

Мікропроцесорні системи

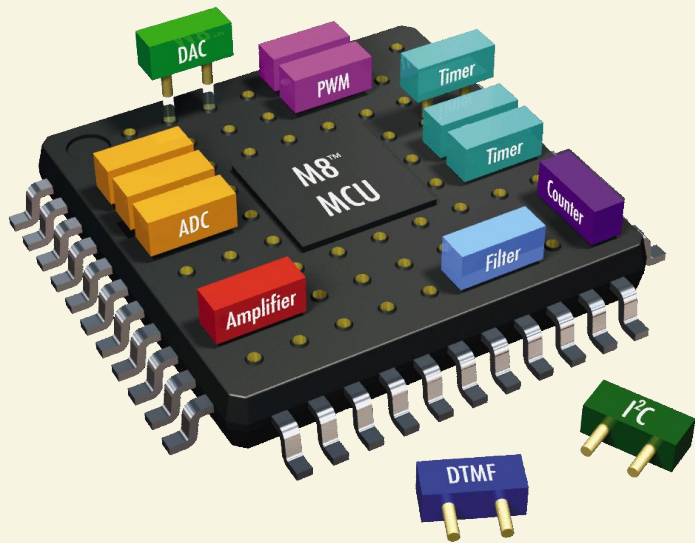
(лекція 1)
Благітко Б.Я.
2019 р.

PSoC Creator 4.2
Designing with PSoC 3/5



- Знайомство з PSoC 3/5
- Основні можливості мікроконтролера
- Інструментальні засоби розробки PSoC 3/5 Development kit
- Програмні засоби розробки Creator 3.0

Що таке PSoC 3/5?



PSoC 3/5 = Програмована система на кристалі для реалізації вбудовуваних систем **низької вартості з мінімальною кількістю зовнішніх компонент**

PSoC 3/5 включає в себе можливість обробки аналогових, цифрових і змішаних сигналів, а також можливість формування аналогових і цифрових сигналів, охоплюючи широкий спектр прикладних задач

- **Особливості PSoC 3/5:**
 - Реконфігуровувані Аналогові модулі:
 - Вбудовані АЦП і ЦАП, аналогові фільтри різних типів, підсилювачі аналогових сигналів, компаратори, аналогові модулятори і т. д.
 - Реконфігуровувані Цифрові модулі:
 - Вбудовані таймери, лічильники, PWM, UART, SPI, IrDA, I2C і т. д.
 - Flash від 4КВ до 32КВ для зберігання програми
 - SRAM от 256В до 2КВ для зберігання даних
 - Процесорне ядро - МК8051, CISC, 4MIPS

Фільтри

- 2-4 полюсні фільтри на комутованих конденсаторах низьких частот, смугові, загороджувальні, верхніх частот

Підсилювачі

- Підсилювач із програмованим коефіцієнтом підсилення
- Інструментальні підсилювачі
- Інвертуючі підсилювачі

Програмовані компаратори

- Компаратор із програмованим порогом спрацювання
- Тригер Шмідта із програмованим порогом спрацювання

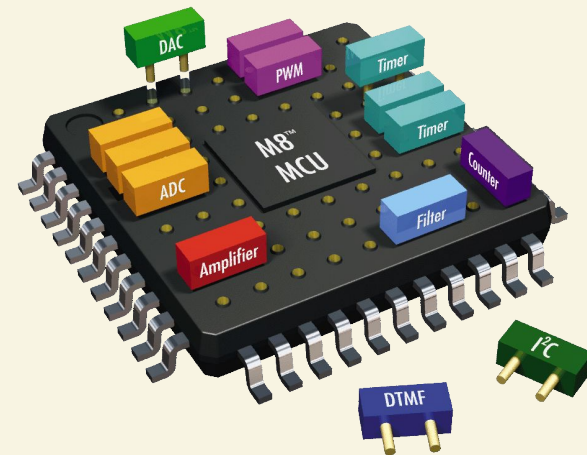
DTMF генератор і детектор

А/Ц Перетворювачі

- Послідовного наближення
- Сигма-дельта 8-14 біт
- Накоплювальний 8-14 біт

Ц/А Перетворювачі

- 6, 8, и 9-бітні ЦАП
- 6 и 8-бітні перемножуючі ЦАП



8, 16, 24, 32-бітні таймери

8, 16, 24, 32-бітні лічильники імпульсів

8, 16-бітні ШІМ

8, 16-бітні Dead Band Генератори

- (генерація 2-о фазних сигналів для управління силовими ключами)

Генератори псевдо-випадкових сигналів (PRS)

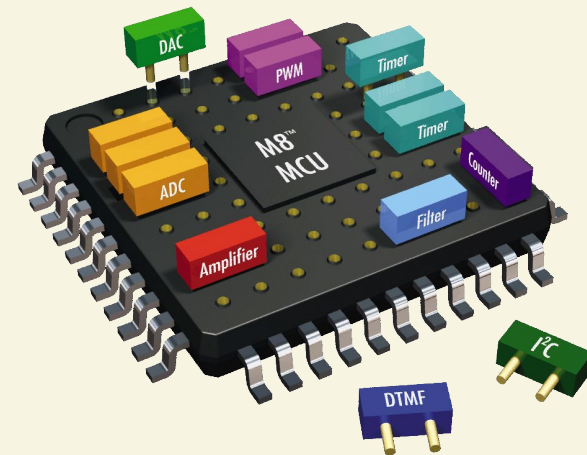
Генератори цифрових контрольних сум (CRC)

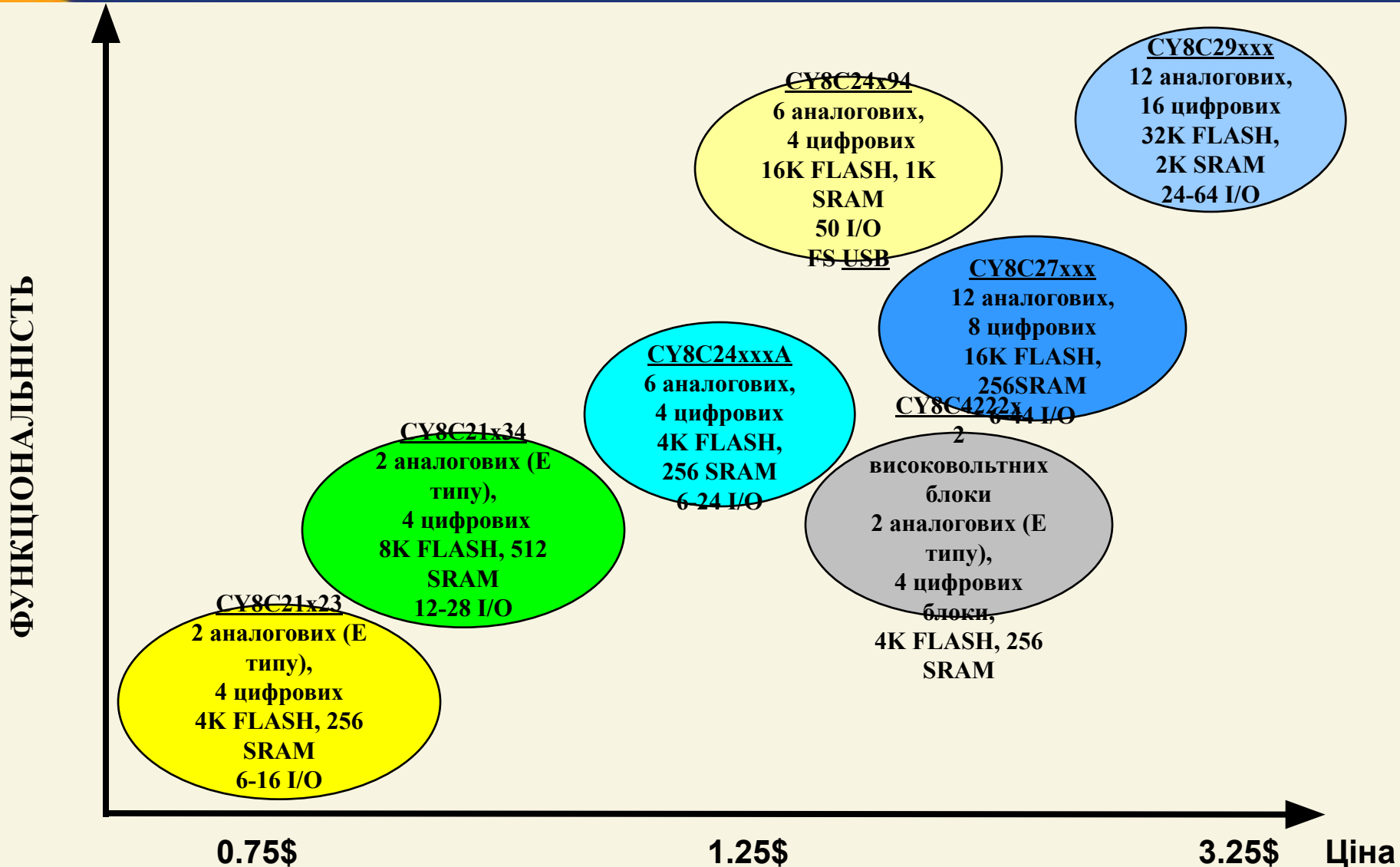
I²C майстер/підлеглий

SPI майстри/підлегли

Повнодуплексні UART

IrDA приймачі та передавачі





Всі кристали сімейства PSoC не містять Pb починаючи з 2005 року!

