB, the IMO is much more accurate (+/-0.25%) but this was not recognized by the tool, leading to clock warnings. Updated the clock model to update the report IMO accuracy whenever the USB was enabled to the IMO |
| 92580 | The ILO clock accuracy at "Clocks" tab of the DWR file is stated as +/- 20%, which does not match the device spec. | Updated the ILO clock data to match the new specifications. This may cause clock warnings on very slow local clocks that check source tolerance. |
| 93312 | In the schematic editor, a shape with the "no fill" property prevents a shape beneath it from being selected. | The check for IsFilled was incorrect. A context-sensitive right-click menu was also added to enable the selection from multiple overlaid shape without affecting the z-order. |
| 94227 | Cannot use SWV pin as GPIO in PSoC 3 even if the feature is de-selected in the System DWR editor. | The DWR now reads the SWV parameter to determine whether the SWV pin may be used as GPIO. |
| 95554 | Rotating shapes in the schematic editor leaves the previous selection marking. | The selection was not being updated after the rotate operation. That feature has been re-implemented now and everything is updated correctly. |
| 95650 | When vertical-flipping the Stay Awake component symbol the instance name moves to the wrong place. | The text class was recalculating the center to flip about incorrectly. |

| Cypress ID | Defect | Fix and Impact |
|---|---|---|
| 98666 | When choosing a digital signal from the "Select Input Signal" dialog that lets the user create a digital clock source from the schematic, expanding the node for un-named signals also expands other nodes. | The issue was that bus nodes did not have an identifying tag and so matched every other bus node, causing the paired open/close behavior in the GUI. This has been addressed and nodes now behave correctly. |
| 98689 | The rename page option in the context menu of Schematic editor allows renaming a page to an already existing page name (duplicate names) | A check for name collision was added. |
| 103130 | Design fails to build when it contains two ADC_DelSig components named "ADC" and "ADC_INT". Due to unlucky component naming, the ADC_INT (cy_isr) component's ADC_INT.c has the same name as the ADC (ADC_DelSig) component's ADC_INT.c API. | PSoC Creator now checks for this type name collision when creating API files, not just for instance name collisions. |
| 104936 | SWV pin can be used as GPIO even if dedicated to debug function. | If the pin was locked before the SWV setting made the tool was not issuing the error. Corrected the background check to generate an error in this condition regardless of the order of events. |
| 105127 | Renaming a component (COMPONENT_NAME) when there is an instance placed in a schematic causes an infinite loop of pop-up dialogs. | To avoid the repeating error on the mismatched names the tool now only checks accesses to the cached component data without trying to get the symbol header every time. |
| 105180 | Tool does not allow USB applications, all of which need a 48 MHz clock, to build on 40 MHz parts (CY8C52 family). | The silicon allows this and the IMO, MHz, ECO and DSI clocks may be run at 24 MHz and through the doubler to provide the necessary 48 MHz for USB. |

### *Debug / Program*

| Cypress ID | Defect | Fix and Impact |
|---|---|---|
| 67029 | It is not possible to update CPU register values via the Register Details dialog. | Fixed an issue with the enablement of the Commit button in the dialog. |
| 100810 | PSoC 3 PDATA addresses are not shown or updated correctly in the debugger Watch window. | The PDATA memory space was not being added to the list of addresses the debugger translates. |
| 108217 | The tool allows the user to set more variable watchpoints than the hardware can support. | Even though the Watch and Local windows detect that there are no remaining watchpoints, and suitably disable menu options for setting them, the Source window still allows them to be set. The tool now uses a single check for available watchpoints that ensures a consistent enable/disable of the feature. |
| 110509 | The radix of watched variables cannot be saved and preserved across debugger invocations. | Changing the radix of a watched variable is not preserved across debugger invocations. The debugger now saves its state on exit. |

| Cypress ID | Defect | Fix and Impact |
|---|---|---|
| 110543 | Double-clicking a watch variable, to initiate an edit, causes a duplicate Watch window entry to be created. | The check for a move operation is over-sensitive and almost any double-click action will cause a copy to be made in the window. The sensitivity is now correctly set such that a deliberate move, outside of the current line selection, is required to cause a move operation. Double-clicking on a watched variable now correctly enables an edit. |
| 110656 | Cannot do a mass-copy of data from the debugger memory window. | Small numbers of cells can be highlighted in the Memory window and copy-pasted. However, larger selections, where scrolling is required, fail to copy. The Memory window no longer resets the cursor to the first row when scrolling and large copies can be made from the window. |

