

Getting Confidence  
in Your Design Early!

跨界整合 翻轉設計

# Graser User Conference

Taipei

2016  
7.14



# OrCAD Capture 新功能與強化 工具應用

Addi Lin/ Graser

14 / July / 2016



# Agenda

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- OrCAD<sup>®</sup> Capture/CIS V17.2-2016 Release
- GraserWARE FrontEnd PACK Application



# OrCAD Capture/CIS V17.2 – 2016 Release

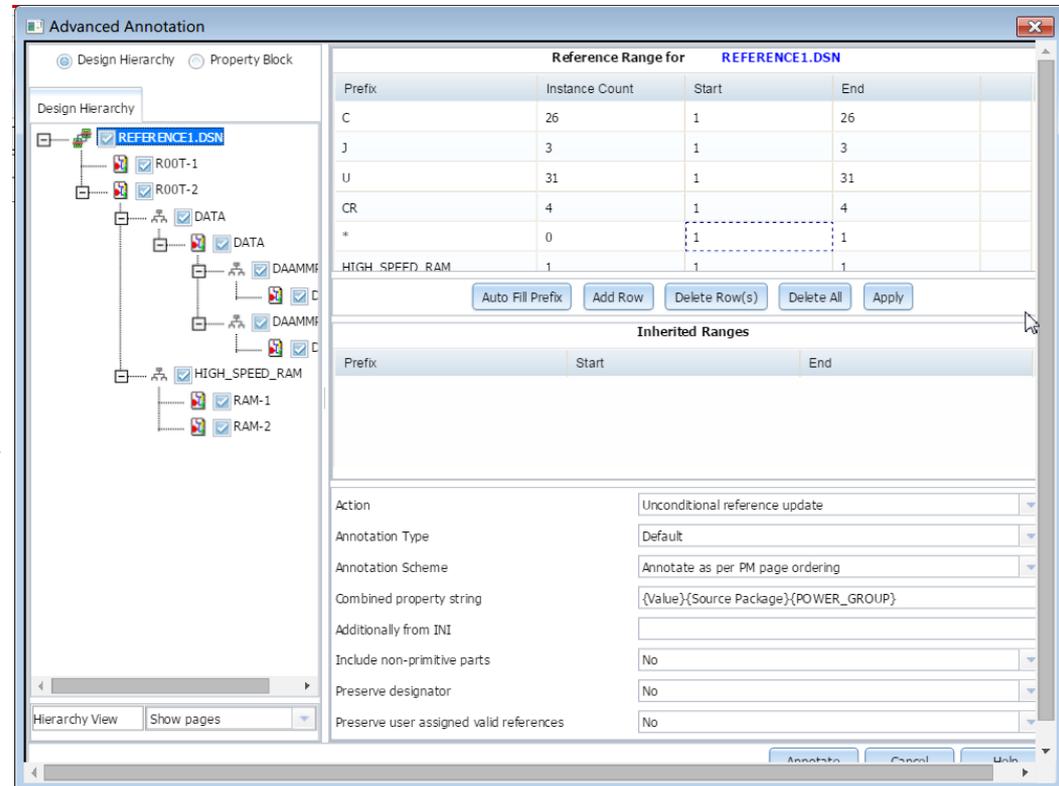
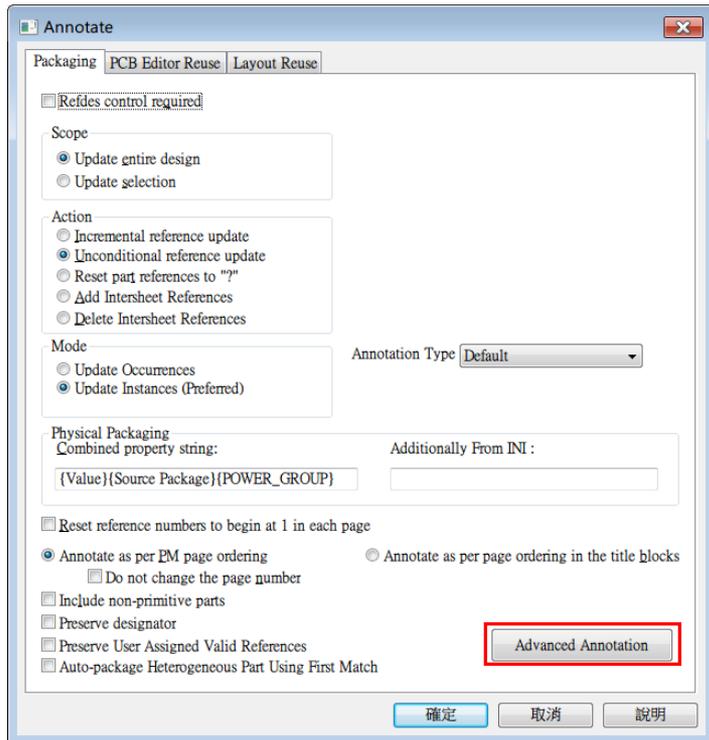
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- Advanced Annotate
- Design Difference Viewer
- Demo Design
- Export PDF
- Export – Import XML
- Export ISCF
- Extended Preferences Setup



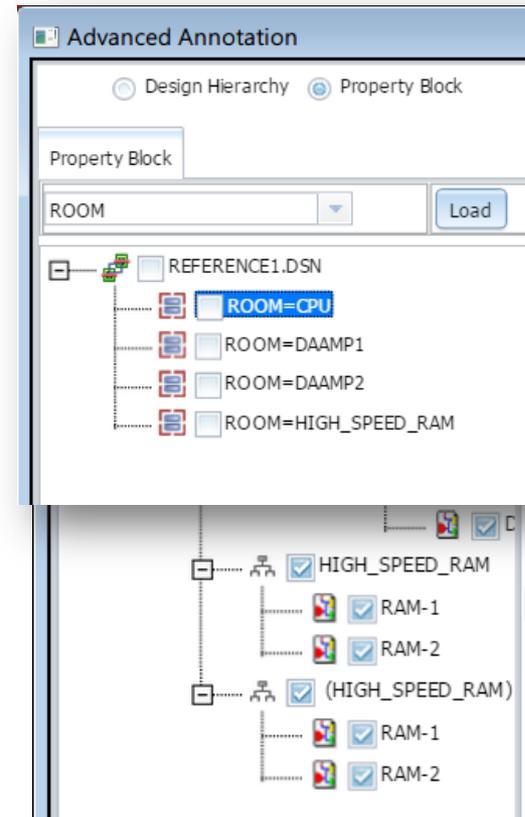
# Advanced Annotation

You can annotate multiple schematic pages at a time.



# Advanced Annotation

- Design/Hierarchical Block/Page/Property Block level REFDES control
- REFDES Control –
  - Prefix based (R ,U..)
  - Generic (support of \*)
- Hierarchical support of specified Ranges
  - Inherited from the Parent
  - Closest assigned range wins
- Auto Instance count support
  - To help in deciding range span
- Auto reference follows the specified range for Blocks/Pages
  - Place part
  - Copy – Paste part



# Graphical Design Difference Viewer

Design Difference Summary

Differences generated using [Object ID](#). Regenerate using [Object Name / Part Reference](#).

Logical Differences		All Differences	
<a href="#">Show Details</a>		<a href="#">Show Details</a>	
Object	Number of Differences	Object	Number of Differences
Components	3	Schematic	1
Pin Net Connectivity	0	Page	1
FlatNet	6	Components(Logical Differences)	3
		Components(All Differences On Matching Pages Only)	3
		Pin Net Connectivity	0
		FlatNet	6
		Wire	0
		OffPage	0
		Hierarchical Port	0
		TitleBlock	1

General Information		
Selected Options	Design1	Design2
	D:\WorkData\Capture\17.2\OrCA	D:\WorkData\Capture\17.2\OrCA
	D:\WorkData\Capture\17.2\OrCA	D:\WorkData\Capture\17.2\OrCA

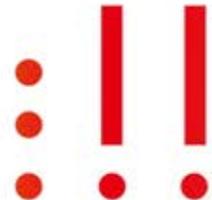
You can view logical and graphical differences between two designs, schematic folders, or schematic pages .

The screenshot shows the Design Difference Viewer application interface. It features two side-by-side schematic diagrams for comparison. The left diagram is labeled 'ABC.DSN' and the right is 'ABC\_MOD.DSN'. Both diagrams show a circuit with resistors (R1-R7), capacitors (C10, C11), and a voltage source (V2). A red box highlights a difference in the resistor network between the two designs. Below the diagrams is a summary table:

S.No.	ABC.DSN	ABC_MOD.DSN	Information
+	Components Difference		Number of differences: 16
+	Pin Net Connectivity Difference		Number of differences: 4
+	FlatNets Difference		Number of differences: 12

## Supported Browser

- Chrome (v45 +)  
- recommended
- IE (11 & above)



# Graphical Design Difference Viewer

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- Detailed HTML Difference View
  - An interactive self-contained HTML file
    - Contains interactive graphical view of designs
    - Contains interactive textual view of differences with hierarchical categories
    - Cross-probing from text view to graphical view
  - Advantages of interactive self-contained HTML file
    - Open in any standard web browser
    - Share with others
    - Offline comparison/review
    - Difference file for version management systems
    - HTML file generation will require license. File viewing will not require any license
- Differencing Engine
  - Logical – shows only those differences which result into circuit behavior change
  - Detailed – shows individual object level differences
- A powerful utility to graphically compare
  - Design vs. Design
    - compare 2 designs for all their schematics and pages
  - Schematic vs. Schematic
    - Compare 2 schematics of same or different designs for all their pages
  - Page vs. Page
    - Compare 2 pages of same or different designs/schematics
- Summary View
  - Shows logical differences count
  - Show total differences count
  - The search criteria with object name vs. id can be quickly changed to show updated results
  - Allows user to open the detailed report of his choice

# Graphical Design Difference Viewer

## Difference Categories

### Logical Mode

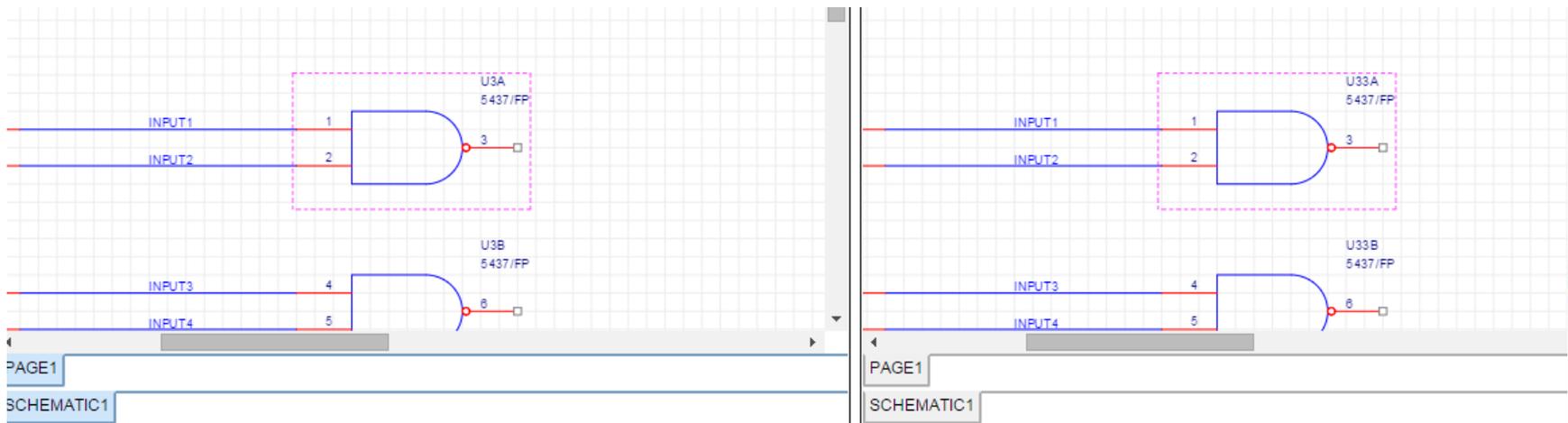
- **Components Differences**

- Pin Difference
  - Property Difference
- Property Difference
- Occurrence Difference
  - Property Difference

- **Pin Net connectivity Differences**

- **Flat Nets Differences**

- Pin Difference
- Property Difference



S.No.	design_v1.dsn	design_v2.DSN	Information
<b>Components Difference</b> <span style="float: right;">Number of differences: 3</span>			
1	U2	U22	Property Difference(1)
2	U3A	U33A	Property Difference(1)
3	U3B	U33B	Property Difference(1)
<b>FlatNets Difference</b> <span style="float: right;">Number of differences: 6</span>			

# Graphical Design Difference Viewer

## Difference Categories

### Detailed Mode

- Schematic Difference

- PAGE differences

- Components Difference

- Property Difference
      - Pin Difference
        - Property Difference
      - Occurrence Difference
        - Property Difference

