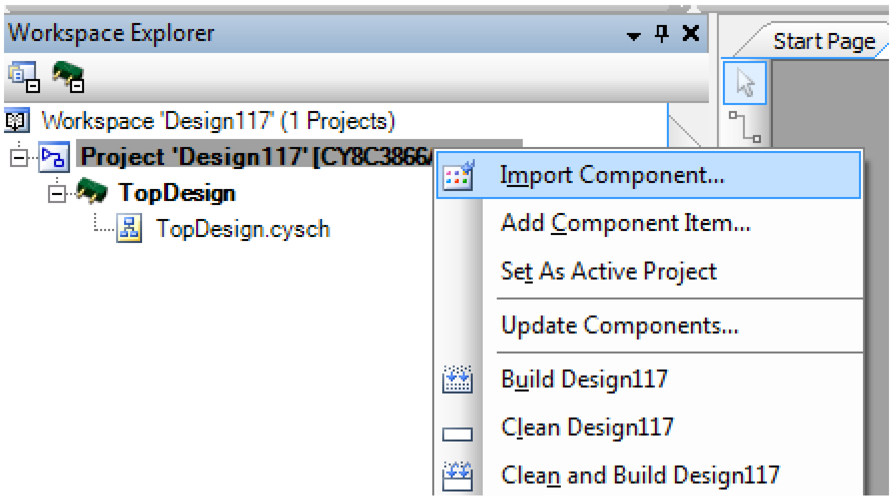
This memo documents step by step directions on how to import an existing component with a C# customizer into your design, change the name of the component (a necessary step to prevent problems) and rebuild the customizer without errors.

This memo also documents step by step directions for importing simple C# customizers into Visual Studio Express 2010 for simple editing of the customizer layout, as well as modifying an existing customizer to suit your needs.

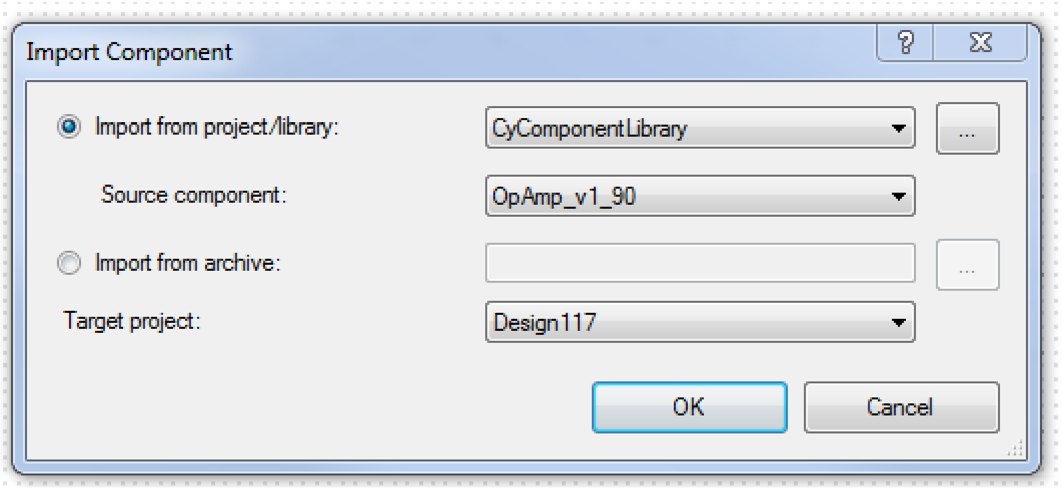
<u>Details:</u>

Importing and renaming a component with a C# customizer in Creator

We will begin the process by importing a component with a C# customizer into our project. We will use the Opamp because the C# customizer is very simple. We begin with a blank project. We go to the components tab in the workspace explorer, right click on our project, and select "Import Component"



We are going to be importing the "OpAmp" from the "CyComponentLibrary"



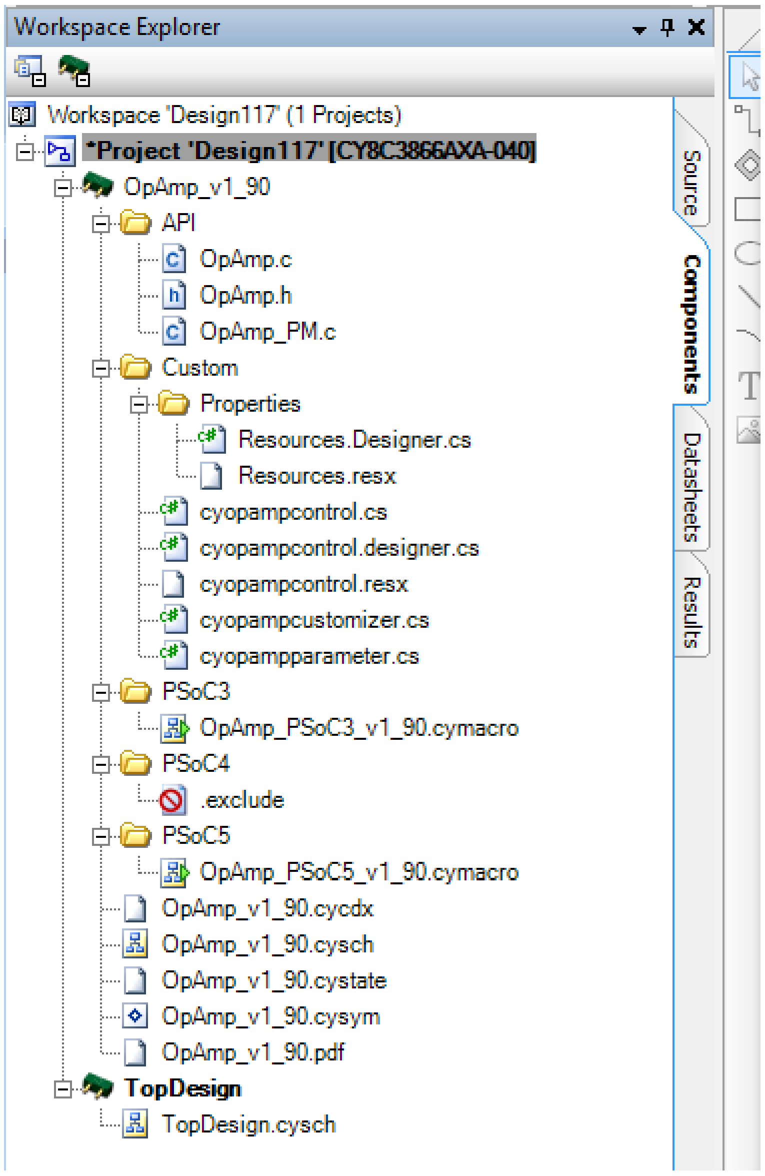
Import from project/library: [✓] CyComponentLibrary

Source component: OpAmp_v1_90

Import from archive:

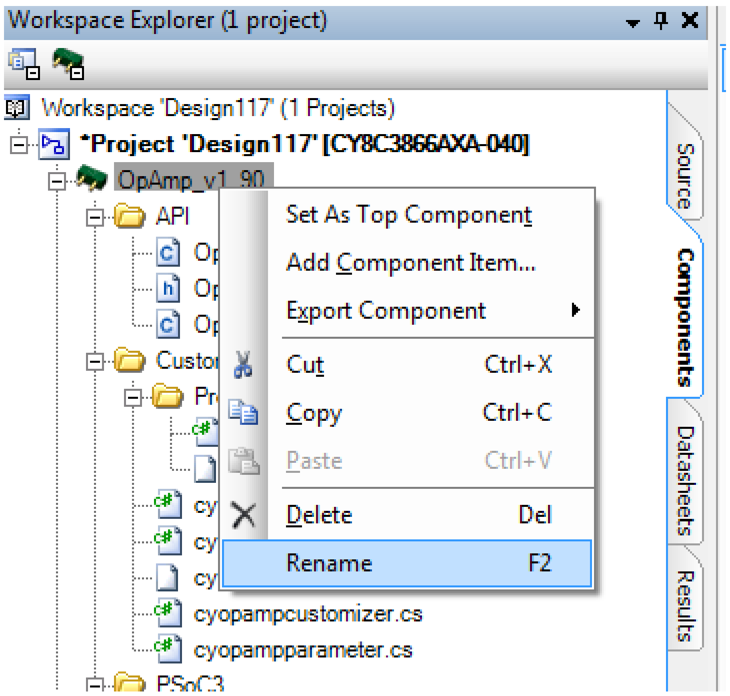
Target project: Design117

Click ok, and you should see the following files in the workspace explorer

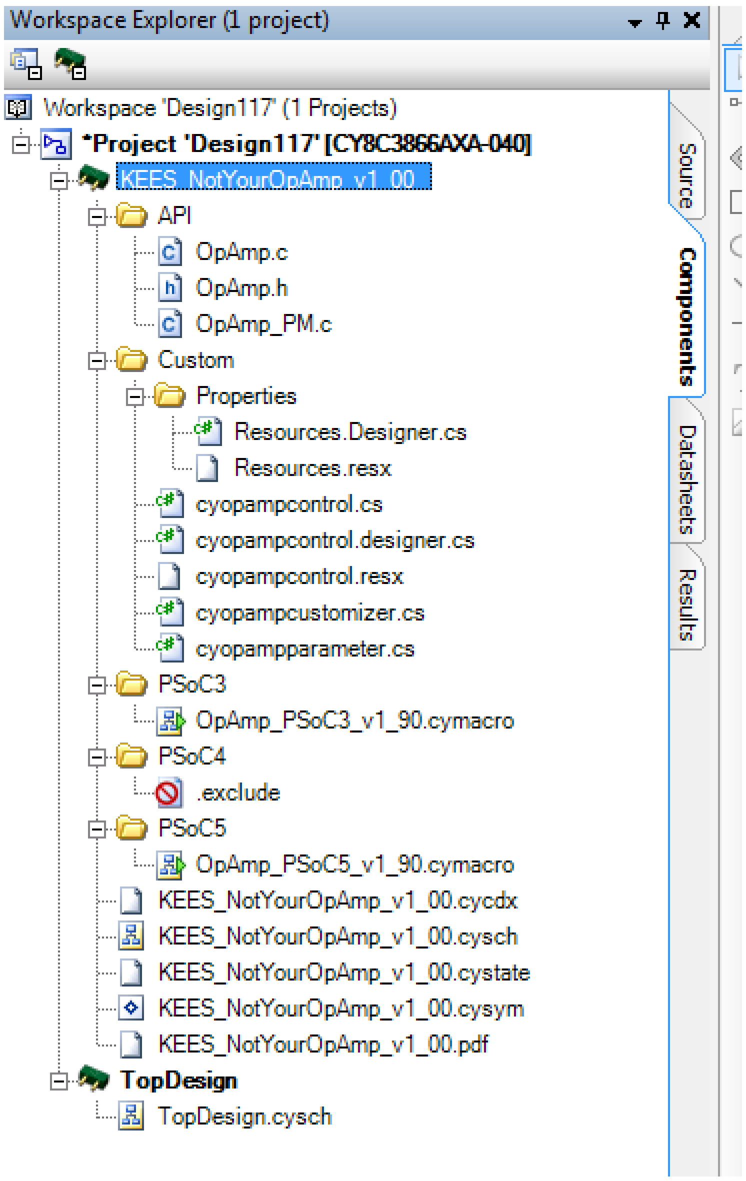


Workspace 'Design117' (1 Projects)
*Project 'Design117' [CY8C3866AXA-040]
OpAmp_v1_90
API
OpAmp.c
OpAmp.h
OpAmp_PM.c
Custom
Properties
Resources.Designer.cs
Resources.resx
cyopampcontrol.cs
cyopampcontrol.designer.cs
cyopampcontrol.resx
cyopampcustomizer.cs
cyopampparameter.cs
PSoC3
OpAmp_PSoC3_v1_90.cymacro
PSoC4
.exclude
PSoC5
OpAmp_PSoC5_v1_90.cymacro
OpAmp_v1_90.cycdx
OpAmp_v1_90.cysch
OpAmp_v1_90.cystate
OpAmp_v1_90.cysym
OpAmp_v1_90.pdf
TopDesign
TopDesign.cysch

To prevent Creator from thinking there are 2 identical versions of the OpAmp version 1.9, we are going to rename our copy of the component. Right Click on “OpAmp_V1_90” and select “Rename”.

