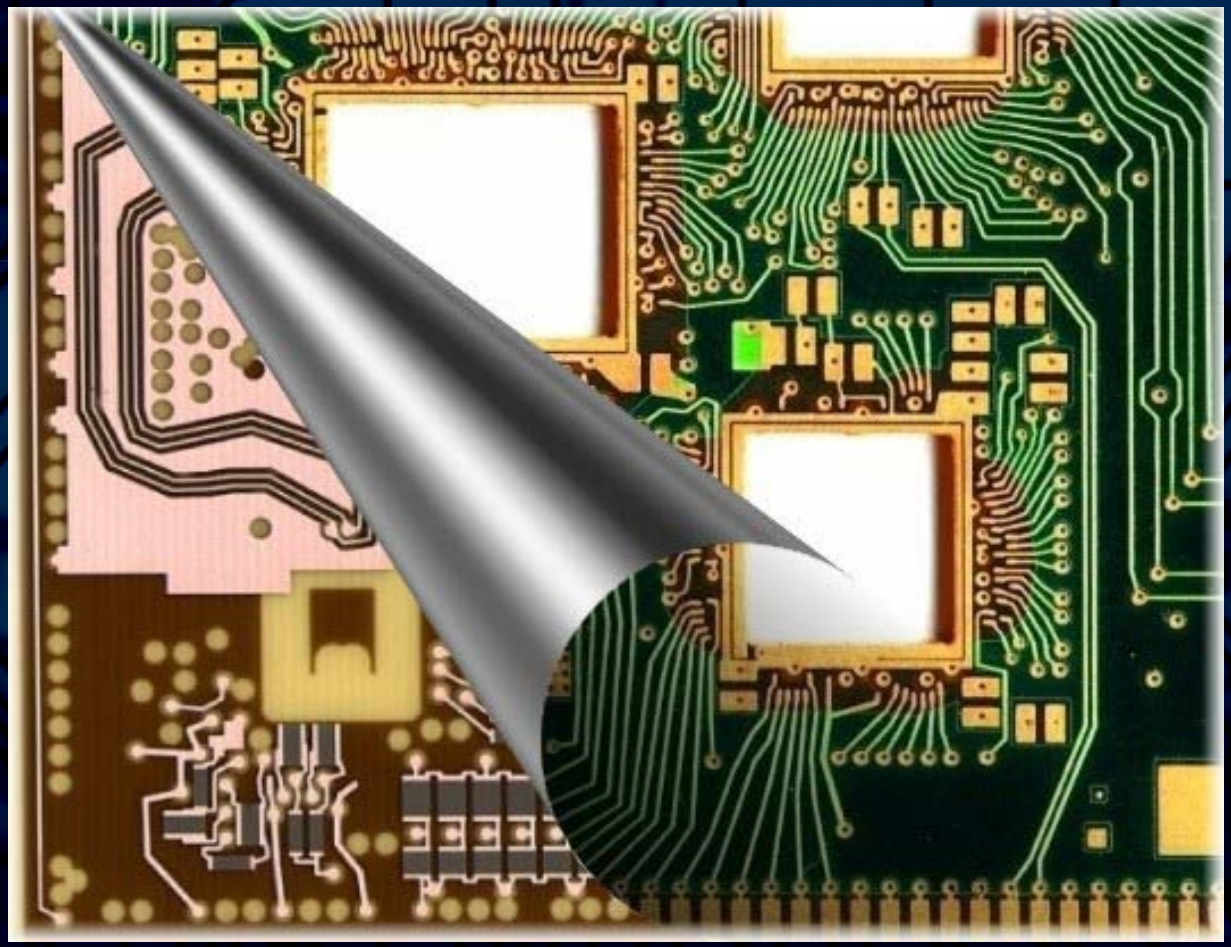
Ohmega Technologies, Inc.