### *Build System*

| Cypress ID | Defect | Fix and Impact |
|---|---|---|
| 51388 | The Build Settings for the Keil 8051 compiler limit the optimization to level 9. | Levels 10 and 11 are now enabled, removing an arbitrary restriction on the optimizer. |
| 94818 | GNU compiler fails to find symbols in library files added via the Build Settings->Linker dialog, causing the link to fail. | The GNU linker does a single pass to find unresolved external references. In PSoC Creator, library files are now automatically grouped inside -Wl,--start-group <args> -Wl,--end-group to force the linker to iteratively search for unresolved references. |
| 94847 | BitStream Verifier generates IndexOutOfRangeException errors in low-resource devices. | The placer/router was assuming the availability of resources that do not exist in these parts. The database was updated so that only real resources are used to route a design. |
| 95125 | The analog hardware MUX generates connections that use a follower switch, which is not hardware controllable. As a result analog global routes (AGL and AGR) are always connected to the pin(s) and other pins in the physical port become corrupted. | There are 16 switches (12 switches for opamp & 4 switches for high current IDAC) that have direct connections to GPIO but not controlled by AMuxHw component. Code was added to the analog routing algorithm to limit these 16 switches from router when AMuxHw is in the design. |
| 96521 | In PSoC 5 connections to the positive input of the ADC can get routed/shorted to the negative input of the ADC in the hardware. | The amuxbusl connection from dsm0+ to dsm0- was the wrong way around. They have been swapped and the tool no longer shorts the connections. |
| 97222 | Tool crashes while using "Additional include directories" if the paths listed are relative. | Corrected the Project Management Build settings to allow fixed paths. |
| 99355 | When storing configuration code in ECC memory, the tool fails to detect a memory overflow. | The code was modified for compressed mode so that when the ECC space is filled it will overflow and store the remainder in flash. This results in it behaving the same was that the Uncompressed and DMA options behave. |
| 99577 | When using GCC on PSoC 5, sprintf() always returns a string with zeros for float type conversion. | A soft reset of the device does not leave the stack aligned properly for var arguments. This is fixed in cy_boot v_2_30. |

| Cypress ID | Defect | Fix and Impact |
|---|---|---|
| 100111 | When storing configuration data in ECC / configuration memory the bootloader application does not correctly validate application checksum before entering bootloadable. | The ECC portion of the application was not being verified. Verification now runs over the flash and then runs over the ECC memory. Corruptions in either one will cause verification to fail. The bootloader does not return a status for exit, it causes the device to reset. If there is a valid application the application will be run. If there is no valid application the bootloader will start up again in a clean state. |
| 102531 | PSoC Creator can generate routes to/from the ADC_DelSig component such that differential inputs are shorted. | The device definition implied that the AMUXL bus connects to the positive input of the ADC (DSM block) and has been fixed. |
| 102878 | CyResetStatus is not correct after a watchdog reset. | The variable was pre-allocated to a specific address near the top of RAM that is also used for the XDATA stack. If any functions get called that push something onto the stack it would corrupt the variable value. CyResetStatus is now allocated an address by the linker. |
| 103102 | A Logic Low connected to the OE terminal of an output pin does not disable the output. | The optimizer was incorrectly removing the logic zero component. |
| 104188 | When a project is built with the 'count' input of a counter tied to logic 'low', the mpr.M0037 (Removed Unused Component) warning message occurs. | A counter with this input tied low will never change value and so the component is automatically optimized out of the design. The message is misleading, however, and has been changed to "Unused pieces of the design have been optimized out. See section <section> of the report file for details". |
| 104359 | On PSoC 5 the PWM and Counter components generate a DRC, warning about the interrupt terminal's connectivity, when implemented in a Fixed Function Timer block. | The DRC should only apply to the Timer component in a fixed function block. This has been corrected and the error message improved to help identify the offending component instance. |
| 105436 | PSoC Creator can generate routes to/from the Comparator component such that inputs are shorted. | The device definition implied that the AMUXL bus connects to the positive input of the Comparator and has been fixed. |
| 107256 | The Cypress reentrancy file fails to set the reentrancy condition on generated source files if there is white space in the entry. | The .cyre (reentrancy file) does not ignore white space and so end-of-line spaces were being treated as significant. White space is now trimmed. |
| 107455 | Using a SAR_ADC in a PSoC 5 design prevents use of the pin that can be used for the bypass capacitor, even though that is not being used by the SAR configuration. | The checking for associated resources was too restrictive on the SAR. The tool now leaves the IO available for other uses. |
| 108221 | The fitter erroneously warns the user that it shall pick pins with pft.m0040 even though pins are correctly set in a control file. | This is a potentially confusing message because it implies that the control file was ignored, which is not the case. The check for the condition has been delayed until after the control file is processed. |
| 108350 | Projects migrated from GNU compiler to ARM MDK or RealView (RVDS) fails to reach main() function after reset if GNU compatibility mode is used (--gnu). | The --gnu option sets both __GNU__ and __ARMCC__ macros. The code in cy_boot's CM0Start.c file was, as a result, configuring the device twice and hanging. The latest cy_boot component corrects this by ignoring the code for __GNU__ if __ARMCC__ is also true. |