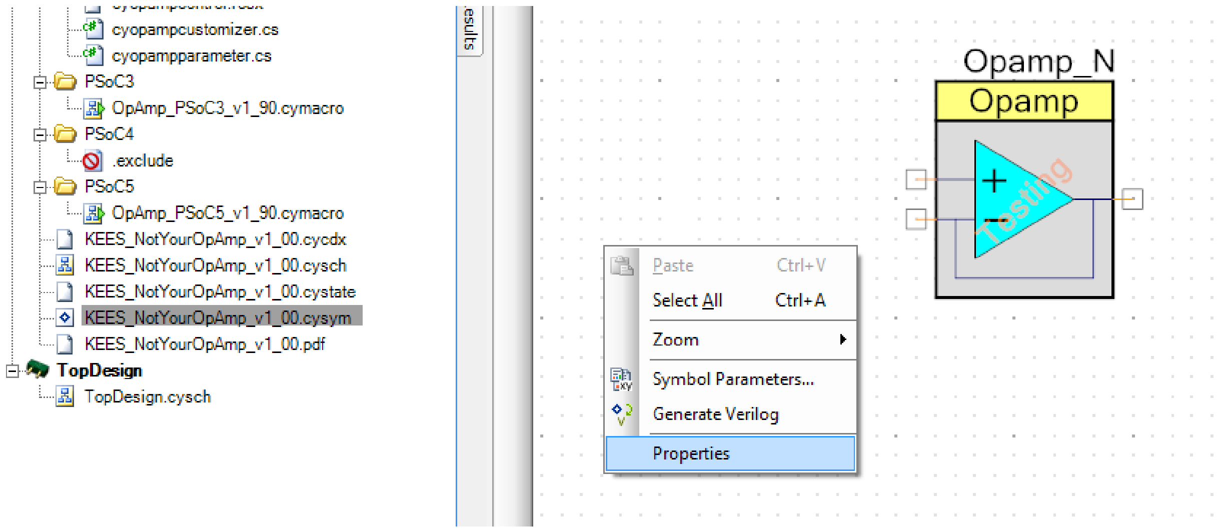


Rename it something different. I usually add my initials to the beginning to make it unlikely that someone else will use the same name as my component.

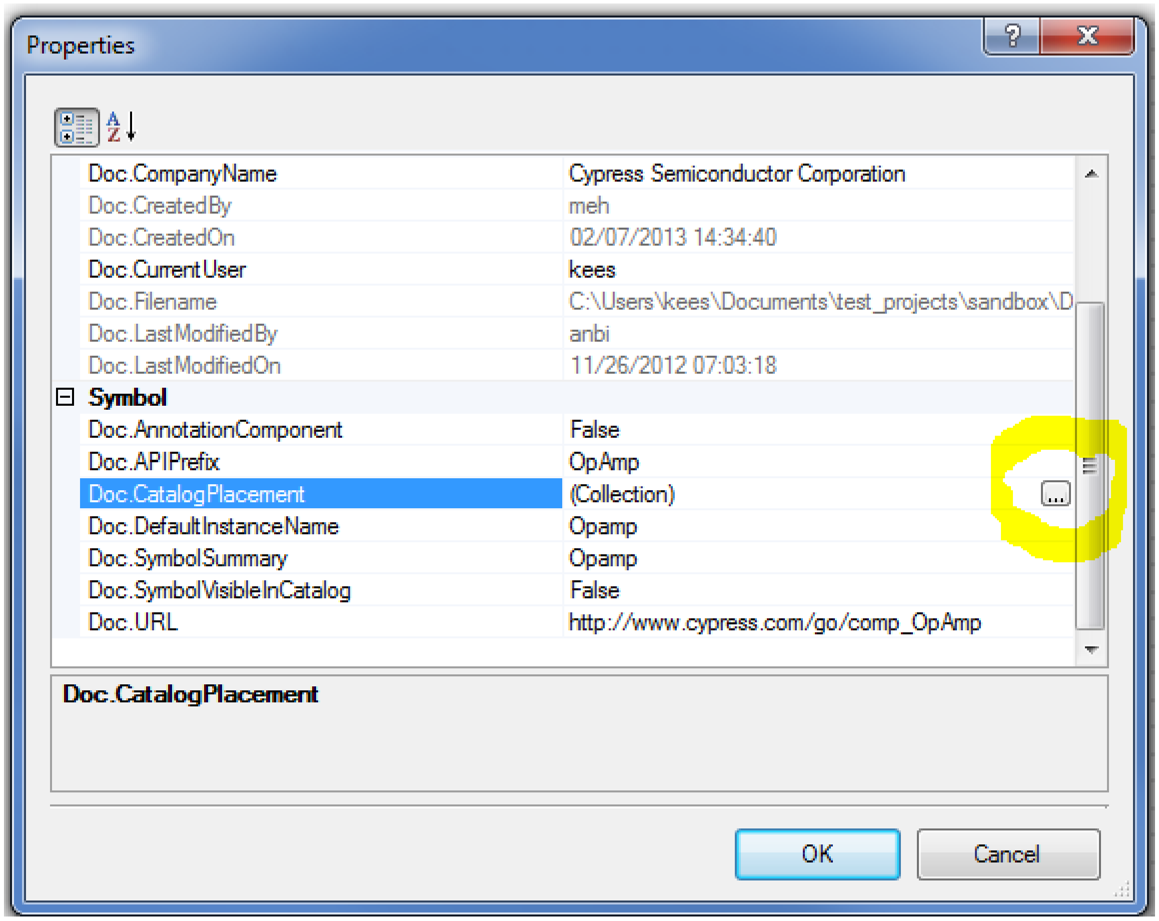


```
Workspace Explorer (1 project)
Workspace 'Design117' (1 Projects)
  *Project 'Design117' [CY8C3866AXA-040]
    KEES_NotYourOpAmp_v1_00
      API
        OpAmp.c
        OpAmp.h
        OpAmp_PM.c
      Custom
        Properties
          Resources.Designer.cs
          Resources.resx
        cyopampcontrol.cs
        cyopampcontrol.designer.cs
        cyopampcontrol.resx
        cyopampcustomizer.cs
        cyopampparameter.cs
      PSoC3
        OpAmp_PSoC3_v1_90.cymacro
      PSoC4
        .exclude
      PSoC5
        OpAmp_PSoC5_v1_90.cymacro
      KEES_NotYourOpAmp_v1_00.cycdx
      KEES_NotYourOpAmp_v1_00.cysch
      KEES_NotYourOpAmp_v1_00.cystate
      KEES_NotYourOpAmp_v1_00.cysym
      KEES_NotYourOpAmp_v1_00.pdf
    TopDesign
      TopDesign.cysch
```

Now let’s move it into our own library location. Open the .cysym file, and right click in the open space around the component symbol and select “Properties”


cyopampcustomizer.cs
cyopampparameter.cs
PSoC3
OpAmp_PSoC3_v1_90.cymacro
PSoC4
.exclude
PSoC5
OpAmp_PSoC5_v1_90.cymacro
KEES_NotYourOpAmp_v1_00.cycdx
KEES_NotYourOpAmp_v1_00.cysch
KEES_NotYourOpAmp_v1_00.cystate
KEES_NotYourOpAmp_v1_00.cysym
KEES_NotYourOpAmp_v1_00.pdf
TopDesign
TopDesign.cysch
Paste Ctrl+V
Select All Ctrl+A
Zoom
Symbol Parameters...
Generate Verilog
Properties
Opamp_N
Opamp
Testing

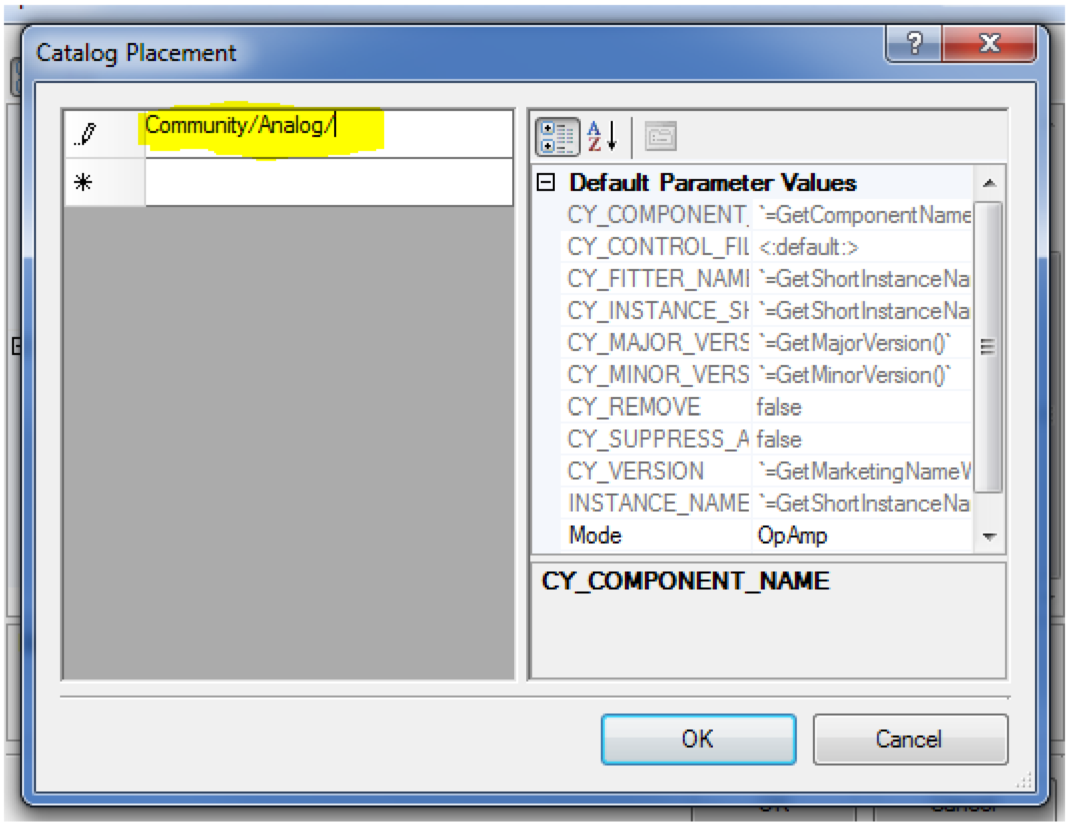
We are going to modify the 'Doc.CatalogPlacement' entry. Click on the '…' at the end of the field.