- Wire Differences

- Property Difference

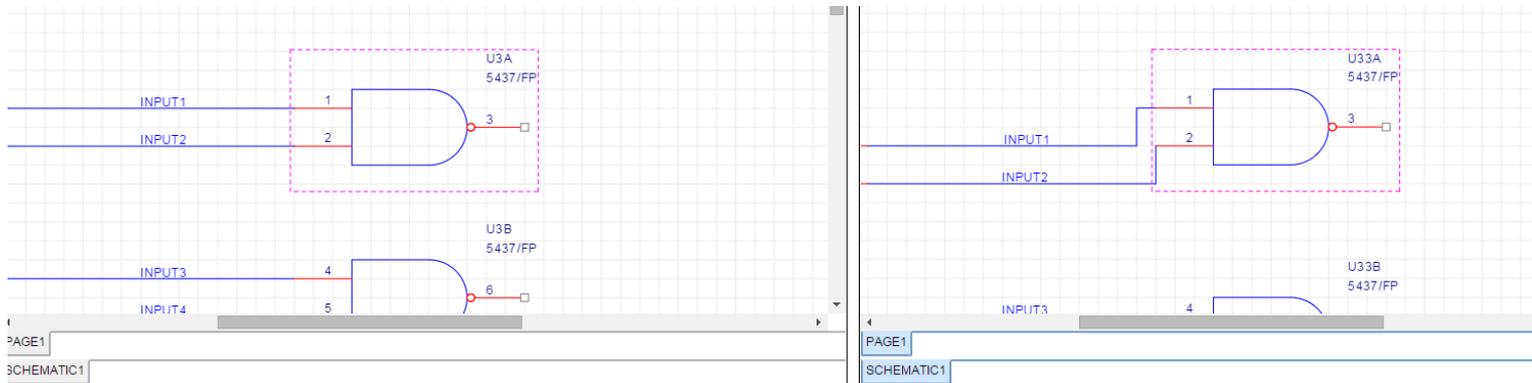
- Port Differences

- Property Difference

- Off-Page Differences

- Property Difference

- Title block/Buses Differences

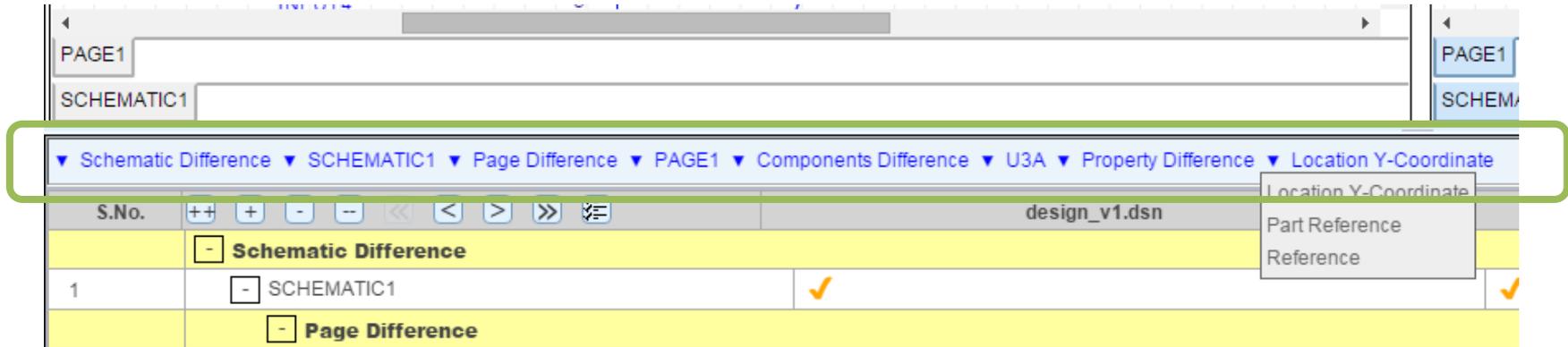


S.No.	design_v1.dsn	design_v2.DSN	Information
<b>Schematic Difference</b>			
1	SCHEMATIC1	✓	Number of differences: 1
<b>Page Difference</b>			
1-1	PAGE1	✓	Number of differences: 1
<b>Components Difference</b>			
1-1-1	U2	✓	Property Difference(2)
1-1-2	U3A	✓	Property Difference(3)
<b>Property Difference</b>			
1-1-2-1	Location Y-Coordinate	110	90
1-1-2-2	Part Reference	U3A	U33A
1-1-2-3	Reference	U3	U33
1-1-3	U3B	✓	Property Difference(2)
<b>Wires Difference</b>			
			Number of differences: 3

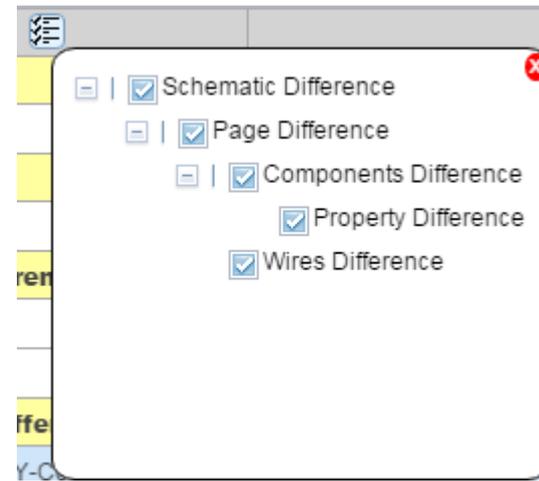
# Graphical Design Difference Viewer

## Other Features

- For easy navigation, breadcrumbs with drop-down

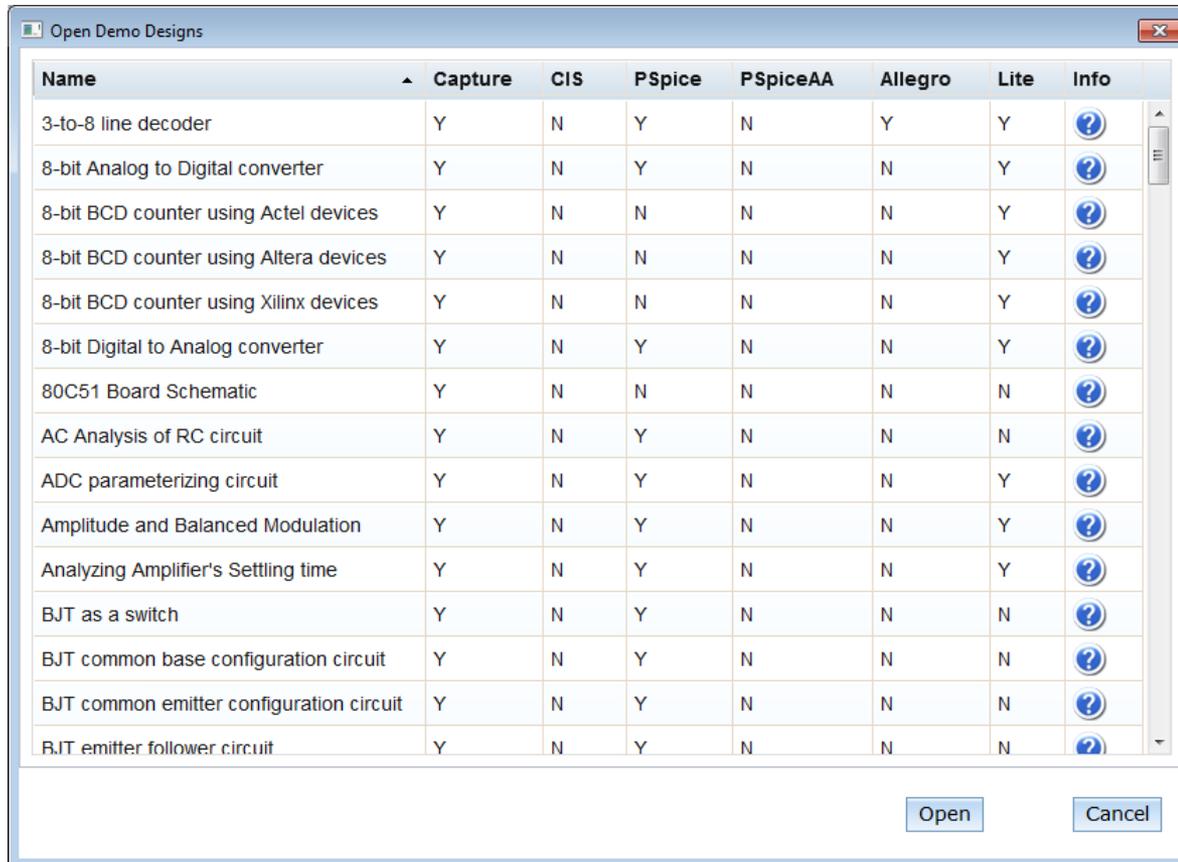


Category filters for hiding and un-hiding specific categories



# Demo Design

Cadence® hierarchy contains more than 150 demo designs to help you understand OrCAD® Capture, Capture CIS, and the Capture – PSpice® Designer flow.



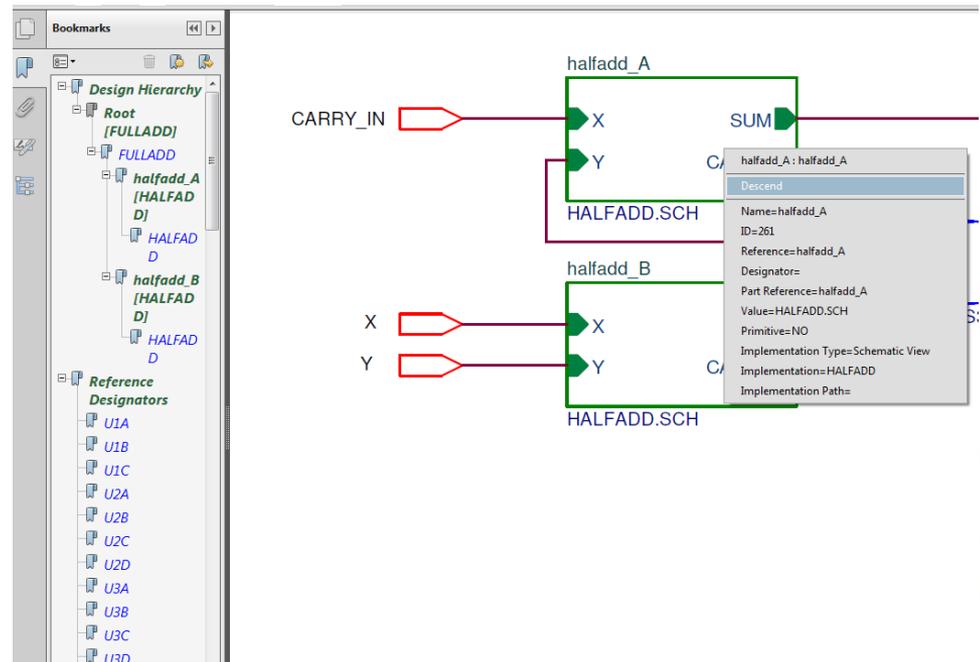
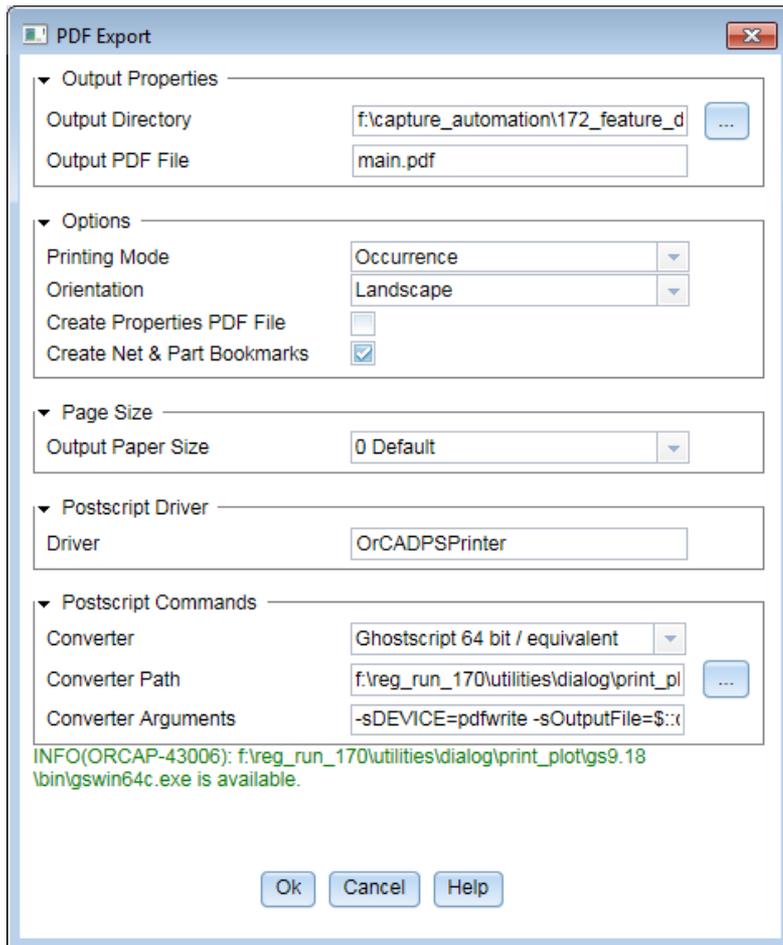
Name	Capture	CIS	PSpice	PSpiceAA	Allegro	Lite	Info
3-to-8 line decoder	Y	N	Y	N	Y	Y	?
8-bit Analog to Digital converter	Y	N	Y	N	N	Y	?
8-bit BCD counter using Actel devices	Y	N	N	N	N	Y	?
8-bit BCD counter using Altera devices	Y	N	N	N	N	Y	?
8-bit BCD counter using Xilinx devices	Y	N	N	N	N	Y	?
8-bit Digital to Analog converter	Y	N	Y	N	N	Y	?
80C51 Board Schematic	Y	N	N	N	N	N	?
AC Analysis of RC circuit	Y	N	Y	N	N	N	?
ADC parameterizing circuit	Y	N	Y	N	N	Y	?
Amplitude and Balanced Modulation	Y	N	Y	N	N	Y	?
Analyzing Amplifier's Settling time	Y	N	Y	N	N	Y	?
BJT as a switch	Y	N	Y	N	N	N	?
BJT common base configuration circuit	Y	N	Y	N	N	N	?
BJT common emitter configuration circuit	Y	N	Y	N	N	N	?
BJT emitter follower circuit	Y	N	Y	N	N	N	?



# Export PDF

Export a OrCAD® Capture design as a PDF file.