| Cypress ID | Defect | Fix and Impact |
|---|---|---|
| 111187 | Users see erroneous errors (prj.M0038) when projects are dependent upon libraries on other network drives. | The tool is over-zealous in marking library paths as not being persistent. Improved checking now allows libraries to be used more reliably on network drives, disk partitions, and USB drives. |

### *Bootloading*

| Cypress ID | Defect | Fix and Impact |
|---|---|---|
| 83802 | A bootloadable project built on a new release is not compatible with older bootloaders, causing a build failure. | Bootloader and Bootloadable projects now store metadata in their generated hex files to remove the reliance on specific directory structures. This removes the need for working around the problem by renaming the directory structure of the older bootloader project. |
| 105648 | Bootloader projects fail to download when they are "large" (use many components). | When the bootloadable image will not fit in the ECC / configuration memory space it is split up and some is placed in flash. The cyhextool was incorrectly calculating the end address of the application. This has been fixed to ensure that applications with a lot of configuration data will bootload correctly. |
| 106156 | Bootloadable projects with Device configuration mode set to "DMA" and having dependency to a MultiApp (Dual mode) Bootloader fails to build with the error "DMA Init must be within the first 64k of flash" | Multi-App bootloaders, by definition, use significant amounts of flash. As a result almost all use cases require the flash-miserly "compressed" boot option. Also, the performance improvement of DMA-based configuration is dwarfed by the reset time and so is not useful for bootloading designs. To address the error, the DMA option with Multi-App bootloadable projects was removed and the default option changed from DMA to Compressed. Existing projects with DMA option will be updated to Compressed and have a warning message sent to the output window. |
| 107040 | When the target devices for Bootloader and Bootloadable do not match, the error messages refer only to the mismatched System DWR settings. | A new error check was added so that the user corrects the root issue before editing the system settings. |
| 109740 | Bootloader applications default to the wrong communications interface when a custom set of bootloader APIs is used. For example, if the CyBtldrComm*() APIs are implemented by the user and a SPI Master is added to the schematic, the tool assumes that the SPI is the bootloader channel. | The DWR lists all legal bootloader channels and defaults to the first one found. This is intended as a user convenience where the channel is automatically picked up. For custom bootloaders, however, this creates an inconsistency between the desired and the defaulted channel. The default channel is now always "custom" and the user is expected to select the desired channel in the DWR. |

