

全新OrCAD 2015
SPB Seminar
不僅僅只有電路設計
The New OrCAD is NOT only the Circuit Design

Complete Design Environment 完整的設計環境

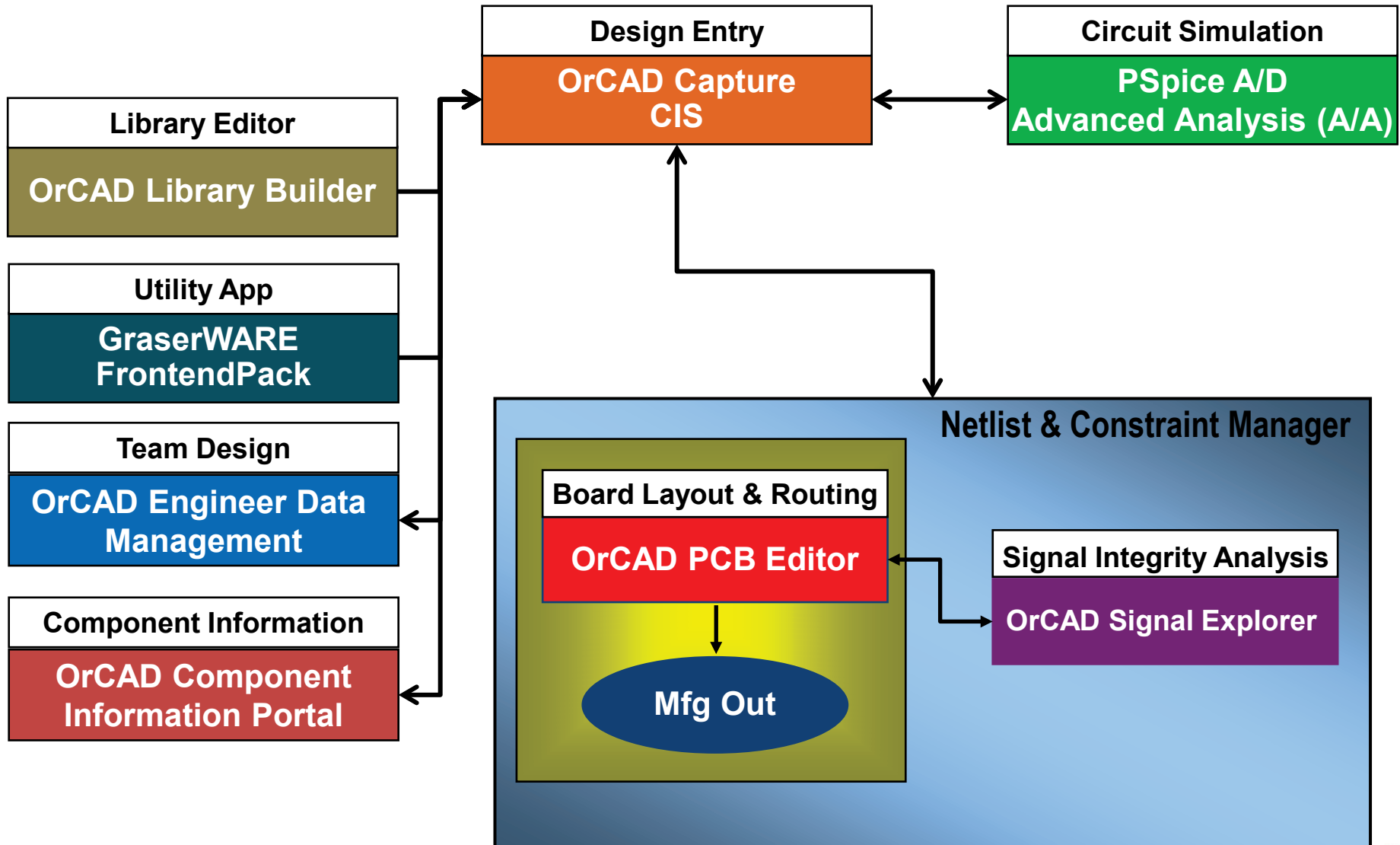
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25/Jun/2015

Graser®

cadence®
CHANNEL PARTNER

OrCAD PCB Design Flow – Overview



Topic

OrCAD Capture / CIS & GraserWARE FrontendPack

OrCAD Engineer Data Management

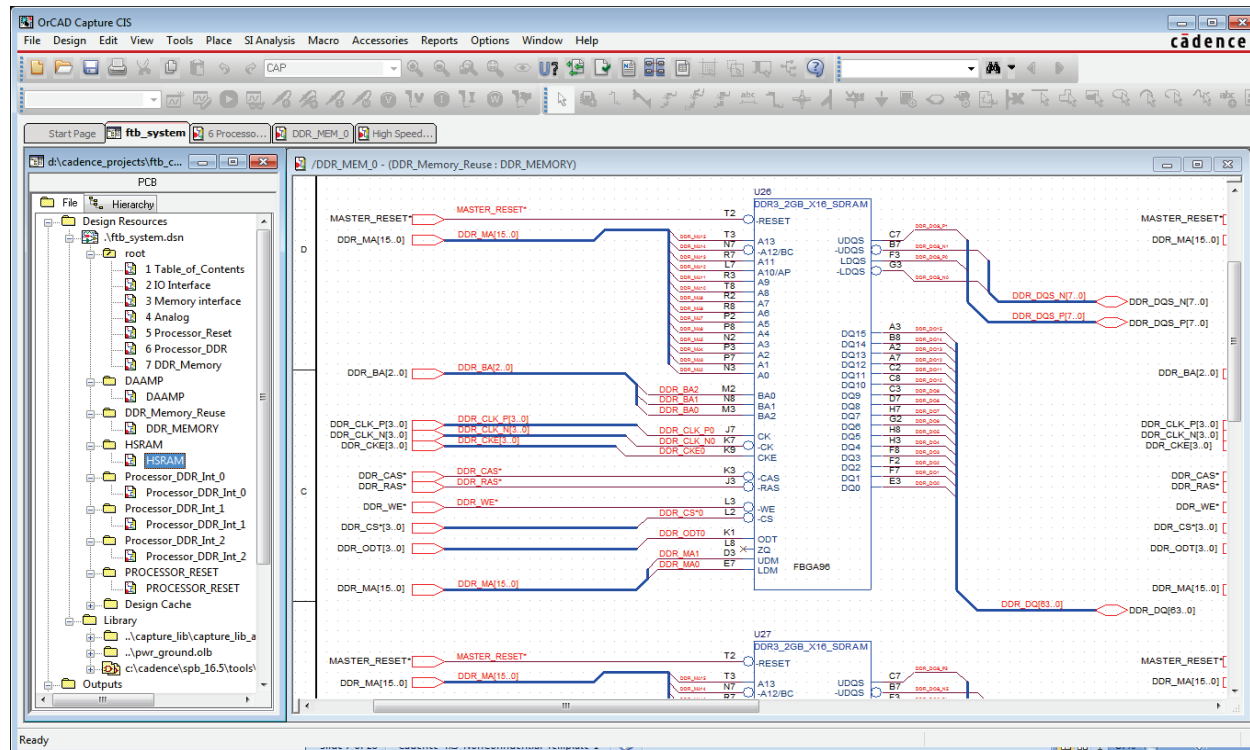
OrCAD Library Builder

OrCAD Component Information Portal

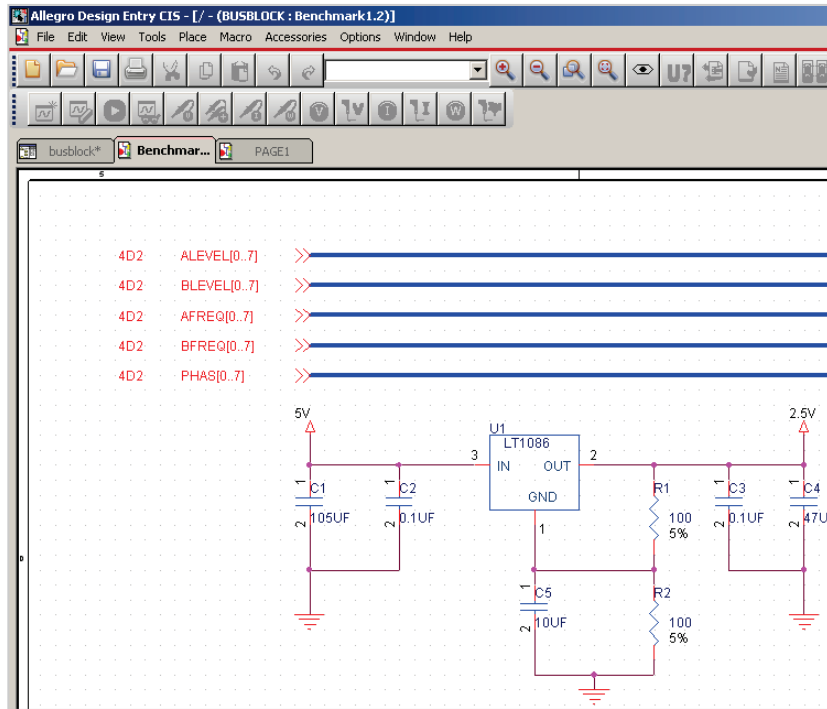


Schematic Design Entry - Capture

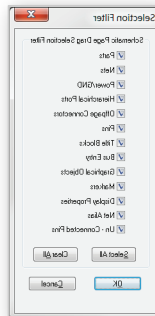
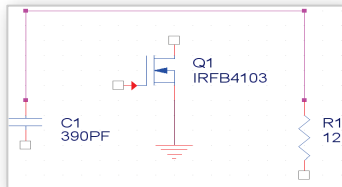
- Architected for personal or small design teams
- Focus on rapid netlist creation
 - Ease of use
 - Quick design turnaround



Schematic Design Entry - Capture



- Architected for ease of use
 - Standard “windows” commands
- Everything you expect for a modern schematic entry tool
 - Netlists, inter-sheet references, BOMS, DRC etc.
- Schematic Edit functions
 - Auto Wire
 - Selection Filter
 - 3D footprint viewer
 - Ole objects
 - Global navigate
 - Customizable and automated
 - File locking for team design
 - Diff Pair creation (for PCB Editor)
 - ...