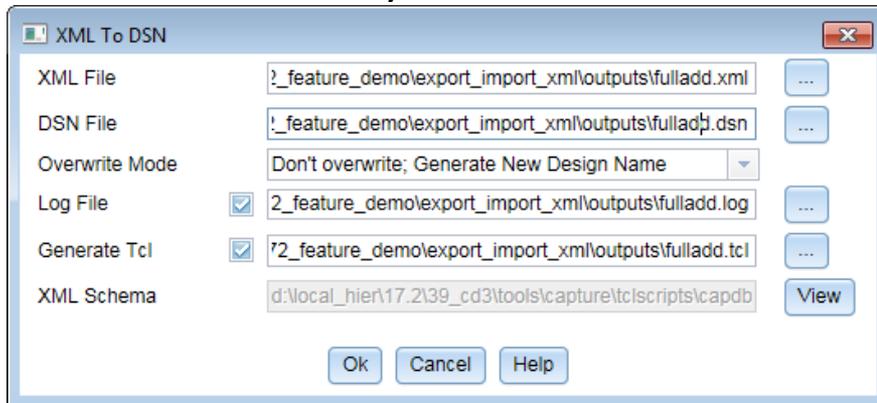
- Capture Design PDF
- Capture Design Object Properties PDF



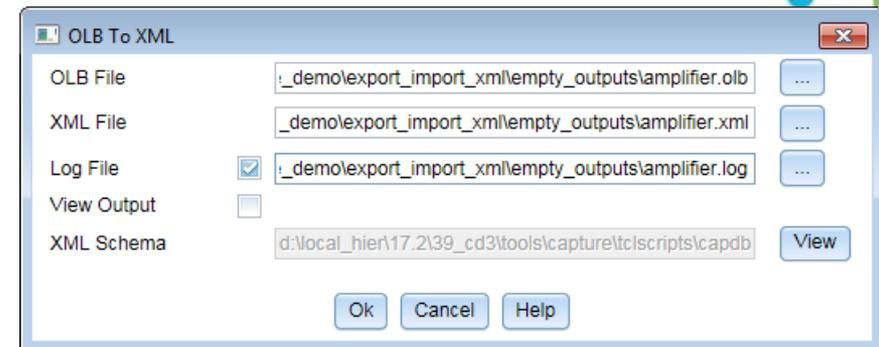
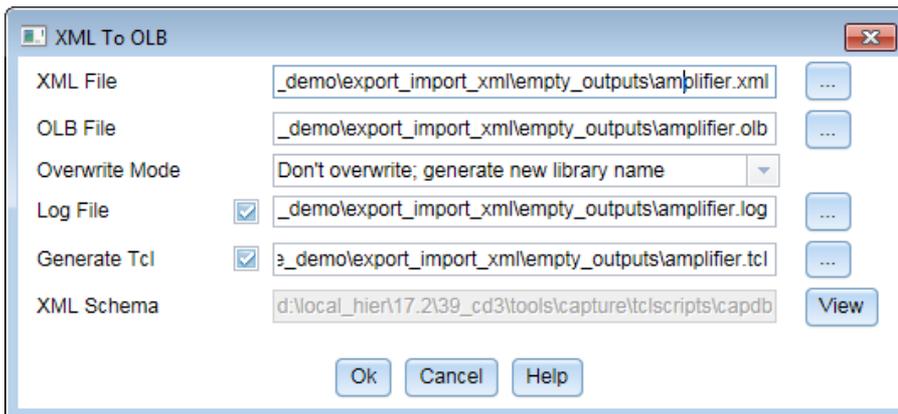
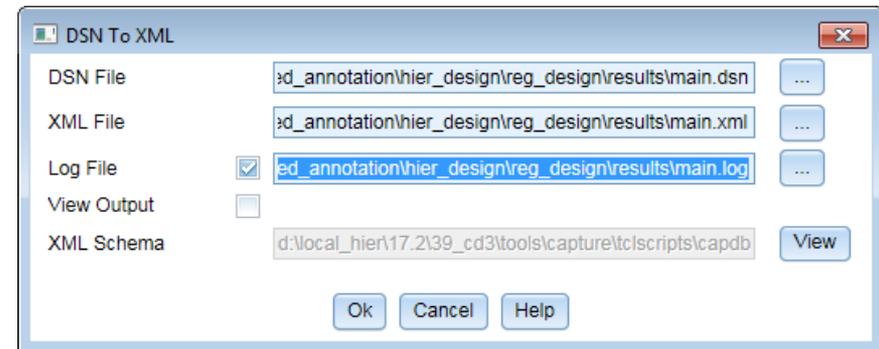
# Export-Import XML

You can import an XML file as a OrCAD® Capture design, also can export Capture designs to XML format.

File=>Import=>Design XML  
=>Library XML

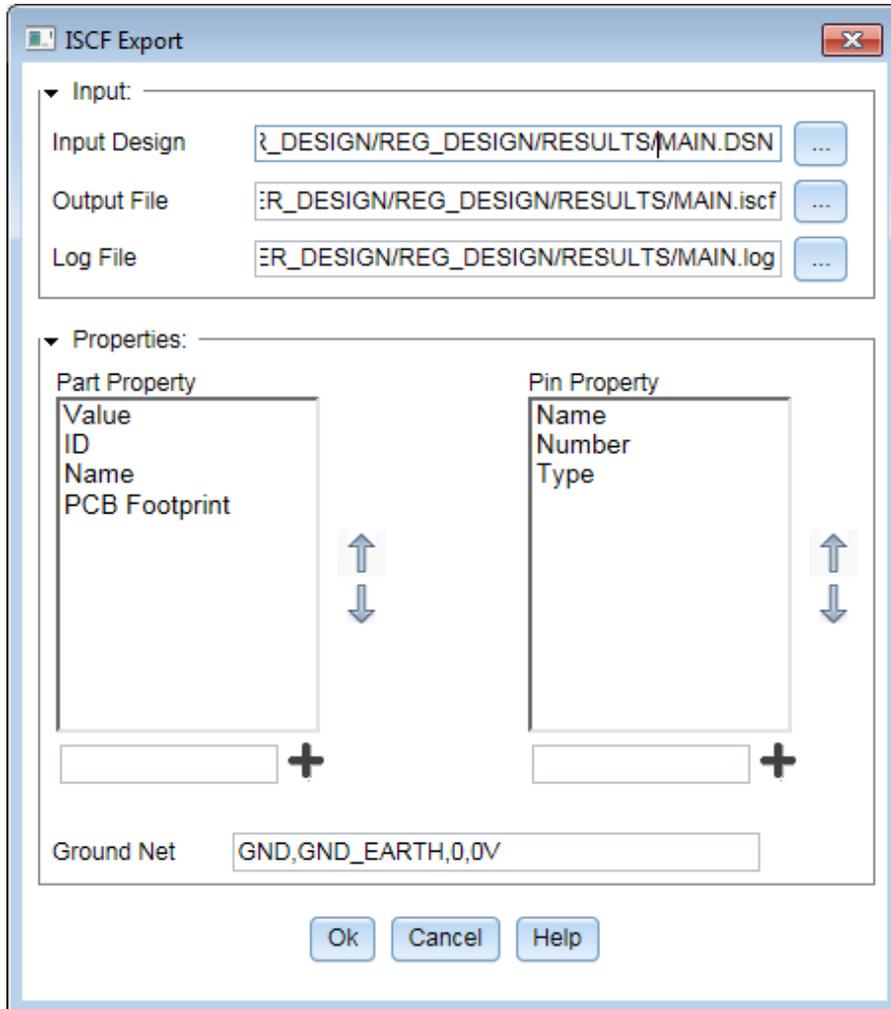


File=>Export=>Design XML  
=>Library XML



# Export ISCF format

You can export part properties, pin properties, and ground nets of a OrCAD® Capture design to Intel Schematic Export Format (ISCF).



```
BENCH.iscf - Notepad
File Edit Format View Help

BEGIN_COMPMPROS
##RefDes:Value,ID,Name,PCB Footprint,Part Number
C1:10PF,6921,I-956883897,cap10,PCC100CQTR-ND
C2:10PF,6927,I-956883896,cap10,PCC100CQTR-ND
C3:22PF,7930,I-956883785,cap22,PCC220CQTR-ND
C4:22PF,7939,I-956883784,cap22,PCC220CQTR-ND
C5:10UF,5751,I-956883704,cap10,ECE-V1HA100SP
C6:0.1UF,5736,I-956883707,cap1,
C7:150pF,5085,I-956883744,cap150,PCC151CGTR-ND
C8:390PF,5694,I35720,cap390,PCC391BNTR-ND
C9:820PF,4962,I40020,cp820,PCC821CGTR-ND
C10:10UF,5754,I-956883703,cap10,ECE-V1HA100SP
C11:0.1UF,5739,I-956883706,cap1,ECE-B1HGEO1R
C12:150PF,5241,I-956883732,cap150,PCC151CGTR-ND
C13:390PF,5308,I-956883729,cap390,PCC391BNTR-ND
P1A:R200E,781R,730017,6820A,66R811CGR-MN

BEGIN_BUSES
##NetName:1,NetName-2,...,NetName-N
ND,N1,N2,N3,N4,N5,N6
MA0,MA1,MA2,MA3
PCD17,PCD17,PCD17,PCD17
HD,H1,H2,H3,H4,H5,H6,H7
C0,C1,C2,C3,C4,C5,C6,C7,C8,C9,C10,C11,C12,C13,C14
D0,D1,D2,D3,D4,D5,D6,D7,D8,D9,D10,D11,D12,D13,D14,D15,D16,D17,D18,D19,D20,D21,D22,
A0,A1,A2,A3,A4,A5,A6,A7,A8,A9,A10,A11
HC11_A0,HC11_A1,HC11_A2,HC11_A3,HC11_A4,HC11_A5,HC11_A6,HC11_A7,HC11_A8,HC11_A9,HC
DSP_D0,DSP_D1,DSP_D2,DSP_D3,DSP_D4,DSP_D5,DSP_D6,DSP_D7,DSP_D8,DSP_D9,DSP_D10,DSP_
HC11_D0,HC11_D1,HC11_D2,HC11_D3,HC11_D4,HC11_D5,HC11_D6,HC11_D7
BK0,BK1,BK2,BK3,BK4
DSP_A0,DSP_A1,DSP_A2,DSP_A3,DSP_A4,DSP_A5,DSP_A6,DSP_A7,DSP_A8,DSP_A9,DSP_A10,DSP_
END_BUSES

BEGIN_NETS
##NetName:RefDes(pinNumber:pinLabel),RefDes(pinNumber:pinLabel),...,RefDes(pinNum
+12V:P5(62:831),P5(95:C31),P6(6:6),P7(12:12),P8(18:809 +12V)
-12V:P5(62:830),P5(94:C30),P6(8:8),P8(14:807 -12V)
/READ:U26(6:15),U27(6:15),U33(20:/DOSTR),U34(17:82),U49(55:RD)
/WRITE:U22(9:HR,W),U26(7:16),U27(7:16),U33(24:/DISTR),U34(16:83),U49(54:WR)
A0:U19(1:A0),U20(1:A0),U22(54:A0),U24(1:A0),U25(1:A0),U29(1:A0),U30(1:A0)
A1:U19(2:A1),U20(2:A1),U22(54:A1),U24(2:A1),U25(2:A1),U29(2:A1),U30(2:A1)
A2:U19(3:A2),U20(3:A2),U22(57:A2),U24(3:A2),U25(3:A2),U28(4:13),U29(3:A2),U30(3:A2)
A3:U19(4:A3),U20(4:A3),U22(58:A3),U24(4:A3),U25(4:A3),U28(5:14),U29(4:A3),U30(4:A3)
A4:U19(5:A4),U20(5:A4),U22(60:A4),U24(5:A4),U25(5:A4),U28(6:15),U29(5:A4),U30(5:A4)
A5:U19(6:A5),U20(6:A5),U22(61:A5),U24(6:A5),U25(6:A5),U28(6:A5),U29(6:A5),U30(6:A5)
A6:U19(7:A6),U20(7:A6),U22(62:A6),U24(7:A6),U25(7:A6),U28(7:A6),U29(7:A6),U30(7:A6)

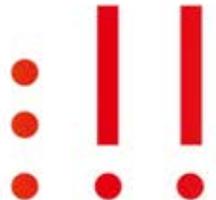
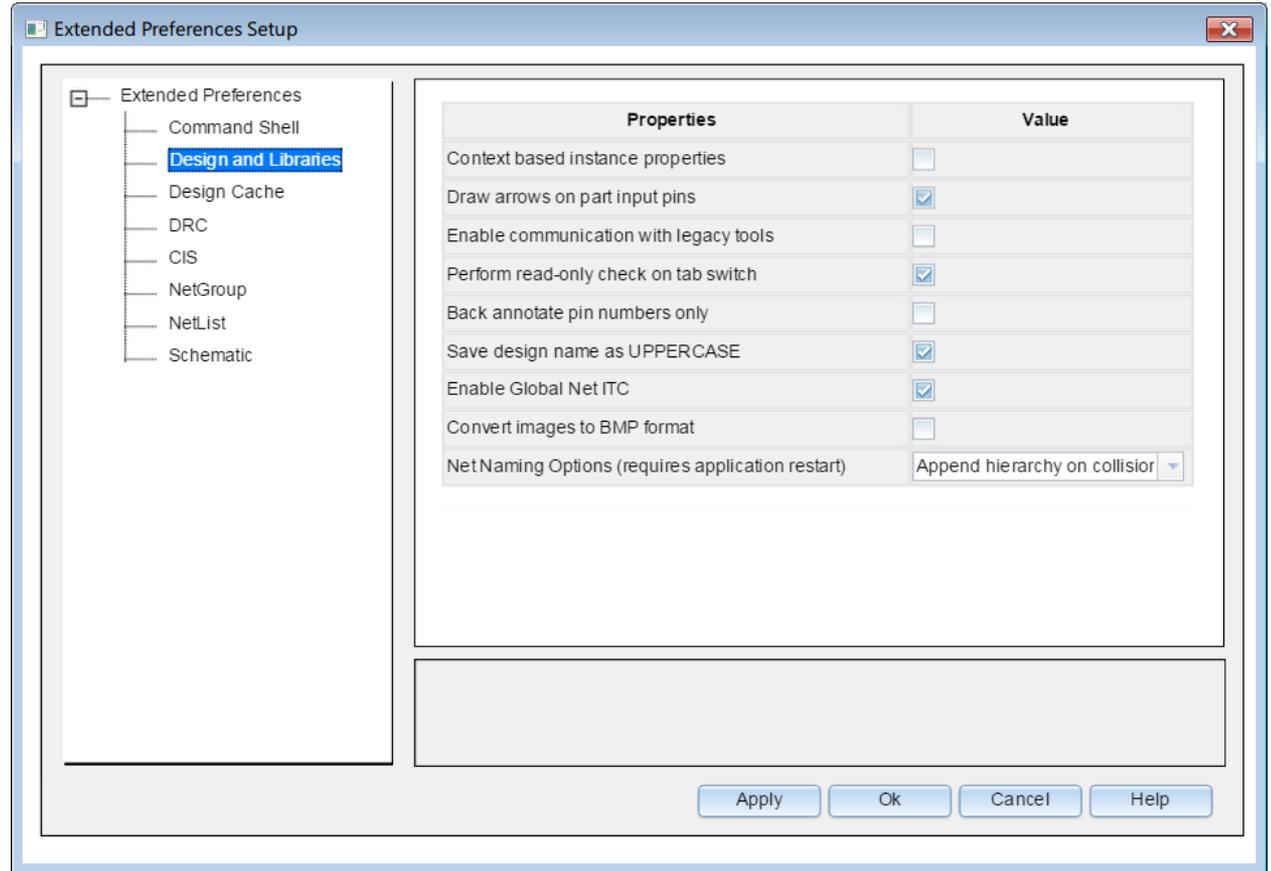
BEGIN_GROUND
##NetName:RefDes(pinNumber:pinLabel),RefDes(pinNumber:pinLabel),...,RefDes(pinNum
GND:C1(2:2),C2(2:2),C3(1:1),C4(1:1),C6(2:2),C7(2:2),C8(2:2),C9(2:2),C11(2:2),C12(
:2),C124(2:2),C125(2:2),C126(2:2),C127(2:2),C128(2:2),C129(2:2),C130(2:2),C131(1:
01 GND),P8(20:B10 GND),P8(62:B31 GND),P8(98:D18 GND),P9(5:5),Q3(1:1),Q4(1:1),Q5(1:
U43(9:17),U43(10:18),U43(14:GND),U44(5:GND),U45(8:GND),U46(8:GND),U47(10:GND),U4
END_GROUND

BEGIN_POWER
##NetName:RefDes(pinNumber:pinLabel),RefDes(pinNumber:pinLabel),...,RefDes(pinNum
+5:C32(2:2),C33(1:1),C34(1:1),C35(1:1),C36(1:1),C37(1:1),C38(1:1),C39(1:1),C40(1:
V),R3(2:2),R23(2:2),R24(1:1),R25(1:1),R26(1:1),R27(1:1),R51(1:1),R55(1:1),R300(2:
,U309(28:VCC),U310(20:VCC),U311(20:VCC),U312(1:DIR),U312(20:VCC),U313(1:DIR),U313
+12V_8093:U13(18:+VS),U14(4:+V),U15(18:+VS),U16(18:+VS)
-12V_8096:U13(12:-VS),U14(11:-V),U15(12:-VS),U16(12:-VS)
V+12:C25(1:1),C133(1:1),C134(1:1),C135(1:1),C136(1:1),P3(18:+12V),R35(2:2),R38(2:
V-12:C129(1:1),C130(1:1),C131(2:2),C132(2:2),P3(14:-12V)
END_POWER
```