- Номери елементів, які не містять Pb перед температурним кодом мають мітку 'X'
- Наприклад:

Стандартний номер елемента = CY8C27443-24PI

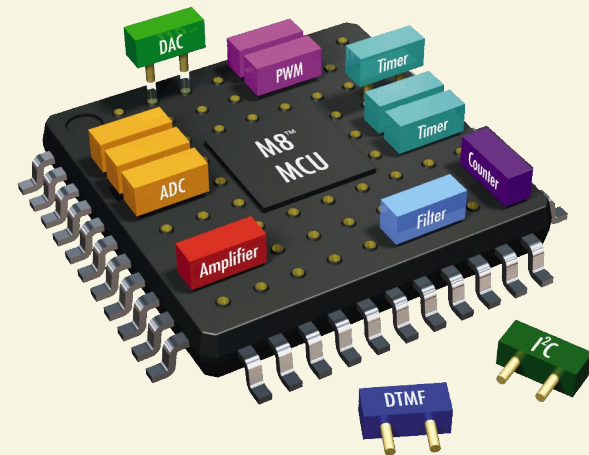
Номер елемента,

який не містить Pb

= CY8C27443-24PXI

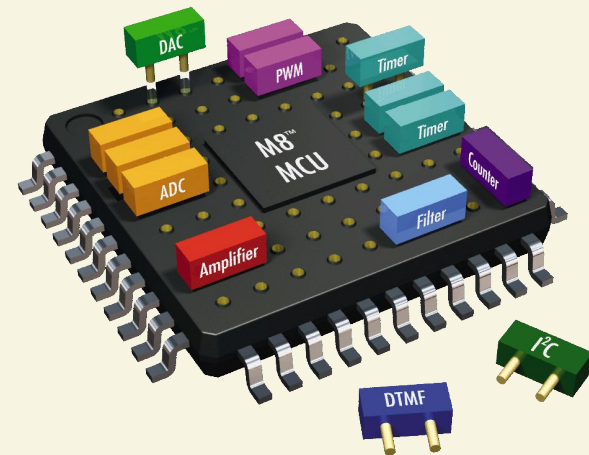


- Інтегроване середовище розробника PSoC Creator
- Оцінювальні плати
- Програматори
- Апаратні емулятори



PSoC Creator – це:

- Інтуїтивний інтерфейс
- Простота з'єднань
- Підтримка динамічної реконфігурації процесора



Оптимальними для PSoC являються задачі, коли необхідна обробка аналогових сигналів на апаратному рівні (підсилення, фільтрація, АМ/ФМ модуляція, демодуляція) із наступним перетворенням в цифрову форму в смузі аналогових сигналів до 100 кГц.

Виграш полягає в переносі зовнішніх дискретних компонентів у середину процесора.

PSoC Creator 2.1


File Edit View Debug Project Build Tools Window Help

Workspace Explorer

Source Components Datasheets Results

Start Page

PSoC® Creator™



Recent Projects

- HelloWorld_Blinky01.cywrk
- CapSense_CSD_Design01...
- CapSense_CSD_Design01...
- CharLCD_CustomFont01.c...
- CharLCD_CustomFont01.c...

Create New Project...
Open Existing Project...

Getting Started

- PSoC Creator Start Page
- Quick Start Guide
- Intro to PSoC
- Intro to PSoC Creator
- PSoC Creator Training
- Help Tutorials
- Getting Started With PSoC 3
- Getting Started With PSoC 5

Examples and Kits

- Find Example Project...
- No Kit Packages Installed

简体中文 日本語 한국어 English


PSoC Creator News and Information

[Happy Lunar New Year!](#)
Posted on 02/11/2013

Gong Xi Fa Cai! As many of my friends and colleagues are celebrating the New Year and welcoming in the year of the water snake, I wanted to take a minute and wish you all well. May the New Year bring each of you prosperity, good luck and a new PSoC design.
[Read More](#)

[Tips + Tricks: Menu Customization](#)
Posted on 01/24/2013

Did you know you can create a customized menu in PSoC® Creator? Right click in a blank area of the top menu and select customize from the



Help

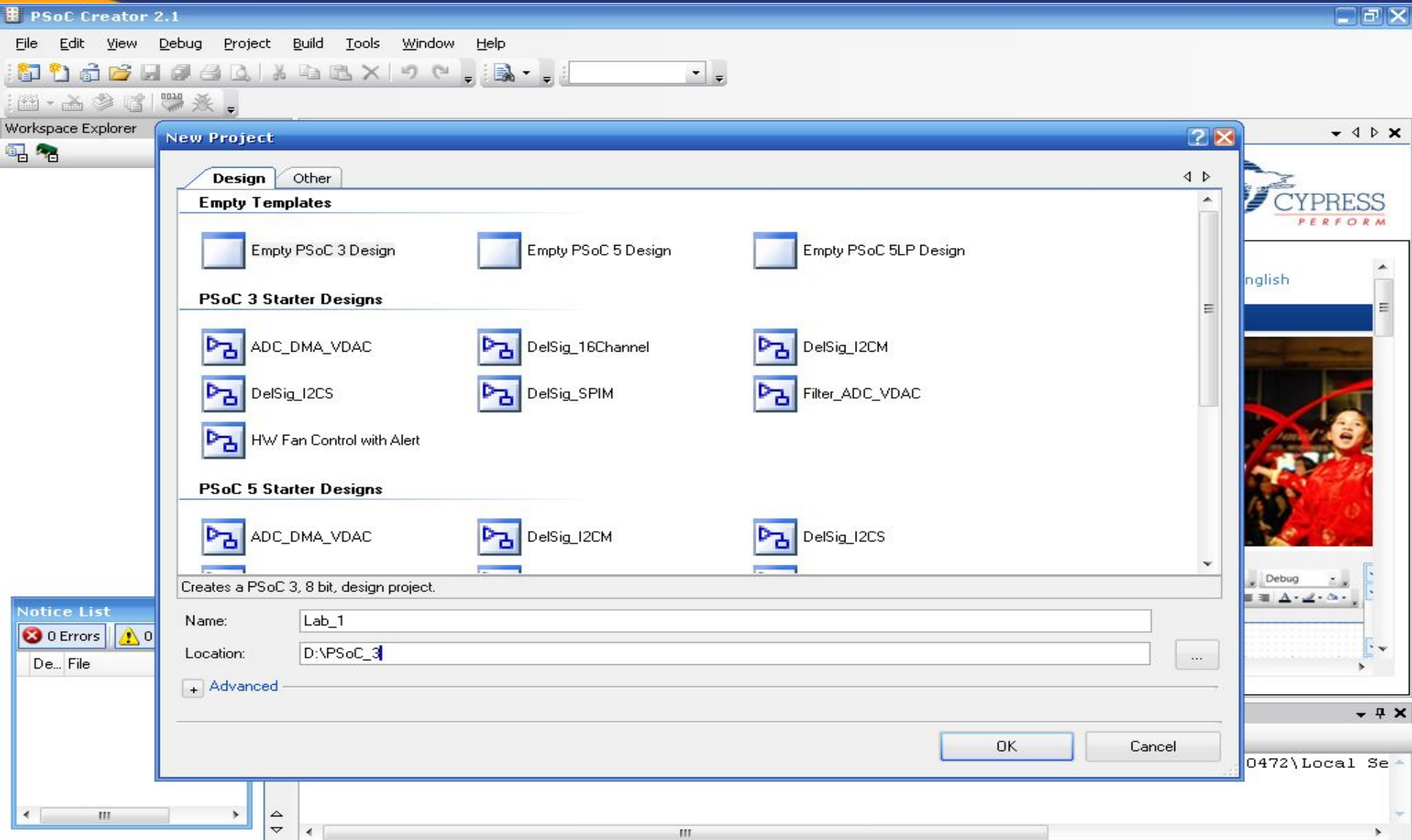
5% - Debug

Output

Show output from: All

Log file for this session is located at: C:\Documents and Settings\Admin.MICROSOFT-7D0472\Local Se

File – New - Projekt



The screenshot displays the PSoC Creator 2.1 application window. The main menu bar includes File, Edit, View, Debug, Project, Build, Tools, Window, and Help. The toolbar contains various icons for file operations and project management. The 'New Project' dialog box is open, showing the 'Design' tab. It lists several project templates under three categories: 'Empty Templates', 'PSoC 3 Starter Designs', and 'PSoC 5 Starter Designs'. The 'Name' field is set to 'Lab_1' and the 'Location' field is set to 'D:\PSoC_3'. The 'Advanced' section is expanded. The 'Notice List' panel on the left shows '0 Errors' and '0 Warnings'. The status bar at the bottom indicates 'Ready' and '0 Errors 0 Warnings 0 Notes'.