### System

| Cypress ID | Defect | Fix and Impact |
|---|---|---|
| 87491 | Analog components are out of spec for settling time when run at low voltage and the PGA can output incorrect voltages. | Corrected the setting of ANAIF_CFG_PUMP_CR0 at low device voltage (<4 V). |
| 95693 | PSoC Creator creates local clocks with poor duty cycle characteristics. | In a system with, for example, a 3MHz IMO and 12MHz PLL, a request for a local clock at 1MHz is derived from the IMO and a divider of 3. This results in a duty cycle of 33% whereas 50% could be achieved from the PLL with the same accuracy and precision. The clock-solver algorithm now includes a comparison of duty cycle (assuming 50% is ideal) as a deciding factor when frequency and tolerance are both satisfied by multiple clock sources. |
| 103855 | Can't place a Segment LCD in a CY8C3245PVI-134 device. | The internal parts database, which is used to populate the Device Selector, erroneously marked this part as having no LCD support. The database has been corrected and verified. |
| 105407 | After a 48-pin part is programmed without the optional XRES pin disabled it cannot be re-programmed with the Miniprog3. | MiniProg3 only supports reset programming mode and so, if XRES is disabled on 48-pin parts (which do not have a separate, fixed XRES), it cannot re-acquire the part. The tool now issues a warning about disabling XRES on these devices and when the user clicks on the message the tool navigates to the DWR, enabling easy "correction" of the setting. |
| 108735 | When using the USBIO pins (P15[6]/P15[7]) as digital outputs (strong drive) the initial state is always high (1). | Pins components that are implemented in the USBIO pins ignore the user's selected initial state. This is because USBIO default to high, whereas GPIO default to low. GPIO do not need to be written when the user wishes for a low initial value but USBIO do. The tool now honors the user's selection and set up USBIO correctly, regardless of the value. |
| 109084 | A Pins component set to resistive pull-up would generate error messages for no reason when placed on USBIO pins. | USBIO pins do not support resistive pull-up, only strong and open drain (low) are available. The tool will not allow placement of pins onto USBIO if the parameters are not supportable and the error message has been corrected. |
| 109325 | Clocks based on an external 32Khz oscillator sometimes fail to start. | The boot code was misinterpreting trim data for the XTAL_32KHZ clock source, causing boot failures. The boot code now correctly initializes the external crystal oscillator. |
| 109378 | When using Resource Reserve components to force two nets to use the same routing resource, the tool gives the pft.M0067 error (There is a usage conflict for the global routing resource). | There is no conflict since the reason for using the Resource Reserve components was precisely to force the nets to share resources. The message has been downgraded to the note apr.M0054 (The signal <signal> is constrained to occupy Location <resource>). |
| 109926 | A Resource Constraint component, when applied to wire that is connected to an analog mux, cannot be connected to a wire that is constrained to use the same resource. | The Resource Constraint fails to distinguish the Amux Common connection (static) from its arm connection (dynamic) and reports an illegal use; Resource Constraints for the same resource on either side of an analog mux. New checks have been added to identify which side of the mux is connected to the constrained route, making this a legal configuration. |

| Cypress ID | Defect | Fix and Impact |
|---|---|---|
| 112236 | Users see pft.M0000 (An internal error occurred in the fitter) when an input on an analog mux is left unconnected. | The workaround is to make sure all "inputs" to an analog mux are connected. The fix in the tool ensures that the check for Amux connections returns a null, which causes the unconnected terminal to be ignored by the fitter. |
| 112370 | In PSoC 5 designs it is possible to select an illegal voltage reference (Vref component). | For PSoC 5 devices the following voltage references - Vddd, Vccd, and VBat - have been removed from the pull-down. Existing designs, or designs re-targeted from PSoC 3, that use an illegal selection will generate an error and the user must select a new reference. |

### *Tuning*

| Cypress ID | Defect | Fix and Impact |
|---|---|---|
| 90287 | The Tuner requires the user to open the Configure Communications dialog before calling the ICyTunerCommApi_v1.Connect() API. | It now allows a connection to be made if the settings are valid, so there is no need for the extra setup step. |
| 94569 | After the CSD tuner helper is launched and used, the Miniprog3 is put into the "I2C" state. As a result, closing the tuner and attempting to re-program the device with PSoC Creator returns an acquisition error. | The Select Debug Target dialog now automatically applies the user's MiniProg3 (or other device) settings when opening or attempting to program. This obviates the need for the user to force a re-acquisition of the part. |
| 98528 | In the CyTunerProviderBase_v2 interface the AddressSizeBytes parameter returned is always 32, matter what sub-address is selected (2-bytes, 1-bytes or None) | Corrected an issue where the tuner comm was returning the data for the MaxPacketSize (32) instead of the SubAddressSize. |
| 103848 | The Port Configuration fields in the Tuner Communication Setup revert to their default values after a save. | The new values are now properly (permanently) stored. |

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