# Extended Preferences setup

You can modify preferences for the following applications.

- Command Shell
- Design and Libraries
- Design Cache
- Design Rule Check (DRC)
- CIS
- NetGroup
- NetList
- Schematic



# GraserWARE FrontEnd PACK Application



# GraserWare FrontEnd PACK Application

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## ➤ Schematic Edit Application

- Replace BUS Alias
- Export-Import Properties
- Occurrences to Instance Properties
- Reference Edit
- NC-Part Setting

## ➤ Verify & Report

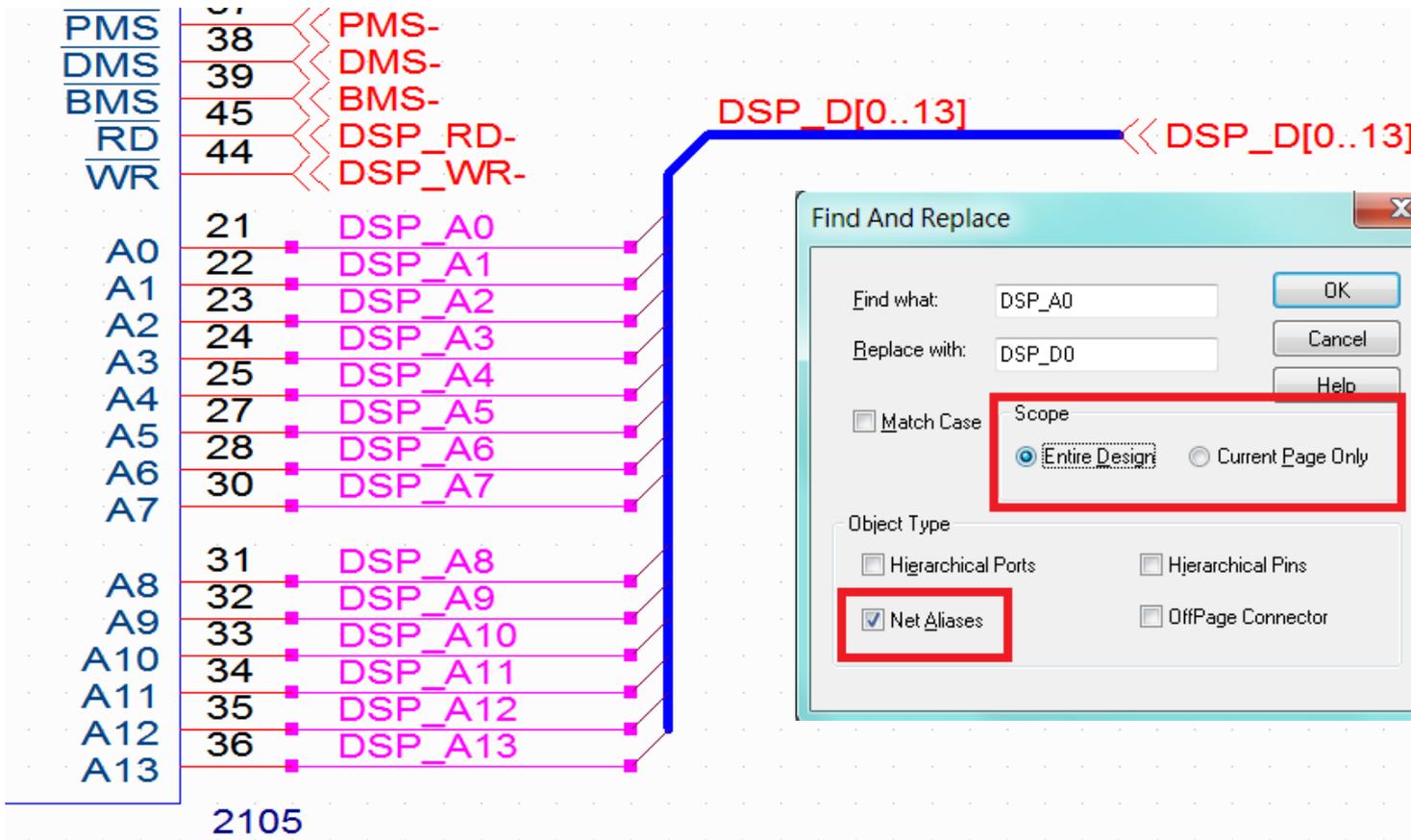
- Capture Design Compare
- Part Utility



# Replace BUS Alias

How to change BUS signal Name by page?

- Manually change
- Delete and reconnection the net
- Global Replace for string



2105

# Replace BUS Alias

[GraserWARE FrontEnd PACK ]-Replace Bus alias

- By Selection
- By Page
- By Design

The diagram shows a circuit structure with the following connections:

Signal	Value	Component
BMS_RD	45	BMS-
BMS_RD	44	DSP_RD-
BMS_WR	44	DSP_WR-
A0	21	DSP_D0
A1	22	DSP_D1
A2	23	DSP_D2
A3	24	DSP_D3
A4	25	DSP_D4
A5	27	DSP_D5
A6	28	DSP_D6
A7	30	DSP_D7
A8	31	DSP_D8
A9	32	DSP_D9
A10	33	DSP_D10
A11	34	DSP_D11
A12	35	DSP_D12
A13	36	DSP_D13

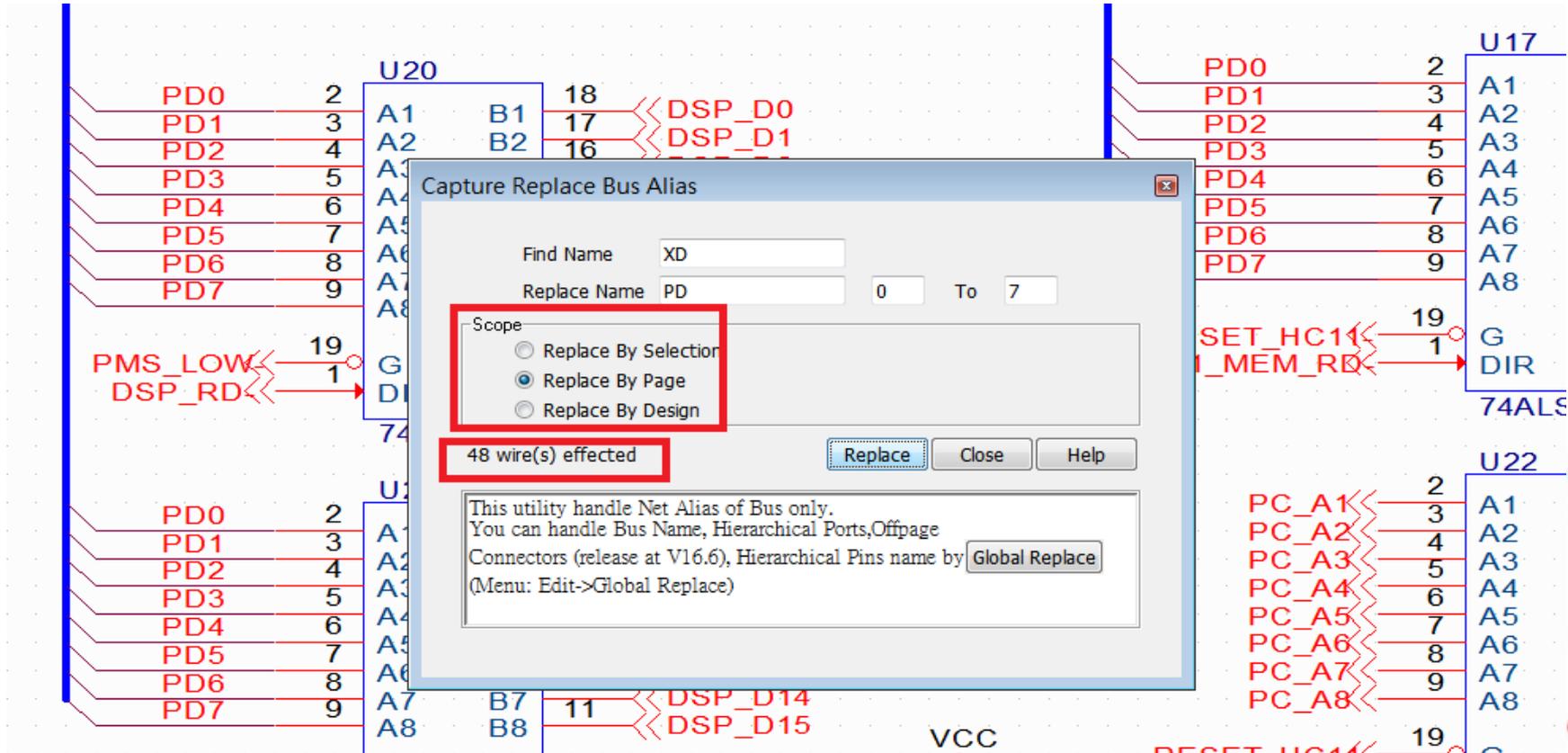
The 'Capture Replace Bus Alias' dialog box contains the following information:

- Find Name: DSP\_A
- Replace Name: DSP\_D
- To: [ ]
- Scope:
  - Replace By Selection
  - Replace By Page
  - Replace By Design
- 14 wire(s) effected
- Buttons: Replace, Close, Help
- Text: This utility handle Net Alias of Bus only. You can handle Bus Name, Hierarchical Ports, Offpage Connectors (release at V16.6), Hierarchical Pins name by Global Replace (Menu: Edit->Global Replace)

# Replace BUS Alias

[GraserWARE FrontEnd PACK ]-Replace Bus alias

- RESULT



# Design Properties Editor

## Traditional edit properties solution - Property Editor

- Hard to find properties which you want

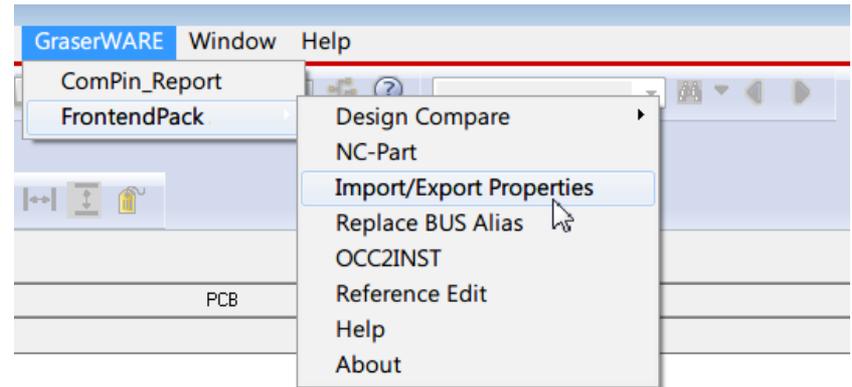
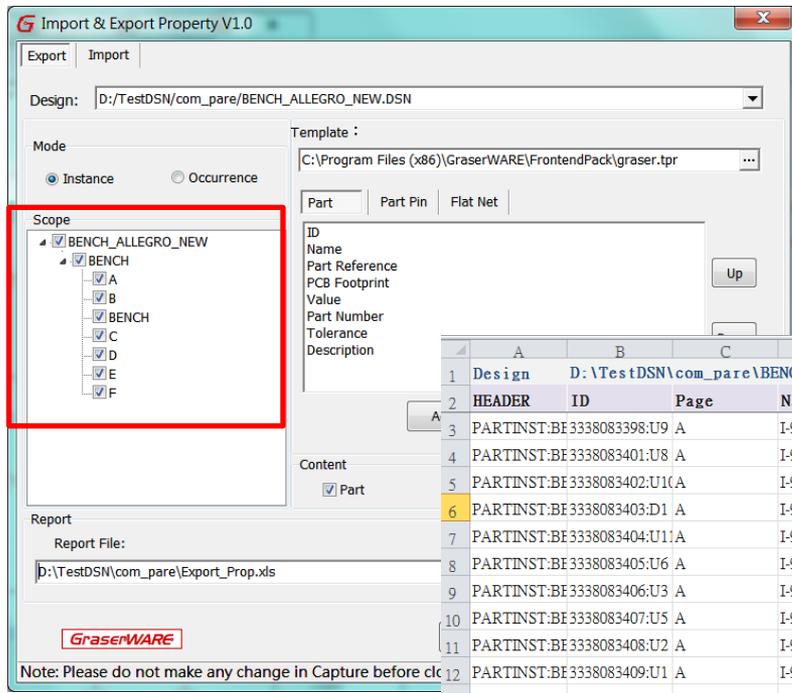
The screenshot displays the OrCAD Capture CIS software interface. The main window shows a circuit schematic with three LM2902 comparators (U14A, U14B, U14C) and various passive components (resistors R4-R19 and capacitors C6, C11, C16). The Property Editor is open on the right, showing a table of properties for selected components.