PSoc Creator 2.1

File Edit View Debug Project Build Tools Window Help

Workspace Explorer

New Project

Design Other

Empty Templates

- Empty PSoC 3 Design
- Empty PSoC 5 Design
- Empty PSoC 5LP Design

PSoC 3 Starter Designs

- ADC_DMA_VDAC
- DelSig_16Channel
- DelSig_I2CM
- DelSig_I2CS
- DelSig_SPIM
- Filter_ADC_VDAC
- HW Fan Control with Alert

PSoC 5 Starter Designs

- ADC_DMA_VDAC
- DelSig_I2CM
- DelSig_I2CS

Creates a PSoC 3, 8 bit, design project.

Name: Lab_1

Location: D:\PSoC_3

+ Advanced

OK Cancel

Notice List

0 Errors 0 Warnings

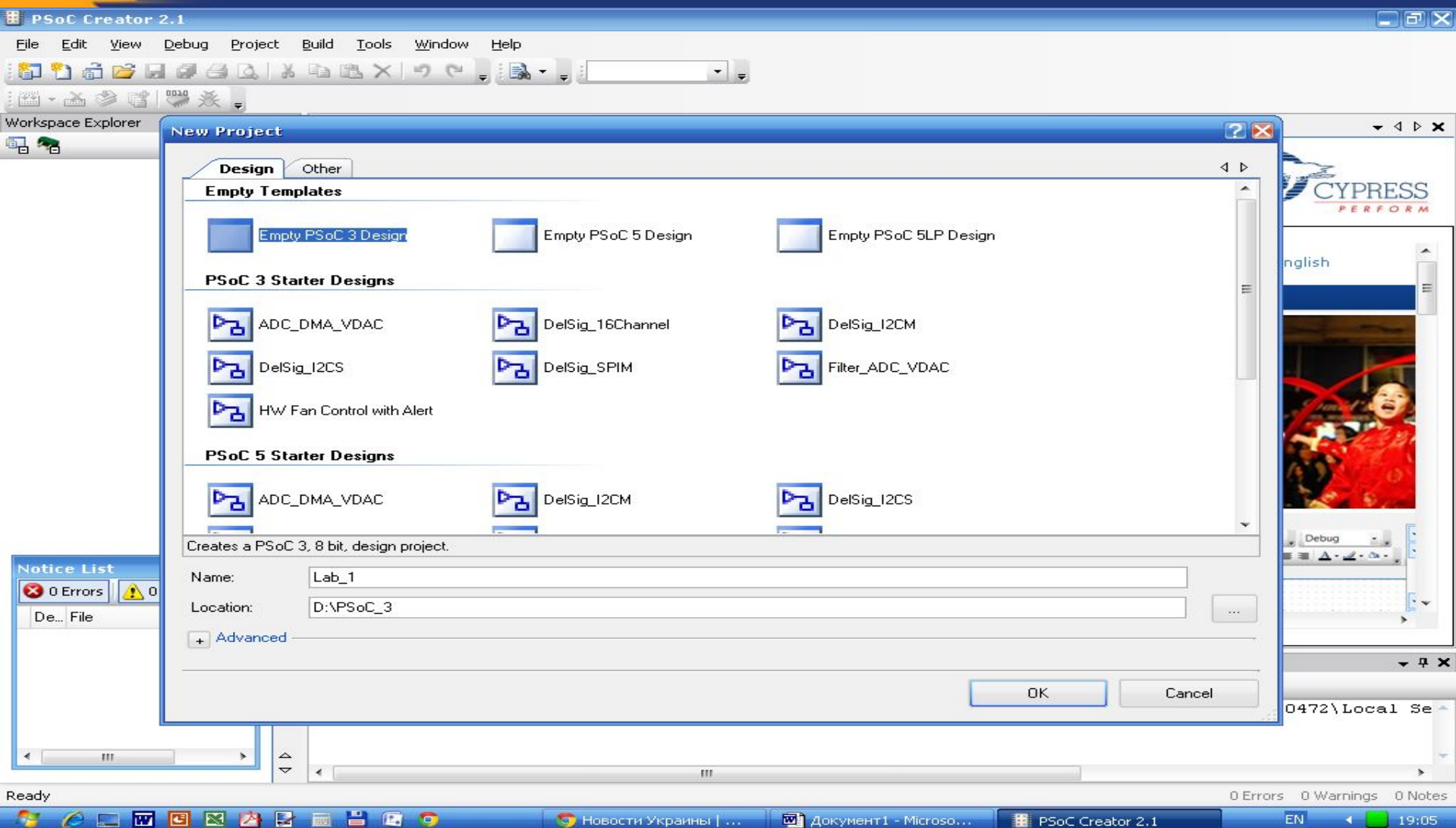
De... File

Ready

0 Errors 0 Warnings 0 Notes

EN 19:02

Empty PSoC 3/5 Design



The screenshot displays the PSoC Creator 2.1 application interface. The main window is titled "New Project" and is divided into several sections:

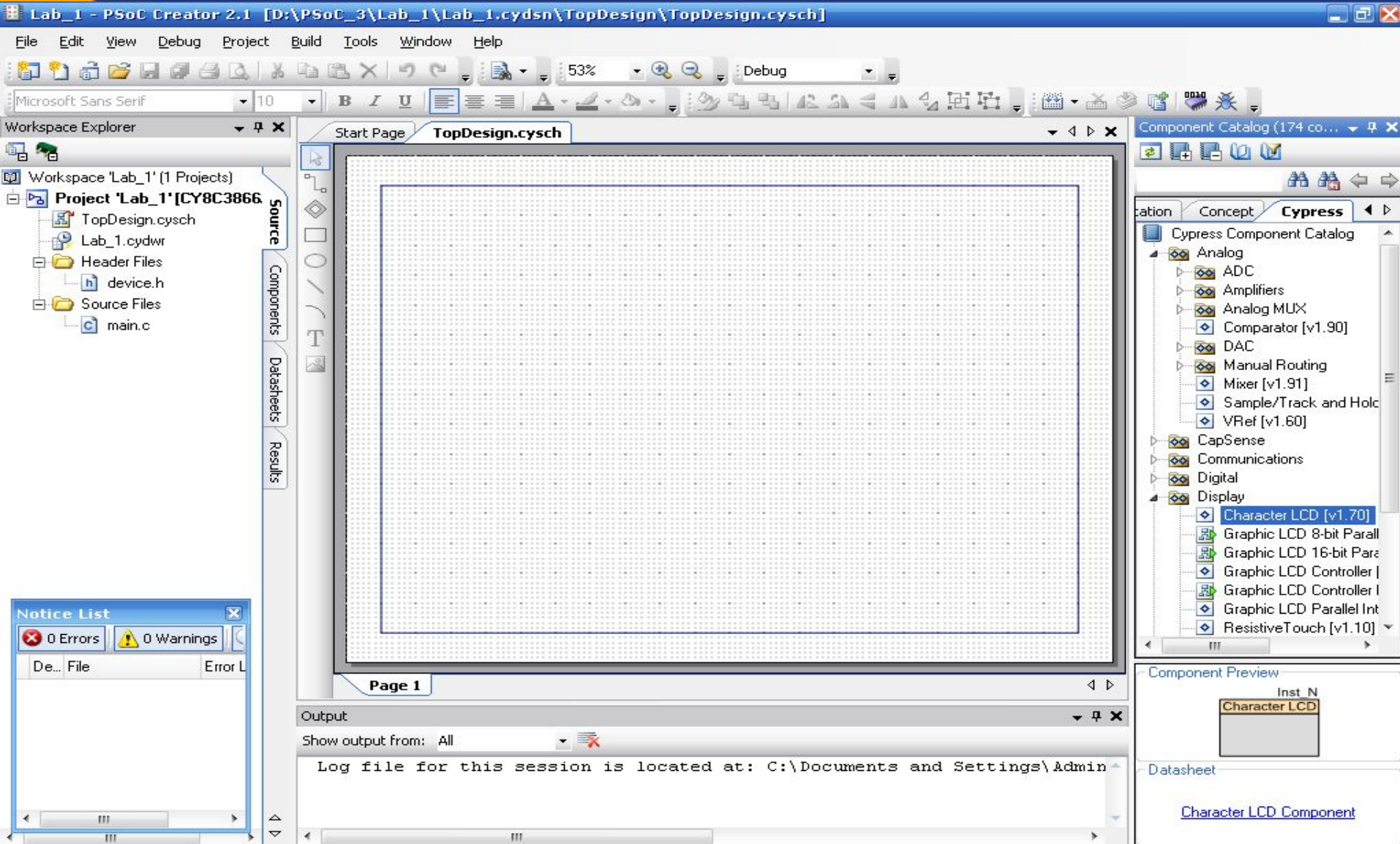
- Design** tab is selected.
- Empty Templates** section includes:
 - Empty PSoC 3 Design (highlighted)
 - Empty PSoC 5 Design
 - Empty PSoC 5LP Design
- PSoC 3 Starter Designs** section includes:
 - ADC_DMA_VDAC
 - DelSig_I2CS
 - HW Fan Control with Alert
 - DelSig_16Channel
 - DelSig_SPIM
 - DelSig_I2CM
 - Filter_ADC_VDAC
- PSoC 5 Starter Designs** section includes:
 - ADC_DMA_VDAC
 - DelSig_I2CM
 - DelSig_I2CS

Below the design templates, a description reads: "Creates a PSoC 3, 8 bit, design project." The form fields are filled with:

- Name: Lab_1
- Location: D:\PSoC_3

Buttons for "OK" and "Cancel" are visible at the bottom right of the dialog. In the background, the "Notice List" shows 0 errors and 0 warnings. The Windows taskbar at the bottom shows the system tray with "0 Errors 0 Warnings 0 Notes" and the time "19:05".

