

How to create a Padstack including a flash based symbol

## How to create a Padstack including a flash based symbol

This app note will describe the best process to create a padstack for the mechanical fixing shown below. This requires a padstack using a non-plated hole, design layers for top, internal and bottom, soldermask layers and a flash based symbol for the stencil suggestion (Pastemask\_Top). We will also include a keepout area for the copper layers. This can all be achieved from within Padstack Editor.



How to create a Padstack including a flash based symbol

To start launch Padstack Editor using Windows button – Cadence PCB Utilities 17.4-2019 – Padstack Editor 17.4



We require a non-plated hole so in this example we will choose a Mechanical Hole with a Circle pad geometry on the Start tab. You should also set the Units and decimal places to the required values (millimeter and 4 in this example).



On the Drill tab specify the finished drill diameter, tolerance and plating type (3.7, 0.1 and non-plated in this example).

© 2022 Parallel Systems Limited

w to create a Padstack	cincluding a flash ba	sed symbol	
Padstack Editor: (D:/Library/Padst	acks)		– 🗆 X
File View Help			cādence
🔓 📛 💾			
2D Top Padstack View 🗗 🗙	Start Drill Secondary Drill Drill S	Symbol Drill Offset Design Layers Mask Layers Options Summary	
	Drill hole		
	Hole type: Circle	▼	
		Diamete	er
	Finished diameter: 3.7000		
	+ Tolerance: 0.1000		
	- Tolerance: 0.1000		
	Drill tool size:		
2D Padstack Side Views 🛛 🛪 🗙	Non-standard drill:	▼	
	Hole plating		
	Hole/slot plating: Non-plated	▼	
	Drill rows and columns		]
	Pattern style:	Array 🔍 Number of drill rows:	1
		Number of drill columns:	1
		Clearance between columns:	0.0000
		Clearance between rows:	0.0000
Side Front		Drills are staggered	
Mechanical Hole Units: Millimeter	▼ Decimal places: 4 ▼		

On the Drill Symbol tab, specify a Type of drill figure, character and drill figure diameter (Circle, A and 1 mm).

Padstack Editor: (D:/Library/Padstack Editor: D:/Library/Padstack Editor: D:/Librar	tacks) –	- 🗆 ×
File View Help		cādence
🗟 📛 🔡		
2D Top Padstack View 🛛 🗗 🗙	Start Drill Secondary Drill Drill Symbol Drill Offset Design Layers Mask Layers Options Summary	
	Define a drill symbol Type of drill figure: Characters: Drill figure diameter: 1.0000	
2D Padstack Side Views 🗗 🗙		
Side Front		
Mechanical Hole Units: Millimeter	Decimal places: 4	.4

On the Design Layers tab, specify a Regular Pad as Circle with a diameter of 6 mm to match the datasheet. We will also include a Keepout circle of 8 mm. You can add exceptions to this keepout area if required at the bottom of the form. Once set for the BEGIN LAYER, copy and paste to the DEFAULT INTERNAL and END LAYER.

Padstack Editor: (D:/Library/Padstack	u)							_		×
File View Help									ca	d e n c e'
2D Top Padstack View 🗗 🗙	Start Drill Secondary Drill	Drill Symbol	Drill Offset	Design Lay	ers Mask Laye	ers Options	Summary			
	Select pad to change —							 		
	Layer Name	Regular Pad	Thermal Pad	Anti Pad	Keep Out					
	BEGIN LAYER	Circle 6.0000	None	None	Circle 8.0000					
	DEFAULT INTERNA	Circle 6.0000	None	None	Circle 8.0000					
	END LAYER	Circle 6.0000	None	None	Circle 8.0000					
	ADJACENT LAYER				None					
	END LAYER									
	Geometry: Cir	cle			▼					
2D Padstack Side Views 🛛 🗗 🗙										
	Flash symbol:									
	Diameter: 8.0	000								
	Offset x:	000								
	Offset y: 0.0	000								
	Keep Out Exceptions:	Clines		Pins						
	-	Shapes		Vias						
Side Front										
Mechanical Hole Units: Millimeter 🔻	Decimal places: 4	-								

On the Mask Layers tab specify a Circle diameter 6 mm for the SOLDERMASK\_TOP and \_BOTTOM.