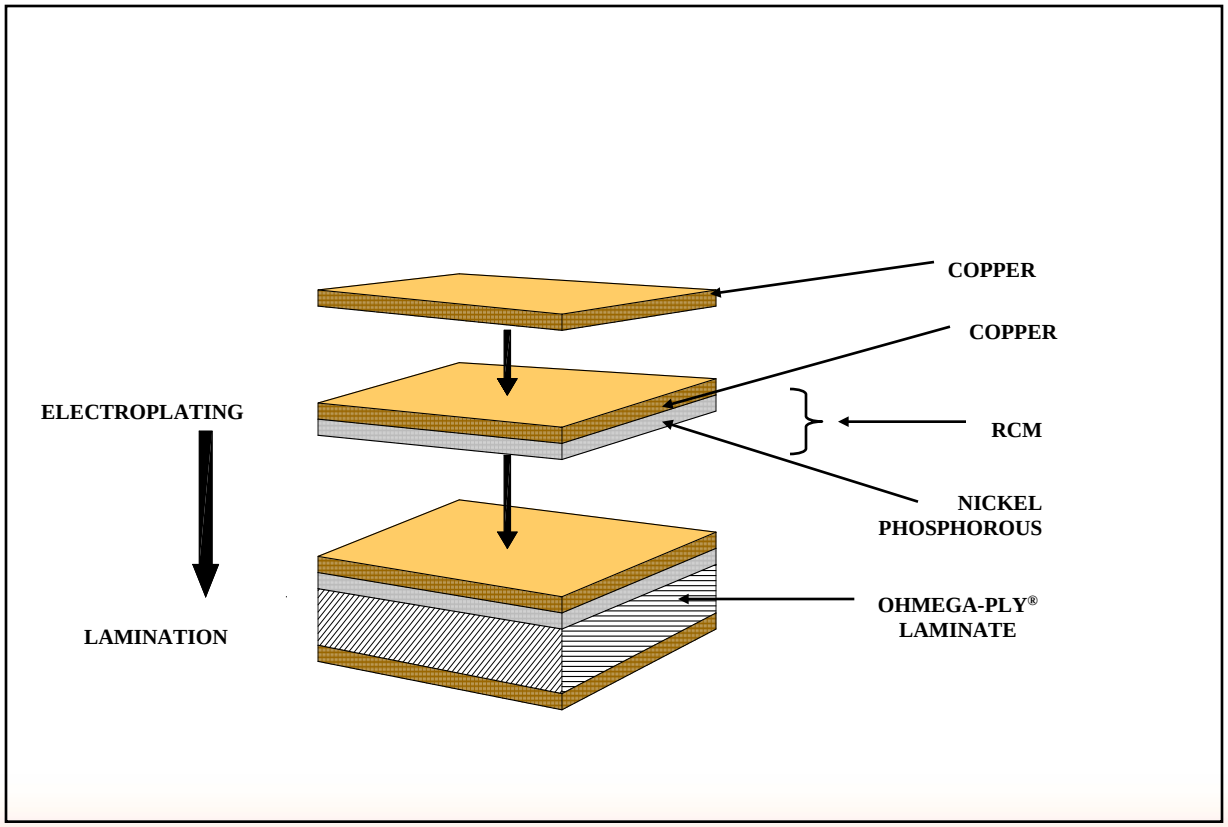
Overview of OhmegaPly® Processing Guide

Guidelines for Processing OhmegaPly® Resistors

1. OhmegaPly laminate materials
2. Artwork film sets, layout and compensation factors
3. Print and etch process chemistries.
4. Oxides and oxide replacement processes
5. Electrical Test Requirements.
6. Instructions for surface and embedded resistors.

OhmegaPly® Material Overview

OhmegaPly® is a thin film nickel phosphorous metal alloy electrodeposited on standard ED copper foil that is laminated to a dielectric material and subtractively processed to produce planar resistors. Any organic substrate is allowed including epoxies, polyimides, and PTFEs.



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OhmegaPly® Sheet Resistivity Vs. Film Thickness

Sheet Resistivity (Ω/□)	OhmegaPly® Film Thickness (μm)	Material Tolerance (%)
10	1.00	3
25	0.40	5
40	0.26	5
50	0.20	5
100	0.10	5
250	0.05	10

Basic Guidelines for OhmegaPly®

Artwork Film Set Layout

Planar resistors processing consists of two prints:

1st print – COMPOSITE image of conductors and resistors

2nd print – RESISTOR DEFINE image of resistor elements

(Figure 5 for voltage or ground planes, or Figure 6 for signal/logic layers).