Custom Window

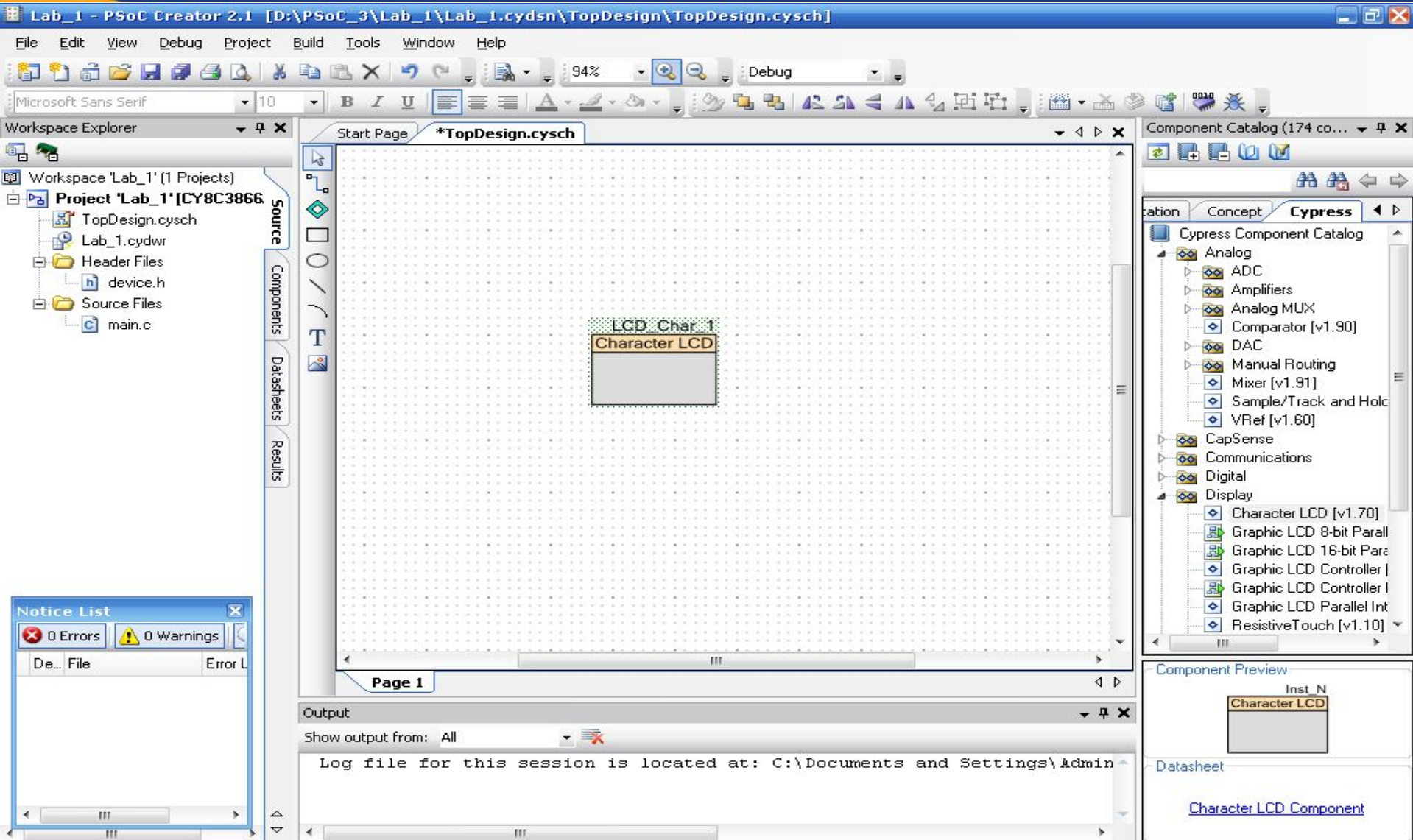


The screenshot displays the PSoC Creator 2.1 software interface. The main workspace shows a custom window design on a grid, labeled "Page 1". The interface includes a menu bar (File, Edit, View, Debug, Project, Build, Tools, Window, Help), a toolbar, and a workspace explorer on the left showing the project structure for "Project 'Lab_1' [CY8C3866]". The workspace explorer lists files such as "TopDesign.cysch", "Lab_1.cydwr", "Header Files", "device.h", "Source Files", and "main.c".

On the right side, the "Component Catalog" is visible, showing a tree view of components under the "Cypress" category. The "Display" category is expanded, and "Character LCD [v1.70]" is selected. Below the catalog, the "Component Preview" section shows a preview of the "Character LCD" component. The "Datashheet" section at the bottom right contains a link to the "Character LCD Component" datashheet.

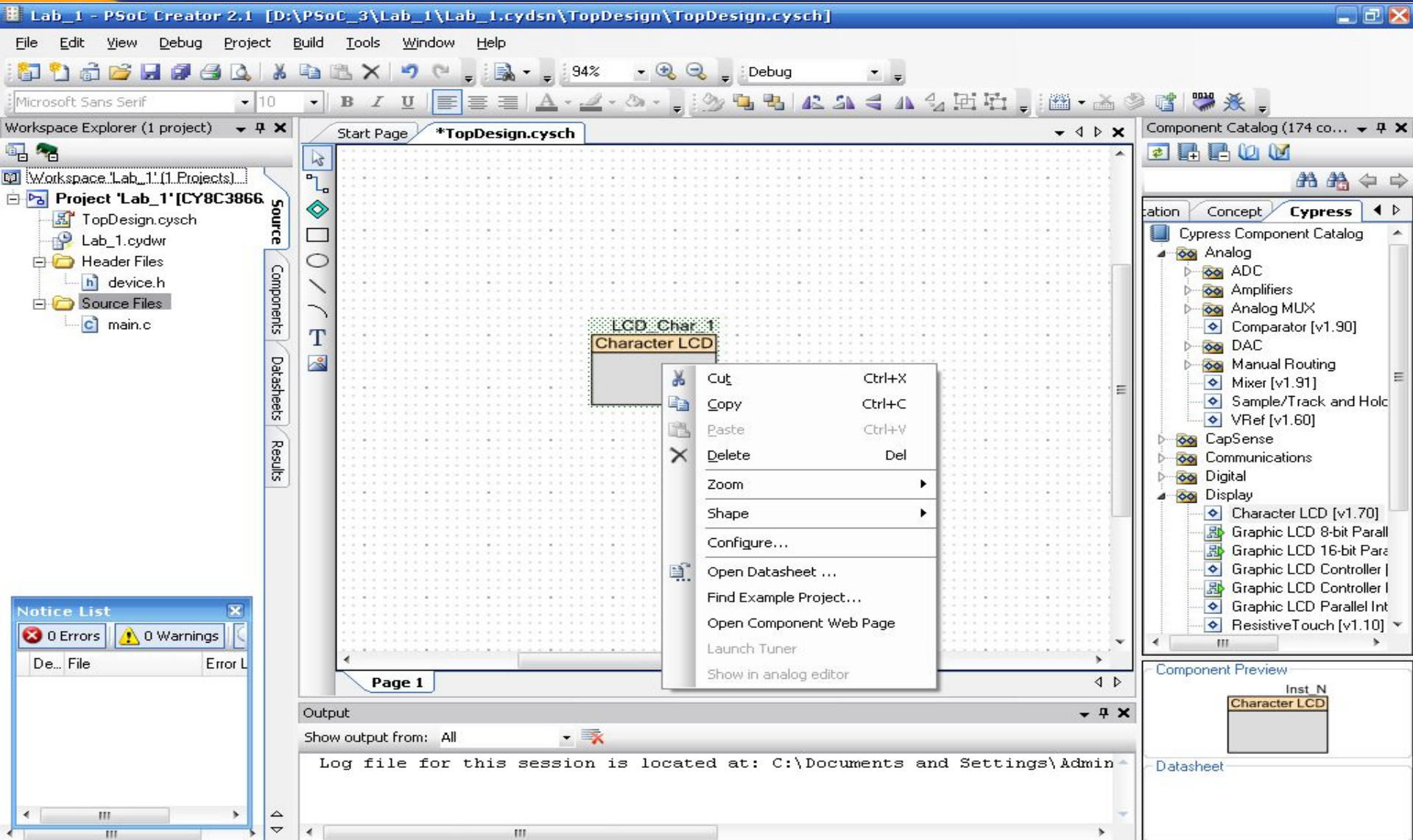
In the bottom left corner, a "Notice List" window is open, showing "0 Errors" and "0 Warnings". The "Output" window at the bottom center displays the message: "Log file for this session is located at: C:\Documents and Settings\Admin...".