Doc.CompanyName	Cypress Semiconductor Corporation
Doc.CreatedBy	meh
Doc.CreatedOn	02/07/2013 14:34:40
Doc.CurrentUser	kees
Doc.Filename	C:\Users\kees\Documents\test_projects\sandbox\D
Doc.LastModifiedBy	anbi
Doc.LastModifiedOn	11/26/2012 07:03:18
Symbol	
Doc.AnnotationComponent	False
Doc.APIPrefix	OpAmp
Doc.CatalogPlacement	(Collection)
Doc.DefaultInstanceName	Opamp
Doc.SymbolSummary	Opamp
Doc.SymbolVisibleInCatalog	False
Doc.URL	http://www.cypress.com/go/comp_OpAmp

Doc.CatalogPlacement

Change the catalog placement to something besides the Cypress catalog.



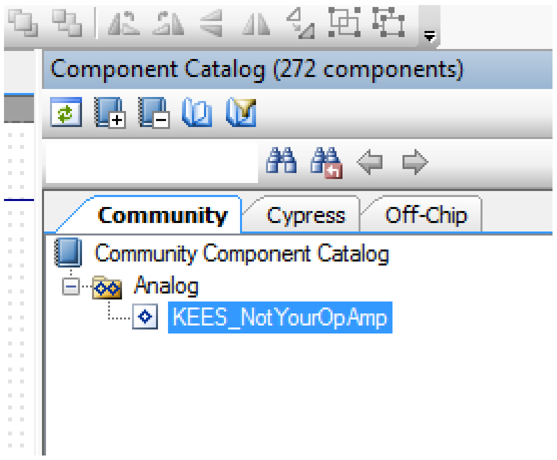
Catalog Placement

Community/Analog/

Default Parameter Values	
CY_COMPONENT_	`=GetComponentName
CY_CONTROL_FIL	<:default:>
CY_FITTER_NAMI	`=GetShortInstanceNa
CY_INSTANCE_SI	`=GetShortInstanceNa
CY_MAJOR_VERS	`=GetMajorVersion()`
CY_MINOR_VERS	`=GetMinorVersion()`
CY_REMOVE	false
CY_SUPPRESS_A	false
CY_VERSION	`=GetMarketingNameV
INSTANCE_NAME	`=GetShortInstanceNa
Mode	OpAmp

CY_COMPONENT_NAME

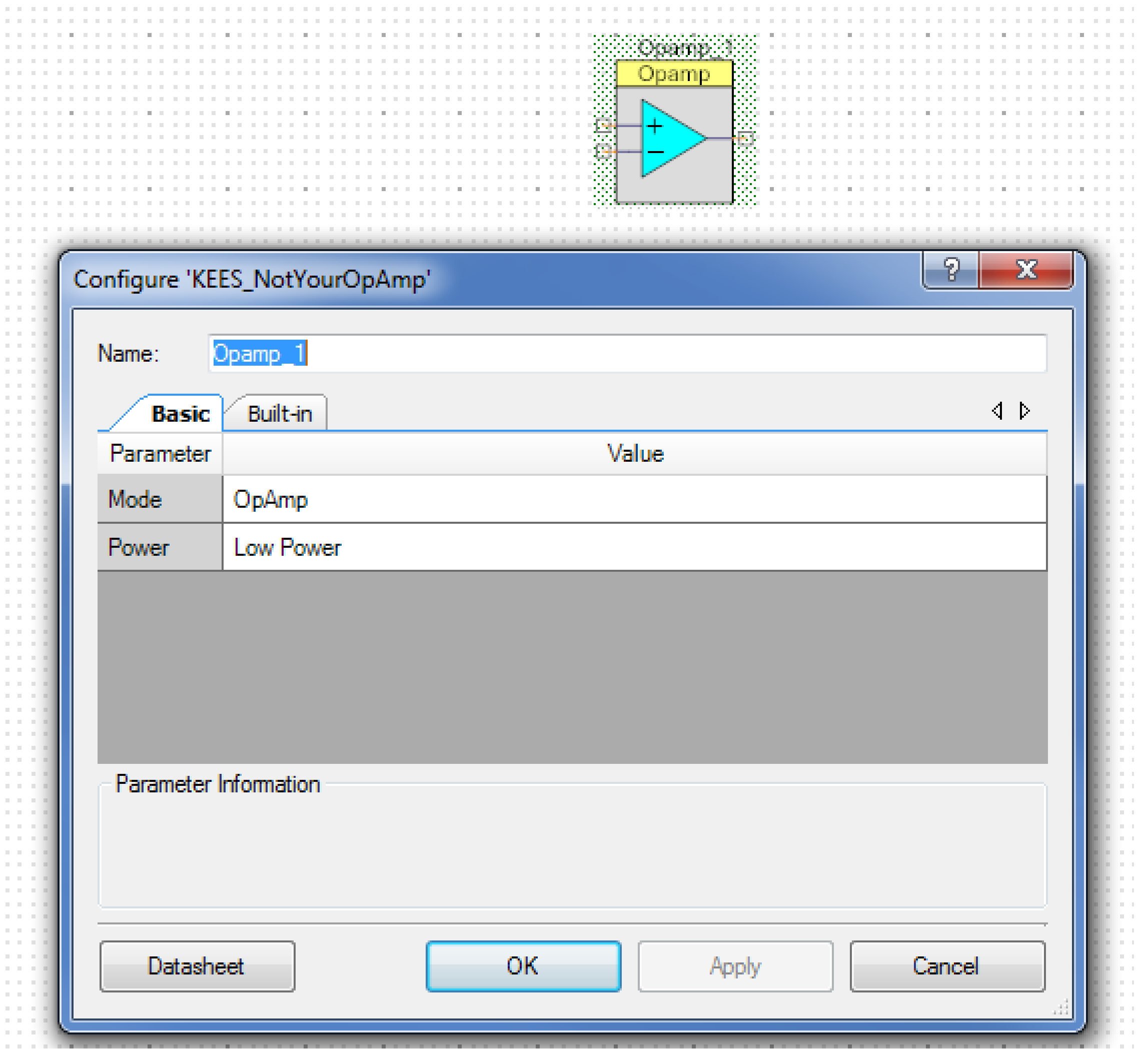
Click “OK” and “OK” again. Save all your changes. Our component should show up in the proper library now and have a new name.



Component Catalog (272 components)

Community Component Catalog
Analog
KEES_NotYourOpAmp

However, if we place it on the schematic and try to open the customizer, this is what we are greeted with.



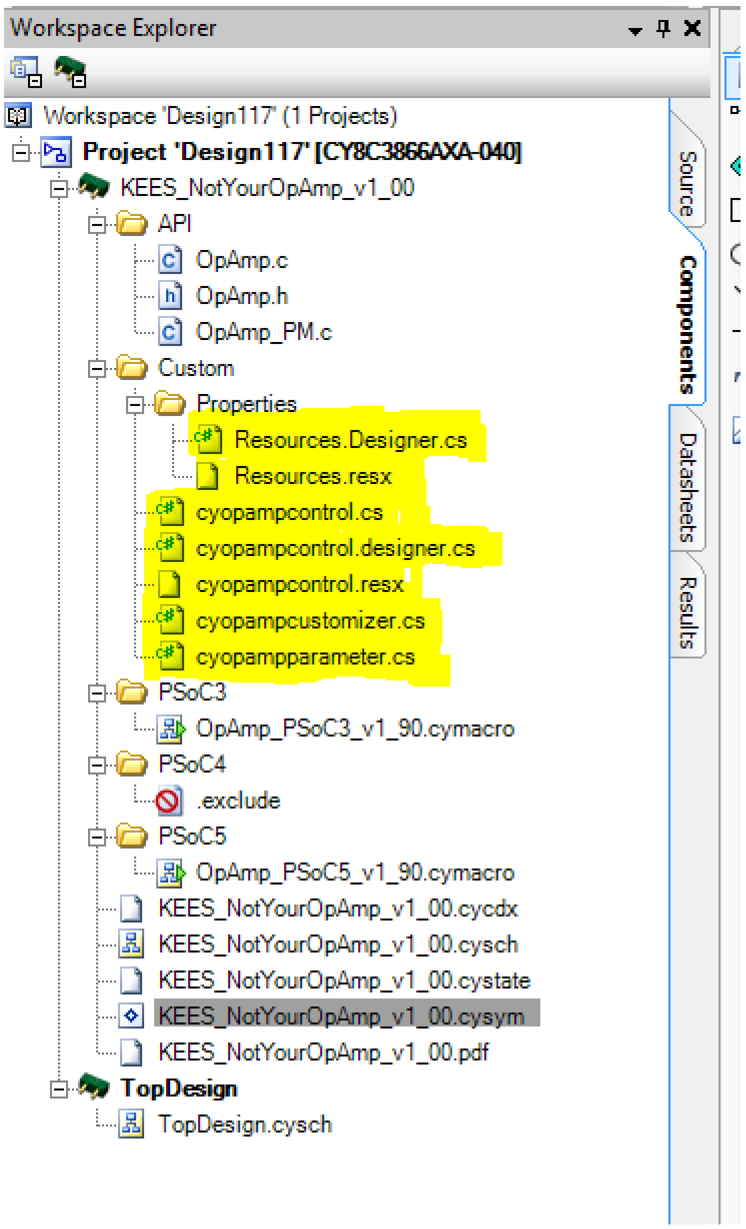
Configure 'KEES_NotYourOpAmp'

Name: Opamp_1

Parameter	Value
Mode	OpAmp
Power	Low Power

Parameter Information

This is clearly not the C# customizer. To fix this problem, open all the C# files associated with the component.

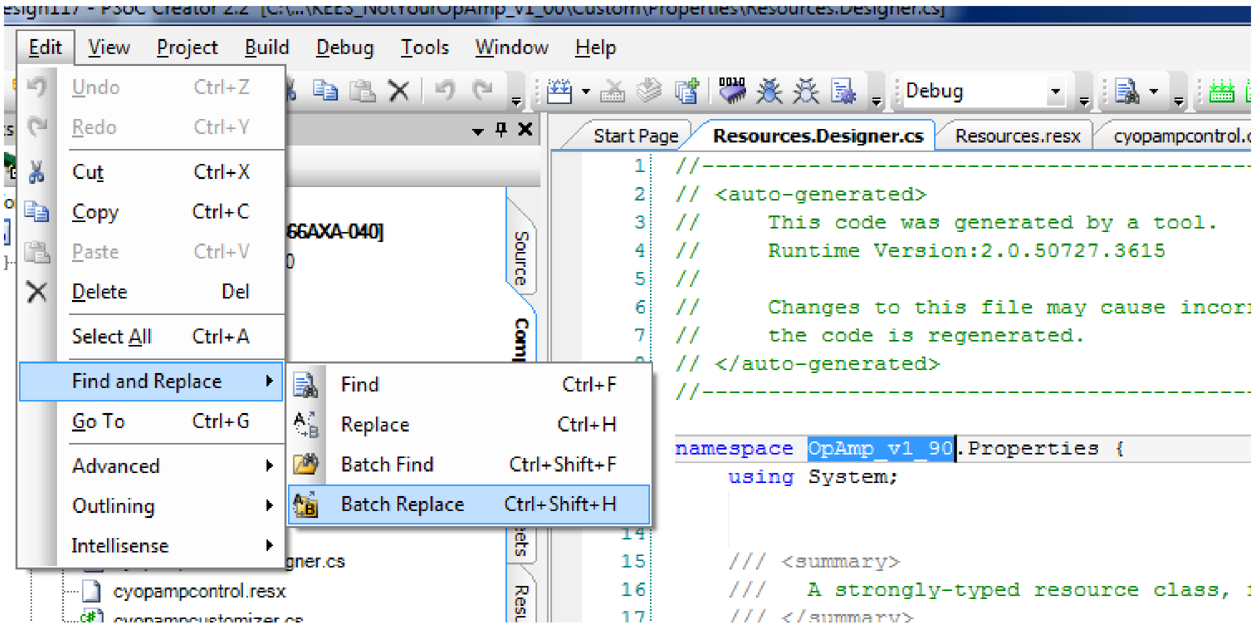


Workspace Explorer

Workspace 'Design117' (1 Projects)

```
Project 'Design117' [CY8C3866AXA-040]
  KEES_NotYourOpAmp_v1_00
    API
      OpAmp.c
      OpAmp.h
      OpAmp_PM.c
    Custom
      Properties
        Resources.Designer.cs
        Resources.resx
      cyopampcontrol.cs
      cyopampcontrol.designer.cs
      cyopampcontrol.resx
      cyopampcustomizer.cs
      cyopampparameter.cs
    PSoC3
      OpAmp_PSoC3_v1_90.cymacro
    PSoC4
      .exclude
    PSoC5
      OpAmp_PSoC5_v1_90.cymacro
    KEES_NotYourOpAmp_v1_00.cycdx
    KEES_NotYourOpAmp_v1_00.cysch
    KEES_NotYourOpAmp_v1_00.cystate
    KEES_NotYourOpAmp_v1_00.cysym
    KEES_NotYourOpAmp_v1_00.pdf
  TopDesign
    TopDesign.cysch
```

With all of these files open, we need to remove all instances of the old component name, and update it with the new component name. The simplest way to do this is a batch 'find and replace' of all the open files. Click Edit->Find and Replace->Batch Replace.

