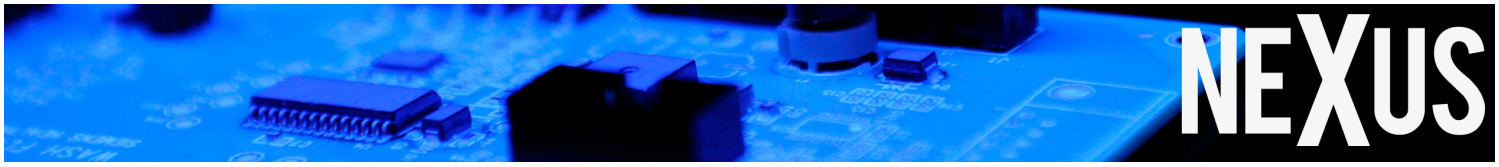


General design rules for Parylene

By Dr Lee Hitchens, Nexus

The quality of masking is everything

Be aware that Parylene deposition is not line of sight and is highly invasive. It is a gaseous process so it will coat everything not masked.

Simplify the design of the board

Design the board to make it efficient to mask and de-mask the areas to be free of Parylene.

Include space for masking

Where masking will be needed ensure there is enough space between components to allow the masking materials to get around the devices efficiently.

Ensure adequate spacing between components that may need to be coated next to components that needs to masked.

For example, do not place small resistors adjacent to a connector that will be masked down to the board surface or the resistor may not be Parylene coated.

Select parts to be masked carefully

If a part does not need to be electrically conductive, do not mask it.

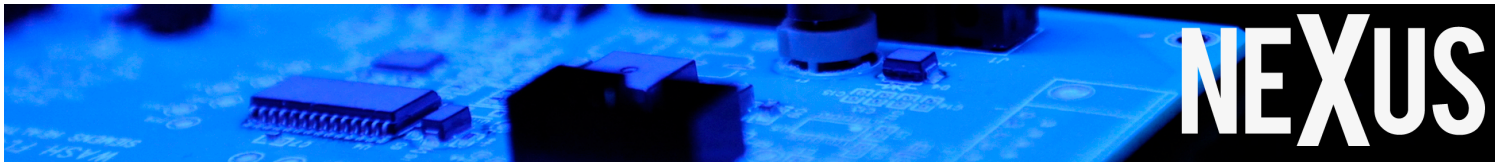
For example, un-plated holes will not bridge, heat sinks do not need to be masked.

It also may be possible to coat the test points if they are only there for future troubleshooting.

This is because the Parylene may be removed when the test point is needed.

Use the correct components

Reduce masking requirements by using IP67 rated switches and connectors where possible.



When designing a board for Parylene coating great emphasis should be put on choosing connectors that can be easily masked from a “gas”.

This means selecting connectors that are either sealed or that can be sealed on the back or bottom.

This is so only the contact area will need to be masked.

Be cautious of vent holes in relays and switches.

Also, be aware of alignment pinholes on connectors.

Both provide a path for Parylene coating.

Seal connector bases before Parylene Coating

Many connectors could be sealed before masking to reduce costs on the masking process.

Decide on an acceptable RTV or epoxy material and “seal” the base either before fitting or before Parylene coating.

Choose the male type of connector on the circuit

Use the male header pin type connectors that can be masked easily with boots rather than the female sockets that cannot be easily masked.

This is the same for other types of connectors.

It’s easier to clean pins on a male connector than it is to clean the internal parts of the female connectors.

Press fit connectors

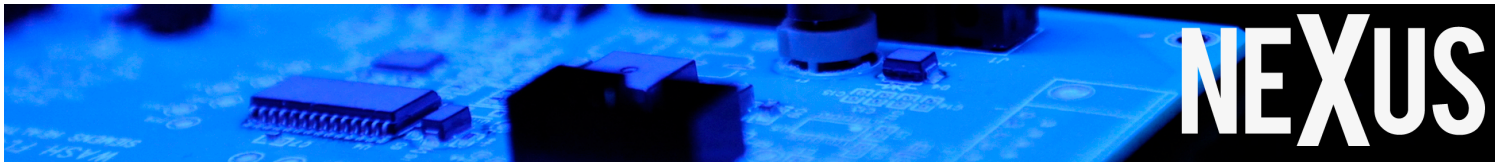
Press fit connectors can be installed after Parylene coating the board and the barrels.

The pins will have sufficient contact when inserted.

Don’t mask side edges

Side edges that would normally need to be masked for liquid are often coated with Parylene.

This is because the film is so thin and also a lubricant and it only enhances the boards ability to slide in the mount or rack.



Fit some components after Parylene coating

Ejector latches could be fitted after Parylene coating and make masking much simpler.

The cost of fitting after the process may be lower than the masking process.

Cables and wires

Short cables and wires are easy to mask and the solder joints get coated.

Very long wires or cables can be more of a problem as they fill work space in the chamber.

Consideration could be given to them being fitted after coating to ease masking and increase chamber capacity.

Finally, you could accept the wires being coated.

Can you help improve these guidelines?

Do you know a design rule or guideline for conformal coating that could help others? Tell us how we can improve this section.

Contact us now at sales@nexus3c.com if you would like to talk about design rules or any other related topic to conformal coating and Parylene.