Character LCD



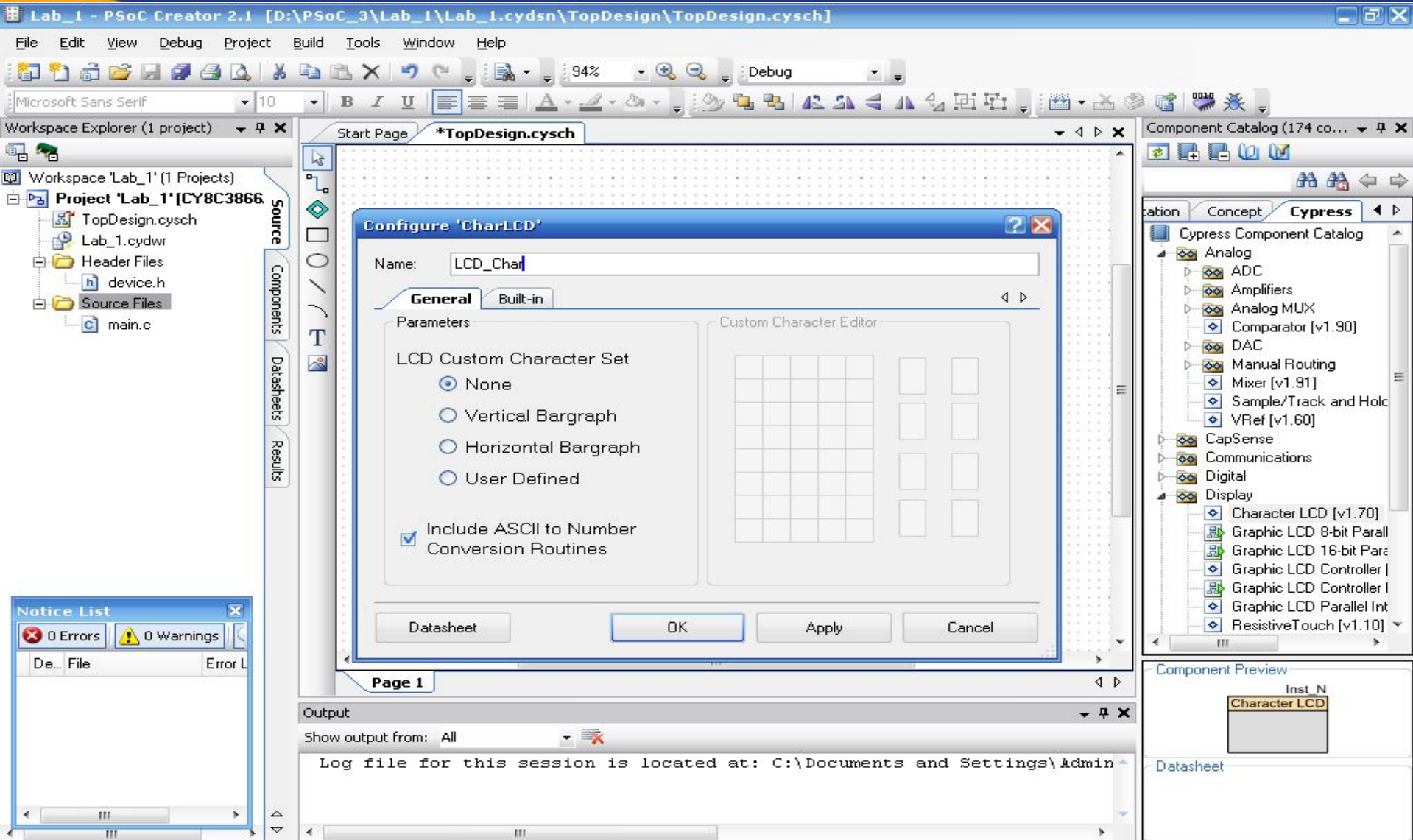
The screenshot displays the PSoC Creator 2.1 software interface. The main workspace shows a design page with a grid background. A component labeled "LCD Char 1" is being placed, and its internal structure is visible, showing "Character LCD". The Component Catalog on the right lists various components, with "Character LCD [v1.70]" selected under the "Display" category. The Notice List window in the bottom-left corner shows "0 Errors" and "0 Warnings". The Output window at the bottom displays the message: "Log file for this session is located at: C:\Documents and Settings\Admin...". The status bar at the bottom indicates "Ready" and "0 Errors 0 Warnings 0 Notes".

Character LCD



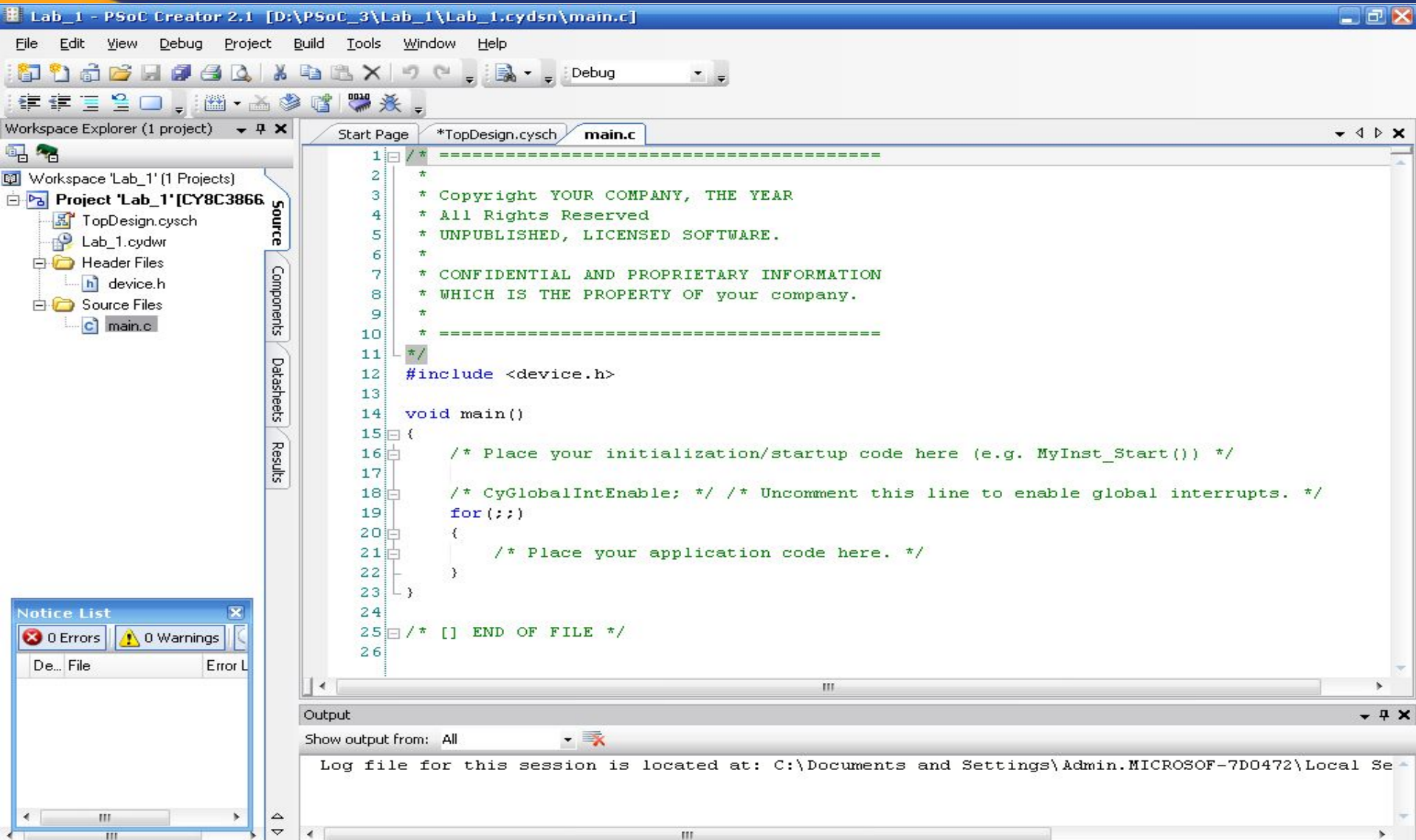
The screenshot displays the PSoC Creator 2.1 IDE. The main workspace shows a schematic with a grid. A component labeled "Character LCD" is being placed on the grid. A context menu is open over the component, listing actions such as Cut, Copy, Paste, Delete, Zoom, Shape, Configure..., Open Datasheet..., Find Example Project..., Open Component Web Page, Launch Tuner, and Show in analog editor. The Component Catalog on the right shows the "Character LCD [v1.70]" component selected under the "Display" category. The Notice List in the bottom left shows 0 Errors and 0 Warnings. The Output window at the bottom displays the log file path: "Log file for this session is located at: C:\Documents and Settings\Admin...".

