@CADSTAR[™]

DATASHEET

VARIATION

Set up PCB design variants for multiple markets and feature levels – or any other reason you choose.

WHY DESIGN VARIATION?

Well-structured design variation in eCADSTAR is the best way to set up design variants for three main reasons:

• Duplicating design details is rather like copying and pasting text from one document to another. It's easy to copy too much or too little or to change the original and forget about the copy.

• It's much easier to see what you have, so it's much easier to re-use it, preserving known-good IP and valuable design time.

• It works right with you while you design and when you collaborate with your colleagues.

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Design variation comes as standard in Advanced and Ultimate product bundles and is available as a cost option in others. It gives you a clean way to structure design variation from schematic entry through to physical design. Variations can include which components are fitted and even which parts are used. A simple way to think of variation is that the conductor metal on the PCB is always the same, but you can vary what is assembled on it.

SET UP VARIANT STRUCTURE IN VARIATION MANAGER

Variation Manager is a feature of eCADSTAR Schematic Editor. Since it is components that you can vary, it appears on the **Component** tab.



Variation Manager offers **Simple** and **Advanced** modes. You can achieve similar results in either mode, but **Advanced** mode helps you avoid errors.

Let's say you offer your PCB in four variants - **Economy, Economy_Plus, Premium** and **Premium_Plus.** These variants feature different combinations of SDRAM capacity and frequency. In some variants, the **VPP** power supply (DDR4 wordline boost) is onboard and in others off-board.

To vary the memory capacity, you fit either two or three SDRAMs.

To vary the on or off board VPP supply, you fit or omit the on-board power supply and offboard power-connector, as well as changing a capacitor part. These capacitors are different physical sizes.

To vary the SDRAM frequency, you vary which (pin-compatible) SDRAM parts are fitted.

Variation Manage	r				?	\times
Mode						
○ Simple	Advanced					
Variants Variat	ion Types					
Variation Item assig	gnment:			# ==	₽	
Variant	Variation Type SDRAM_CFG	VPP_SUPPLY	CAP_SIZE			
• Economy	8GB_1200MHz	Off-Board	Small			
Economy_Plus	8GB_1600MHz	Off-Board	Large			-
Premium	12GB_1200MHz	On-Board	Small			•
Premium Plus	12GB_1600MHz	On-Board	Large			

DECIDE ON VARIANT COMPONENTS

After you've described the structure of your variants in Variation Manager, you can add components to each **Variation Type**.

Variation Type	Variant							
variation type	Economy	Economy_Plus	Premium	Premium_Plus				
SDRAM_CFG	8GB_1200MHz	8GB_1600MHz	12GB_1200MHz	12GB_1600MHz				
VPP_SUPPLY	Off-Board	Off-Board	On-Board	On-Board				
CAP_SIZE	Small	Large	Small	Large				

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DECIDE WHAT HAPPENS TO COMPONENTS IN EACH VARIANT

You can set up which components are fitted or not fitted and which parts to use in your variants. Component Browser is usually the best way and it recognizes those **Advanced Mode** linked settings, if you change one the other changes too.

🟠 Start Page 🔝 🛛 🗟 A	ll_Variants_Defined/	003* 🗵 🚺	All_Varian	ts_Defined	×								
Target: Circuit	-	Variation Type	SDRAM_	CFG ·									
Reference Designator Vari	Variation Tune	8GB_1200MHz		8GB_1600MHz		12GB_1200MHz			12GB_1600MHz				
	variation type	Part Name	Value	Fitted	Part Name	Value	Fitted	Part Name	Value	Fitted	Part Name	Value	Fitted
1 <filter></filter>													
• IC2	SDRAM_CFG	STD_DDR4_S	DDR4	YES	FAST_DDR4_S	DDR4	YES	STD_DDR4_S	DDR4	YES	FAST_DDR4_S	DDR4	YES
3 IC3	SDRAM_CFG	STD_DDR4_S	DDR4	YES	FAST_DDR4_S	DDR4	YES	STD_DDR4_S	DDR4	YES	FAST_DDR4_S	DDR4	YES
4 IC4	SDRAM_CFG	STD_DDR4_S	DDR4	NO	FAST_DDR4_S	DDR4	NO	STD_DDR4_S	DDR4	YES	FAST_DDR4_S	DDR4	YES

WORK BY VARIANT IN SCHEMATIC

Once all that's set up, you can select each variant and see the differences on the schematic canvas.



WORK BY VARIANT IN PHYSICAL DESIGN

When you forward-annotate to eCADSTAR PCB Editor you can display and work on physical design by variant.

Canvas display	Component list								
Master Economy Economy_Plus Premium Premium_Plus	Econor	ny Economy_Plus	Premium		Premium_Plus	^			
	IC3	IC3_1	IC3	IC3_1					
		IC4_1	IC4	IC4_1					
						¥			
	<					>			

VARY PARTS AND MERGE FOOTPRINTS

You can even use different parts in different variants, , as with these small and large capacitors defined by Variation Type **CAP_SIZE**, where footprints are merged automatically to accommodate either component.



MANUFACTURING OUTPUT VARIATION

In both Schematic Editor and PCB Editor you can create variant-dependent manufacturing outputs, including Parts List, Pick and Place data, IPC-2581 and Photo Data.