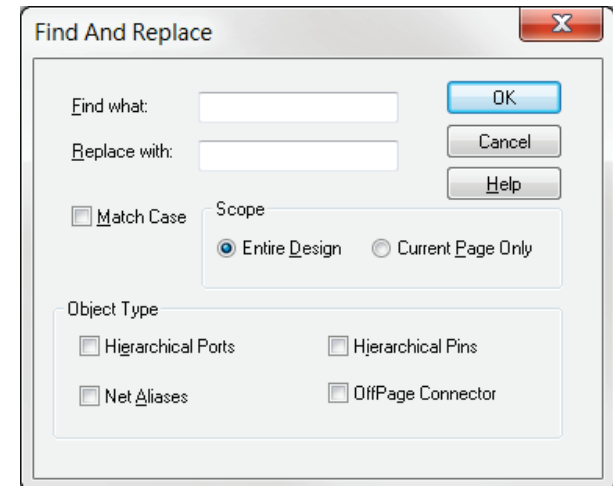
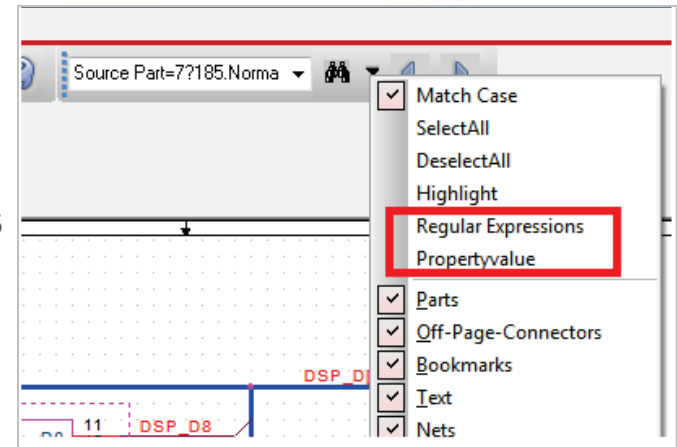


DIR	1	VCC	20
A1	2	G	19
A2	3	B1	18
A3	4	B2	17
A4	5	B3	16
A5	6	B4	15
A6	7	B5	14
A7	8	B6	13
A8	9	B7	12
GND	10	B8	11



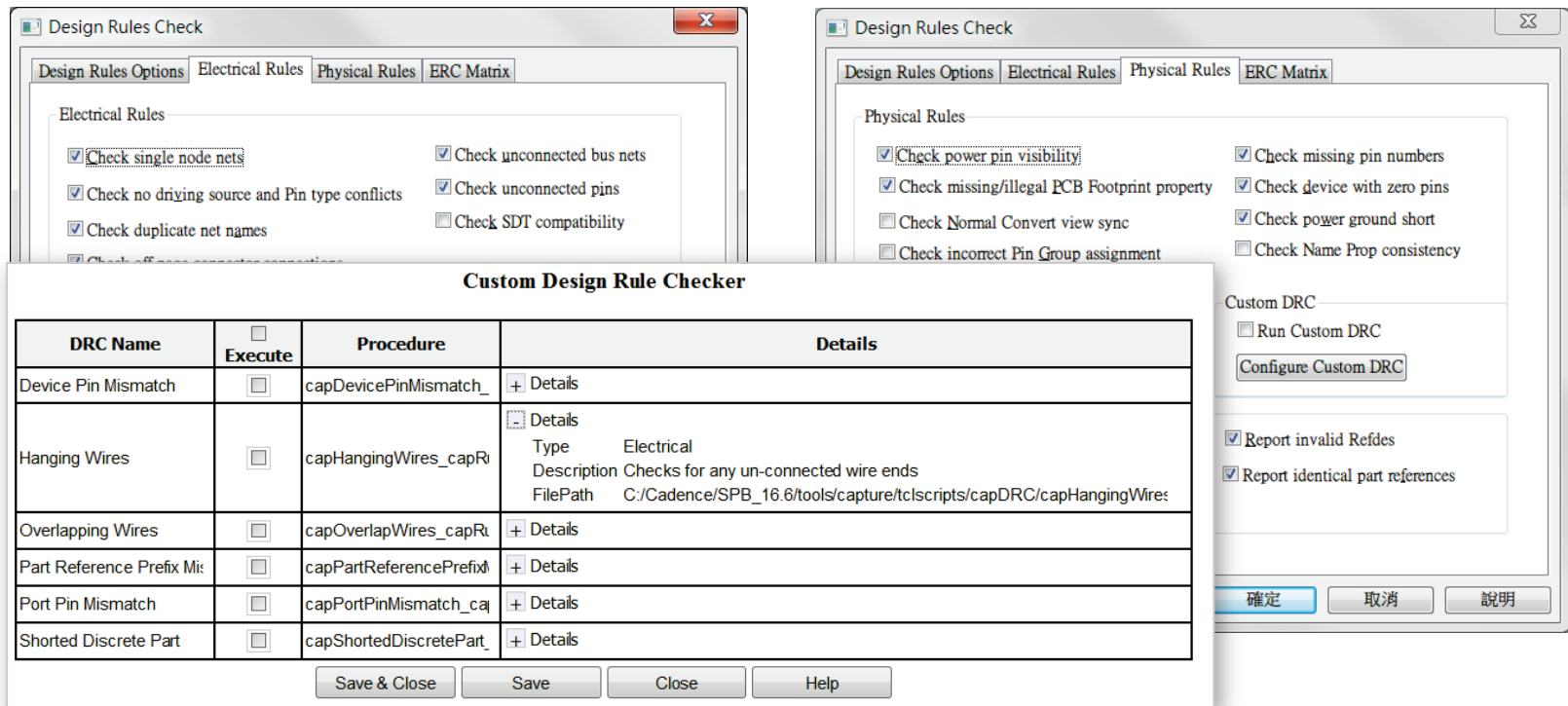
Productivity – Find & Replace

- Find Enhancements
 - Search for Property = specific Value
 - Use Regular Expressions for matching Values
 - Examples
 - PCB Footprint=dip2*
 - Part Reference=(C|R)[2-9] finds all parts with references starting with R or C followed by any number between 2 and 9
- Global Find and Replace support available for Off-page Connectors 、 Net Name 、 Hierarchical Port and Pin



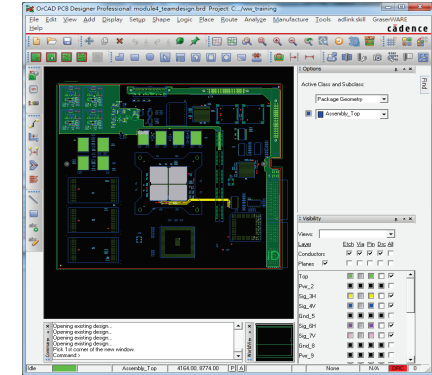
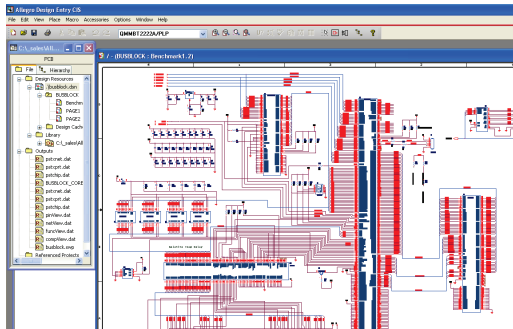
Design Rules Check

- Electrical Rules
- Physical Rules
- Custom DRC on the Rules tab

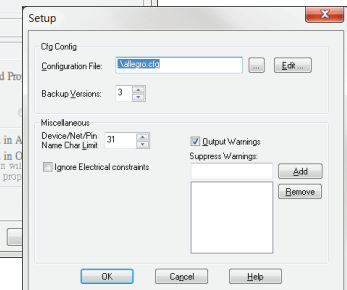
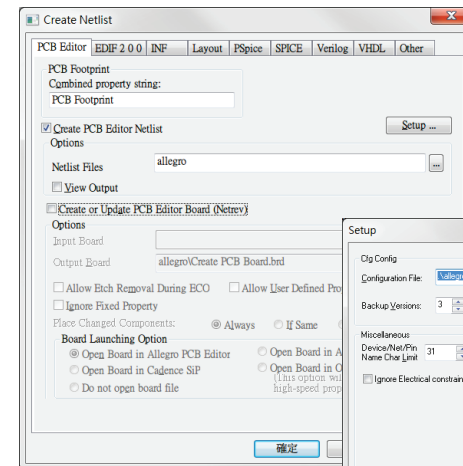


Front to Back Flow

- Create Netlist on OrCAD Capture/CIS



- Creates PCB Editor directory
- Custom control
- Load netlist into PCB Editor and launch from Capture/CIS



Bill Of Materials

- BOM_IGNORE=TRUE :
 - Remove parts from BOM

Bill of Materials

Scope

☒ Process entire design

☐ Process selection

Mode

☒ Use instances (Preferred)

☐ Use occurrences

Line Item Definition

Header:

Item\Quantity\Reference\Part

Combined property string:

{Item}\{Quantity}\{Reference}\{Value}

☐ Place each part entry on a separate line ☒ Open in Excel

Include File

☐ Merge an include file with report

Combined property string:

{Item}\{Quantity}\{Reference}\{Value}

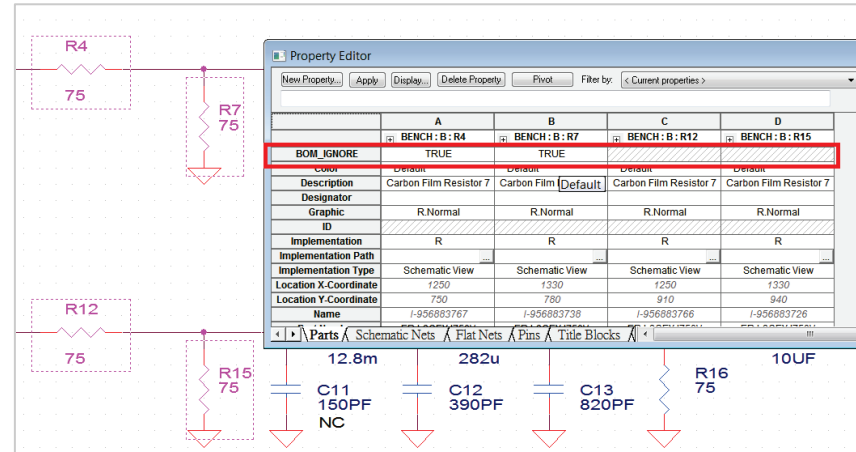
Include file:

D:\TESTDSN\BENCH_ALLEGRO.INC

Report

Report File: ☐ View Output

D:\TESTDSN\BENCH_ALLEGRO.BOM



Bill Of Materials Page1			
Item	Quantity	Reference	Part
1	9	C101,C102,C201,	22PF
2	22	C103,C104,C106,	10UF
3	90	C105,C205,C207,	0.1UF
4	3	C204,C210,C215	820PF
5	2	C208,C212	150PF
6	2	C209,C213	390PF
7	7	C301,C302,C303,	10PF
8	2	C901,C902	75PF
9	2	C903,C904	82PF
10	2	C905,C906	68PF
11	1	C907	62PF

OrCAD Capture CIS

The screenshot shows the OrCAD Capture CIS software interface. The main window is titled "OrCAD Capture CIS - [CIS Explorer - Place Database Part]". The interface includes a menu bar (Update, Edit, View, Go, Window, Help), a toolbar, and a status bar. The "CIS Explorer" panel is active, showing a "Select a Query:" dropdown and a "Query" table. A "Parametric Part Search" annotation points to the "Query" table. The "Query" table has columns: Property, Compare, and Value. It contains three rows of search criteria.

Property	Compare	Value
1 Part Type	=	Ceramic
2 Value	>	10PF
3 MANUFACTURER	Contains	Panasonic

A "Symbol Preview" annotation points to the "Symbol Preview" panel, which displays a capacitor symbol and the text "C? <Value>". The "Footprint Viewer" panel on the right shows the footprint details for a capacitor, including Type, Location, X Length, Y Length, Class, and Subclass. A "PCB Preview" annotation points to the "PCB Preview" panel, which displays a 3D model of the capacitor footprint.

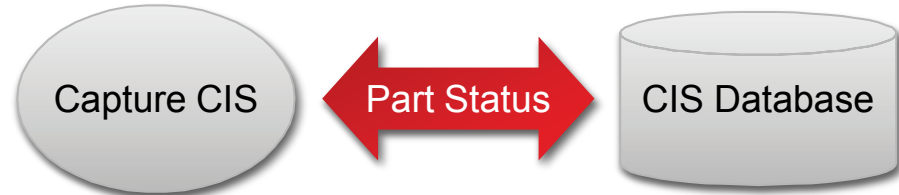
The "Easy Filtering And Part Selection" annotation points to the "Table" panel, which displays a list of parts with columns: Table, PART_NUMBER, DESCRIPTION, Part Type, Schematic Part, Value, VOLTAGE, MANUFACTURER, MPN, PCB Footprint, and DATA_SHEET. The table contains 10 rows of capacitor parts.