Configure LCD



The screenshot shows the PSoC Creator 2.1 software interface. The main window displays the 'Configure CharLCD' dialog box for a component named 'LCD_Char'. The dialog has two tabs: 'General' and 'Built-in'. Under the 'General' tab, there are two sections: 'Parameters' and 'Custom Character Editor'. In the 'Parameters' section, the 'LCD Custom Character Set' is set to 'None'. Other options include 'Vertical Bargraph', 'Horizontal Bargraph', and 'User Defined'. The 'Include ASCII to Number Conversion Routines' checkbox is checked. The 'Custom Character Editor' section contains a grid for defining characters. At the bottom of the dialog are buttons for 'Datasheet', 'OK', 'Apply', and 'Cancel'. The background shows the workspace explorer with project files, a component catalog on the right, and a notice list at the bottom left.

Main.c



The screenshot shows the PSoC Creator 2.1 IDE interface. The main window displays the source code for `main.c` in the `*TopDesign.cysch` project. The code includes a copyright notice and a `main()` function with several comments for initialization and application code.

```
1  /* -----  
2  *  
3  * Copyright YOUR COMPANY, THE YEAR  
4  * All Rights Reserved  
5  * UNPUBLISHED, LICENSED SOFTWARE.  
6  *  
7  * CONFIDENTIAL AND PROPRIETARY INFORMATION  
8  * WHICH IS THE PROPERTY OF your company.  
9  *  
10 * -----  
11 */  
12 #include <device.h>  
13  
14 void main()  
15 {  
16     /* Place your initialization/startup code here (e.g. MyInst_Start()) */  
17  
18     /* CyGlobalIntEnable; */ /* Uncomment this line to enable global interrupts. */  
19     for (;;)   
20     {  
21         /* Place your application code here. */  
22     }  
23 }  
24  
25 /* [] END OF FILE */  
26
```

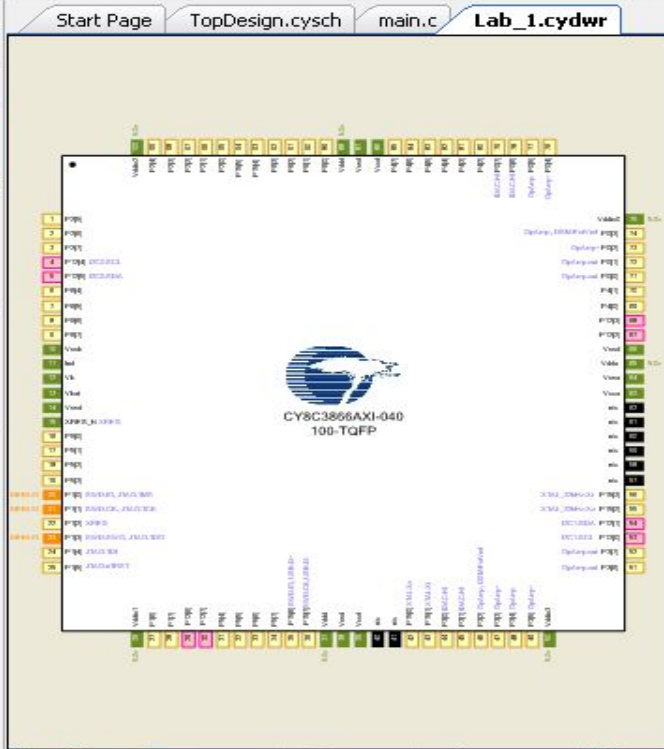
The `Notice List` window is open in the bottom-left corner, showing 0 Errors and 0 Warnings. The `Output` window at the bottom shows the message: "Log file for this session is located at: C:\Documents and Settings\Admin.MICROSOFT-7D0472\Local Se...".

Lab_1 - PSoC Creator 2.1 [D:\PSoC_3\Lab_1\Lab_1.cydsn\Lab_1.cydw] 37% Debug

File Edit View Debug Project Build Tools Window Help

Workspace Explorer (1 project)

- Workspace 'Lab_1' (1 Projects)
 - Project 'Lab_1' [CY8C3866]
 - TopDesign.cysch
 - Lab_1.cydw
 - Header Files
 - device.h
 - Source Files
 - main.c



| Alias | Name | Port | Pin | Lock |
|-------|-------------------------|---------|-----|------|
| | \LCD_Char:LCDPort[6:0]\ | | | |
| | P0[6:0] | IDAC:HC | | |
| | P0[7:1] | IDAC:HC | | |
| | P2[6:0] | | | |
| | P2[7:1] | | | |
| | P3[6:0] | OpAmp:c | | |
| | P3[7:1] | OpAmp:c | | |
| | P4[6:0] | | | |
| | P4[7:1] | | | |
| | P5[6:0] | | | |

LCD_Char_LCDPort_6 - Digital
LCD_Char_LCDPort_5 - Digital
LCD_Char_LCDPort_4 - Digital

Notice List

0 Errors 0 Warnings

De... File Error L

Pins Analog Clocks Interrupts DMA System Directives Flash Security

Output

Show output from: All

Log file for this session is located at: C:\Documents and Settings\Admin.MICROSOFT-7D0472\Local Se



Build – Debug - Program

Lab_1 - PSoC Creator 2.1 [D:\PSoC_3\Lab_1\Lab_1.cydsn\main.c]

File Edit View Debug Project Build Tools Window Help

Debug

Workspace Explorer

- Workspace 'Lab_1' (1 Projects)
 - *Project 'Lab_1' [CY8C3]
 - TopDesign.cysch
 - Lab_1.cydwr
 - Header Files
 - device.h
 - Source Files
 - main.c
 - Generated_Source
 - PSoC3
 - cy_boot
 - CyBootAsmk
 - CyDmac.c
 - CyDmac.h
 - CyFlash.c
 - CyFlash.h
 - CyLib.c
 - CyLib.h
 - cymem.a51
 - cypins.h

Source Components Datasheets Results

```
1  /* -----  
2  *  
3  * Copyright YOUR COMPANY, THE YEAR  
4  * All Rights Reserved  
5  * UNPUBLISHED, LICENSED SOFTWARE.  
6  *  
7  * CONFIDENTIAL AND PROPRIETARY INFORMATION  
8  * WHICH IS THE PROPERTY OF your company.  
9  *  
10 * -----  
11 */  
12 #include <device.h>  
13  
14 void main()  
15 {  
16     /* Place your initialization/startup code here (e.g. MyInst_Start()) */  
17  
18     /* CyGlobalIntEnable; */ /* Uncomment this line to enable global interrupts. */  
19     for(;;)  
20     {  
21         /* Place your application code here. */  
22     }  
23 }  
24  
25 /* [] END OF FILE */  
26
```

Notice List

0 Errors 0 Warnings

| De... | File | Error L |
|-------|------|---------|
|-------|------|---------|

Output

Show output from: All

```
SRAM used: 93 of 8192 bytes (1.1%).  
----- Build Succeeded: 02/14/2013 19:39:40 -----
```



LCD Custom Character Set

Lab_1 - PSoC Creator 2.1 [D:\PSoc_3\Lab_1\Lab_1.cydsn\TopDesign\TopDesign.cysch]

File Edit View Debug Project Build Tools Window Help

Microsoft Sans Serif 10 B I U

Workspace Explorer

Project 'Lab_1' [CY8C3866AX-040]

Source Components Datasheets Results

Configure 'CharLCD'

Name: LCD_Char

General Built-in

Parameters

LCD Custom Character Set

- None
- Vertical Bargraph
- Horizontal Bargraph
- User Defined

Include ASCII to Number Conversion Routines

Custom Character Editor

Custom 7

Datasheet OK Apply Cancel

Notice List

0 Errors 0 Warnings

Output

Show output from: All

```
Verify Checksum...
Device 'PSoc 3 CY8C3866AX*-040' was successfully programmed at 02/14/201
```

Component Catalog (174 components)

- Character LCD [v1.70]

Component Preview

Inst N

Character LCD

Datasheet

Ready {X=442,Y=450} 0 Errors 0 Warnings 0 Notes



Open Project/Workspace

The screenshot shows the PSoC Creator 2.1 application window. The 'File' menu is open, and the 'Open' option is selected. A sub-menu is visible, showing 'Project/Workspace', 'File... Ctrl+O', and 'Example Project...'. The main workspace contains a 'Recent Projects' list, a 'Getting Started' section, and a 'Tips + Tricks' section. A 'Notice List' window is open in the bottom left, showing 0 Errors and 0 Warnings. The output window at the bottom shows the log file location: C:\Documents and Settings\Admin.MICROSOFT-7D0472\Local Se...

