

Embedded Component Option



Support for Embedded Component Technologies

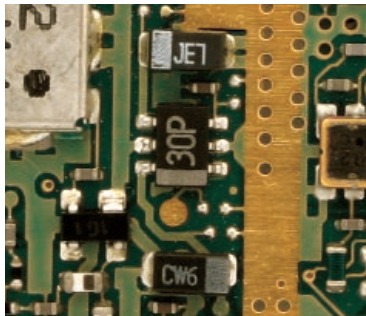
Emerging Technology

Pulsonix is a leading edge product, and as such provides functionality for the latest technologies. One of the fast emerging technologies is the use of embedded components within the traditional PCB design environment.

Components like resistors and capacitors can be manufactured on inner layers of the PCB using a build-up technology etched or printed onto the PCB. RF components like spiral inductors or planar transformers can be created using this technology. These manufacturing technologies are becoming more mainstream now and enable a new breed of smaller, more compact PCB designs to be created where space is a premium.

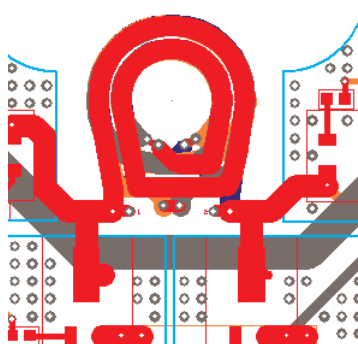
Passive Components

Passive resistors can be printed on inner layers and connected by resistive material. Depending on the manufacturing method, a resist mask or encapsulating coating will be required. The technology would therefore require an electrical layer with associated non-electrical layers for the resistive material, resist and coating shapes. Using a special Layer Class for this, the component is able to 'live' on an inner layer but still have associated construction layers. Likewise, embedded capacitors live on inner layers but require dielectric layers to be embedded and associated with the capacitor layer.

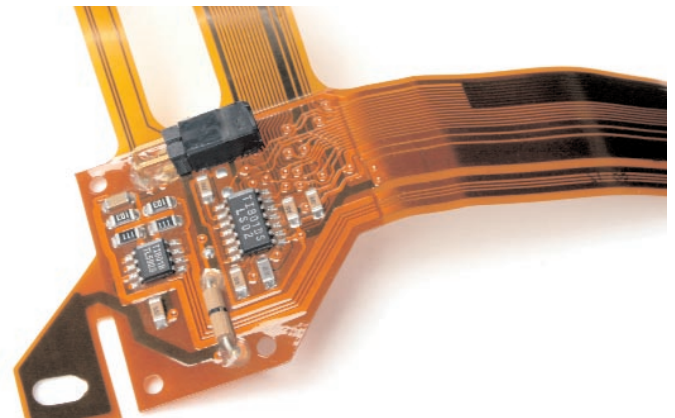


Planar Converter

The planar converter or transfer component may exist on the outer only or through-hole layers and may have a physical body applied to the outer layers. However, part of the footprint consists of copper spirals which are connected by a component via, effectively joining the two footprint pads. Although the pads are joined they would be connected using different nets. Special properties of the copper spirals and Component Vias can be marked as not checked during the design rules checking (DRC) process. By defining the footprint as embedded, the Component can be mirrored and all the inner layers will swap as required.



Irregular spiral shapes can be created using the Pulsonix Embedded Component option



Next-generation flexi-rigid designs can easily be created in Pulsonix

Flexi-rigid technology

Existing flexi-rigid technology designs, where pseudo 'inner' layers containing the flexi board are now being expanded to place components. This technology can only be properly supported using 'embedded' components, even though they are still accessed for manufacturing as surface mount or through-hole devices.

Advanced Intelligent Layer and Layer Classes are rapidly defined in Pulsonix

Technology - Layers - Layers					
	Name	Associated Layer	Class	Side	Bias
Styles					
Pad Styles					
Track Styles		Wires Top	Wire Link	Top	None
Line Styles		Silkscreen Top	Silkscreen	Top	None
Text Styles		Top	Electrical	Top	X
Hatch Styles					
Rules					
Spacing Rules		Solder Mask Top	Solder Mask	Top	None
DFM/DFT Rules		Paste Mask Top	Paste Mask	Top	None
Differential Pairs		Pin Names	Non-Electrical	Top	None
Nets					
Net Names		Resistor	Resistor	Inner	None
Net Classes		Resistor Pad Resist	Resistor	Inner	None
Pin Networks		Resistor Material	Resistor	Inner	None
Layers					
Layer Spans		Inner Copper 2	Electrical	Inner	None
Layer Classes		Capacitor	Capacitor	Inner	None
Materials		Inner Copper 4	Electrical	Inner	None
CAM Plots		Bottom	Electrical	Bottom	Y
Drill Sizes					
		Silkscreen Bottom	Silkscreen	Bottom	None
		Solder Mask Bottom	Solder Mask	Bottom	None
		Paste Mask Bottom	Paste Mask	Bottom	None
		Wires Bottom	Wire Link	Bottom	None
		Documentation	Documentation		None

Feature Summary:

- Support for 'true' embedded components
- Advanced Intelligent Layer definition
- Advanced Layer Class definition
- Support for passive and active components
- Support for passives:
 - Printed resistors
 - Build-up resistors
 - Embedded Capacitors with dielectric layers
- Support for Planar Converter components:
 - Using Through-hole or Outer layers
 - Dialog driven Spiral definition
 - Plated and non-plated hole vias
 - True electrical relationship
- Support for 'plugged' components:
 - Component vias defined in Footprint
 - Support for non-plated blind and buried Footprint vias
- Flexi-rigid PCBs containing:
 - PTH & SM components mounted on the 'flexi' substrate

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