Table	PART_NUMBER	DESCRIPTION	Part Type	Schematic Part	Value	VOLTAGE	MANUFACTURER	MPN	PCB Footprint	DATA_SHEET	
3	Capacitor	PCC331BVTR-ND	CAP 330PF 50	Ceramic	discreteCAPACITOR NON-PO	330PF	50V	Panasonic - SCD	ECU-V1H331KBV	CAP0603	capterm.pdf
4	Capacitor	PCC331BNTR-ND	330PF 50V CE	Ceramic	discreteCAPACITOR NON-PO	330PF	50V	Panasonic - SCD	ECU-V1H331KBN	CAP0805	capterm.pdf
5	Capacitor	PCC330CQTR-ND	CAP 33PF 50V	Ceramic	discreteCAPACITOR NON-PO	33PF	50V	Panasonic - SCD	ECU-E1H330JCQ	CAP0402	capterm.pdf
6	Capacitor	PCC330CGTR-ND	33PF 50V CER	Ceramic	discreteCAPACITOR NON-PO	33PF	50V	Panasonic - SCD	ECU-V1H330JCG	CAP0805	capterm.pdf
7	Capacitor	PCC332BNTR-ND	.0033UF 50V C	Ceramic	discreteCAPACITOR NON-PO	0.0033U	50V	Panasonic - SCD	ECU-V1H332KBN	CAP0805	capterm.pdf
8	Capacitor	PCC300CQTR-ND	CAP 30PF 50V	Ceramic	discreteCAPACITOR NON-PO	30PF	50V	Panasonic - SCD	ECU-E1H300JCQ	CAP0402	capterm.pdf
9	Capacitor	PCC332BVTR-ND	CAP 3300PF 5	Ceramic	discreteCAPACITOR NON-PO	3300PF	50V	Panasonic - SCD	ECU-V1H332KBV	CAP0603	capterm.pdf
10	Capacitor	PCC390CGTR-ND	39PF 50V CER	Ceramic	discreteCAPACITOR NON-PO	39PF	50V	Panasonic - SCD	ECU-V1H390JCG	CAP0805	capterm.pdf

The status bar at the bottom shows "Ready" and "Explorer".

CIS Part Manager

- Design All Part List
- Verify Part Information
- Define Variants
- Link to Page

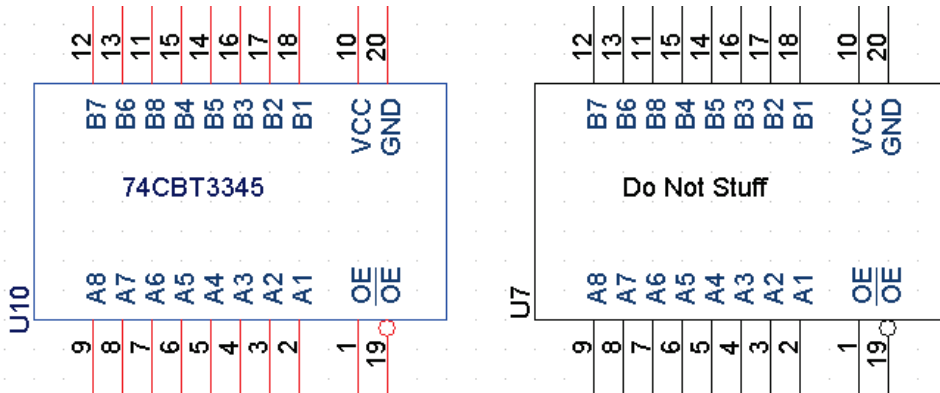


The screenshot displays the CIS Part Manager interface. On the left, a schematic diagram shows a circuit with components like resistors (R101, R102, R103, R104), capacitors (C101, C102), and a crystal (Y101). On the right, a table lists the parts with columns for Schematic, Part Reference, Value, Part Number, Part Status, Source Library, and Source Part.

#	Schematic...	Part Refe...	Value	Part Num...	Part Status	Source Library	Source P
288	BENCH : A	U104	62256	20-00333	Approved: ...	C:\WINDOWS\TEMP\XLAT...	43256
289	BENCH : A	U106	MC145407P	20-003122	Approved: ...	C:\WINDOWS\TEMP\XLAT...	MC145407P
290	BENCH : A	P105	HEADER10	60-00041	Approved: ...	C:\WINDOWS\TEMP\XLAT...	HEADER 10
291	BENCH : A	Y101	3.6864MHz	20-00445	Approved: ...	C:\WINDOWS\TEMP\XLAT...	CRYSTAL
292	BENCH : A	U101	MC68HC11F	20-00445	Approved: ...	C:\WINDOWS\TEMP\XLAT...	68HC11
	BENCH : A	S101	BERG2	70-00000	Approved: ...	C:\WINDOWS\TEMP\XLAT...	SW PUSHBU
	BENCH : A	C103	10UF	EC-00000	Approved: ...	C:\WINDOWS\TEMP\XLAT...	CAPACITOR
	BENCH : A	TP101	TESTPOINT	60-00000	Approved: ...	C:\WINDOWS\TEMP\XLAT...	TP-105-01-4
	BENCH : A	C104	10UF	EC-00000	Approved: ...	C:\WINDOWS\TEMP\XLAT...	CAPACITOR
	BENCH : A	C107	10UF	EC-00000	Approved: ...	C:\WINDOWS\TEMP\XLAT...	CAPACITOR
	BENCH : A	P101	DIN96	70-00052	Approved: ...	C:\WINDOWS\TEMP\XLAT...	DIN96
	BENCH : B	R201	196K	AAA-000123	Approved: ...	C:\CADENCE\SPB_16.6\TO...	R
	BENCH : F	C790	10UF	ECG-C0JB100R	Approved: ...	D:\TESTDSN\BENCH_ALLE...	CAPACITOR
	BENCH : BENCH	C301	10PF	PCC100CQTR...	Approved: ...	D:\TESTDSN\BENCH_ALLE...	SMALL CAP
	BENCH : BENCH	C304	10PF	PCC100CQTR...	Approved: ...	D:\TESTDSN\BENCH_ALLE...	SMALL CAP
	BENCH : BENCH	C302	10PF	PCC100CQTR...	Approved: ...	D:\TESTDSN\BENCH_ALLE...	SMALL CAP
	BENCH : BENCH	C303	10PF	PCC100CQTR...	Approved: ...	D:\TESTDSN\BENCH_ALLE...	SMALL CAP
	BENCH : B	C201	22PF	PCC220CNTR...	Approved: ...	D:\TESTDSN\BENCH_ALLE...	SMALL CAP
	BENCH : B	C202	22PF	PCC220CNTR...	Approved: ...	D:\TESTDSN\BENCH_ALLE...	SMALL CAP
	BENCH : G	C801	10PF	PCC100CQTR...	Approved: ...	D:\TESTDSN\BENCH_ALLE...	SMALL CAP
	BENCH : G	C802	10PF	PCC100CQTR...	Approved: ...	D:\TESTDSN\BENCH_ALLE...	SMALL CAP
	BENCH : A	C105	0.1UF	A104Z15Z5U...	Approved: ...	D:\TESTDSN\BENCH_ALLE...	SMALL CAP
	BENCH : BENCH	U323	10PF	PCC100CQTR...	Approved: ...	D:\TESTDSN\BENCH_ALLE...	SMALL CAP
	BENCH : D	U503	22V10	TMP-1	Temporary...	C:\WINDOWS\TEMP\XLAT...	22V10A
	BENCH : D	U509	22V10	TMP-1	Temporary...	C:\WINDOWS\TEMP\XLAT...	22V10A
	BENCH : C	U410	22V10	TMP-1	Temporary...	C:\WINDOWS\TEMP\XLAT...	22V10A
	BENCH : C	U411	22V10	TMP-1	Temporary...	C:\WINDOWS\TEMP\XLAT...	22V10A

CLS Variants

Part Manager - BUSBLOCK.DSN:1					
	#		Part Reference	Part Number	Value
C:_SALES\ALLEGRO_DE_CIS\C Groups Common caps caps2 BOM Variants Var1 var2	1	✗	C34	Do Not Stuff	Do Not Stuff
	2	✗	C20	Do Not Stuff	Do Not Stuff
	3	✗	C32	Do Not Stuff	Do Not Stuff
	4	✗	U7	Do Not Stuff	Do Not Stuff
	5	+	C?	CDN0004-002	0.1UF
	6	~	R18	CDN0006-003	10K
	7	~	R11	CDN0006-003	10K



Schematic View

- Variants allow a single Design to support multiple stuffing options on a PCB
- Variants easily created using Part Manager
- BOM utility creates baseline and Variant BOMS
- Variant view of schematic for documentation



CIS BOM

Standard Bill of Materials

Template Name
Eng Bill Of Materials

Report Properties
Select Properties:
OrgAddr1
OrgAddr2
OrgAddr3
OrgName
Page Count
Page Modify Date

Add ->
<- Remove

Delete User Property

Output Format:
* Quantity
PART_NUMBER
Part Reference
DESCRIPTION
MANUFACTURER
MANUFACTURER_PAF
PRICE

Keyed
Allow Saving Title Block Properties
List Relational Data Fields

Part Reference Options
Standard
Standard- separate line per part
Compressed
List Separator: Comma(,)
Exclude Prefixes: TP

Output Mechanical Part Data
Mechanical parts only
Both mechanical parts and assemblies

Relational Data Displayed
Horizontal Output
Max Rows 1

Scope
Process Entire Design
Process Selection

Export BOM report to Excel
Merge BOM Reports

Variants
Variant "Not Stuffed" Qty 0 Displayed
<Core Design>
Variation #1
Variation #2

OK Cancel Help

- Extracts information from the design and the database.
- Formatting options
- Re-usable BOM templates
- Easily re-arrange BOM data
- Baseline and Variant BOMS



GraserWARE FrontendPack Export/Import Properties

- Export Design Properties to Excel

	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:U10	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-8GEYJ103	5%	Carbon Film Resistor 10K OHM 1/8W 5% 1206 SMD			



GraserWARE FrontendPack Export/Import Properties

- Import Part Properties from Excel to Design

The screenshot displays the GraserWARE FrontendPack interface. On the left, the 'Import & Export Property V1.0' dialog is open, showing the 'Import' tab. The 'Import File' field contains 'D:\TestDSN\com_pare\Export_Prop.xls'. Below this, there are checkboxes for 'Get mapping sheet from import file', 'Part mapping sheet', 'Source d...', 'PartPin mapping sheet', 'Source d...', 'FlatNet mapping sheet', and 'Source d...'. A 'GraserWARE' logo is visible at the bottom left of the dialog.

In the center, a circuit schematic is shown. It features two integrated circuits: 'U9' (74ALS138) and 'U11' (22V10). U9 is connected to various signals including DSP_A0, DSP_A1, DSP_A2, DSP_IO, DSP_A11, DSP_A12, and DSP_A13. U11 is connected to signals like CLKOUT, PMS, DMS, BMS, DSP_RD, DSP_WR, BG, DSP_A13, DSP_A14, DSP_A15, PC_RESET, and DSP_A11. The schematic also shows other components like DMS, PMS, BMS, DSP_IO, DSP_A12, PC_RESET, and DSP_A13.