File Edit View Debug Project Build Tools Window Help

- New
- Open
- Add
- Close Ctrl+F4
- Close Workspace
- Save Ctrl+S
- Save As
- Save All Ctrl+Shift+S
- Create Workspace Bundle...
- Page Setup...
- Print Ctrl+P
- Print Preview
- Recent Files
- Recent Projects
- Exit

Project/Workspace

- Project/Workspace
- File... Ctrl+O
- Example Project...

Recent Projects

- CharLCD_CustomFont01.c...
- Lab_1.cywrk
- HelloWorld_Blinky01.cywrk
- CapSense_CSD_Design01...
- CapSense_CSD_Design01...

Create New Project...
Open Existing Project...

Getting Started

- PSoC Creator Start Page
- Quick Start Guide
- Intro to PSoC
- Intro to PSoC Creator
- PSoC Creator Training
- Help Tutorials
- Getting Started With PSoC 3
- Getting Started With PSoC 5

Examples and Kits

- Find Example Project...
- No Kit Packages Installed

PSoC Creator News and Information

简体中文 日本語 한국어 English

Happy Lunar New Year!
Posted on 02/11/2013

Gong Xi Fa Cai! As many of my friends and colleagues are celebrating the New Year and welcoming in the year of the water snake, I wanted to take a minute and wish you all well. May the New Year bring each of you prosperity, good luck and a new PSoC design.

[Read More](#)

Tips + Tricks: Menu Customization
Posted on 01/24/2013

Did you know you can create a customized menu in PSoC® Creator? Right click in a blank area of the top menu and select customize from the

Notice List

0 Errors 0 Warnings

| De... | File | Error L |
|-------|------|---------|
|-------|------|---------|

Output

Show output from: All

Log file for this session is located at: C:\Documents and Settings\Admin.MICROSOFT-7D0472\Local Se...



Lab_1 Character LCD

CharLCD_CustomFont01 - PSoC Creator 2.1 [F:\...\CharLCD_CustomFont01.cydsn\TopDesign\TopDesign.cysch]

File Edit View Debug Project Build Tools Window Help

Microsoft Sans Serif 10 B I U

Workspace Explorer (1 project)

Project 'CharLCD_CustomFont01'

- TopDesign.cysch
- CharLCD_CustomFont01
 - Header Files
 - device.h
 - Source Files
 - main.c
 - Generated_Source
 - PSoC3
 - cy_boot
 - CyBootAsmk
 - CyDmac.c
 - CyDmac.h
 - CyFlash.c
 - CyFlash.h
 - CyLib.c
 - CyLib.h
 - cymem.a51
 - cypins.h

Component Catalog (174 components)

Cypress Component Catalog

- Analog
 - ADC
 - Amplifiers
 - Analog MUX
 - Comparator [v1.90]
 - DAC
 - Manual Routing
 - Mixer [v1.91]
 - Sample/Track and Hold
 - VRef [v1.60]
- CapSense
- Communications
- Digital
- Display
 - Character LCD [v1.70]
 - Graphic LCD 8-bit Parallel
 - Graphic LCD 16-bit Parallel
 - Graphic LCD Controller I
 - Graphic LCD Parallel Interface
 - Resistive Touch [v1.10]

Notice List

0 Errors 0 Warnings

Output

Show output from: All

Log file for this session is located at: C:\Documents and Settings\Admin...



Lab_1 Character LCD

CharLCD_CustomFont01 - PSoC Creator 2.1 [F:\LCD_Font_1\CharLCD_CustomFont01\CharLCD_CustomFont01.cydsn\main.c]

File Edit View Debug Project Build Tools Window Help

Debug

Workspace Explorer (1 project)

- Workspace 'CharLCD_CustomFont01'
 - Project 'CharLCD_CustomFont01'
 - TopDesign.cysch
 - CharLCD_CustomFont01
 - Header Files
 - device.h
 - Source Files
 - main.c
 - Generated_Source
 - PSoC3
 - cy_boot
 - CyBootAsmk
 - CyDmac.c
 - CyDmac.h
 - CyFlash.c
 - CyFlash.h
 - CyLib.c
 - CyLib.h
 - cymem.a51
 - cypins.h

Source Components Datasheets Results

```
1 /*****  
2 * File Name: main.c  
3 *  
4 * Version: 2.0  
5 *  
6 * Description:  
7 * The example project displays " CYPRESS" in a custom font on 2X16 LCD  
8 * available with CY8CKIT-001.  
9 *  
10 *****/  
11 * Copyright 2012, Cypress Semiconductor Corporation. All rights reserved.  
12 * This software is owned by Cypress Semiconductor Corporation and is protected  
13 * by and subject to worldwide patent and copyright laws and treaties.  
14 * Therefore, you may use this software only as provided in the license agreement  
15 * accompanying the software package from which you obtained this software.  
16 * CYPRESS AND ITS SUPPLIERS MAKE NO WARRANTY OF ANY KIND, EXPRESS OR IMPLIED,  
17 * WITH REGARD TO THIS SOFTWARE, INCLUDING, BUT NOT LIMITED TO, NONINFRINGEMENT,  
18 * IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.  
19 *****/  
20  
21 #include <device.h>  
22  
23 extern uint8 const CYCODE LCD_customFonts[];  
24  
25 /*****  
26 * Function Name: main  
27 *****/
```

Output

Show output from: All

Log file for this session is located at: C:\Documents and Settings\Admin.MICROSOFT-7D0472\Local Se

Notice List

0 Errors 0 Warnings

De... File Error L



Lab_1 Character LCD

CharLCD_CustomFont01 - PSoC Creator 2.1 [F:\LCD_Font_1\CharLCD_CustomFont01\CharLCD_CustomFont01.cydsn\main.c]

File Edit View Debug Project Build Tools Window Help

Debug

Workspace Explorer (1 project)

Project 'CharLCD_CustomFont01'

- Header Files
 - device.h
- Source Files
 - main.c
- Generated_Source
 - PSoC3
 - cy_boot
 - CyBootAsmk
 - CyDmac.c
 - CyDmac.h
 - CyFlash.c
 - CyFlash.h
 - CyLib.c
 - CyLib.h
 - cymem.a51
 - cypins.h

```
25 /*****  
26 * Function Name: main  
27 *****/  
28 *  
29 * Summary:  
30 * The main program does the following  
31 * 1. Initialiaes the LCD.  
32 * 2. Load the custom fonts.  
33 * 3. Puts "CYPRESS" in custom available font on the row 0 of the LCD.  
34 * 4. Prints " Perform" in normal font on the row 1 of the LCD.  
35 *  
36 * Parameters:  
37 * None.  
38 *  
39 * Return:  
40 * None.  
41 *  
42 *****/  
43 void main()  
44 {  
45     uint8 pos = 1u;  
46     uint8 row = 0u;  
47  
48     LCD_Start();  
49     LCD_LoadCustomFonts(LCD_customFonts);  
50 }
```

Notice List

0 Errors 0 Warnings

De... File Error L

Output

Show output from: All

Log file for this session is located at: C:\Documents and Settings\Admin.MICROSOF-7D0472\Local Se

Ln 1 Col 1 INS 0 Errors 0 Warnings 0 Notes

7:40



Lab_1 Character LCD

CharLCD_CustomFont01 - PSoC Creator 2.1 [F:\LCD_Font_1\CharLCD_CustomFont01\CharLCD_CustomFont01.cydsn\main.c]

File Edit View Debug Project Build Tools Window Help

Debug

Workspace Explorer (1 project)

Project 'CharLCD_CustomFont01'

- TopDesign.cysch
- CharLCD_CustomFont01
 - Header Files
 - device.h
 - Source Files
 - main.c
 - Generated_Source
 - PSoC3
 - cy_boot
 - CyBootAsmk
 - CyDmac.c
 - CyDmac.h
 - CyFlash.c
 - CyFlash.h
 - CyLib.c
 - CyLib.h
 - cymem.a51
 - cypins.h

```
50
51 LCD_Position(row, pos);
52 LCD_PutChar(LCD_CUSTOM_0);
53 pos += 1u;
54
55 LCD_Position(row, pos);
56 LCD_PutChar(LCD_CUSTOM_1);
57 pos += 1u;
58
59 LCD_Position(row, pos);
60 LCD_PutChar(LCD_CUSTOM_2);
61 pos += 1u;
62
63 LCD_Position(row, pos);
64 LCD_PutChar(LCD_CUSTOM_3);
65 pos += 1u;
66
67 LCD_Position(row, pos);
68 LCD_PutChar(LCD_CUSTOM_4);
69 pos += 1u;
70
71 LCD_Position(row, pos);
72 LCD_PutChar(LCD_CUSTOM_5);
73 pos += 1u;
74
75 LCD_Position(row, pos);
76 LCD_PutChar(LCD_CUSTOM_6);
77 pos += 1u;
```

Output

Show output from: All

Log file for this session is located at: C:\Documents and Settings\Admin.MICROSOFT-7D0472\Local Se