Padstack Editor: (D:/Library/Padstacks)	– 🗆 X
File View Help	cādence"
2D Top Padstack View 🗗 🗙 Start Drill Secondary Drill Drill Symbol Drill Offset Design Layers Mask Layers Options	Summary
Select pad to change	
Layer Name Pad	Add Layer
SOLDERMASK_TOP Circle 6.0000	
SOLDERMASK_BOTTOM	
PASTEMASK_TOP Circle 0.0000	
PASTEMASK_BOTTOM None	
FILMMASK_TOP None	
FILMMASK_BOTTOM None	
Pad on layer PASTEMASK_TOP	
Geometry: Circle 🔻	
2D Padstack Side Views & X	
Shape symbol:	
Flash symbol:	
Diameter: 0.0000	
Offset x: 0.0000	
Offset y: 0.0000	
Side Front	
Mechanical Hole Units: Millimeter V Decimal places: 4 V	

The Final part is to define the Stencil suggestion. Choose the PASTEMASK\_TOP entry and then at the bottom of the form choose the ... button to browse for a Flash Symbol. (Your view could be different due to your available flash symbols).

Library Shape Symbol Browse	r	×
Select a pad symbol from the lis	Selected pad symbolab00	
ab85 blank cus_shape f150_210_40 f1_3x1_7 f1_8x2_2 f2_3x2_7 f12_3x2_7 f1310_390_40 f1ash50_70_10		
r 110_210_26_15 r 1110_210_26_15 r 110_210_26_15 r 1210_310_26_15 r 1210_110_26_15 s quare_10 t 450_480_90 Create New Flash Symbol		
ок	Cancel	Help

In this example we need to create a new flash symbol so choose that option on the form. Specify a name and click OK.

New Symbol	? ×					
Name of new Flash symbol:						
WE_5_84						
ОК	Cancel					

PCB Editor is launched with a new flash symbol of the name specified. WE\_5\_84 in this example. To create the flash symbol choose Add – Flash then populate the required values in the form. This is specified by the datasheet

Stencil Suggestion:	🎛 Thermal Pad Symbol Defaults 🛛 🗌 🗙
	Thermal Pad Definition
	Inner diameter: 3.8000
	Outer diameter: 5.8400
	Spoke definition
	Spoke width: 0.6500
	Number of spokes:
	Spoke angle: 90 V
	Center Dot Option
	Add center dot
	Dot diameter: 0.0000
	OK Cancel Help

Click OK and the Flash Symbol is generated and displayed. The centre of the flash is the origin which is set as 0,0.

## How to create a Padstack including a flash based symbol



Save the Flash Symbol and close PCB Editor. Important – make sure that the Flash Symbol (filename.dra and filename.fsm) are stored in your psmpath library location.

Choose the newly created flash symbol from the list in the form below and click OK.



The flash symbol is now listed as the entry for the PASTEMASK\_TOP definition as shown below.

Padstack Editor: (D:/I	Library/Padstacks)									-	
File View Help											cādence <sup>°</sup>
la 📛 💾											
D Top Padstack View	-r × sta	art Drill Seco	ndary Drill D	rill Symbol	Drill Offset	Design Layers	Mask Layers	Options Sun	nmary		
	Г	Select pad to ch	ange								
		Layer Na		Pad cle 6.0000						Add	Layer
		SOLDERMASK_									
		SOLDERMASK_	вопом	cle 6.0000							
		PASTEMASK_TC	P	sh we_5_84							
		PASTEMASK_BC	ттом	None							
		FILMMASK_TOP		None							
		FILMMASK_BOT	том	None							
	1	Pad on layer PAS	TEMASK_TOP								
		Geometry:	Flash				▼				
D Padstack Side Views	ъх	Shape symbol:									
		Flash symbol:	wa 5 94								
		Width:	5.8043								
		Height:	5.8043								
		Offset x:	0.0000								
		Offset y:	0.0000								

Save the Padstack. Important – make sure that the Padstack (filename.pad) is stored in your padpath library location. Close Padstack Editor and launch PCB Editor to build the Mechanical Symbol.