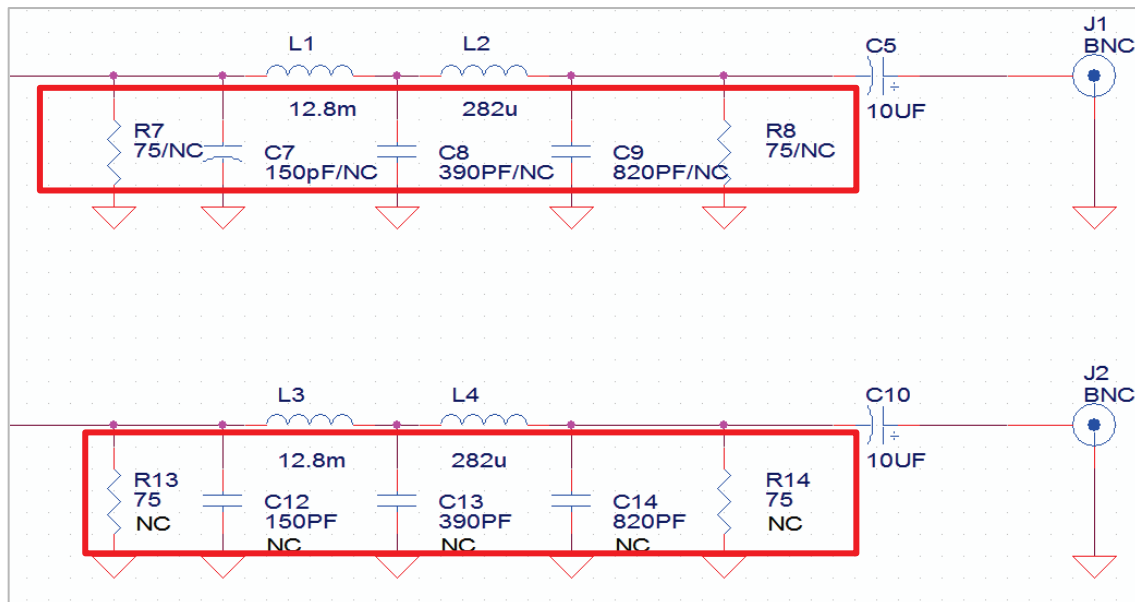
On the right, the 'Property Editor' is open, displaying a table of properties for three components: BENCH : A : D1, BENCH : A : U9, and BENCH : A : U11. The table includes columns for Tag, Color, Description, Designator, Graphic, ID, Implementation, Implementation Path, Implementation Type, Location X-Coordinate, Location Y-Coordinate, Name, Part Number, Part Reference, PCB Footprint, Power Pins Visible, Primitive, PSpice, Rating, Reference, Source Library, Source Package, Source Part, Tolerance, and Value.

	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	L.956883893	L.956883898	L.956883892
Part Number	40-00017	20-00045	20-00033
Part Reference			
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:\WINDOWS\IT	C:\WINDOWS\IT	C:\WINDOWS\IT
Source Package	LED1	74ALS138	22V10
Source Part	LED1.Normal	74ALS138.Normal	22V10.Normal
Tolerance			
Value	RA-LED	74ALS138	22V10

GraserWARE FrontendPack

NC-Part Setting

- Design component sets are not present
 - Manually add strings in Value
 - Add a new field in the part property and then add a string to display on the page



	A	B
	BENCH : B : C14	BENCH : B : R14
Tag		
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	139917	I:95683727
Part Number	PCC821CGTR-ND	ERJ-8GEVJ750V
Part Reference	C14	R14
PCB Footprint	smdcap	smdres
Power		1/8W
Power Pins Visible	☐	☐
Present	NC	NC
Primitive	DEFAULT	YES
PSpice	C	R
Reference	C14	R14
Source Library	D:\ORCAD\WIM\9\CAPTURE\LIBRARY\	C:\WINDOWS\TEMP\X\LATTEMP.OLB
Source Package	CAP NP	R



GraserWARE FrontendPack

NC-Part Setting

- Simply set up part status
- Auto Parts, increase Value string or BOM_IGNORE property and change part color

The screenshot displays the GraserWARE FrontendPack NC-Part V3.0 interface. The main window shows a circuit diagram with components like capacitors (C7, C8, C9), inductors (L1, L2, L3, L5), and resistors (R7, R8). A settings dialog is open, showing options to 'Add NC string to property' and 'Type of NC string'. A 'Viewer' window is also open, displaying a table of components with columns for NC, Reference, Description, Name, NC_Part, Part Number, PCB Footprint, Value, and Voltage.

NC	Reference	Description	Name	NC_Part	Part Number	PCB Footprint	Value	Voltage
☒	C1	CAP 10PF 50V CERAMIC...	INS338019		PCC100CQTR-ND	smdcap	10PF/NC	50V
☒	C2	CAP 10PF 50V CERAMIC...	INS338061		PCC100CQTR-ND	smdcap	10PF/NC	50V
☒	C3	22PF 50V CERAMIC CAP...	INS422065		PCC220CNTR-ND	smdcap	22PF/NC	50V
☒	C4	22PF 50V CERAMIC CAP...	INS422179		PCC220CNTR-ND	smdcap	22PF/NC	50V
☒	C5	CAP 10UF 50V VS ELEC...	INS421639		ECE-V1HA100SP		10UF/NC	50V
☐	C6	CAP 10UF 6.3V CB SERI...	INS421365		ECG-C0JB100R		10UF	6.3V
☒	C7	150PF 50V CERAMIC CA...	INS421129		PCC151CGTR-ND	smdcap	150PF/NC	50V
☒	C8	390PF 50V CERAMIC CA...	INS421387		PCC391BNTR-ND	smdcap	390PF/NC	50V
☒	C9	820PF 50V CERAMIC CA...	INS421323		PCC821CGTR-ND	smdcap	820PF/NC	50V
☐	C10	CAP 10UF 50V VS ELEC...	INS421681		ECE-V1HA100SP		10UF	50V
☐	C11	CAP 50V .1UF NHE AXI...	INS421493		ECE-B1HGE0R1	smdcap	0.1UF	50V

GraserWARE FrontendPack

NC-Part BOM

NC-Part V3.0

BOM General

BOM Options:

Template File: Graser

Properties Select Properties:

Exp Properties:

	A	B	C	D	E	F	G	H	I	J	K	L	M
1	Standard Part List												
2	Item	Quantity	Reference Part Num	Pcb Footp	Value								
3	1	6	C6,C121,CECG-C0JB100R		10UF								
4	2	3	C10,C123,ECE-V1HA100SP		10UF								
5	3	13	C11,C39,CECE-B1H smdcap		0-11UF								
6	4	4	C20,C21,CPC100C smdcap										
7	5	7	C24,C25,CPC220C smdcap		2								
8	6	10	C29,C41,CECE-A1H smdcap		0								
9	7	4	C32,C36,CECE-A2AGE100		1								
10	8	1	C33 ECE-V1EA100SR		1								
11	9	1	C34 A104Z15Z5UFVFW		0								
12	10	7	C35,C116,ECE-V1HV100SP		1								
13	11	12	C37,C40,CECE-A1H smdcap		0								
14	NC-Part List												
15	1	2	C1,C2 PCC100C smdcap		1								
16	2	2	C3,C4 PCC220C smdcap		2								
17	3	2	C5,C15 ECE-V1HA100SP		1								
18	4	3	C7,C12,C PCC151C smdcap		1								
19	5	3	C8,C13,C PCC391B smdcap		3								
20	6	3	C9,C14,C PCC821C smdcap		8								
21													

<< The application loaded design

2ND_SOURCE_PART_OK

BOM Options:

Template File: Graser

Properties Select Properties:

Exp Properties:

Item Quantity 2nd Source Reference Part Number Pcb Footprint Value

ICA_MFR_NAME ICA_PARTNUM ID

☐ Skip NC Part(s)

Exclude Reference Prefix: (Seperate with space)

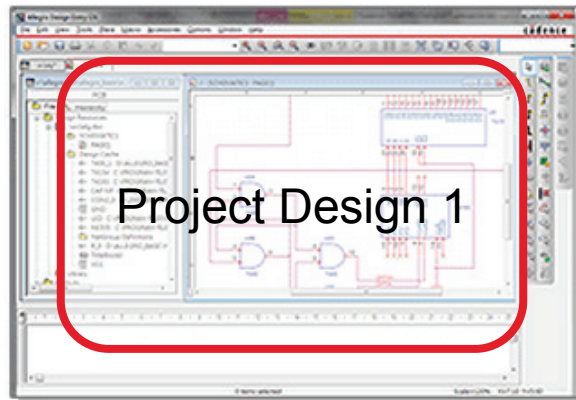
BOM File: D:/TestDSN/Graser_App/2nd_source_part/2ND_SOURCE_PART_OK.csv

☒ Open bom with excel after exporting

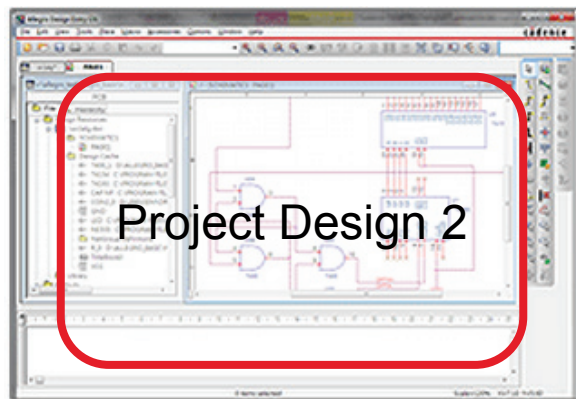
General BOM

GraserWARE FrontendPack Design Compare

- Design version 1 and version 2
How do you know which part or
Net-list is different?