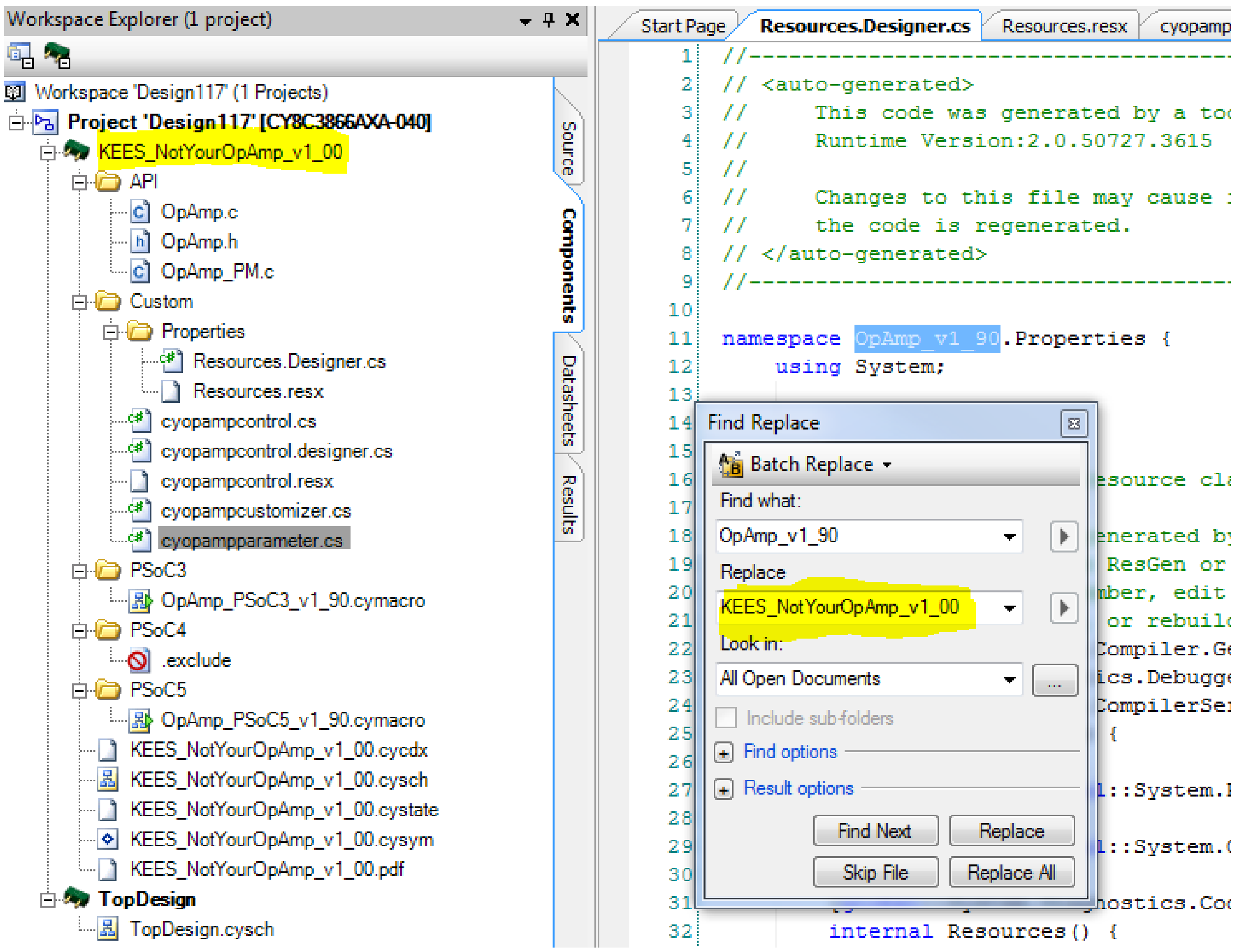


```
//------------------------------------------
// <auto-generated>
//     This code was generated by a tool.
//     Runtime Version:2.0.50727.3615
//
//     Changes to this file may cause incor
//     the code is regenerated.
// </auto-generated>
//------------------------------------------

namespace OpAmp_v1_90.Properties {
    using System;


    /// <summary>
    ///   A strongly-typed resource class, 
    /// </summary>
```

When the Find and Replace window pops up, we are going to find all instances of the old component name “OpAmp_v1_90” and replace it with our new component name “KEES_NotYourOpAmp_v1_00”. Since we opened all the C# files, we can do the batch replace on “all open documents”, just make sure you don’t have any other files open that you don’t accidently want edited. Click “Replace All”.



```
Workspace 'Design117' (1 Projects)
  Project 'Design117' [CY8C3866AXA-040]
    KEES_NotYourOpAmp_v1_00
      API
        OpAmp.c
        OpAmp.h
        OpAmp_PM.c
      Custom
        Properties
          Resources.Designer.cs
          Resources.resx
        cyopampcontrol.cs
        cyopampcontrol.designer.cs
        cyopampcontrol.resx
        cyopampcustomizer.cs
        cyopampparameter.cs
      PSoC3
        OpAmp_PSoC3_v1_90.cymacro
      PSoC4
        .exclude
      PSoC5
        OpAmp_PSoC5_v1_90.cymacro
      KEES_NotYourOpAmp_v1_00.cydcx
      KEES_NotYourOpAmp_v1_00.cysch
      KEES_NotYourOpAmp_v1_00.cystate
      KEES_NotYourOpAmp_v1_00.cysym
      KEES_NotYourOpAmp_v1_00.pdf
    TopDesign
      TopDesign.cysch
```

```
//------------------------------------------
// <auto-generated>
//     This code was generated by a to
//     Runtime Version:2.0.50727.3615
//
//     Changes to this file may cause 
//     the code is regenerated.
// </auto-generated>
//------------------------------------------

namespace OpAmp_v1_90.Properties {
    using System;
```

Find Replace

Batch Replace

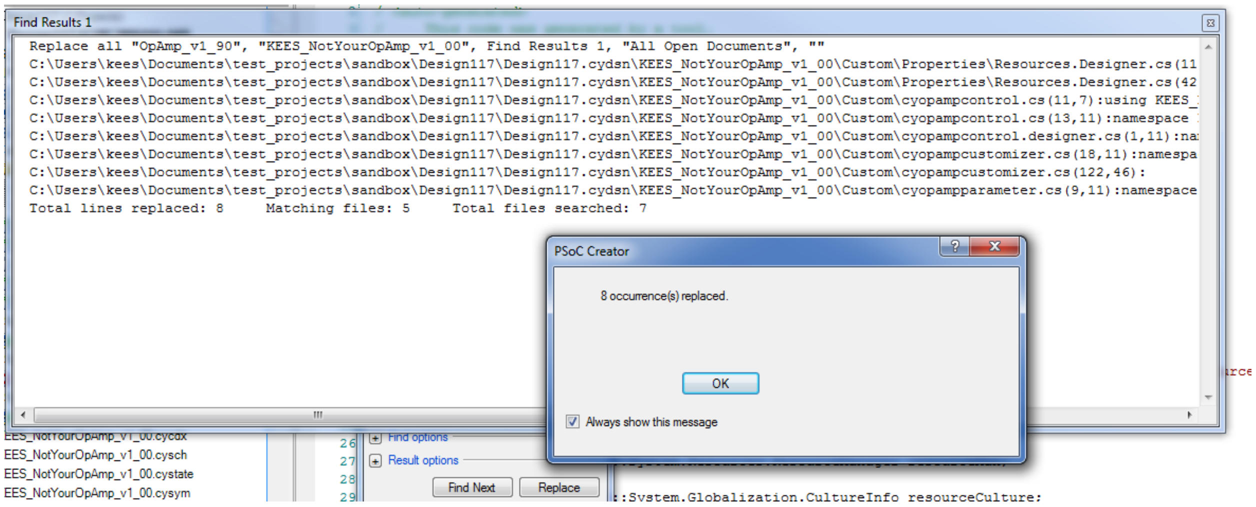
Find what: OpAmp_v1_90

Replace: KEES_NotYourOpAmp_v1_00

Look in: All Open Documents

Include sub-folders

After the batch find and replace completes, you should see something that indicates how many times it was found and replaced.



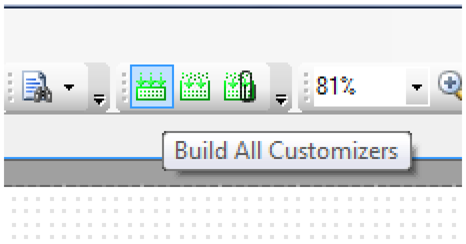
```
Replace all "OpAmp_v1_90", "KEES_NotYourOpAmp_v1_00", Find Results 1, "All Open Documents", ""
C:\Users\kees\Documents\test_projects\sandbox\Design117\Design117.cydsn\KEES_NotYourOpAmp_v1_00\Custom\Properties\Resources.Designer.cs(11
C:\Users\kees\Documents\test_projects\sandbox\Design117\Design117.cydsn\KEES_NotYourOpAmp_v1_00\Custom\Properties\Resources.Designer.cs(42
C:\Users\kees\Documents\test_projects\sandbox\Design117\Design117.cydsn\KEES_NotYourOpAmp_v1_00\Custom\cyopampcontrol.cs(11,7):using KEES_
C:\Users\kees\Documents\test_projects\sandbox\Design117\Design117.cydsn\KEES_NotYourOpAmp_v1_00\Custom\cyopampcontrol.cs(13,11):namespace 
C:\Users\kees\Documents\test_projects\sandbox\Design117\Design117.cydsn\KEES_NotYourOpAmp_v1_00\Custom\cyopampcontrol.designer.cs(1,11):na
C:\Users\kees\Documents\test_projects\sandbox\Design117\Design117.cydsn\KEES_NotYourOpAmp_v1_00\Custom\cyopampcustomizer.cs(18,11):namespa
C:\Users\kees\Documents\test_projects\sandbox\Design117\Design117.cydsn\KEES_NotYourOpAmp_v1_00\Custom\cyopampcustomizer.cs(122,46):
C:\Users\kees\Documents\test_projects\sandbox\Design117\Design117.cydsn\KEES_NotYourOpAmp_v1_00\Custom\cyopampparameter.cs(9,11):namespace
Total lines replaced: 8     Matching files: 5     Total files searched: 7
```