Choose File – New and populate the form as required ensuring that Mechanical Symbol is selected as the Drawing Type. **The directory location should also be your psmpath location.** 

🔡 New Drawing		×
Project Directory:	D:/Library/Footprints	
Drawing Name:	WE_6	Browse
Drawing Type:	Mechanical symbol	Template
-	Board Board (wizard) Module Package symbol Package symbol (wizard) Mechanical symbol Format symbol Shape symbol Flash symbol	
ОК	Cancel	Help

Use the command Layout – Pins and then in the Options pane use the ... button to browse for the padstack you generated above.

How to create a Padstack including a flash based symbol	
We compare the destable interacting a mastripaded by model         We compare the destable interacting a mastripaded by model         We compare the destable interacting a mastripaded by model         We compare the destable interacting a mastripaded by model         We compare the destable interacting a mastripaded by model         We compare the destable interacting a mastripaded by model         We compare the destable interacting a mastripaded by model         We compare the destable interacting a mastripaded by model         We compare the destable interacting a mastripaded by model         We compare the destable interacting a mastripaded by model         We compare the destable interacting a mastripaded by model         Waymont_Phh         Waymont_Bh         Waymont_Bh         Waymont_Lib_Pad1         Wcon100t_Lib_Pad2         Wcon100t_Lib_Pad3         Wcon100t_Lib_Pad3         Wcon100t_Lib_Pad3         Wcon100t_Lib_Pad3         Wcon100t_Lib_Pad3         Wcon100t_Lib_Pad3         Withmak_cos8_01         Withmak_cos8_01         Withmak_cos8_01         Withmak_cos8_01         Withmak_cos8_01         Withmak_cos8_01         Withmak_cos8_01         Withmak_cos8_01         Withmak_cos8_01	Options View Design Workflow   Options     Padstack:     Copy mode:   Rectangul   Cty   Spacing   Order   X:   1   1.2700   Right   Y:   1   0.000

Once selected, the pad is attached to your mouse ready to place, Position at the symbol origin or 0,0 (This can be changed later using the Setup – Change Drawing Origin command if preferred). The views below show the top / bottom copper layers and the soldermask\_top / pastemask\_top where you can see the flash symbol.





You should also add a circle on the Package Geometry / Placebound\_Top layer which will stop components being placed too close to the mounting hole. In this example the Placebound circle added is a 10 mm diameter.

The following are trademarks or registered trademarks of Cadence Design Systems, Inc. 555 River Oaks Parkway, San Jose, CA 95134 Allegro<sup>®</sup>, Cadence<sup>®</sup>, Cadence logo<sup>™</sup>, Concept<sup>®</sup>, NC-Verilog<sup>®</sup>, OrCAD<sup>®</sup>, PSpice<sup>®</sup>, SPECCTRA<sup>®</sup>, Verilog<sup>®</sup> **Other Trademarks** All other trademarks are the exclusive property of their prospective owners. **NOTICE OF DISCLAIMER**: Parallel Systems is providing this design, code, or information "as is." By providing the design, code, or information as one possible implementation of this feature, application, or standard, Parallel Systems makes no representation that this implementation is free from any claims of infringement. You are responsible for obtaining any rights you may require for your implementation. Parallel Systems expressly disclaims any warranty whatsoever with respect to the adequacy of the implementation, including but not limited to any warranties or representations that this implementation is free from claims of infringement and any implied warranties of merchantability or fitness for a particular purpose.