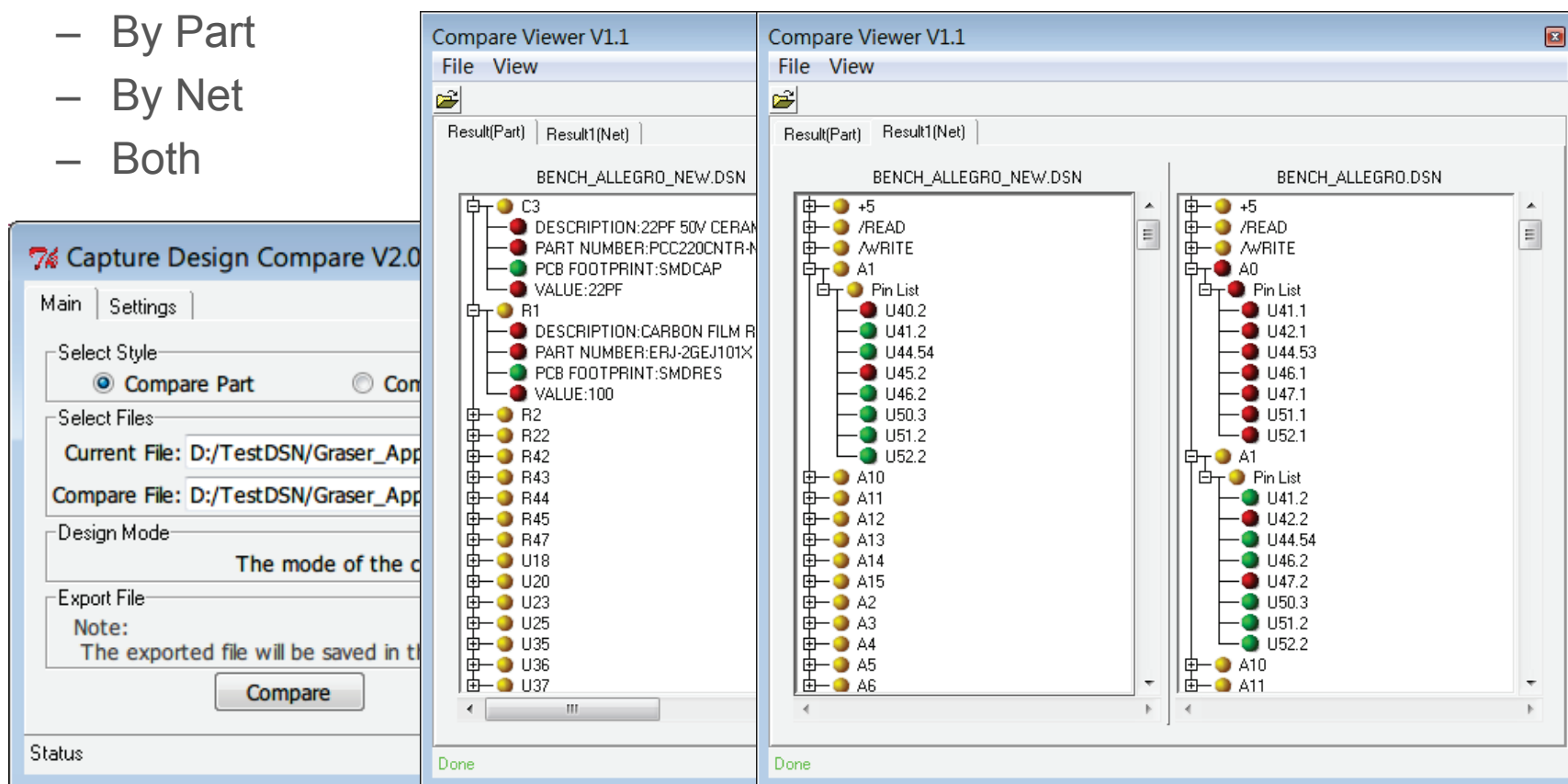


Difference



GraserWARE FrontendPack Design Compare

- Design Compare
 - By Part
 - By Net
 - Both



OrCAD Engineer Data Management



Administrative Control

- The ability to manage projects and project access for design teams
 - Provides ability to control project access and users roles
 - Control user rights

The screenshot shows the 'Admin' tab of the Engineering Data Management (EDM) application. It features three configuration panels: 'Revision', 'Project Status', and 'Page Status'. Each panel has a 'Pick List' or 'User Editable' interaction mode and a list of values to choose from. The 'Revision' panel shows a list of revisions (REV1.0 to REV2.1) with 'REV1.0' selected as the default. The 'Project Status' panel shows a list of statuses (Approved, Frozen, New, Work In Progress). The 'Page Status' panel also shows a list of statuses (Approved, Frozen, New, Work In Progress). Buttons for 'Add', 'Save', 'Cancel', and 'Remove' are visible.

The screenshot shows the 'Users' tab of the Engineering Data Management (EDM) application. It displays a table of users with columns for 'User', 'Email', and 'Group'. A 'Refresh' button is located to the right of the table.

User	Email	Group
☒ ☐ addi	addi@graser.com.tw	Administrators
☒ ☐ Mark	mark@graser.com.tw	
☒ ☐ Test	addi@graser.com.tw	Project Leaders
☒ ☐ USER	addi@graser.com.tw	Administrators



Project Leader Control

- The ability to manage projects and project access for design teams
 - Create, edit, manage projects
 - Specific pages
 - Setup group
 - Provides ability to control project access and users roles
 - Easily assign pages to users
 - Control user rights
 - Edit
 - View

Projects > NewDesign_B (Flat)_REV2.0

	Group	Page Name	Status	Users	Locked By	Date Locked
aaa						
		Clock	Work In Progress			
		CPU	Work In Progress			
Memory						
	Memory	Memory-1	Work In Progress			
	Memory	Memory-2	Work In Progress			

The 'New Page' dialog box is shown with the following fields and options:

- Page Name:** Micro Section *
- Schematic:** P01/DDXO-PROxx_Top_Blkg_Diagram (dropdown)
- Status:** In Work (dropdown) *
- Assigned Users:** NatasiaR x, BruceB x, PeterP x
- Buttons:** Create, Cancel

Project Leader Management

- The ability to manage and track
 - Dashboard with real-time updates
 - Full revision history
 - Quick project access inside Capture

	Project Name	Project Type	Revision	Status	Project Users	Project Leaders	Freeze Date	Repository Name
-	Bench (Flat)							
   	Bench	Flat	REV1.0	Wrok In Progress	addi, Mark	addi		Location
-	Library1 (Library)							
   	Library1	Library	REV1.0	Approved	addi, Mark	addi		Library
-	Library2 (Library)							
   	Library2	Library	REV1.0	New	addi, Mark	addi		Library
-	New_prj (Hierarchical)							
   	New_prj	Hierarchical	REV1.1	Wrok In Progress	addi, Mark, USER	addi		Location



	Project Name	Project Type	Revision	Status	Project Users	Project Leaders
-	Bench (Flat)					
 	Bench		REV1.0	Wrok In Progress	addi x Mark x	addi x

OrCAD EDM Design Data Repository

Project A

Project B

Project C

WIP Data

Read Only Access

Team Design



Engineer A
Working on their own design



Reviewer
Downloads "Read Only" Version of Project B

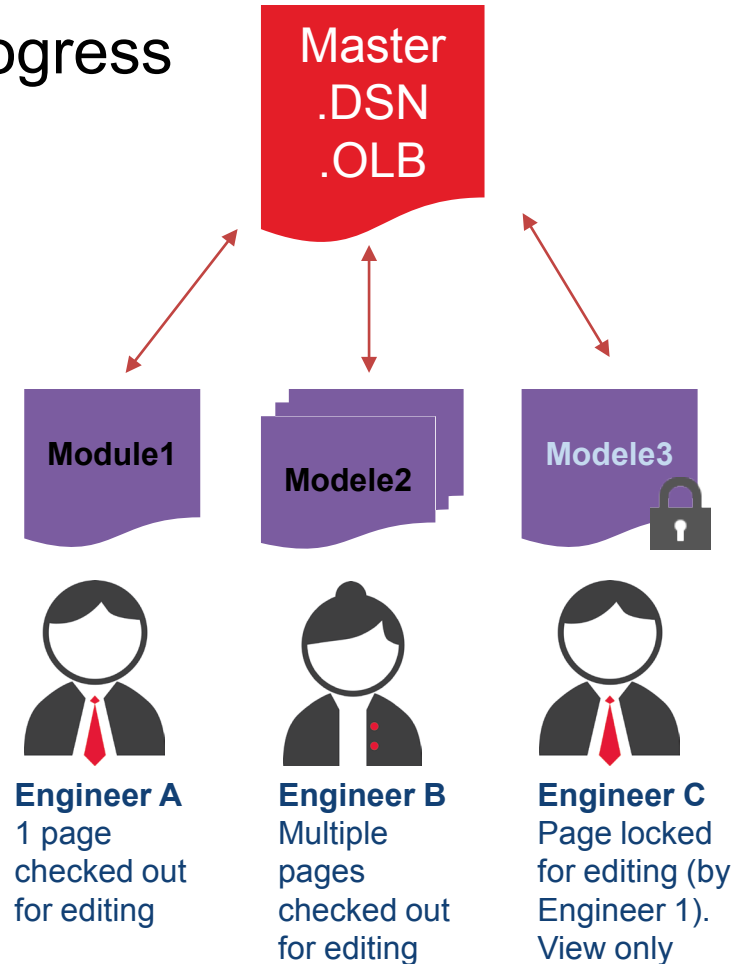


Engineering Team
Working Collaboratively on a single project

Page-level Management

- The ability to manage and track progress
 - Dashboard with real-time updates
 - Quick page(s) access inside Capture

	Group	Page Name	Status	Users
CPU				
☒ ☐	CPU	CPU-1	Work In Progress	addi
☒ ☐	CPU	CPU-2	Work In Progress	addi
☒ ☐	CPU	CPU-3	Work In Progress	addi
☒ ☐	CPU	CPU-4	Work In Progress	addi
☒ ☐	CPU	CPU-5	Work In Progress	addi
Memory				
☒ ☐	Memory	Memory-1	Work In Progress	addi, Mark
☒ ☐	Memory	Memory-2	Work In Progress	addi, Mark



User Design Edit - Download

- The ability to manage and track progress
 - Lock for edit
 - Download new or Update design

[Projects](#) > [NewProject_C \(Flat\). REV1.0](#)

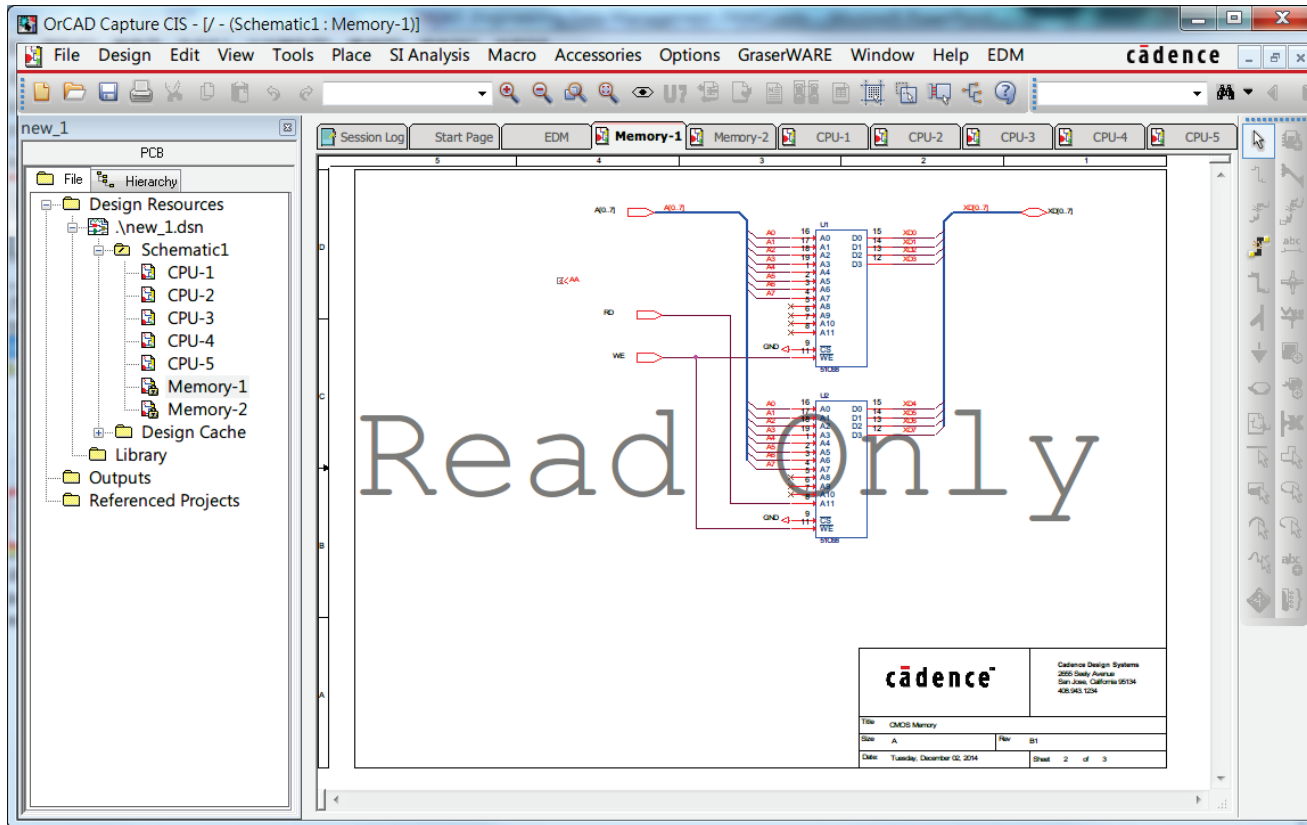
Project Assigned Users: addi, Mark

	Page Name ^	Status	Assigned Users	Locked	Date Locked	 Lock for Edit	 Download	History
	CPU							
	CPU-1	Work In Progress	addi	addi	2014-12-02 01:49:55.697	☐	☐	
	CPU-2	Work In Progress	addi	addi	2014-12-02 01:49:55.697	☐	☐	
	CPU-3	Work In Progress	addi	addi	2014-12-02 01:49:55.697	☐	☐	
	CPU-4	Work In Progress	addi	addi	2014-12-02 01:49:55.697	☐	☐	
	CPU-5	Work In Progress	addi	addi	2014-12-02 01:49:55.697	☐	☐	
	Memory							
	Memory-1	Work In Progress	addi, Mark			☐	☐	
	Memory-2	Work In Progress	addi, Mark			☐	☐	