	A	B	C	D
Tag	BENCH : B : C3	BENCH : B : C4	BENCH : B : C5	BENCH : B :
Color	Default	Default	Default	Default
Description	22PF 50V CERAMI	22PF 50V CERAMI	CAP 10UF 50V VS	
Designator				
Graphic	SMALL CAP.Normal	SMALL CAP.Normal	CP.Normal	CAP.Normal
ID				
Implementation				
Implementation Path				
Implementation Type	<none>	<none>	<none>	<none>
Location X-Coordinate	260	260	1340	550
Location Y-Coordinate	130	170	650	680
Name	I-956883785	I-956883784	I-956883704	I-95688370
Part Number	PCC220CNTR-ND	PCC220CNTR-ND	ECE-V1HA100SP	
Part Reference	C3	C4	C5	C6
PCB Footprint	smdcap	smdcap		
Power				
Power Pins Visible	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Primitive	YES	YES	YES	YES
PSpice	C	C	C	
Rating				
Reference	C3	C4	C5	C6
Source Library	C:\WINDOWST	C:\WINDOWST	C:\WINDOWST	C:\WINDOWST
Source Package	SMALL CAP	SMALL CAP	CP	CAP
Source Part	SMALL CAP Norma	SMALL CAP Norma	CP.Normal	CAP.Normal
Tolerance				
Value	22PF	22PF	10UF	0.1UF
Voltage	50V	50V	50V	

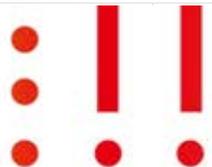
# Design Properties Editor

## [GraserWARE FrontEnd PACK ] - Export Properties

— Export Design Properties to Excel file



	A	B	C	D	E	F	G	H	I	J	K	L	M
1	Design	D:\TestDSN\com_pare\BENCH_ALLEGRO_NEW.DSN											
2	HEADER	ID	Page	Name	Part Reference	PCB Footprint	Value	Part Number	Tolerance	Description			
3	PARTINST:BE3338083398:U9	A		I-956883898	U9	dip16_3	74ALS138	TMP-2		IC, 74ALS138, multiplexer, Standard input, Inverted, totem ouput			
4	PARTINST:BE3338083401:U8	A		I-956883895	U8	dip20_3	74ALS273	20-81432		IC, 74ALS273 OCTAL D POS EDGE TRIGG 20 DIP			
5	PARTINST:BE3338083402:U1(A)	A		I-956883894	U10	dip20_3	74ALS245	20-003297		IC, 74ALS245 (N)OCTL TRI-ST TRANSCVR 20DIP			
6	PARTINST:BE3338083403:D1	A		I-956883893	D1		RA-LED	40-00017		LED Red			
7	PARTINST:BE3338083404:U11(A)	A		I-956883892	U11	plcc28	22V10	TMP-1		Bipolar PLD Device			
8	PARTINST:BE3338083405:U6	A		I-956883891	U6	dip16_3	7201	20-00042		FIFO Status Flag Expandable 512x9			
9	PARTINST:BE3338083406:U3	A		I-956883890	U3	dip16_3	7201	20-00042		FIFO Status Flag Expandable 512x9			
10	PARTINST:BE3338083407:U5	A		I-956883889	U5	dip20_3	6264	20-00062		CMOS Static RAM 8Kx8			
11	PARTINST:BE3338083408:U2	A		I-956883888	U2	dip20_3	6264	20-00062		CMOS Static RAM 8Kx8			
12	PARTINST:BE3338083409:U1	A		I-956883887	U1	dip20_3	6264	20-00062		CMOS Static RAM 8Kx8			
13	PARTINST:BE3338083410:U4	A		I-956883886	U4	dip20_3	6264	20-00062		CMOS Static RAM 8Kx8			
14	PARTINST:BE3338083411:U7	A		I-956883885	U7	dip20_3	6264	20-00062		CMOS Static RAM 8Kx8			
15	PARTINST:BE3338083412:TP1	A		I-956883884	TP1		TESTPOINT	60-00038		Header, 1 row, 1 pin			
16	PARTINST:BE3338083413:P1	A		I-956883883	P1		HEADER12	60-00037		Header, 2 row x 6 pin			
17	PARTINST:BE3338083414:R2	A		I-956883882	R2	smdres	100	ERJ-2GEJ101X	5%	Carbon Film Resistor 100 OHM 1/16W 5% 0402 SMD			
18	PARTINST:BE3338083415:R1	A		I-956883881	R1	smdres	100	ERJ-2GEJ101X	5%	Carbon Film Resistor 100 OHM 1/16W 5% 0402 SMD			
19	PARTINST:BE3338083416:R3	A		I-956883880	R3	res400	10K	ERJ-8GEY1103	5%	Carbon Film Resistor 10K OHM 1/8W 5% 1206 SMD			



# Design Properties Editor

## [GraserWARE FrontEnd PACK] – Import Properties

— Import part properties from Excel into OrCAD® Capture schematic design

Import & Export Property V1.0

Export | Import

Import File:  
D:\TestDSN\com\_pare\Export\_Prop.xls

Get mapping sheet from import file

Part mapping sheet : Parts

Source design : D:\TestDSN\com\_pare\BENCH\_ALLEGRO\_NEW.DSN

PartPin mapping sheet :

	A	B	C	D	E	F	G	H	I	J	K	L	M
1	Design	D:\TestDSN\com_pare\BENCH_ALLEGRO_NEW.DSN											
2	HEADER	ID	Page	Name	Part Reference	PCB Footprint	Value	Part Number	Tolerance	Description			
3	PARTINST:BE3338083398:U9	A		I-956883898	U9	dip16_3	74ALS138	20-00045		IC, 74ALS138, multiplexer, Standard input, Inverted, totem ouput			
4	PARTINST:BE3338083401:U8	A		I-956883895	U8	dip20_3	74ALS273	20-81432		IC, 74ALS273 OCTAL D POS EDGE TRIGG 20 DIP			
5	PARTINST:BE3338083402:U1(A			I-956883894	U10	dip20_3	74ALS245	20-003297		IC, 74ALS245 (N)OCTL TRI-ST TRANSCVR 20DIP			
6	PARTINST:BE3338083403:D1	A		I-956883893	D1	SMDLED	RA-LED	40-00017		LED Red			
7	PARTINST:BE3338083404:U11	A		I-956883892	U11	plcc28	22V10	20-00033		Bipolar PLD Device			
8	PARTINST:BE3338083405:U6	A		I-956883891	U6	dip16_3	7201	20-00042		FIFO Status Flag Expandable 512x9			
9	PARTINST:BE3338083406:U3	A		I-956883890	U3	dip16_3	7201	20-00042		FIFO Status Flag Expandable 512x9			
10	PARTINST:BE3338083407:U5	A		I-956883889	U5	dip20_3	6264	20-00062		CMOS Static RAM 8Kx8			
11	PARTINST:BE3338083408:U2	A		I-956883888	U2	dip20_3	6264	20-00062		CMOS Static RAM 8Kx8			
12	PARTINST:BE3338083409:U1	A		I-956883887	U1	dip20_3	6264	20-00062		CMOS Static RAM 8Kx8			
13	PARTINST:BE3338083410:U4	A		I-956883886	U4	dip20_3	6264	20-00062		CMOS Static RAM 8Kx8			
14	PARTINST:BE3338083411:U7	A		I-956883885	U7	dip20_3	6264	20-00062		CMOS Static RAM 8Kx8			
15	PARTINST:BE3338083412:TP1	A		I-956883884	TP1	TP20	TESTPOINT	60-00038		Header, 1 row, 1 pin			
16	PARTINST:BE3338083413:P1	A		I-956883883	P1	headx12x45	HEADER12	60-00037		Header, 2 row x 6 pin			
17	PARTINST:BE3338083414:R2	A		I-956883882	R2	smdres	100	ERJ-2GEJ101X	5%	Carbon Film Resistor 100 OHM 1/16W 5% 0402 SMD			
18	PARTINST:BE3338083415:R1	A		I-956883881	R1	smdres	100	ERJ-2GEJ101X	5%	Carbon Film Resistor 100 OHM 1/16W 5% 0402 SMD			
19	PARTINST:BE3338083416:R3	A		I-956883880	R3	res400	10K	ERJ-8GEY103	5%	Carbon Film Resistor 10K OHM 1/8W 5% 1206 SMD			

Note: Please do not make a

# Design Properties Editor

[GraserWARE FrontEnd PACK ] – Export/Import Properties

— Import part properties from Excel into OrCAD® Capture schematic design

The Property Editor window displays the following table of properties:

	A	B	C
	⊕ BENCH : A : D1	⊕ BENCH : A : U9	⊕ BENCH : A : U11
Tag			
Color	Default	Default	Default
Description	LED Red	IC, 74ALS138, multi	Bipolar PLD Device
Designator			
Graphic	LED1.Normal	74ALS138.Normal	22V10.Normal
ID			
Implementation	D	74ALS138	
Implementation Path	...	...	...
Implementation Type	Schematic View	Schematic View	<none>
Location X-Coordinate	1540	710	510
Location Y-Coordinate	850	850	1000
Name	I-956883893	I-956883898	I-956883892
Part Number	40-00017	20-00045	20-00033
Part Reference	D1	U9	U11
PCB Footprint	SMDLED	dip16_3	plcc28
Power Pins Visible	☐	☐	☐
Primitive	YES	YES	YES
PSpice	D	74ALS138	
Rating	2.0V		
Reference	D1	U9	U11
Source Library	C:\WINDOWSIT ...	C:\WINDOWSIT ...	C:\WINDOWSIT ...
Source Package	LED1	74ALS138	22V10
Source Part	LED1.Normal	74ALS138.Normal	22V10.Normal
Tolerance			
Value	RA-LED	74ALS138	22V10

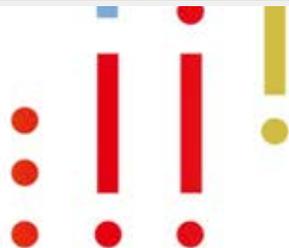
# Occurrence to Instance Properties

Traditional synchronize part properties solution - Push Occ. Prop into Instance

- Synchronize the Part Reference and PCB Footprint

The screenshot shows the Altium Designer interface with a PCB design. A dialog box titled "Push Occ. properties to instance" is open, displaying a warning and three options. The background shows a table of component properties for three occurrences: BENCH : A : C2, /C102, and BENCH : A : C801. The table includes columns for various properties such as BOM\_IGNORE, Color, Description, Designator, Graphic, ICA\_MFR\_NAME, ICA\_PARTNUM, ID, Implementation, Implementation Path, Implementation Type, Location X-Coordinate, Location Y-Coordinate, Name, Part Number, Part Reference, PCB Footprint, Power, Power Pins Visible, Primitive, PSpice, Reference, Source Library, Source Package, Source Part, Tolerance, Value, and Voltage. The "Description" and "Tolerance" rows are highlighted with red boxes in the original image.