Notice List

0 Errors 0 Warnings

| De... | File | Error L |
|-------|------|---------|
|-------|------|---------|

Lab_1 Character LCD

CharLCD_CustomFont01 - PSoC Creator 2.1 [F:\LCD_Font_1\CharLCD_CustomFont01\CharLCD_CustomFont01.cydsn\main.c]

File Edit View Debug Project Build Tools Window Help

Debug

Workspace Explorer (1 project)

Project 'CharLCD_CustomFont01'

- TopDesign.cysch
- CharLCD_CustomFont01
 - Header Files
 - device.h
 - Source Files
 - main.c
 - Generated_Source
 - PSoC3
 - cy_boot
 - CyBootAsmk
 - CyDmac.c
 - CyDmac.h
 - CyFlash.c
 - CyFlash.h
 - CyLib.c
 - CyLib.h
 - cymem.a51
 - cypins.h

```

66
67 LCD_Position(row, pos);
68 LCD_PutChar(LCD_CUSTOM_4);
69 pos += 1u;
70
71 LCD_Position(row, pos);
72 LCD_PutChar(LCD_CUSTOM_5);
73 pos += 1u;
74
75 LCD_Position(row, pos);
76 LCD_PutChar(LCD_CUSTOM_6);
77 pos += 1u;
78
79 LCD_Position(row, pos);
80 LCD_PutChar(LCD_CUSTOM_7);
81 pos += 1u;
82
83 //extern uint8 const CYCODE LCD_Char_customFonts[0x00,0x0E];
84 CyDelay(200u);
85 LCD_Position(1u, 1u);
86 LCD_PrintString("LAb1 02.10.2013");
87
88 for (;;)
89 {}
90
91
92
93 /* [] END OF FILE */
    
```

Notice List

0 Errors 0 Warnings

| De... | File | Error L |
|-------|------|---------|
| | | |

Output

Show output from: All

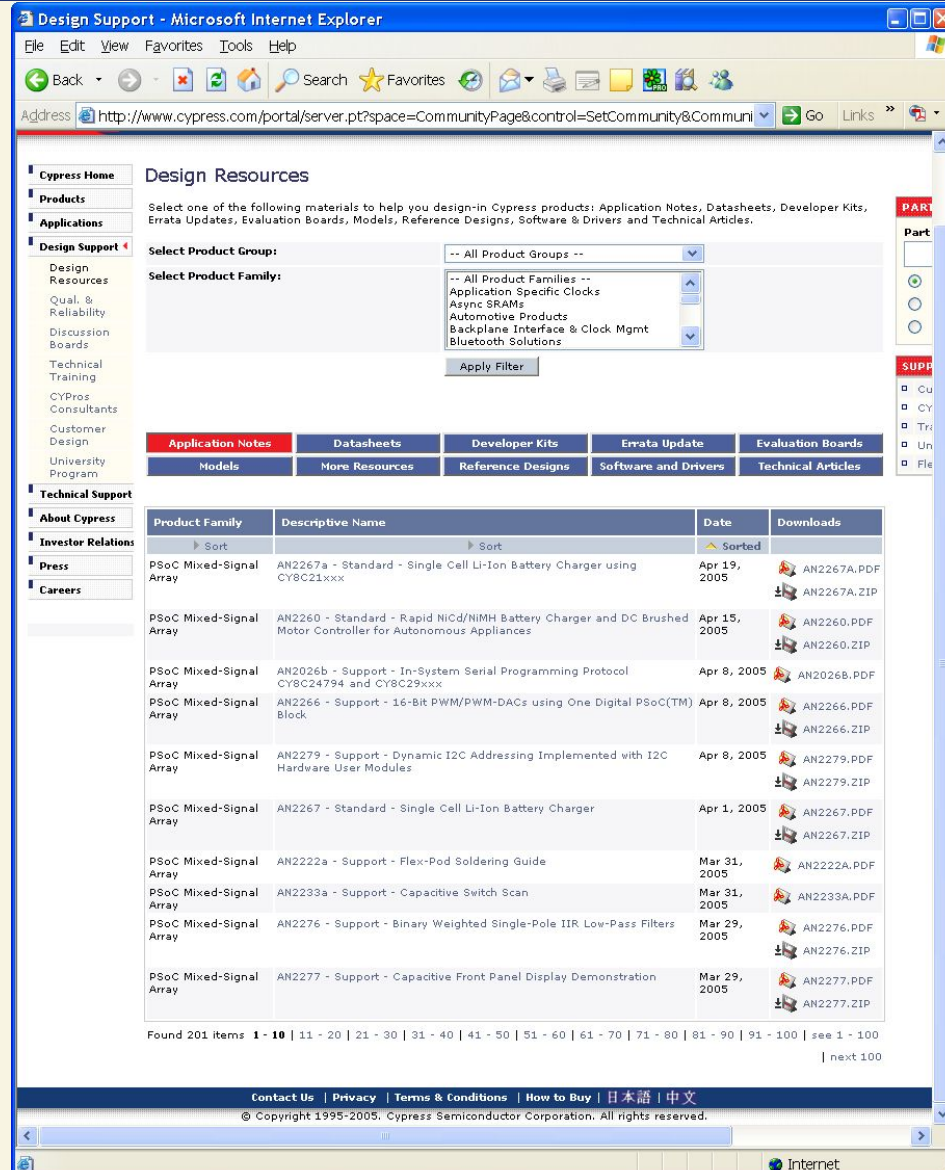
Log file for this session is located at: C:\Documents and Settings\Admin.MICROSOFT-7D0472\Local Se

Ln 85 Col 24 INS 0 Errors 0 Warnings 0 Notes

Ready

Новости ... Do_Prese... Microsoft ... CharLCD... EN 7:47

На сайті фірми Cypress знаходиться більше **200** Application Notes і Reference Designs, які ілюструють області застосування мікроконтролерів PSoC.



The screenshot shows the 'Design Resources' page on the Cypress website. It features a navigation menu on the left with categories like 'Cypress Home', 'Products', 'Applications', 'Design Support', 'Technical Support', 'About Cypress', 'Investor Relations', 'Press', and 'Careers'. The main content area is titled 'Design Resources' and includes a search filter for 'Product Group' and 'Product Family'. Below the filter is a grid of navigation tabs: 'Application Notes', 'Datasheets', 'Developer Kits', 'Errata Update', 'Evaluation Boards', 'Models', 'More Resources', 'Reference Designs', 'Software and Drivers', and 'Technical Articles'. The 'Application Notes' tab is active, displaying a table of resources.

| Product Family | Descriptive Name | Date | Downloads |
|-------------------------|---|--------------|----------------------------|
| PSoC Mixed-Signal Array | AN2267a - Standard - Single Cell Li-Ion Battery Charger using CY8C21xxx | Apr 19, 2005 | AN2267A.PDF AN2267A.ZIP |
| PSoC Mixed-Signal Array | AN2260 - Standard - Rapid NiCd/NiMH Battery Charger and DC Brushed Motor Controller for Autonomous Appliances | Apr 15, 2005 | AN2260.PDF AN2260.ZIP |
| PSoC Mixed-Signal Array | AN2026b - Support - In-System Serial Programming Protocol CY8C24794 and CY8C29xxx | Apr 8, 2005 | AN2026B.PDF |
| PSoC Mixed-Signal Array | AN2266 - Support - 16-Bit PWM/PWM-DACs using One Digital PSoC(TM) Block | Apr 8, 2005 | AN2266.PDF AN2266.ZIP |
| PSoC Mixed-Signal Array | AN2279 - Support - Dynamic I2C Addressing Implemented with I2C Hardware User Modules | Apr 8, 2005 | AN2279.PDF AN2279.ZIP |
| PSoC Mixed-Signal Array | AN2267 - Standard - Single Cell Li-Ion Battery Charger | Apr 1, 2005 | AN2267.PDF AN2267.ZIP |
| PSoC Mixed-Signal Array | AN2222a - Support - Flex-Pod Soldering Guide | Mar 31, 2005 | AN2222A.PDF |
| PSoC Mixed-Signal Array | AN2233a - Support - Capacitive Switch Scan | Mar 31, 2005 | AN2233A.PDF |
| PSoC Mixed-Signal Array | AN2276 - Support - Binary Weighted Single-Pole IIR Low-Pass Filters | Mar 29, 2005 | AN2276.PDF AN2276.ZIP |
| PSoC Mixed-Signal Array | AN2277 - Support - Capacitive Front Panel Display Demonstration | Mar 29, 2005 | AN2277.PDF AN2277.ZIP |

Found 201 items 1 - 10 | 11 - 20 | 21 - 30 | 31 - 40 | 41 - 50 | 51 - 60 | 61 - 70 | 71 - 80 | 81 - 90 | 91 - 100 | see 1 - 100 | next 100

© Copyright 1995-2005, Cypress Semiconductor Corporation. All rights reserved.

Мікропроцесорні системи

(лекція 1, кінець)
Благітко Б.Я.
2019 р.