User Design Edit

- The ability to manage and track progress
 - Update design
 - Lock page without selection



Page History

- Full audit trail is maintained
 - Why/What
 - Who
 - When
- Real-time status
 - Individual project status
 - All project progress
 - User tasks / progress

Projects > Bench (Flat)_REV1.0

Project Assigned Users: addi, Mark

	Page Name ^	Status	Assigned Users	Locked	Date Locked	Lock for Edit	Download	History
-	Bench							
	A	Work In Progress	addi, Mark			☐	☐	
	B	Work In Progress	addi, Mark			☐	☐	
	BENCH	Work In Progress	addi, Mark			☐	☐	
	C	Work In Progress	addi, Mark			☐	☐	
	D	Work In Progress	addi, Mark			☐	☐	
	E	Work In Progress	addi, Mark			☐	☐	
	F	Work In Progress	addi, Mark			☐	☐	
	PAGE1	Work In Progress	addi, Mark			☐	☐	

Projects > Bench_REV1.0 > PAGE1 - History

Date	Action	Comments	Status	Get Copy
2014-11-25 16:01:24.473	addi upload and unlock	add new part and add a net on u5	Work In Progress	
2014-11-25 15:59:02.823	addi download with lock for edit	Page Downloaded	Work In Progress	
2014-11-25 15:55:57.943		Page Imported	Work In Progress	



Design Edit - Upload

- The ability to manage and track progress
 - Select Upload to server page
 - Comments type and page status

Projects > [NewProject_C \(Flat\). REV1.0](#)

Project Assigned Users: addi, Mark

	Page Name	Status	Assigned Users	Locked	Date Locked	History
CPU						
	CPU-1	Work In Progress	addi	addi	2014-12-02 01:49:55.697	
	CPU-2	Work In Progress	addi	addi	2014-12-02 01:49:55.697	
	CPU-3	Work In Progress	addi	addi	2014-12-02 01:49:55.697	
	CPU-4	Work In Progress	addi	addi	2014-12-02 01:49:55.697	
	CPU-5	Work In Progress	addi	addi	2014-12-02 01:49:55.697	
Memory						
	Memory-1	Work In Progress	addi, Mark			
	Memory-2	Work In Progress	addi, Mark			

Actions

☐ Download

☒ Upload

☐ Remove Lock

Upload

Refresh



Page Change Tracking

- Full audit trail is maintained
 - Why/What
 - Who
 - When
- Real-time status
 - Individual project status
 - All project progress
 - User tasks / progress

Engineering Data Management					
Projects > NewProject_C_REV1.0 > CPU-1 - History					
Date	Action	Comments	Status	Get Copy	
2014-12-02 02:01:14.240	addi upload and unlock	Modify CPU-1 Page; Addi RES R5 to U1.5 connect GND	Work In Progress	↓	
2014-12-02 01:49:55.680	addi download with lock for edit	Page Downloaded	Work In Progress		
2014-12-02 01:49:35.887	addi unlock	Page unlocked	Work In Progress		
2014-12-02 01:49:17.167	addi upload and keep lock	no change	Work In Progress	↓	
2014-12-02 01:47:35.690	addi download with lock for edit	Page Downloaded	Work In Progress		
2014-12-02 01:47:27.683		Undo of download	Work In Progress		
2014-12-02 01:47:25.197	addi download with lock for edit	Page Downloaded	Work In Progress		
2014-12-02 01:47:06.427	addi upload and unlock	no change	Work In Progress	↓	

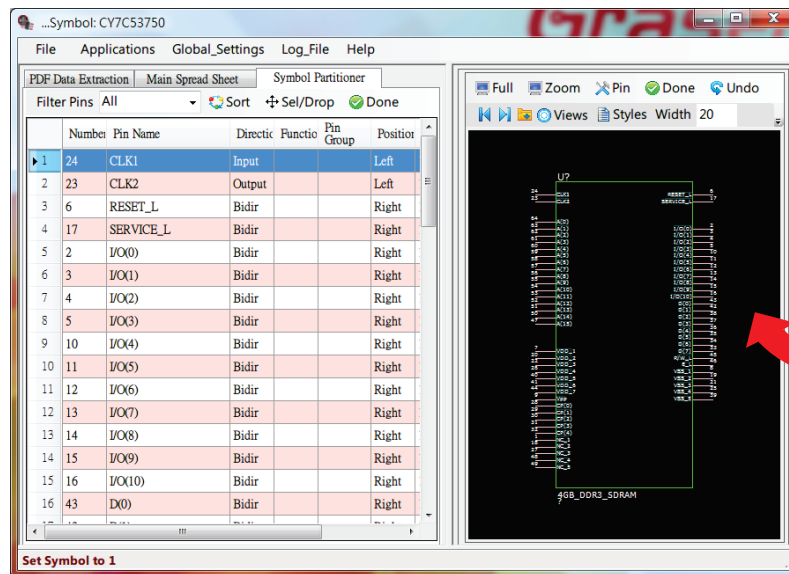


OrCAD Library Builder



PDF Extraction

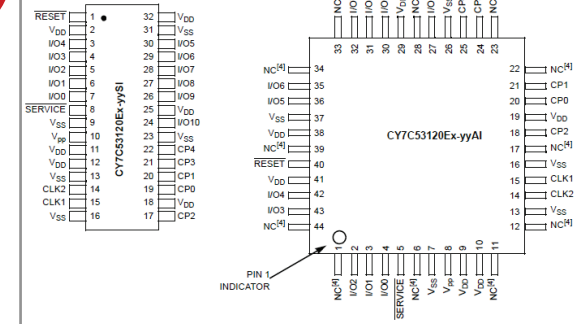
- Intelligent PDF datasheets extraction
 - Direct datasheet extraction
 - Spreadsheet import / manipulation
 - Checks and verification



Pin Descriptions

Pin Name	I/O	Pin Function	CY7C53158 TQFP-64 Pin No.	CY7C53120Ex SOIC-32 Pin No.	CY7C53120Ex TQFP-44 Pin No.
CLK1	Input	Oscillator connection or external clock input.	24	15	15
CLK2	Output	Oscillator connection. Leave open when external clock is input to CLK1. Maximum of one external load.	23	14	14
RESET	I/O (Built-in Pull up)	Reset pin (active LOW). Note: The allowable external capacitance connected to the RESET pin is 100-1000 pF.	6	1	40
SERVICE	I/O (Built-in Configurable Pull up)	Service pin (active LOW). Alternates between input and output at a 76-kHz rate.	17	8	5
I/O0-I/O3	I/O	Large current-sink cap General I/O port. The output of Timer/Counter 1 may be of I/O4-I/O7. The input to may be derived from I/O0.			
I/O4-I/O7	I/O (Built-in Configurable Pull ups)	General I/O port. The input to may be derived from I/O0-I/O7. The input to may be derived from I/O0.			
I/O8-I/O10	I/O	General I/O port. May be communication under fan			
DQ-D7	I/O	Bidirectional memory			
R/W	Output	Read/write control output memory.			
E	Output	Enable clock control output memory.			
A0-A15	Output	Memory address output			
VDD	Input	Power input (5 V nom). be connected together			
VSS	Input	Power input (0 V, GND). be connected together			
Vpp	Input	In-circuit test mode when RESET is asserted and data buses become			
CP0-CP4	Configuration	Bidirectional port supplications in three modes			
NC					

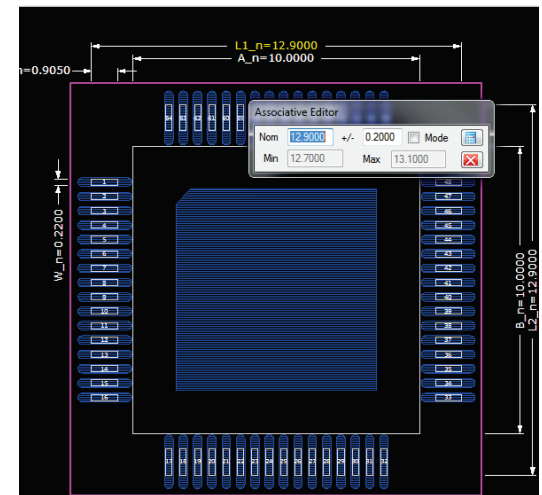
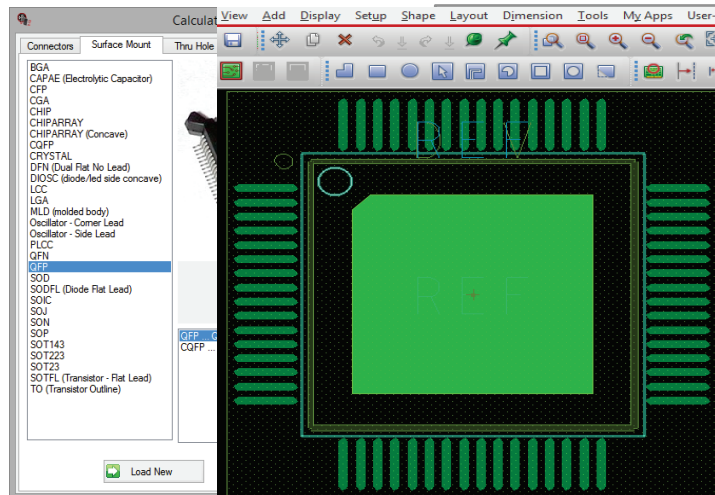
Figure 2. 32-Pin SOIC and 44-Pin QFP