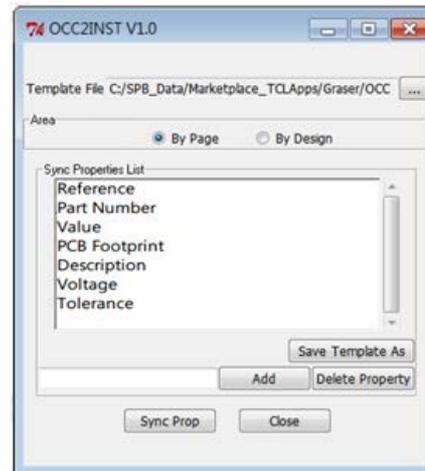
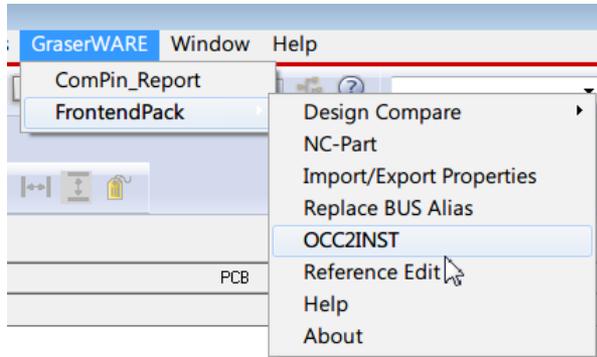
	A	B	C						
BOM_IGNORE	BENCH : A : C2	/C102	BENCH : A : C801						
Color	Default	Default	Default						
Description	CAP 100PF 50V CERAMI	CAP 10PF 16V CERAMIC	CAP 100PF 50V CERAMI						
Designator									
Graphic	SMALL CAP.Normal	SMALL CAP.Normal	SMALL CAP.Normal						
ICA_MFR_NAME									
ICA_PARTNUM									
ID		20808							
Implementation	C	C	C						
Implementation Path									
Implementation Type	PSpice Model	PSpice Model	PSpice Model						
Location X-Coordinate	1110	1110	1060						
Location Y-Coordinate	870	870	870						
Name	I-956883896	I-956883896	INS1124906						
Part Number	PCC100CVCT-ND	PCC100CVCT-ND	PCC100CVCT-ND						
Part Reference	C2	C102	C801	C101	R1	R101	R2	R102	
PCB Footprint	smdcap	smdcap	smdcap	smdcap	smdres	smdres	smdres	smdres	
Power					1/16W	1/16W	1/16W	1/16W	
Power Pins Visible									
Primitive	YES	YES	YES	YES	YES	YES	YES	YES	
PSpice	C	C	C	C	R	R			
Reference	C2	C102	C801	C101	R1	R101	R2	R102	
Source Library	C:\WINDOWS\TEMP\...	C:\WINDOWS\TEMP\...	C:\WINDOWS\TEMP\...	C:\WINDOWS\TEMP\...	C:\WINDOWS\TEMP\PIXL...	C:\WINDOWS\TEMP\...	C:\CADENCE\SPB_1...	C:\CADENCE\SPB_1...	
Source Package	SMALL CAP	SMALL CAP	SMALL CAP	SMALL CAP	RESISTOR	RESISTOR	RESISTOR	RESISTOR	
Source Part	SMALL CAP.Normal	SMALL CAP.Normal	SMALL CAP.Normal	SMALL CAP.Normal	RESISTOR.Normal	RESISTOR.Normal	RESISTOR.Normal	RESISTOR.Normal	
Tolerance					10%	5%	10%	5%	
Value	10PF	10PF	100PF	10PF	10	10	10	10	
Voltage	50V	16V	50V	16V					



# Occurrence to Instance Properties

[GraserWARE FrontEnd PACK] – OCC2INST

— Synchronize Parts Occurrence properties to Instance



# Occurrence to Instance Properties

[GraserWARE FrontEnd PACK] – OCC2INST

- RESULT

-Not only Part Reference and PCB Footprint, but also can add other part properties which you want to synchronize it.

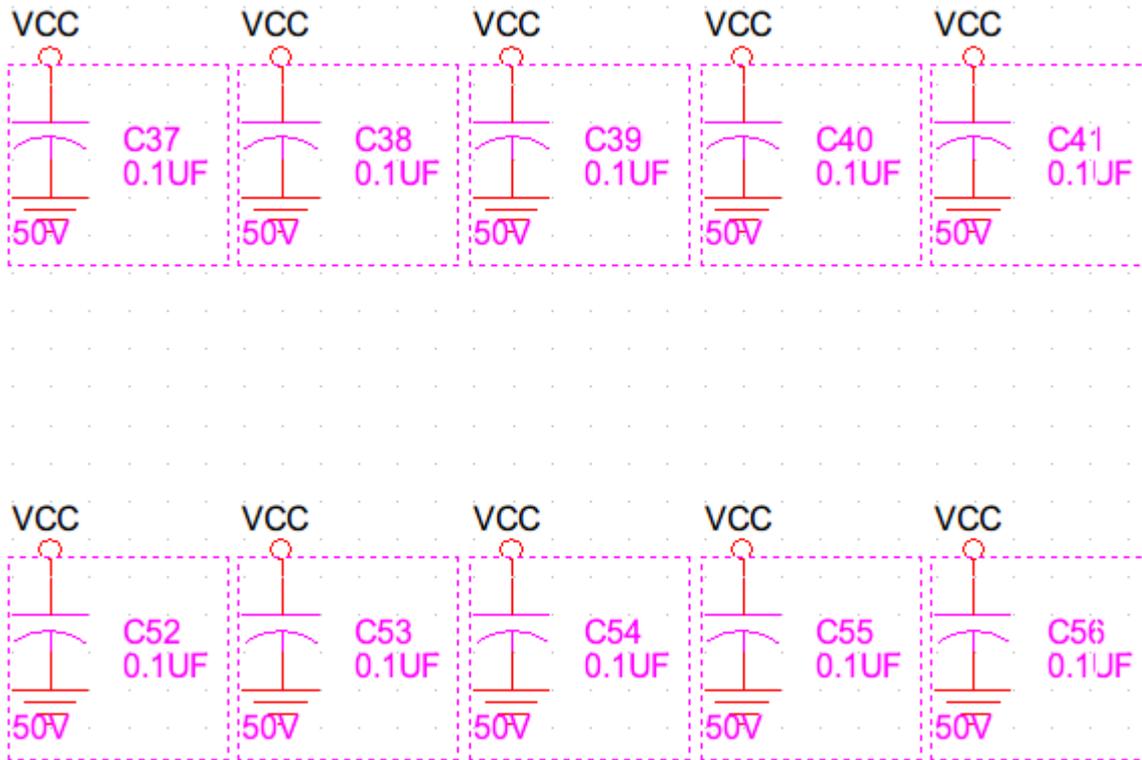
	A	B	C	D	E	F	G	H
	<input type="checkbox"/> BENCH : A : C101	IC101	<input type="checkbox"/> BENCH : A : C102	IC102	<input type="checkbox"/> BENCH : A : R101	R101	<input type="checkbox"/> BENCH : A : R102	R102
BOM_IGNORE								
Color	Default	Default	Default	Default	Default	Default	Default	Default
Description	CAP 10PF 16V CERAMIC	CAP 10PF 16V CERAMIC	CAP 10PF 16V CERAMIC	CAP 10PF 16V CERAMIC	Carbon Film Resistor 10	Carbon Film Resistor 10	Carbon Film Resistor 10	Carbon Film Resistor 10
Designator								
Graphic	SMALL CAP.Normal	SMALL CAP.Normal	SMALL CAP.Normal	SMALL CAP.Normal	RESISTOR.Normal	RESISTOR.Normal	RESISTOR.Normal	RESISTOR.Normal
ICA_MFR_NAME								
ICA_PARTNUM								
ID		21652		20808		21097		21094
Implementation	C	C	C	C	R	R	R	R
Implementation Path								
Implementation Type	PSpice Model	PSpice Model	PSpice Model	PSpice Model	Schematic View	Schematic View	PSpice Model	PSpice Model
Location X-Coordinate	1060	1060	1110	1110	990	990	990	990
Location Y-Coordinate	870	870	870	870	810	810	840	840
Name	INS1124906	INS1124906	I-956883896	I-956883896	I-956883881	I-956883881	I-956883882	I-956883882
Part Number	PCC100CVCT-ND	PCC100CVCT-ND	PCC100CVCT-ND	PCC100CVCT-ND	ERJ-3GSYJ100V	ERJ-3GSYJ100V	ERJ-3GSYJ100V	ERJ-3GSYJ100V
Part Reference	C101	C101	C102	C102	R101	R101	R102	R102
PCB Footprint	smdcap	smdcap	smdcap	smdcap	smdres	smdres	smdres	smdres
Power					1/16W	1/16W	1/16W	1/16W
Power Pins Visible	<input type="checkbox"/>	<input type="checkbox"/>						
Primitive	YES	YES	YES	YES	YES	YES	YES	YES
PSpice	C	C	C	C	R	R		
Reference	C101	C101	C102	C102	R101	R101	R102	R102
Source Library	C:\WINDOWS\TEMP\...	C:\WINDOWS\TEMP\...	C:\WINDOWS\TEMP\...	C:\WINDOWS\TEMP\...	C:\WINDOWS\TEMP\...	C:\WINDOWS\TEMP\...	C:\CADENCE\SPB_1\...	C:\CADENCE\SPB_1\...
Source Package	SMALL CAP	SMALL CAP	SMALL CAP	SMALL CAP	RESISTOR	RESISTOR	RESISTOR	RESISTOR
Source Part	SMALL CAP.Normal	SMALL CAP.Normal	SMALL CAP.Normal	SMALL CAP.Normal	RESISTOR.Normal	RESISTOR.Normal	RESISTOR.Normal	RESISTOR.Normal
Tolerance					5%	5%	5%	5%
Value	10PF	10PF	10PF	10PF	10	10	10	10
Voltage	16V	16V	16V	16V				

# Reference Edit

How to control part reference prefix?

Traditional

- Change Part Reference Prefix manually



# Reference Edit

[GraserWARE FrontEnd PACK] – Reference Edit

-Scope

- By Selection, Page and Design

- Modify RefDes

- Insert, Delete and Modify the Part Reference Prefix

The image shows a PCB layout with two rows of capacitors. Each capacitor is represented by a symbol with a value of 0.1UF and a voltage of 50V. The top row contains references CP37, CP38, CP39, CP40, and CP41. The bottom row contains references CP52, CP53, CP54, CP55, and CP56. A dialog box titled "Reference Edit V1.0" is open, showing the "Modify RefDes" tab. The "Scope" section has "By Selection" selected. The "Mode" section has "Update Instance" selected. The "Action" section has "Middle" selected for the position. The "RefDes Prefix reset to default" button is visible. The "Operation" section has "Insert" selected, and a text box contains the letter "P". The "OK" and "Close" buttons are at the bottom of the dialog.