PSoC Creator

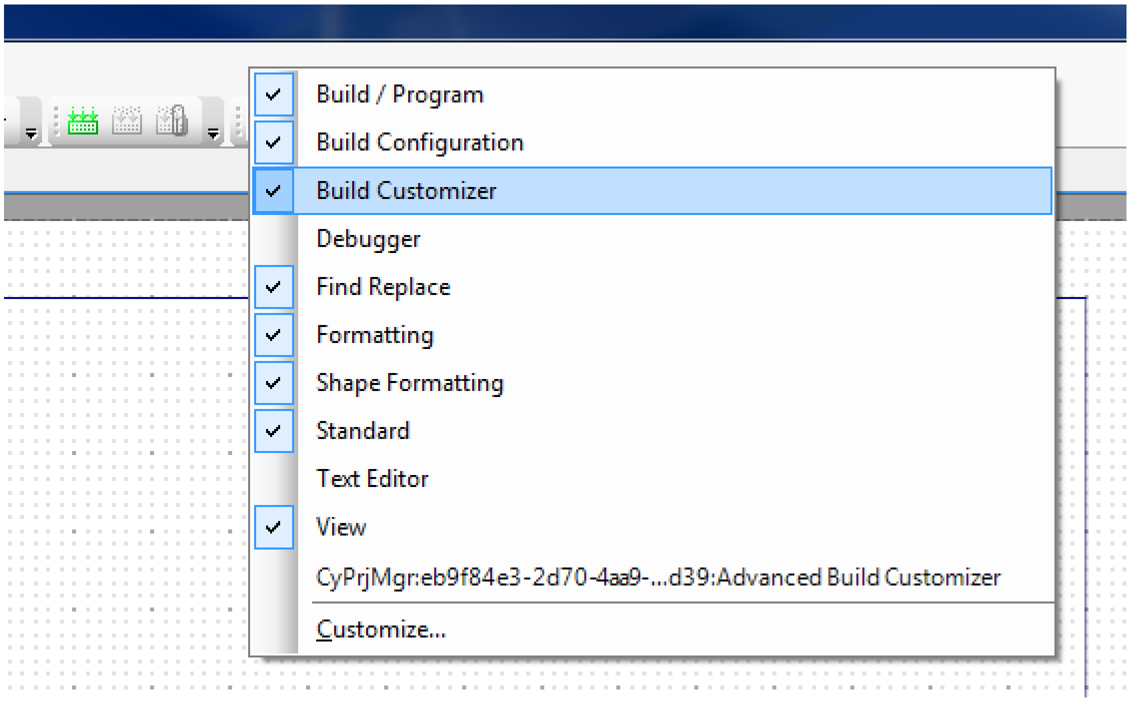
8 occurrence(s) replaced.

Always show this message

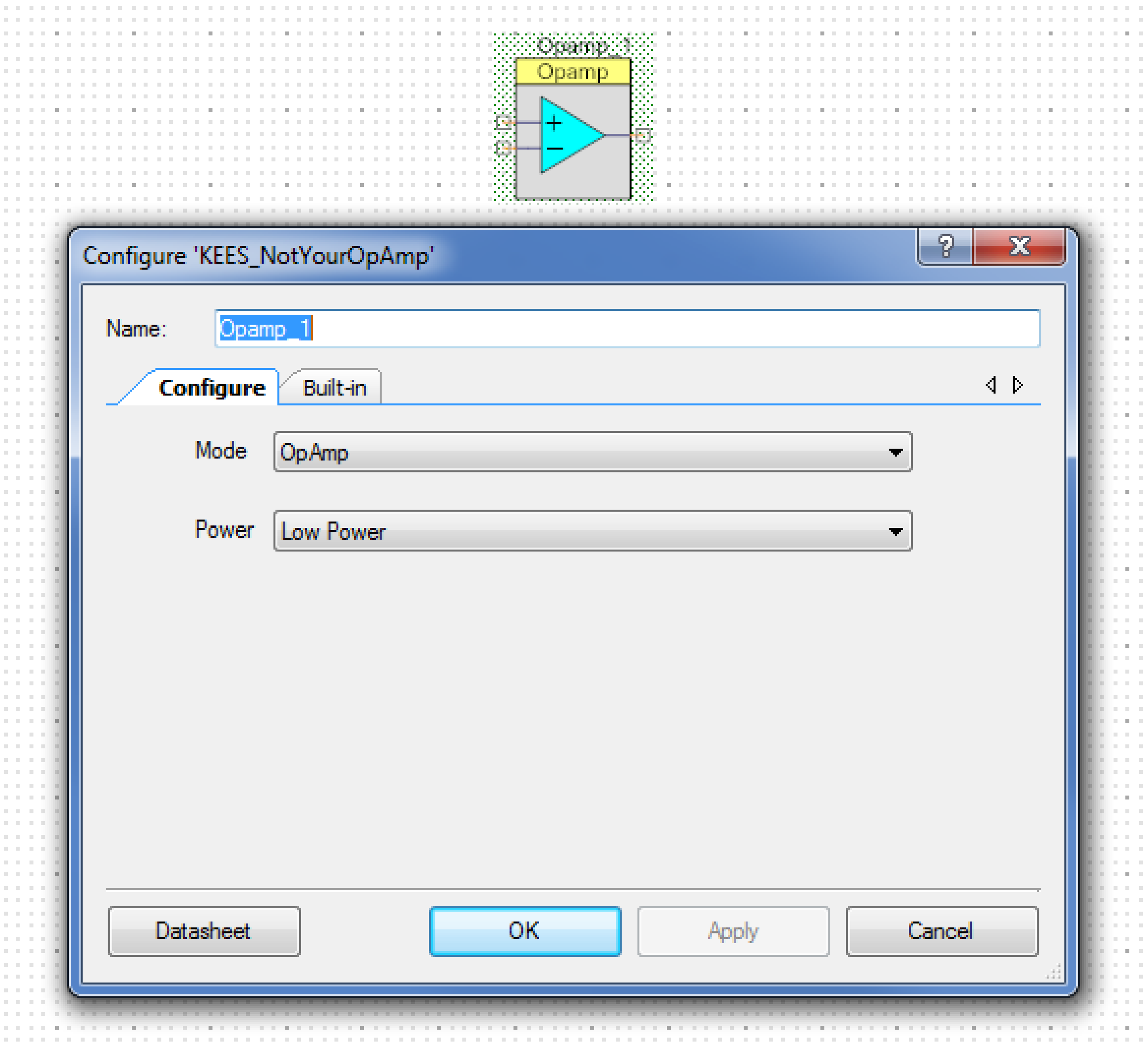
Click “OK”, close the find results window and the batch find and replace dialog. Make sure to “Save All.” Now we need to click “Build all customizers” in the tool bar.



If you don’t have this toolbar, right click in the empty space above the toolbar, and select “Build Customizer”. This should add the “build customizers” entry into your toolbar.



After building the customizers, you should be able to open the customizer and see what you expect.



Name: Opamp_1

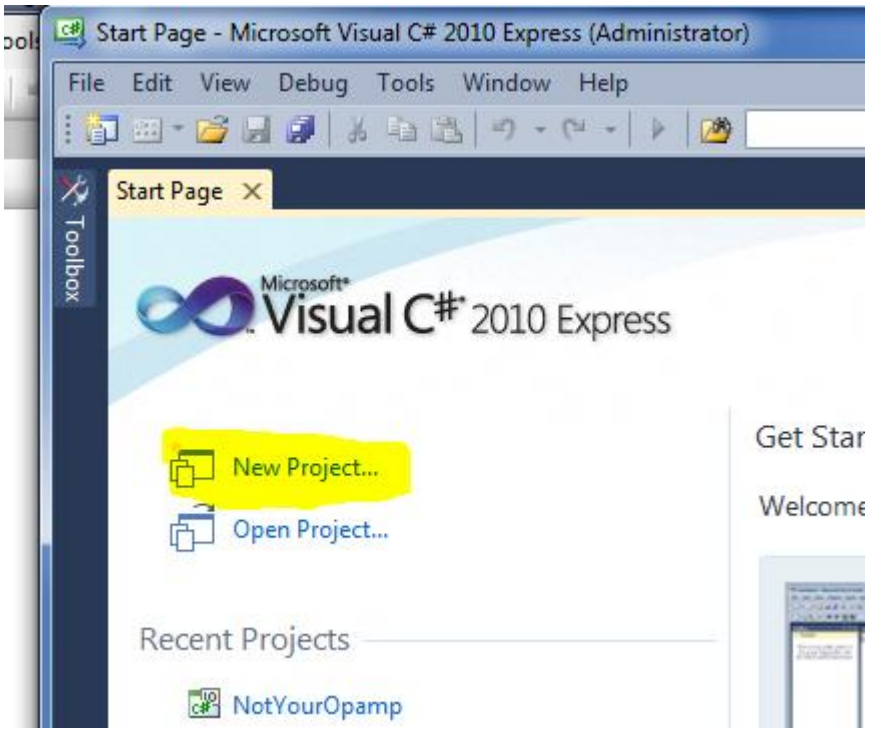
Configure | Built-in

Mode: OpAmp

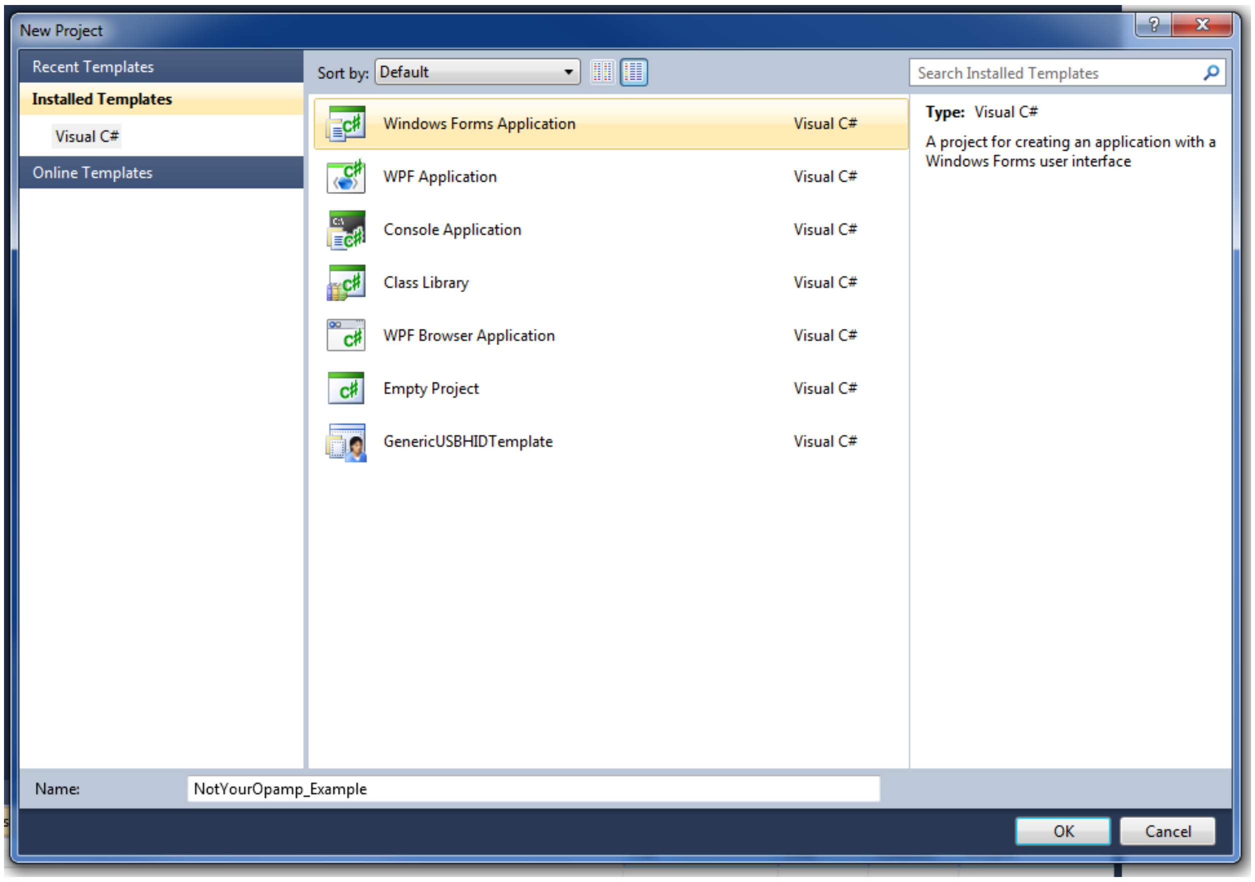
Power: Low Power

Importing a C# customizer into Visual C# Express 2010

Now that we have a copy of the component with a functional C# customizer, lets take it into Visual Studio Express to make some changes to it. First, open Visual Studio, and create a new project.