Accurate Footprints

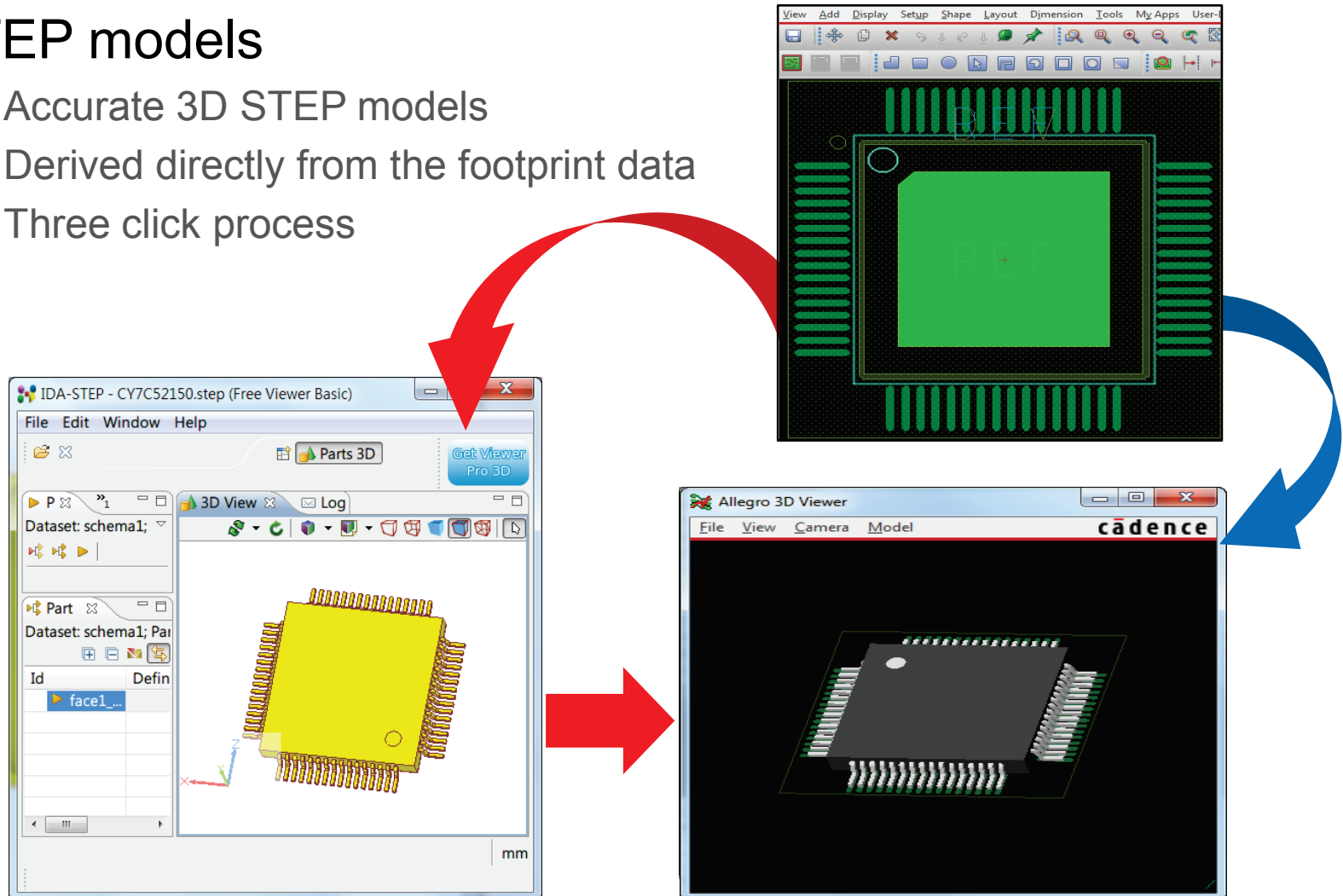
- Calculator-style interface for complex PCB footprint creation
 - Comprehensive library of footprints
 - Simple calculator-based interface
 - Associative editing enables quick on the fly adjustments
 - Extensive pad support

Quad Flatpack (Square Packages)							
Symbol	Description	Min	Nom	Max	Min	Nom	Max
N	Lead Count	44			48		
A	Overall Height			2.35			2.55
A ₁	Stand Off	0.05			0.05		0.25
b	Lead Width	0.20	0.30	.040	0.25	0.30	0.40
c	Lead Thickness	0.10	0.15	0.20	0.11	0.15	0.20
D	Terminal Dimension	12.0	12.4	12.8	15.1	15.3	15.5
D ₁	Package Body		10.0		11.9	12.0	12.1
E	Terminal Dimension	12.0	12.4	12.8	15.1	15.3	15.5
E ₁	Package Body		10.0		11.9	12.0	12.1
e ₁	Lead Pitch	0.65	0.80	0.95	0.70	0.80	0.90
L ₁	Foot Length	0.38	0.58	0.78	0.65	0.85	1.05
T	Lead Angle	0.0°		10.0°	0.0°		7.0°
Y	Coplanarity			0.10			0.10



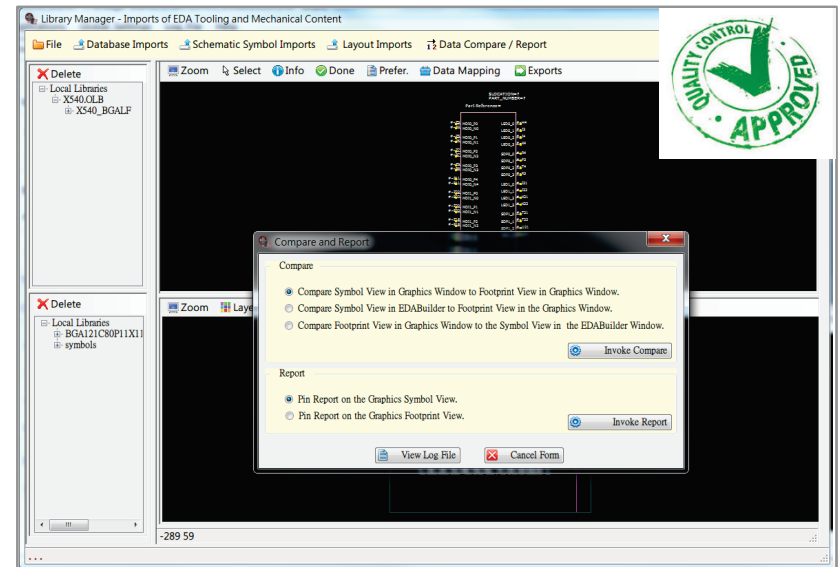
3D Model Creation

- STEP models
 - Accurate 3D STEP models
 - Derived directly from the footprint data
 - Three click process



Automated Error Checking

- Comprehensive checks
 - Checks done throughout creation process
 - Symbol and footprint DRCs
 - Symbol-footprint validation
- Valuable
 - Ensure symbols and footprints are correct
 - Eliminate library part errors
 - Ensure symbol-footprint association

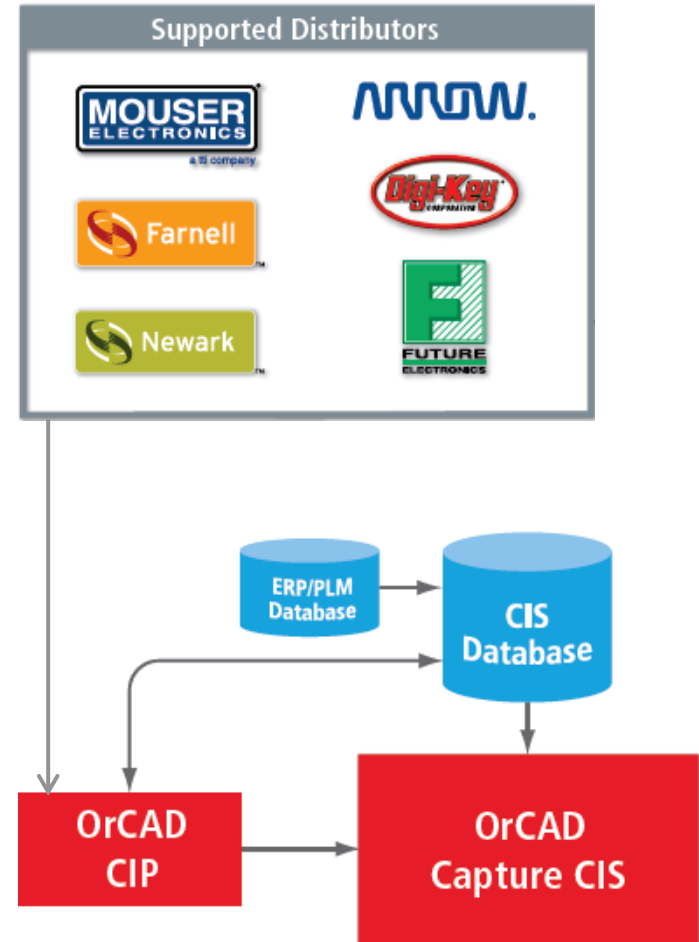


OrCAD Component Information Portal



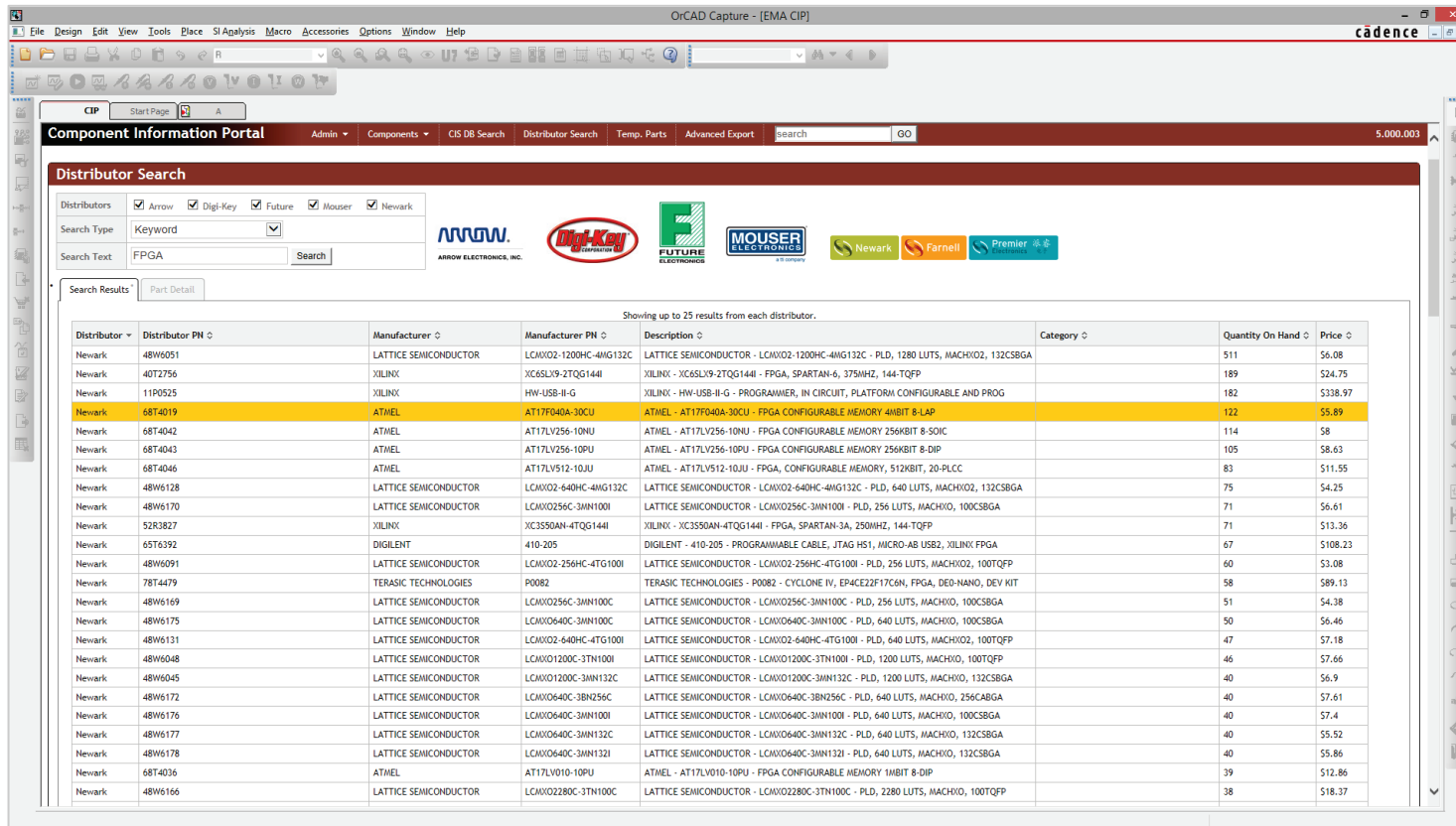
Download Distributor Part Data

- Distributor integrations enable access to parametric data for millions of parts
- Get costing and availability data along with electrical characteristics
- Easily define multiple sources for your parts to avoid supply issues



Integrated in OrCAD Capture

- CIP allows you to access and update component data without leaving Capture



The screenshot shows the OrCAD Capture - [EMA CIP] window. The main content area displays the Component Information Portal (CIP) interface. The interface includes a search bar and a table of search results. The table lists various components and their details, including distributor, part number, manufacturer, description, category, quantity on hand, and price.