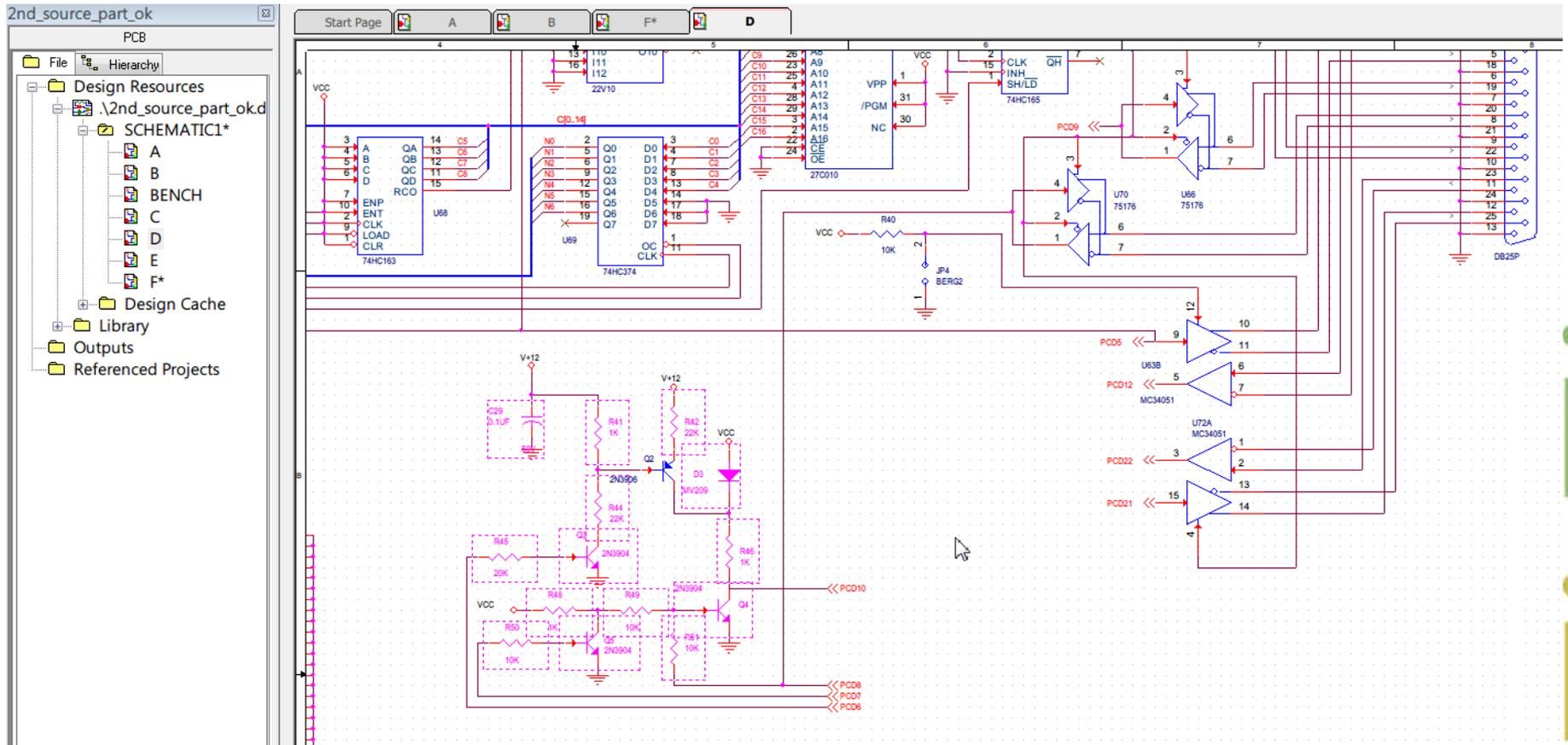


# Reference Edit

## How to assign RefDes?

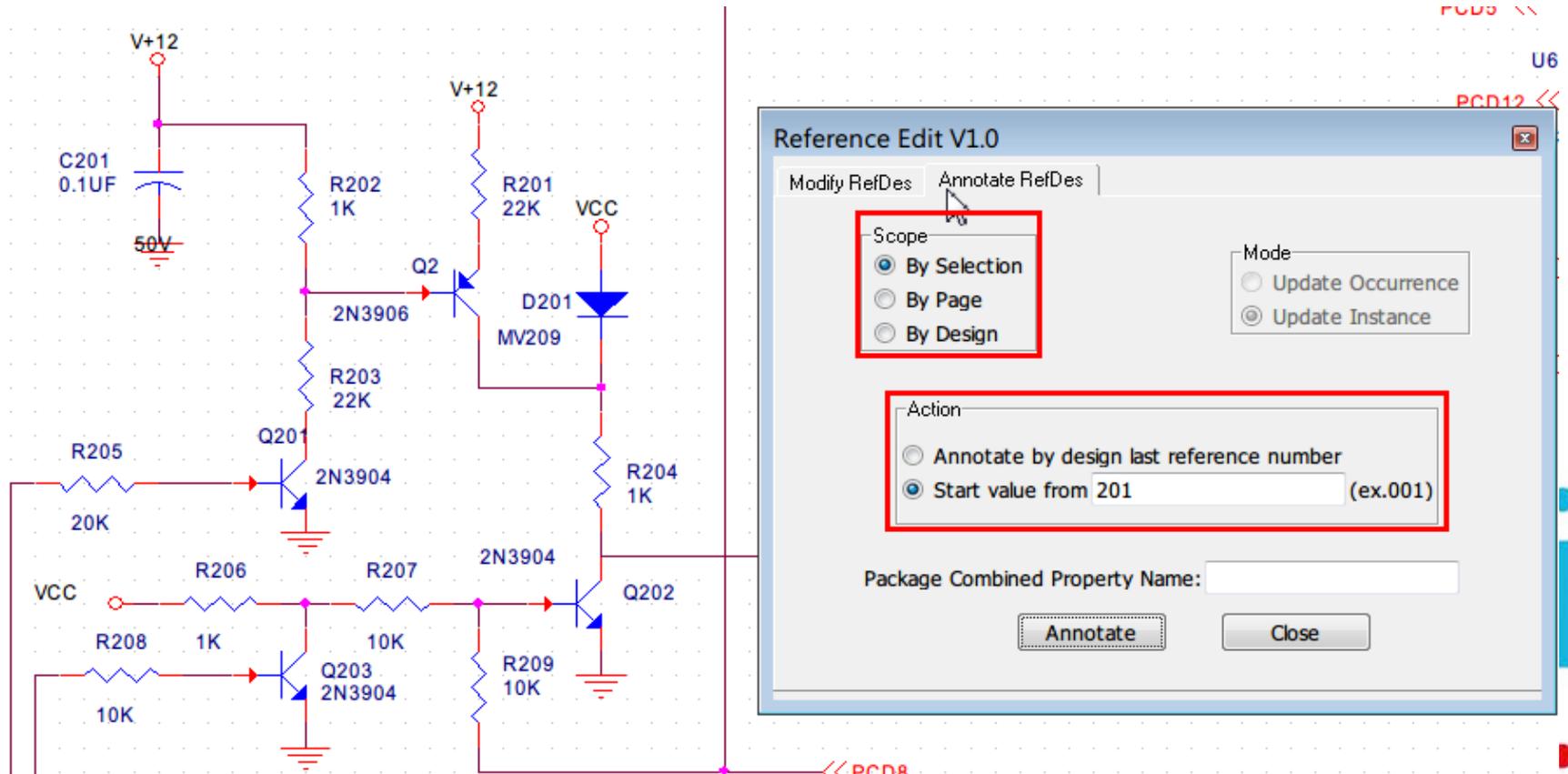
Traditional

- Change Part Reference manually



# Reference Edit

[GraserWARE FrontEnd PACK] – Reference Edit  
Annotate Part Reference by page or selection



# NC Part Setting

- How to set parts are not present?

## Traditional

- Add strings in Value property manually
- Add a new part property and assign string then display on the page

The image shows two circuit diagrams illustrating the placement of Not Connected (NC) parts. The top diagram shows a network of components including resistors R7 and R8, capacitors C7, C8, and C9, inductors L1 and L2, and a capacitor C5, all connected to a BNC connector J1. The bottom diagram shows a similar network with resistors R13, capacitors C12, C13, and C14, and inductors L3 and L4. A red box highlights the NC values for several components in both diagrams.

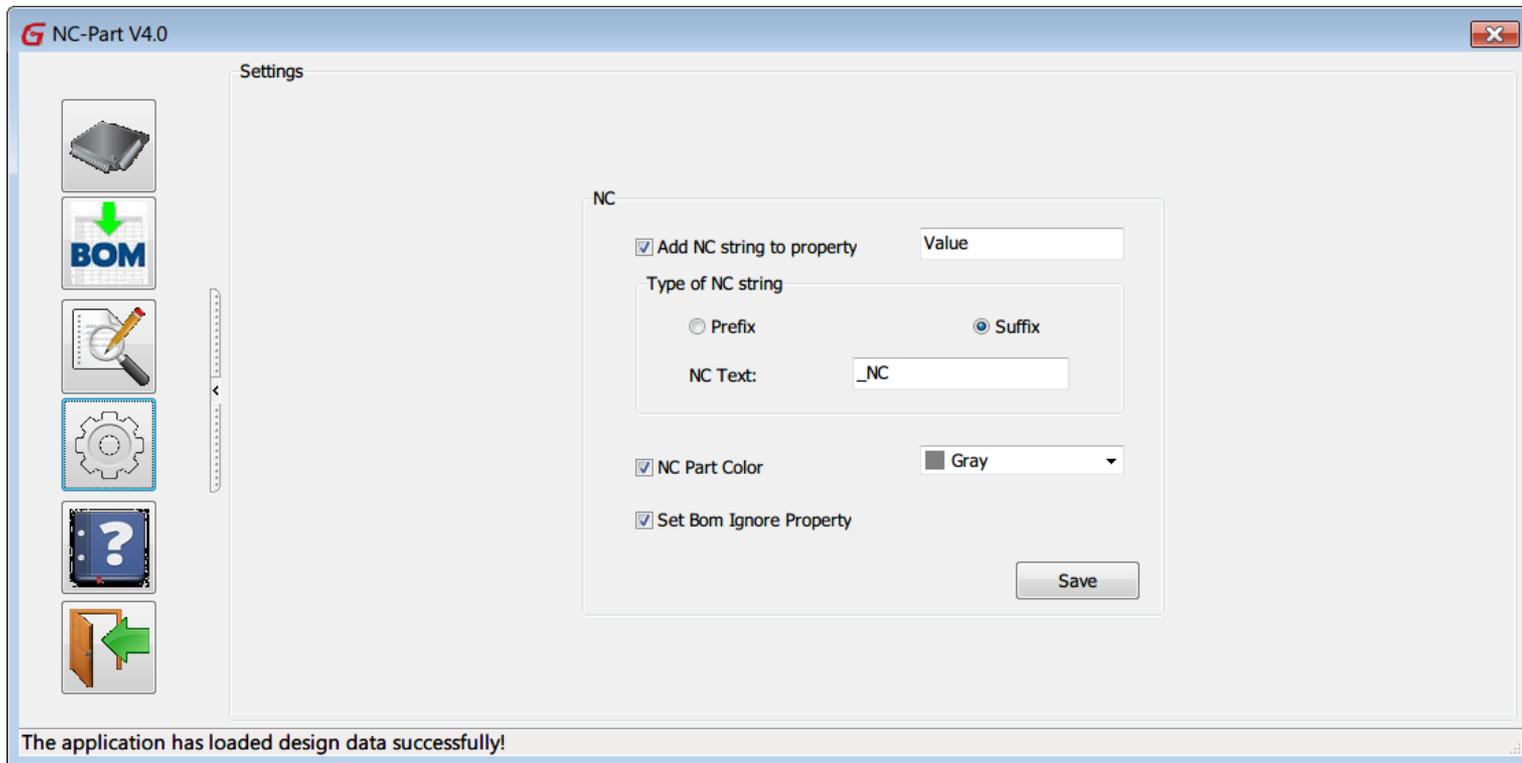
	A	B
Tag	BENCH : B : C14	BENCH : B : R14
Color	Default	Default
Designator		
Graphic	CAP NP Normal	R.Normal
ID		
Implementation		
Implementation Path		
Implementation Type	<none>	<none>
Location X-Coordinate	1200	1270
Location Y-Coordinate	850	840
Name	I39917	I-956883727
Part Number	PCC821CGTR-ND	ERJ-8GEYJ750V
Part Reference	C14	R14
PCB Footprint	smdcap	smdres
Power		1/8W
Power Pins Visible	<input type="checkbox"/>	<input type="checkbox"/>
Present	NC	NC
Primitive	DEFAULT	YES
PSpice	C	R
Reference	C14	R14
Source Library	D:\ORCAD\WINV9\CAPTURE\LIBRARY\...	C:\WINDOWS\TEMP\X\LATTEMP.OLB
Source Package	CAP NP	R



# NC Part Setting

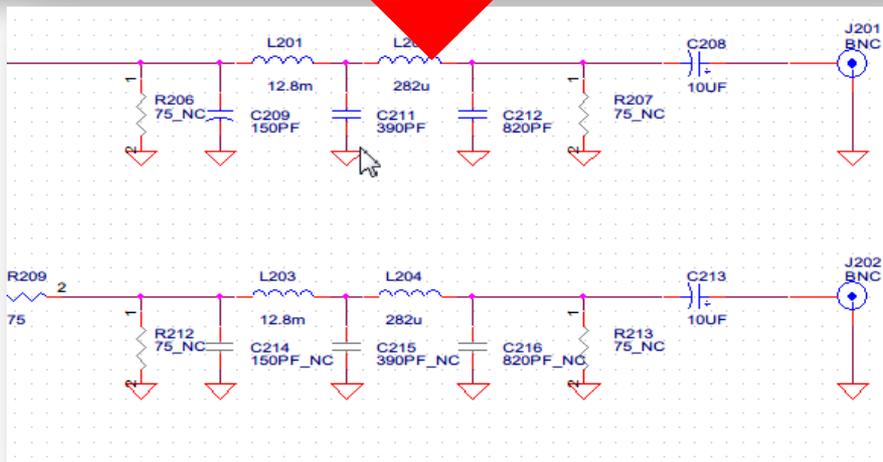
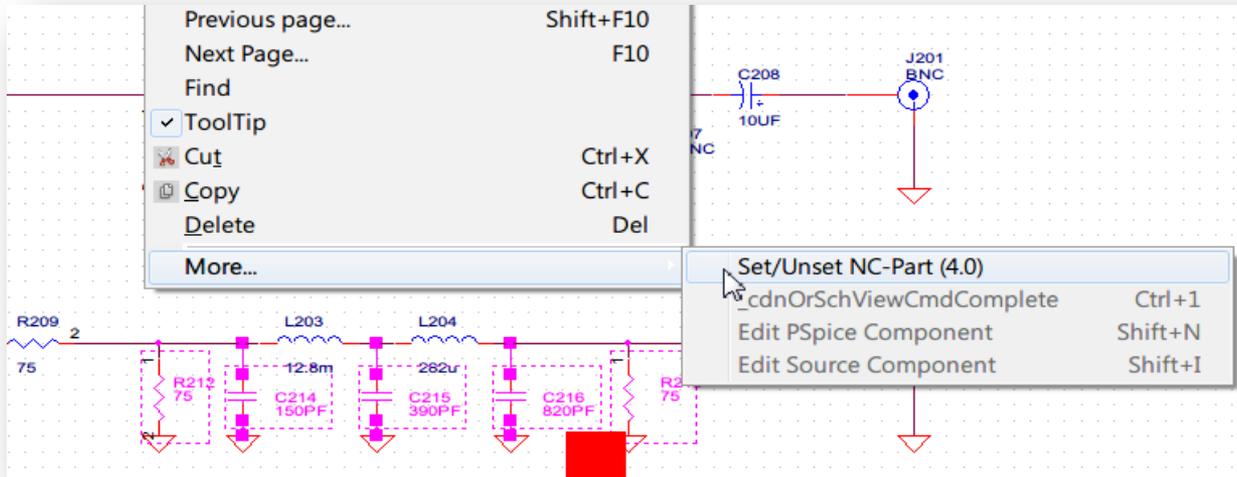
[GraserWARE FrontEnd PACK] – NC Part

- Add NC string in value property
- Add BOM\_IGNORE property
- Change NC part color
- New BOM Export
  - Filter NC Parts and put it on NC Parts section



# NC Part Setting

[GraserWARE FrontEnd PACK] – NC Part  
— Easy to set/unset NC Part

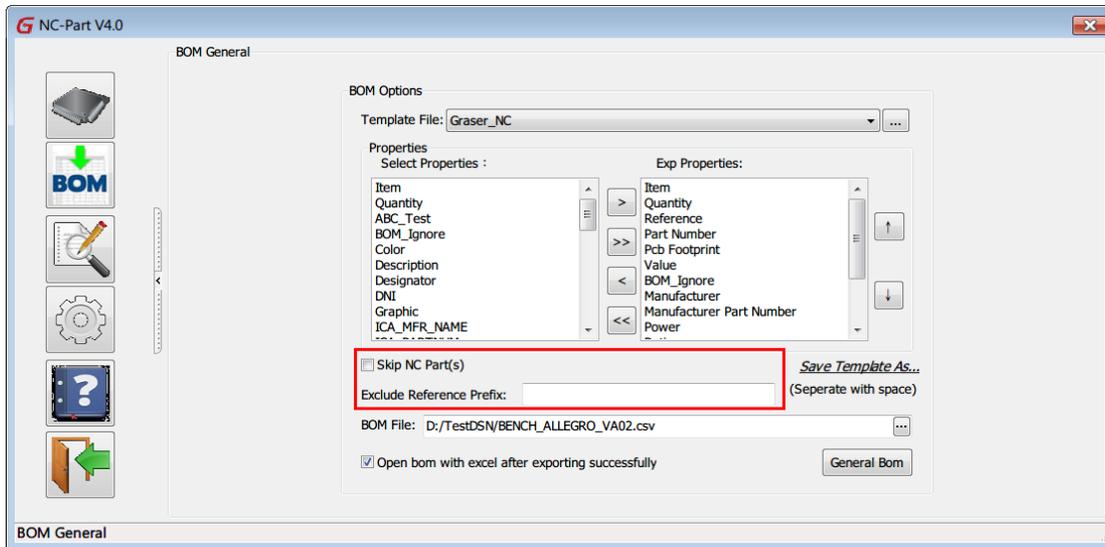


# NC Part Setting

## [GraserWARE FrontEnd PACK] – NC Part

### Generate BOM

- Set part properties in BOM
- Filter NC Parts and put it on NC Parts section

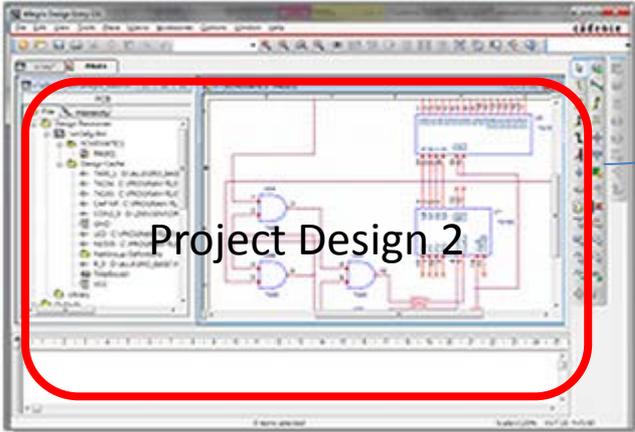
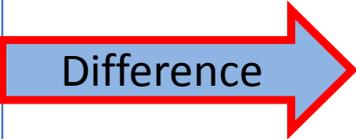
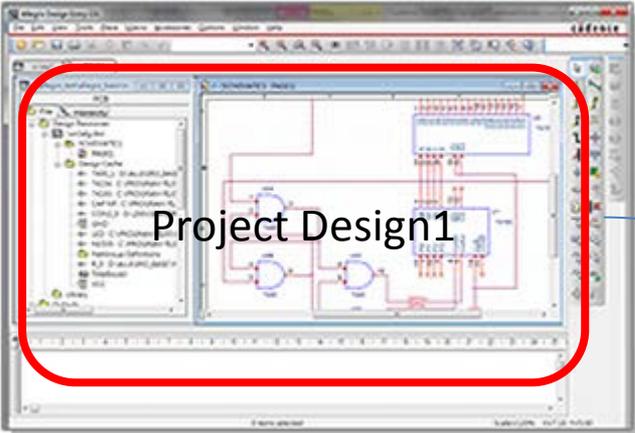