When the new project dialog opens, select “Windows Forms Application” and name the project whatever you like.



New Project

Recent Templates

Installed Templates

Visual C#

Online Templates

Sort by: Default

Search Installed Templates

Windows Forms Application	Visual C#
WPF Application	Visual C#
Console Application	Visual C#
Class Library	Visual C#
WPF Browser Application	Visual C#
Empty Project	Visual C#
GenericUSBHIDTemplate	Visual C#

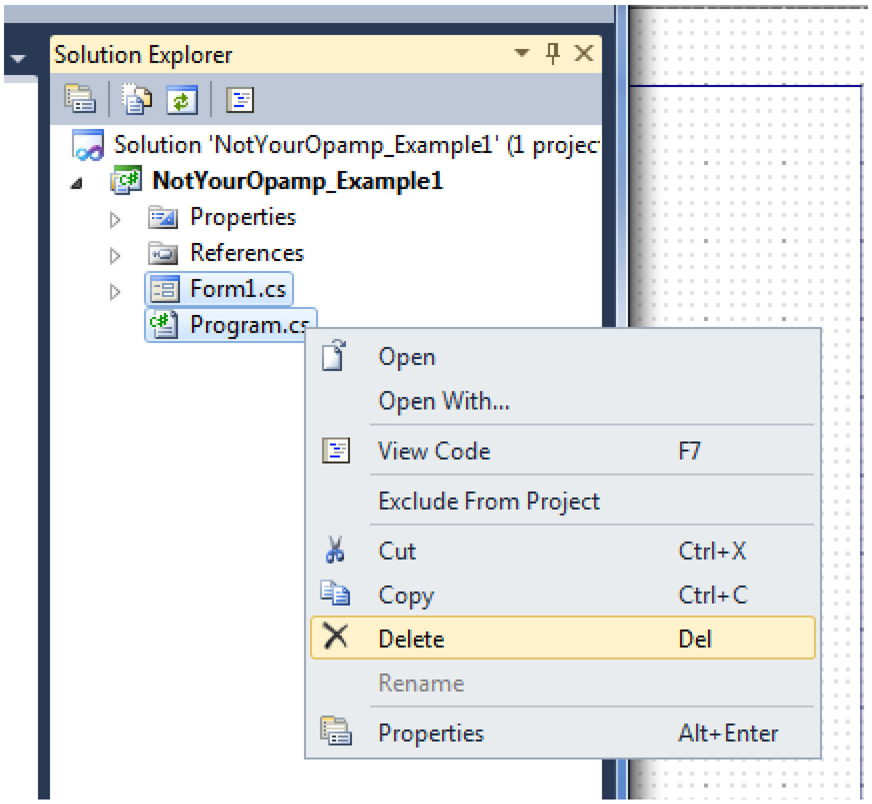
Type: Visual C#

A project for creating an application with a Windows Forms user interface

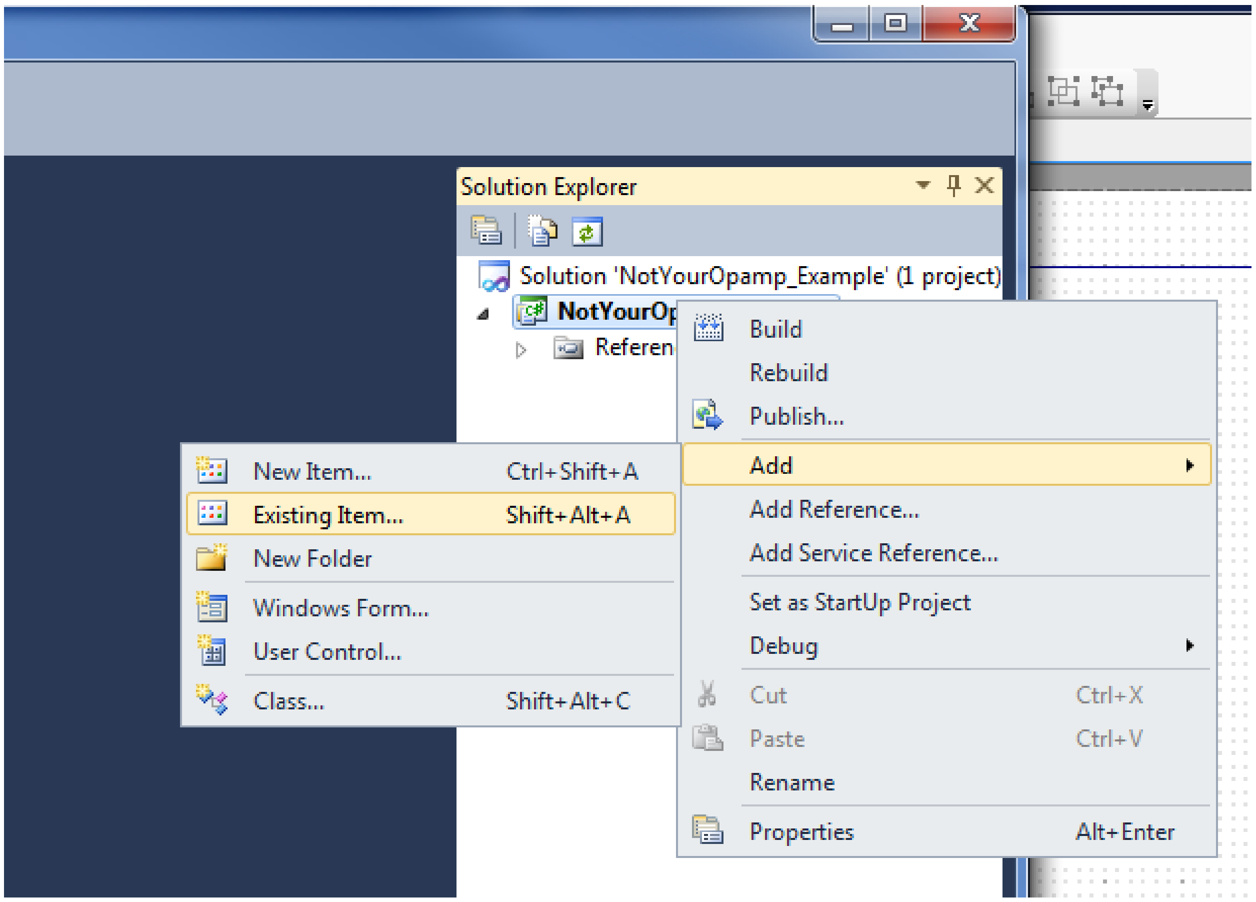
Name: NotYourOpamp_Example

OK Cancel

When the project opens, delete Form1.cs and Program.cs from the solution explorer.

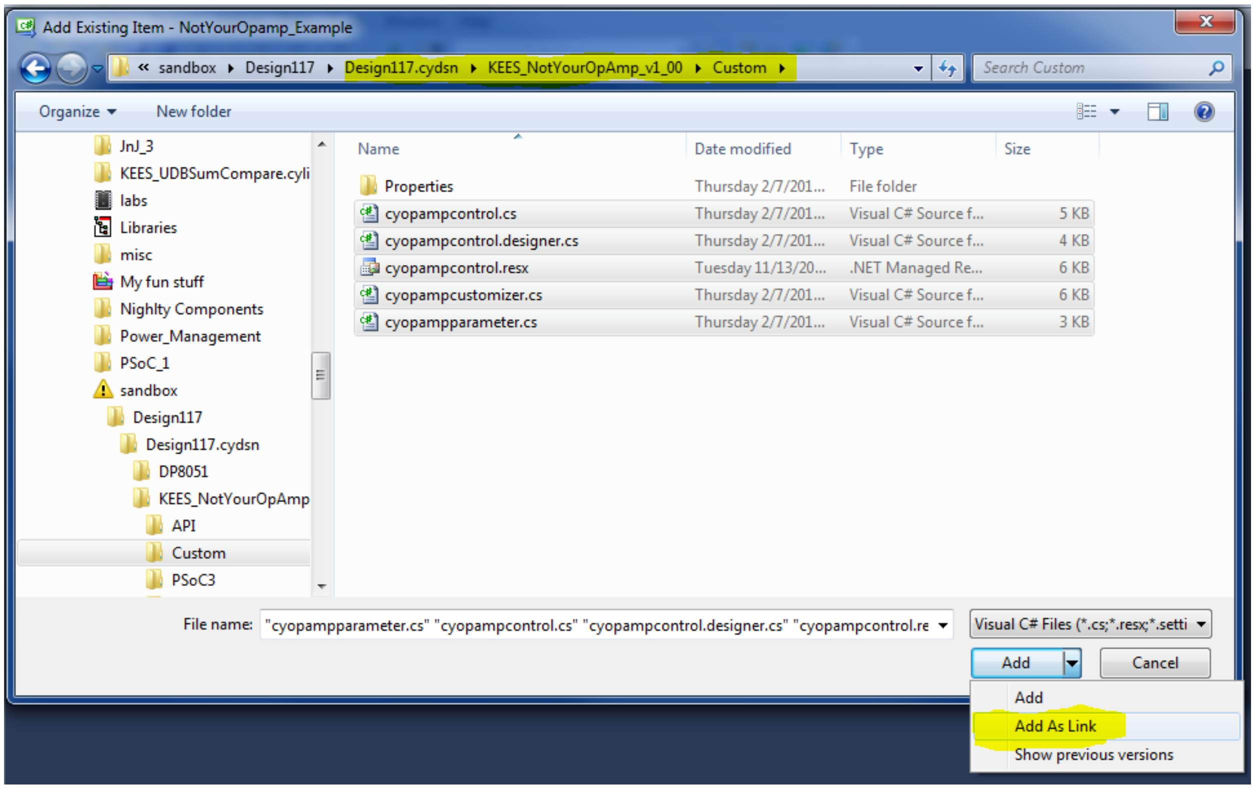


right click on the project in the Solution Explorer and select Add->Existing Item.



Navigate to your Creator project with the imported component. Go into the component “Custom” folder and select ***all*** the C# files in that directory (there may be sub folders with C# files).

Next to the “Add” button at the bottom, click on the down arrow, and select “Add As Link”. This adds the files to the project, but leaves the files in the component folder. If you do not “Add As Link”, Visual Studio will create copies of the files, and all changes that you make will happen on these copies, and not on the component C# files.