Distributor	Distributor PN	Manufacturer	Manufacturer PN	Description	Category	Quantity On Hand	Price
Newark	48W6051	LATTICE SEMICONDUCTOR	LCMX02-1200HC-4MG132C	LATTICE SEMICONDUCTOR - LCMX02-1200HC-4MG132C - PLD, 1280 LUTS, MACHX02, 132CSBGA		511	\$6.08
Newark	40T2756	XILINX	XC6SLX9-2TQG144I	XILINX - XC6SLX9-2TQG144I - FPGA, SPARTAN-6, 375MHz, 144-TQFP		189	\$24.75
Newark	11P0525	XILINX	HW-USB-II-G	XILINX - HW-USB-II-G - PROGRAMMER, IN CIRCUIT, PLATFORM CONFIGURABLE AND PROG		182	\$338.97
Newark	68T4019	ATMEL	AT17F040A-30CU	ATMEL - AT17F040A-30CU - FPGA CONFIGURABLE MEMORY 4MBIT 8-LAP		122	\$5.89
Newark	68T4042	ATMEL	AT17LV256-10NJ	ATMEL - AT17LV256-10NJ - FPGA CONFIGURABLE MEMORY 256KBIT 8-SOIC		114	\$8
Newark	68T4043	ATMEL	AT17LV256-10PU	ATMEL - AT17LV256-10PU - FPGA CONFIGURABLE MEMORY 256KBIT 8-DIP		105	\$8.63
Newark	68T4046	ATMEL	AT17LV512-10JU	ATMEL - AT17LV512-10JU - FPGA, CONFIGURABLE MEMORY, 512KBIT, 20-PLCC		83	\$11.55
Newark	48W6128	LATTICE SEMICONDUCTOR	LCMX02-640HC-4MG132C	LATTICE SEMICONDUCTOR - LCMX02-640HC-4MG132C - PLD, 640 LUTS, MACHX02, 132CSBGA		75	\$4.25
Newark	48W6170	LATTICE SEMICONDUCTOR	LCMX0256C-3MN100I	LATTICE SEMICONDUCTOR - LCMX0256C-3MN100I - PLD, 256 LUTS, MACHX0, 100CSBGA		71	\$6.61
Newark	52R3827	XILINX	XC3550AN-4TQG144I	XILINX - XC3550AN-4TQG144I - FPGA, SPARTAN-3A, 250MHz, 144-TQFP		71	\$13.36
Newark	45T6392	DIGILENT	410-205	DIGILENT - 410-205 - PROGRAMMABLE CABLE, JTAG HS1, MICRO-AB USB2, XILINX FPGA		67	\$108.23
Newark	48W6091	LATTICE SEMICONDUCTOR	LCMX02-256HC-4TG100I	LATTICE SEMICONDUCTOR - LCMX02-256HC-4TG100I - PLD, 256 LUTS, MACHX02, 100TQFP		60	\$3.08
Newark	78T4479	TERASIC TECHNOLOGIES	P0082	TERASIC TECHNOLOGIES - P0082 - CYCLONE IV, EP4CE22F17C6N, FPGA, DEO-NANO, DEV KIT		58	\$89.13
Newark	48W6169	LATTICE SEMICONDUCTOR	LCMX0256C-3MN100C	LATTICE SEMICONDUCTOR - LCMX0256C-3MN100C - PLD, 256 LUTS, MACHX0, 100CSBGA		51	\$4.38
Newark	48W6175	LATTICE SEMICONDUCTOR	LCMX0640C-3MN100C	LATTICE SEMICONDUCTOR - LCMX0640C-3MN100C - PLD, 640 LUTS, MACHX0, 100CSBGA		50	\$6.46
Newark	48W6131	LATTICE SEMICONDUCTOR	LCMX02-640HC-4TG100I	LATTICE SEMICONDUCTOR - LCMX02-640HC-4TG100I - PLD, 640 LUTS, MACHX02, 100TQFP		47	\$7.18
Newark	48W6048	LATTICE SEMICONDUCTOR	LCMX01200C-3TN100I	LATTICE SEMICONDUCTOR - LCMX01200C-3TN100I - PLD, 1200 LUTS, MACHX0, 100TQFP		46	\$7.66
Newark	48W6045	LATTICE SEMICONDUCTOR	LCMX01200C-3MN132C	LATTICE SEMICONDUCTOR - LCMX01200C-3MN132C - PLD, 1200 LUTS, MACHX0, 132CSBGA		40	\$6.9
Newark	48W6172	LATTICE SEMICONDUCTOR	LCMX0640C-3BN256C	LATTICE SEMICONDUCTOR - LCMX0640C-3BN256C - PLD, 640 LUTS, MACHX0, 256CABGA		40	\$7.61
Newark	48W6176	LATTICE SEMICONDUCTOR	LCMX0640C-3MN100I	LATTICE SEMICONDUCTOR - LCMX0640C-3MN100I - PLD, 640 LUTS, MACHX0, 100CSBGA		40	\$7.4
Newark	48W6177	LATTICE SEMICONDUCTOR	LCMX0640C-3MN132C	LATTICE SEMICONDUCTOR - LCMX0640C-3MN132C - PLD, 640 LUTS, MACHX0, 132CSBGA		40	\$5.52
Newark	48W6178	LATTICE SEMICONDUCTOR	LCMX0640C-3MN132I	LATTICE SEMICONDUCTOR - LCMX0640C-3MN132I - PLD, 640 LUTS, MACHX0, 132CSBGA		40	\$5.86
Newark	68T4036	ATMEL	AT17LV010-10PU	ATMEL - AT17LV010-10PU - FPGA CONFIGURABLE MEMORY 1MBIT 8-DIP		39	\$12.86
Newark	48W6166	LATTICE SEMICONDUCTOR	LCMX02280C-3TN100C	LATTICE SEMICONDUCTOR - LCMX02280C-3TN100C - PLD, 2280 LUTS, MACHX0, 100TQFP		38	\$18.37

New Part Introduction (NPI) Flow

- Add new parts in a controlled fashion.
- CIP will flag the part and will send notifications to defined users who need to review and approve the part.
- Engineer can use the part as a temp part in their design.
- When part is approved/rejected, part status will update in engineers view as well.

PART_NUMBER	TMP-2	↺
Description	CAP, Ceramic, SMD, 0.01 uF, 10 %, 5C	↺
PCB Footprint	CAPC1608X87N	
Number of Pins	2	
Operating Temperature Minimum	-55 C	
Package Height	0.87 mm	
Company Part Status	Not Yet Approved	
Equivalent Series Resistance		
Tolerance	10%	
Implementation		
PSpiceTemplate	C^@REFDES %1 %2 C^@REFDES 0.01uF	
CLASS	DISCRETE	



New Part Introduction (NPI) Flow

- Temporary Part Flow promoting concurrency

Component Information Portal

Welcome Admin [Download CIPCClient] [Log Off] [Change Password] [Help]

Admin Components CIS DB Search Distributor Search Temp. Parts Advanced Export Search GO 16.006.044

ICs TMP-79

Part Information History

Part Information

PART_NUMBER	EMA-TMP-79	Part Type	Unassigned Part Type
Description	IC PROCESSOR NEURON 64LOFP	Value	CY7C51150-20AX
PCB Footprint	UNASSIGNED	Schematic Part	INTEGRATED_CIRCUITS:cyp_part_new
Number of Pins		Operating Temperature Maximum	-40C - 85C
Operating Temperature Minimum	-40C - 85C	Package Size	64 LOFP
Package Height		Package Type	Surface Mount
Common Part Status		Rated Power	

19	C14	0.1uF	EMA-00000414V22	Approved: Current	CAPC1608XB6N	CAP, Ceramic, SMD, 0.1...	CAP
20	U4	XC18V01	EMA-00007402	Approved: Current	SOIC327P1034X2...	IC, Memory Devices, PR...	XC18V00X5020
21	U5	27C801	EMA-00007139	Approved: Current	DIP32-600	IC, Memory Devices, EE...	M27_CW_B01_FBK
22	J3	15-24-7240	EMA-00003995	Approved: Current	MOLEX_42385-24	CONN, Header, 15-24-7...	HDR_2X32_F
23	R6	4.75kOhm	EMA-00003690	Approved: Current	RES1608X55N	RES, Thick Film, 4.75 kO...	RES
24	C15	0.22uF	EMA-00001082V22	Approved: Current	CAPC2012X100N	CAP, Ceramic, SMD, 0.2...	CAP
25	U6	CY7C51150-20AX	TMP-79	Temporary: Current	UNASSIGNED	IC PROCESSOR NEURO...	cyp_part_new_3

Part has temp part number, has been checked against database, all properties are the same as database.

18	C13	0.1uF	EMA-00000414V22	Approved: Current	CAPC1608XB6N	CAP, Ceramic, SMD, 0.1...	CAP
19	C14	0.1uF	EMA-00000414V22	Approved: Current	CAPC1608XB6N	CAP, Ceramic, SMD, 0.1...	CAP
20	U4	XC18V01	EMA-00007402	Approved: Current	SOIC327P1034X2...	IC, Memory Devices, PR...	XC18V00X5020
21	U5	27C801	EMA-00007139	Approved: Current	DIP32-600	IC, Memory Devices, EE...	M27_CW_B01_FBK
22	J3	15-24-7240	EMA-00003995	Approved: Current	MOLEX_42385-24	CONN, Header, 15-24-7...	HDR_2X32_F
23	R6	4.75kOhm	EMA-00003690	Approved: Current	RES1608X55N	RES, Thick Film, 4.75 kO...	RES
24	C15	0.22uF	EMA-00001082V22	Approved: Current	CAPC2012X100N	CAP, Ceramic, SMD, 0.2...	CAP
25	U6	CY7C51150-20AX	EMA-TMP-79	Approved: Current	UNASSIGNED	IC, Integrated Circuits (L...	cyp_part_new_3