A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
Standard Part List														
Item	Quantity	Reference	Part Num	Pcb Foot	Value	BOM_Ign	Manufact	Manufact	Power	Rating	Source Pa	Tolerance	Voltage	
115	1	Y201	20-00442		10MHz						CRYSTAL	Normal		
116	1	Y401	20-00443	dip14_3	24.576MHz						OSC8	Normal		
117	1	Y402	20-00444		4.9152MHz						CRYSTAL	Normal		
118	1	Y601	20-00445		3.6864MHz						CRYSTAL	Normal		
NC-Part List														
1	1	C214	PCC151C	smdcap	150PF_NC	TRUE					CAPACITOR	NON- 50V		
2	1	C215	PCC391B1	smdcap	390PF_NC	TRUE					CAPACITOR	NON- 50V		
3	1	C216	PCC821C	smdcap	820PF_NC	TRUE					CAP NP	Normal 50V		
4	2	R212,R21	ERJ-8GE	smdres	75_NC	TRUE			1/8W		R_0	Norm 5%		

# Compare OrCAD Capture Schematic Design

There are Design version1 and version 2

How to know the Part differences and Connection differences between 2 design?

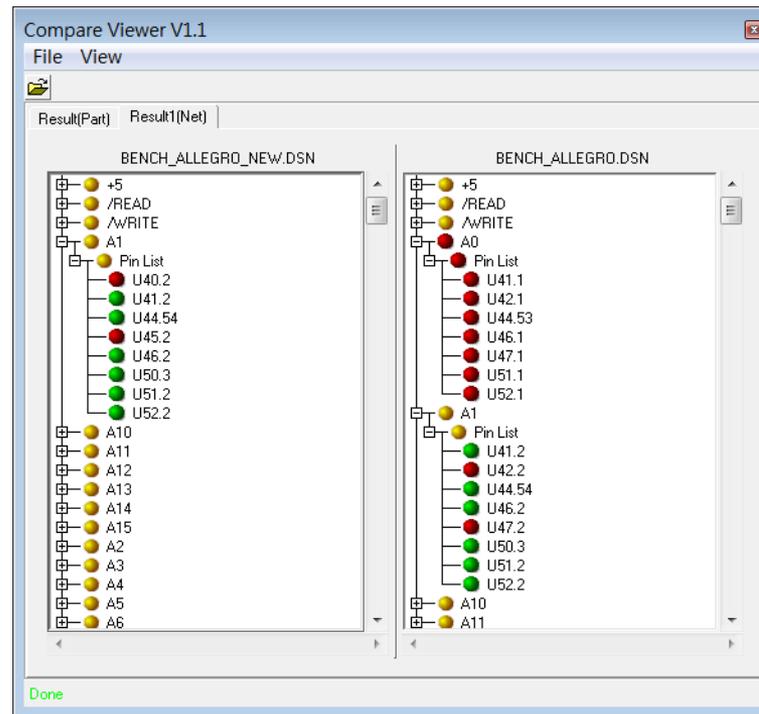
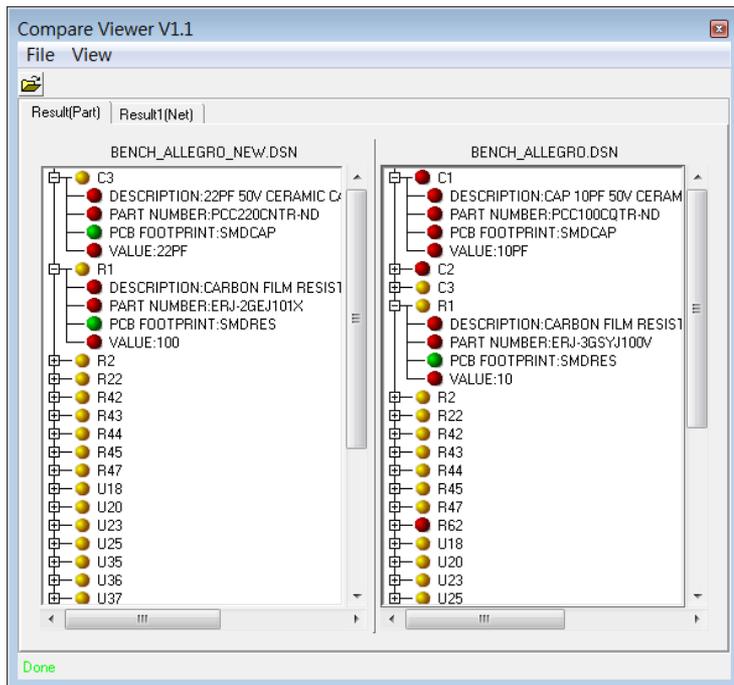
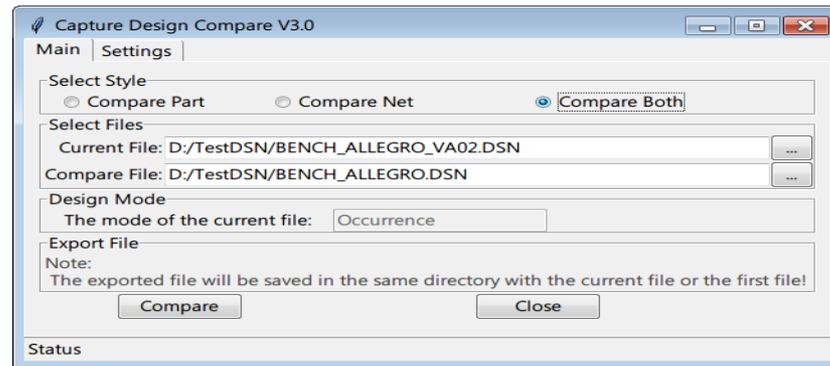


# Compare Capture Schematic Design

## [GraserWARE FrontEnd PACK] – Capture Design Compare

### Design Comparison

- By Part
- By Net
- Part and Net



# Part Information Check

## [GraserWARE FrontEnd PACK] – Part Utility Part Information Check

- Difference with CIS Database
- Part EOL or EOD
- Part Number was not found

The screenshot shows the 'Part Utility V1.2' application window. The main area is titled 'Parts Information' and contains a table with the following columns: St, Referenc, Part Number, Value, Description, Voltage, Tolerance, Source Package, PCB Footprint, Part Approve, Schematic Part, and Power. The table lists 21 parts, with part C4 highlighted in blue. A red rectangular box is drawn around the 'Part Approve' column, which contains the value 'EOL' for part C4. Below the table, there are buttons for 'Compare With DB' and '2nd Source Information', and a text area for 'Selected Part Compare With DB' which currently displays '<No data to display>'. At the bottom right, there are 'Load Dsn Data' and 'Check' buttons. The status bar at the bottom left reads '<Ctrl + Click> to locate the part in page'.

St	Referenc	Part Number	Value	Description	Voltage	Tolerance	Source Package	PCB Footprint	Part Approve	Schematic Part	Power
1	C1	PCC100CQTR-ND	10PF	CAP 10PF 50V CER	50V		SMALL CAP	smdcap	YES		
2	C2	PCC100CQTR-ND	10PF	CAP 10PF 50V CER	50V		SMALL CAP	smdcap	YES		
3	C3	PCC220CNTR-ND	22PF	22PF 50V CERAMIC	50V		SMALL CAP	smdcap	EOL		
4	C4	PCC220CNTR-ND	22PF	22PF 50V CERAMIC	50V		SMALL CAP	smdcap	EOL		
5	C5	ECE-V1HA100SP	10UF	CAP 10UF 50V VS	50V		CP		YES		
6	C6	ECG-C00B100R	10UF	CAP 10UF 6.3V CB	6.3V		CAP		YES		
7	C7	PCC151CGTR-ND	150PF	150PF 50V CERAM	50V		C	smdcap	EOD		
8	C8	PCC391BNTR-ND	390PF	390PF 50V CERAM	50V		CAPACITOR NON-P	smdcap	YES		
9	C9	PCC821CGTR-ND	820PF	820PF 50V CERAM	50V		CAP NP	smdcap			
10	C10	ECE-V1HA100SP	10UF	CAP 10UF 50V VS	50V		CP		YES		
11	C11	ECE-B1HGE0R1	0.1UF	CAP 50V .1UF NHE	50V		CAP	smdcap	NO		
12	C12	PCC151CGTR-ND	150PF	150PF 50V CERAM	50V		CAPACITOR NON-P	smdcap	EOD		
13	C13	PCC391BNTR-ND	390PF	390PF 50V CERAM	50V		CAPACITOR NON-P	smdcap	YES		
14	C14	PCC821CGTR-ND	820PF	820PF 50V CERAM	50V		CAP NP	smdcap			
15	C15	ECE-V1HA100SP	10UF	CAP 10UF 50V VS	50V		CP		YES		
16	C16	ECE-A50ZR1	0.1UF	.1UFD @ 50VDC PA	50V		CAP	smdcap	YES		
17	C17	PCC151CGTR-ND	150PF	150PF 50V CERAM	50V		CAPACITOR NON-P	smdcap	EOD		
18	C18	PCC391BNTR-ND	390PF	390PF 50V CERAM	50V		CAPACITOR NON-P	smdcap	YES		
19	C19	PCC821CGTR-ND	820PF	820PF 50V CERAM	50V		CAP NP	smdcap			
20	C20	PCC100CQTR-ND	10PF	CAP 10PF 50V CER	50V		SMALL CAP	smdcap	YES		
21	C21	PCC100CQTR-ND	10PF	CAP 10PF 50V CER	50V		SMALL CAP	smdcap	YES		

# Part Information Check

[GraserWARE FrontEnd PACK] – Part Utility

Generate BOM

— User define properties

— Generate Excel

— Skip NC Parts

The screenshot displays the GraserWARE Part Utility V1.5 interface. On the left, there are icons for a PCB, a magnifying glass, a gear, and a door with a green arrow. The main window is titled '2nd Part Utility V1.5' and contains an 'Export Options' dialog. The 'Template' is set to 'Graser'. Under 'All Properties', 'Manufacturer Part Number' is selected. Under 'Selected Properties', 'Item', 'Quantity', 'Part Number', 'Reference', 'Value', and 'PCB Footprint' are listed. The 'Skip NC Part(s)' checkbox is checked. The 'Export File Name' field is empty. A status bar at the bottom left indicates 'The application is processing second source information: 100%'. An Excel spreadsheet window titled '2nd\_NC2.xls [相容模式]' is overlaid on the right, showing a BOM table with columns for Item, Quantity, Part Number, Reference, Description, Manufacturer, Part, and Approve.

	A	B	C	D	E	F	G	H	I	J	K	L
1	Item	Quantity	Part Number	Reference	Description	Manufacturer	Part	Part	Approve			
2	10	1	20-000244	U39	IC, 74HC24	Fairchild Ser	MM74HC24	YES				
3	11		20-00091		IC, 74HC57	Fairchild Ser	MM74HC57	YES				
4	12		20-00133		IC, 74S133	Fairchild Ser	DM74S133N	YES				
5	13		20-003297		IC, 74ALS2	Fairchild Ser	MM74HC24	YES				
6	20	8	20-00042	U3,U6,U21	FIFO Status	Advanced M	7201	YES				
7	30	5	20-00062	U1,U2,U4,U	CMOS Static	Mosel Vitelic	MS6264L	YES				
8	40	1	20-00067	U12	SCSI Termir	Dallas Semic	DS2105	YES				
9	41		20-00094		High Perform	Advanced	MAM53C94	YES				
10	42		21-87201		Standard Hig	Texas Instru	PAL16L8A1	NO				
11	50	1	20-00091	U36	IC, 74HC57	Fairchild Ser	MM74HC57	YES				
12	60	1	20-00094	U72	High Perform	Advanced	MAM53C94	YES				
13	70	1	20-00133	U43	IC, 74S133	Fairchild Ser	DM74S133N	YES				
14	80	6	20-00141	U40,U41,U4	IC 8-CH DA	Toshiba	TD62081AF	YES				
15	90	3	20-00163	U63,U67,U6	IC, 74HC16	Fairchild Ser	MM74HC16	YES				
16	100	1	20-00165	U60	IC, 74HC16	Fairchild Ser	MM74HC16	YES				
17	110	2	20-00176	U65,U70	IC, RS485/R	National Sen	DS75176BN	YES				
18	120	1	20-003101	U44	24-Bit Digits	Motorola	DSP56001	YES				