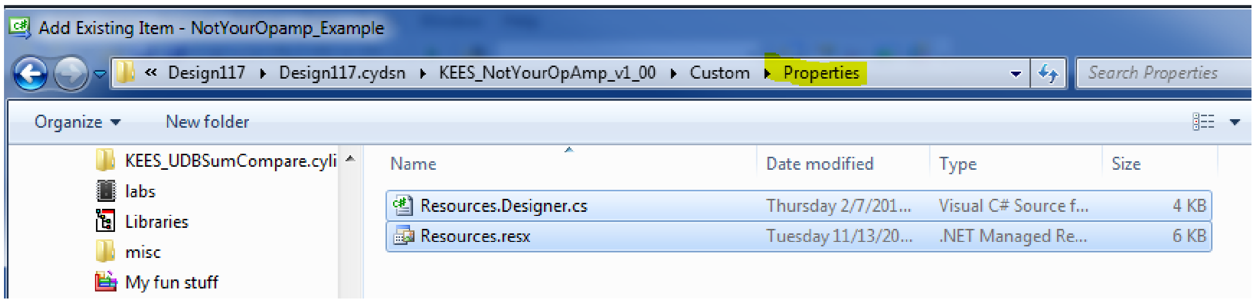


Name	Date modified	Type	Size
Properties	Thursday 2/7/201...	File folder	
cyopampcontrol.cs	Thursday 2/7/201...	Visual C# Source f...	5 KB
cyopampcontrol.designer.cs	Thursday 2/7/201...	Visual C# Source f...	4 KB
cyopampcontrol.resx	Tuesday 11/13/20...	.NET Managed Re...	6 KB
cyopampcustomizer.cs	Thursday 2/7/201...	Visual C# Source f...	6 KB
cyopampparameter.cs	Thursday 2/7/201...	Visual C# Source f...	3 KB

File name: "cyopampparameter.cs" "cyopampcontrol.cs" "cyopampcontrol.designer.cs" "cyopampcontrol.re

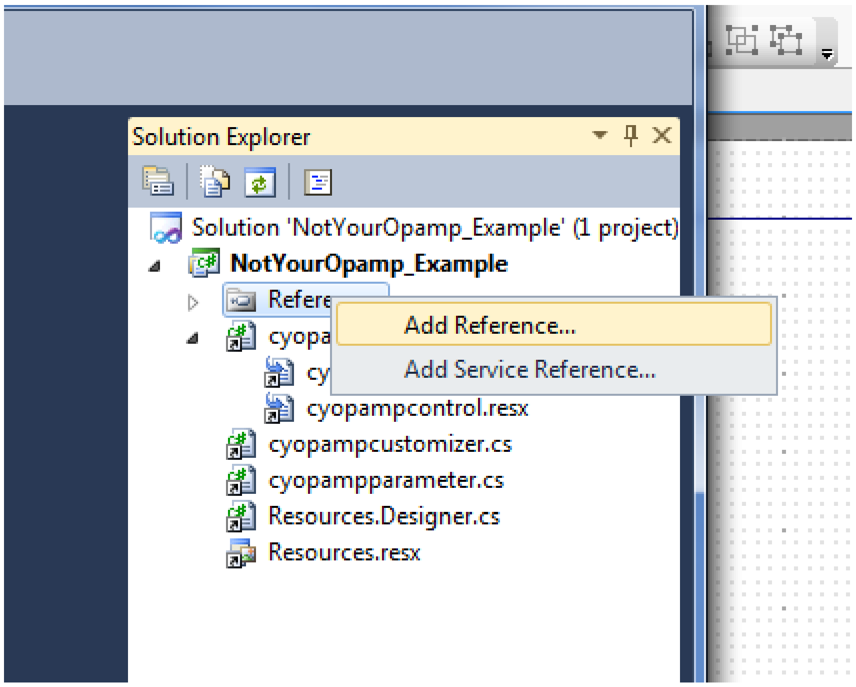
Visual C# Files (*.cs;*.resx;*.setti

Make sure you also add any files in the sub folders using the same "Add As Link"

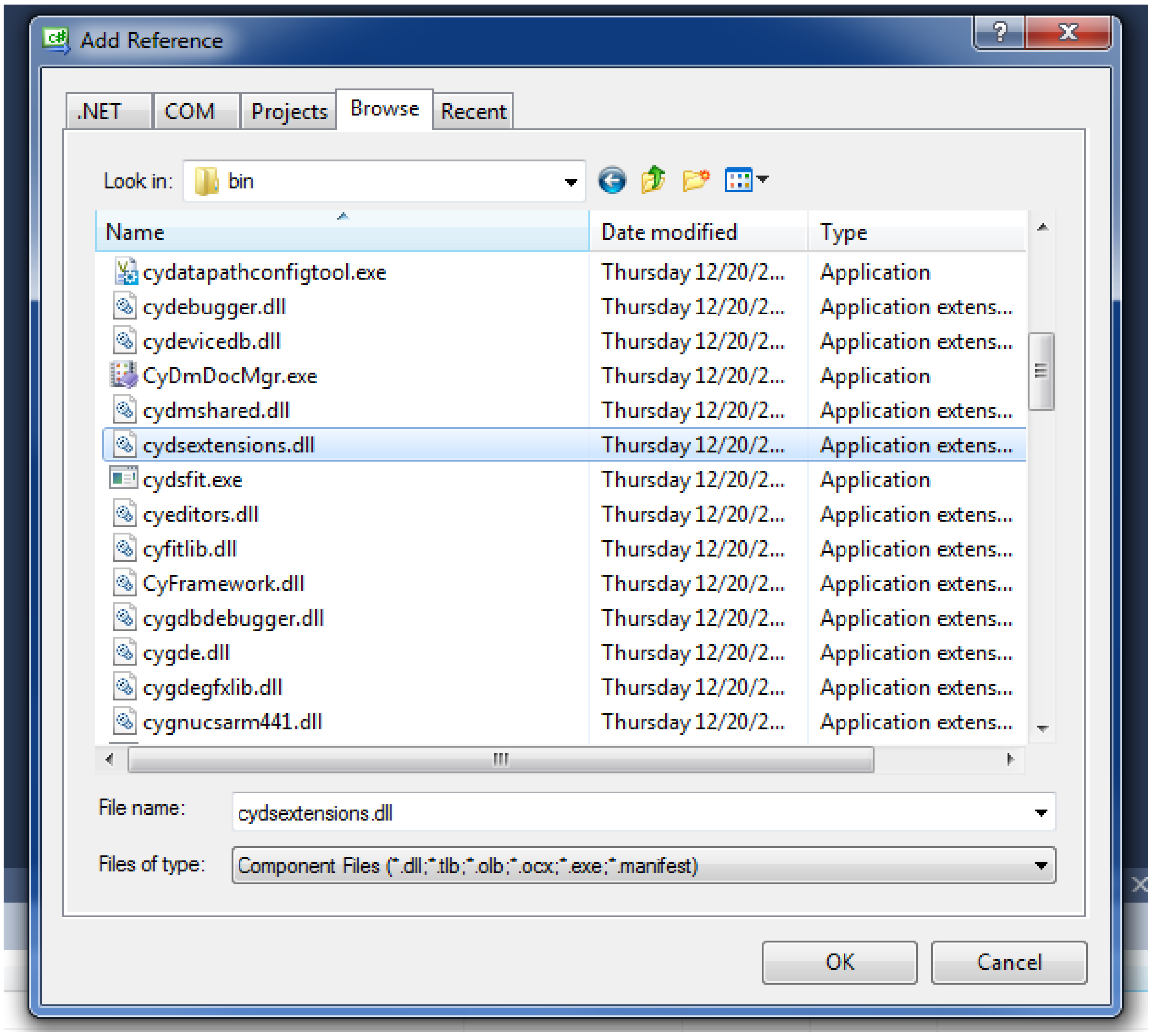

Add Existing Item - NotYourOpamp_Example
« Design117 ▸ Design117.cydsn ▸ KEES_NotYourOpAmp_v1_00 ▸ Custom ▸ Properties
Search Properties
Organize
New folder
KEES_UDBSumCompare.cyli
labs
Libraries
misc
My fun stuff

Name	Date modified	Type	Size
Resources.Designer.cs	Thursday 2/7/201...	Visual C# Source f...	4 KB
Resources.resx	Tuesday 11/13/20...	.NET Managed Re...	6 KB

Now, we need to add one more thing to the project. Right click on the "References" folder in the solution explorer and select "Add Reference"



When the dialog pops up, select the “Browse” tab and navigate to PSoC Creator’s “bin” folder, usually located in “C:\Program Files (x86)\Cypress\PSoC Creator\2.2\PSoC Creator\bin” and select the “cydsextensions.dll” file



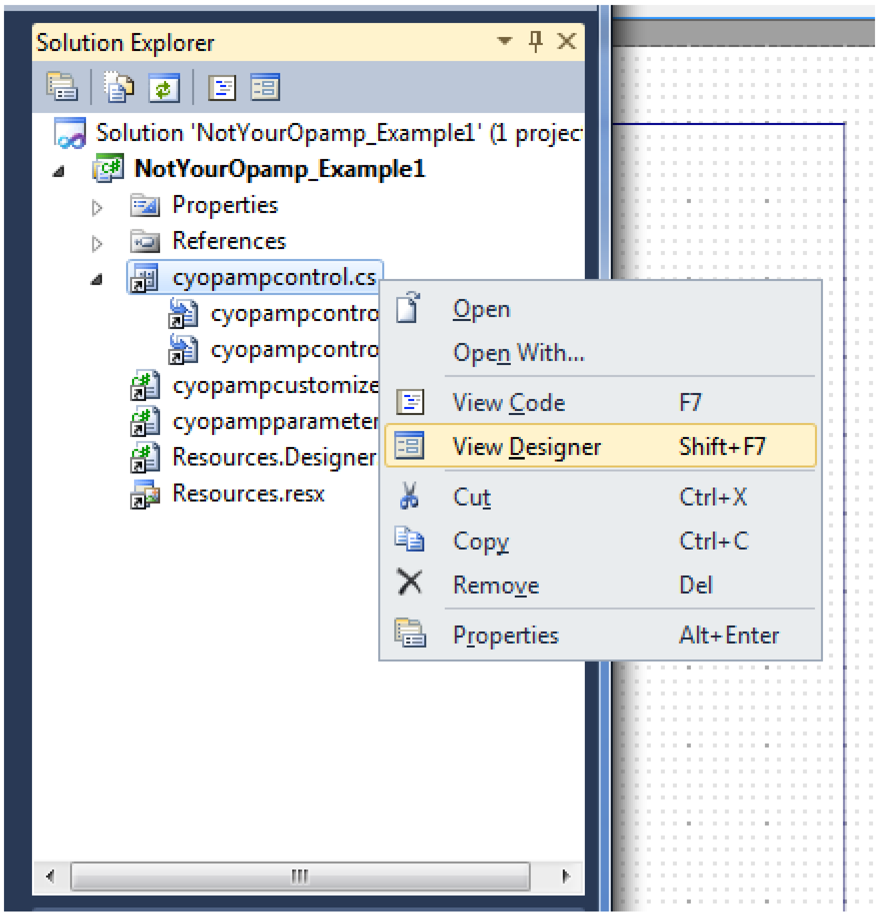
Name	Date modified	Type
cydatapathconfigtool.exe	Thursday 12/20/2...	Application
cydebugger.dll	Thursday 12/20/2...	Application extens...
cydevicedb.dll	Thursday 12/20/2...	Application extens...
CyDmDocMgr.exe	Thursday 12/20/2...	Application
cydmshared.dll	Thursday 12/20/2...	Application extens...
cydsextensions.dll	Thursday 12/20/2...	Application extens...
cydsfit.exe	Thursday 12/20/2...	Application
cyeditors.dll	Thursday 12/20/2...	Application extens...
cyfitlib.dll	Thursday 12/20/2...	Application extens...
CyFramework.dll	Thursday 12/20/2...	Application extens...
cygdbdebugger.dll	Thursday 12/20/2...	Application extens...
cygde.dll	Thursday 12/20/2...	Application extens...
cygdegfxlib.dll	Thursday 12/20/2...	Application extens...
cygnucsarm441.dll	Thursday 12/20/2...	Application extens...

File name: cydsextensions.dll

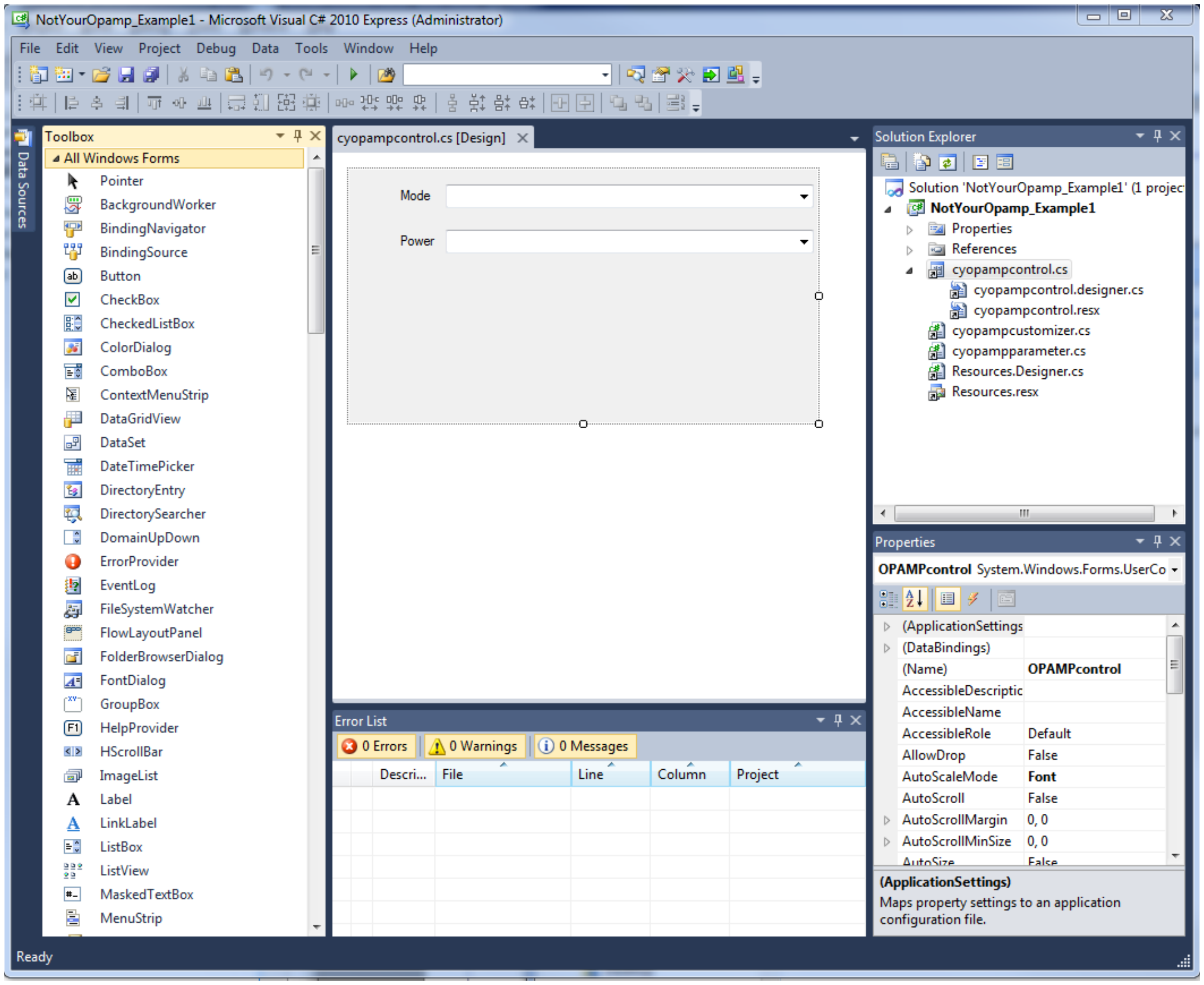
Files of type: Component Files (*.dll;*.tlb;*.olb;*.ocx;*.exe;*.manifest)

Save your Visual C# project somewhere that you want it, it doesn’t matter where.

Right click on the C# form (usually called xxx.cs, and it should have some files under it called xxx.designer.cs and xxx.res, see example below), select “View Designer” to bring up the Form editor.



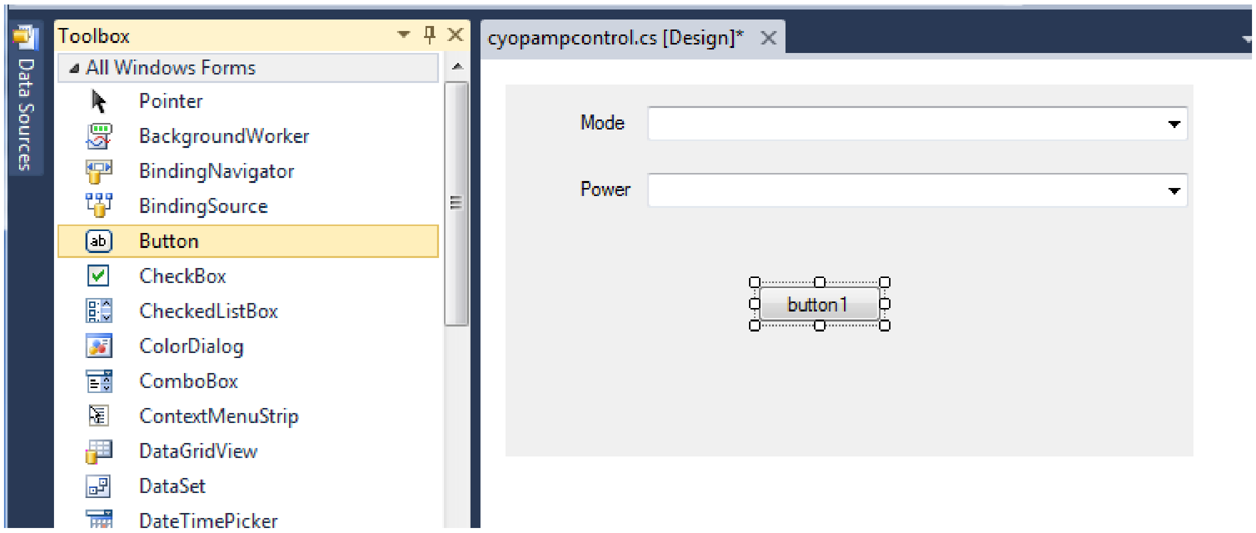
This should bring up the form editor.



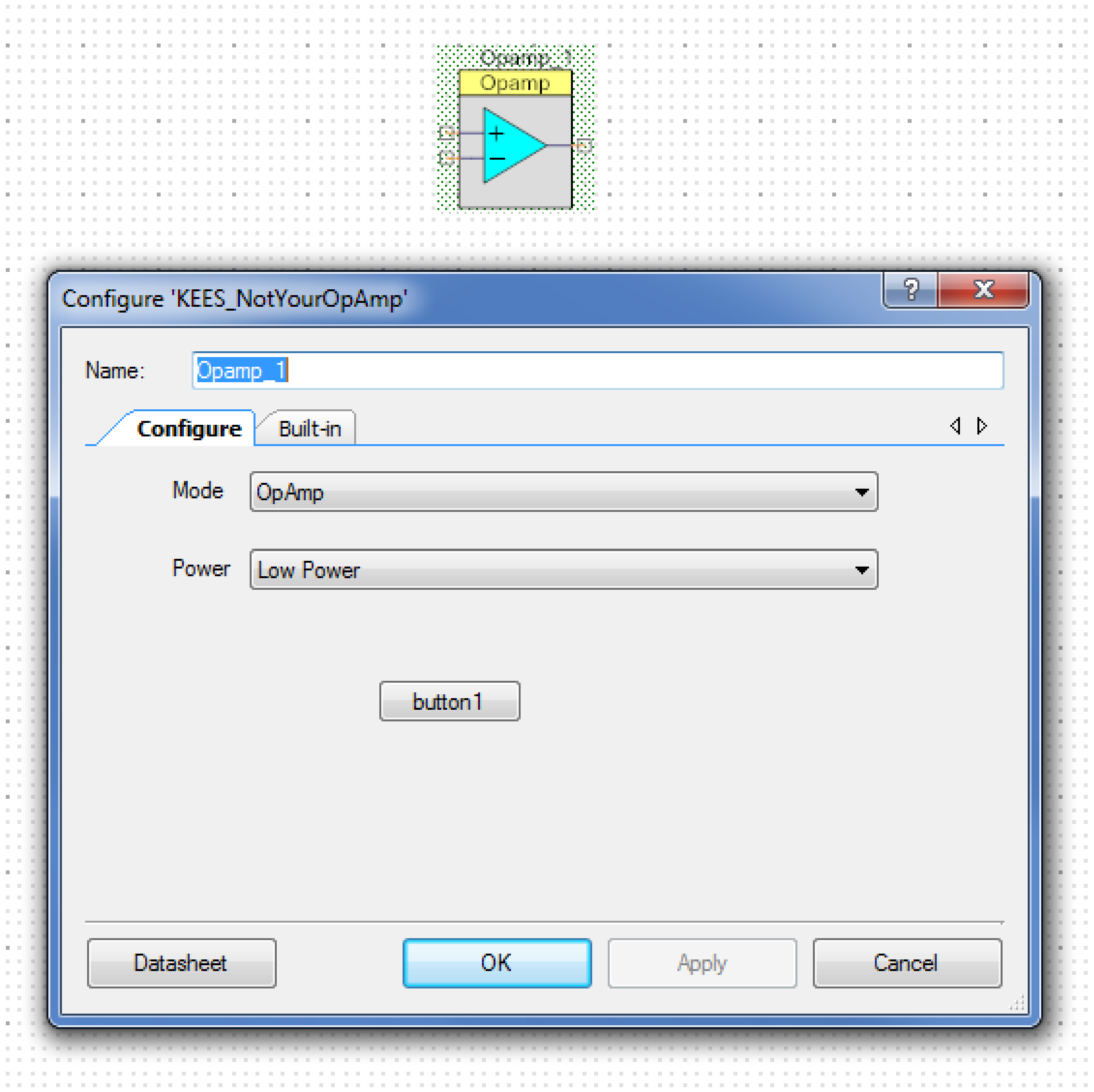
(ApplicationSettings	
(DataBindings)	
(Name)	**OPAMPcontrol**
AccessibleDescriptic	
AccessibleName	
AccessibleRole	Default
AllowDrop	False
AutoScaleMode	**Font**
AutoScroll	False
AutoScrollMargin	0, 0
AutoScrollMinSize	0, 0
AutoSize	False

(ApplicationSettings)
Maps property settings to an application configuration file.

Lets add something to the form and see the change in Creator. Drag button from the toolbox out to the Form.



Save all your changes and go back to Creator. Click the “Build all customizers” button in the toolbar, and open the components customizer. Voila!



Configure 'KEES_NotYourOpAmp'

Name: Opamp_1

Mode: OpAmp

Power: Low Power