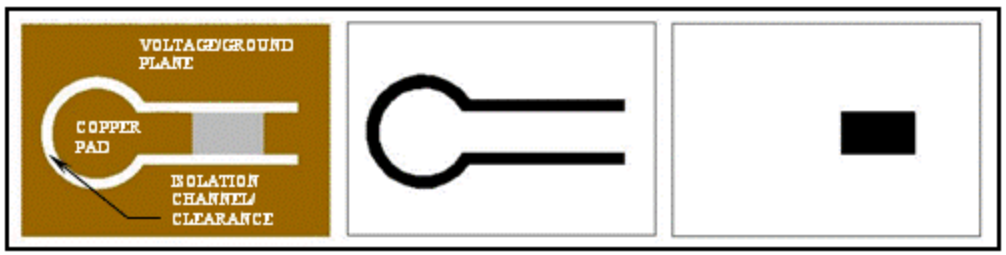


Figure 5 - Composite (negative film) resistor define

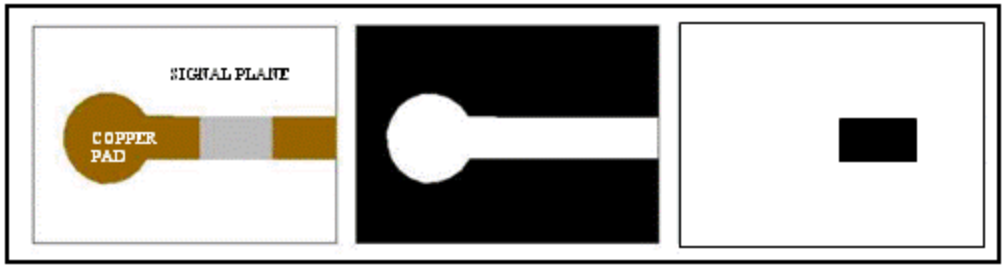


Figure 6 - Composite (negative film) conductor protect

Guidelines for Processing OhmegaPly® Resistors

Process Procedure Summary

1. Two standard print-and-etch process procedures.

2. First etch defines all features using any commercial etchant.

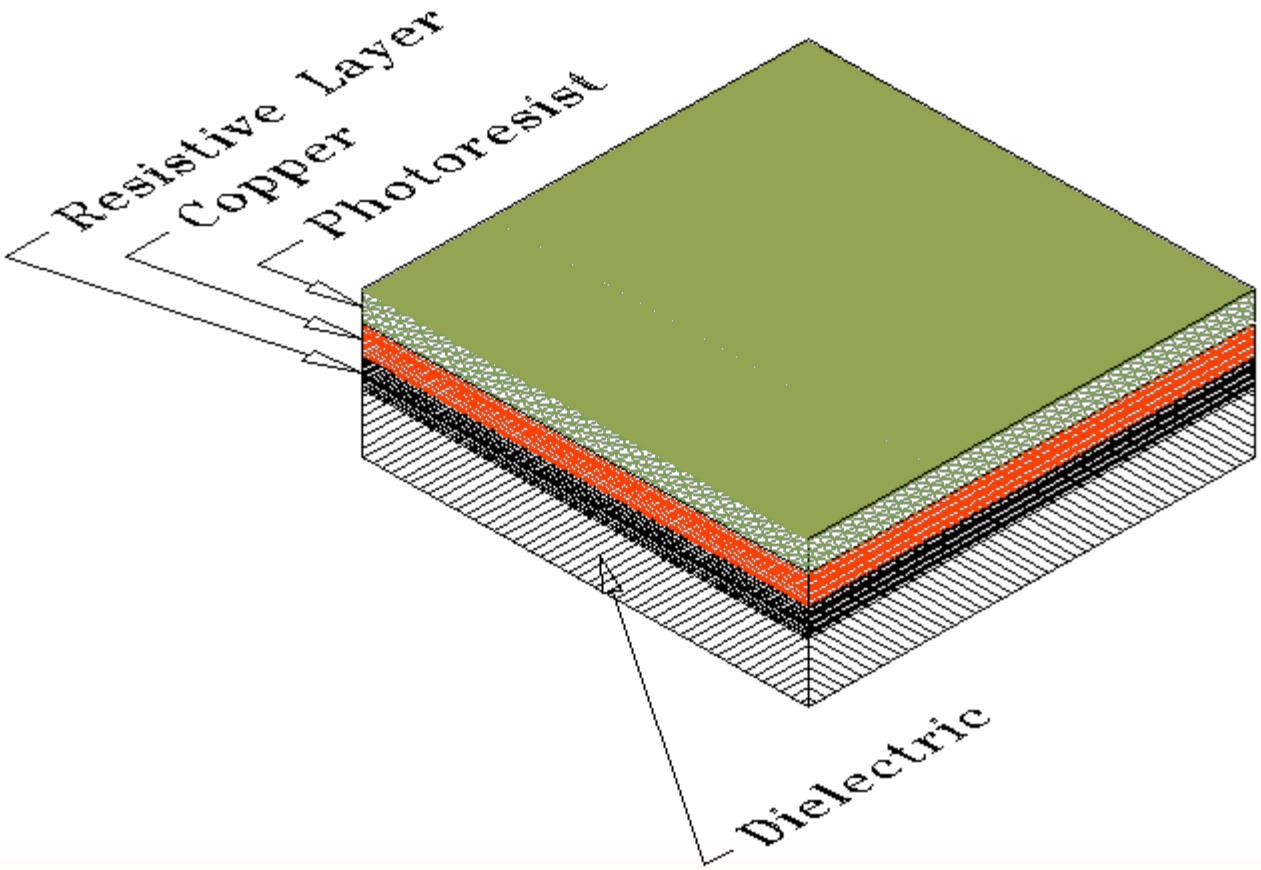
3. Nickel strip by simple immersion dip – only “special” process.

4. Second etch to expose resistor elements using alkaline etchant.

5. Standard post etch and multilayer lamination processes.

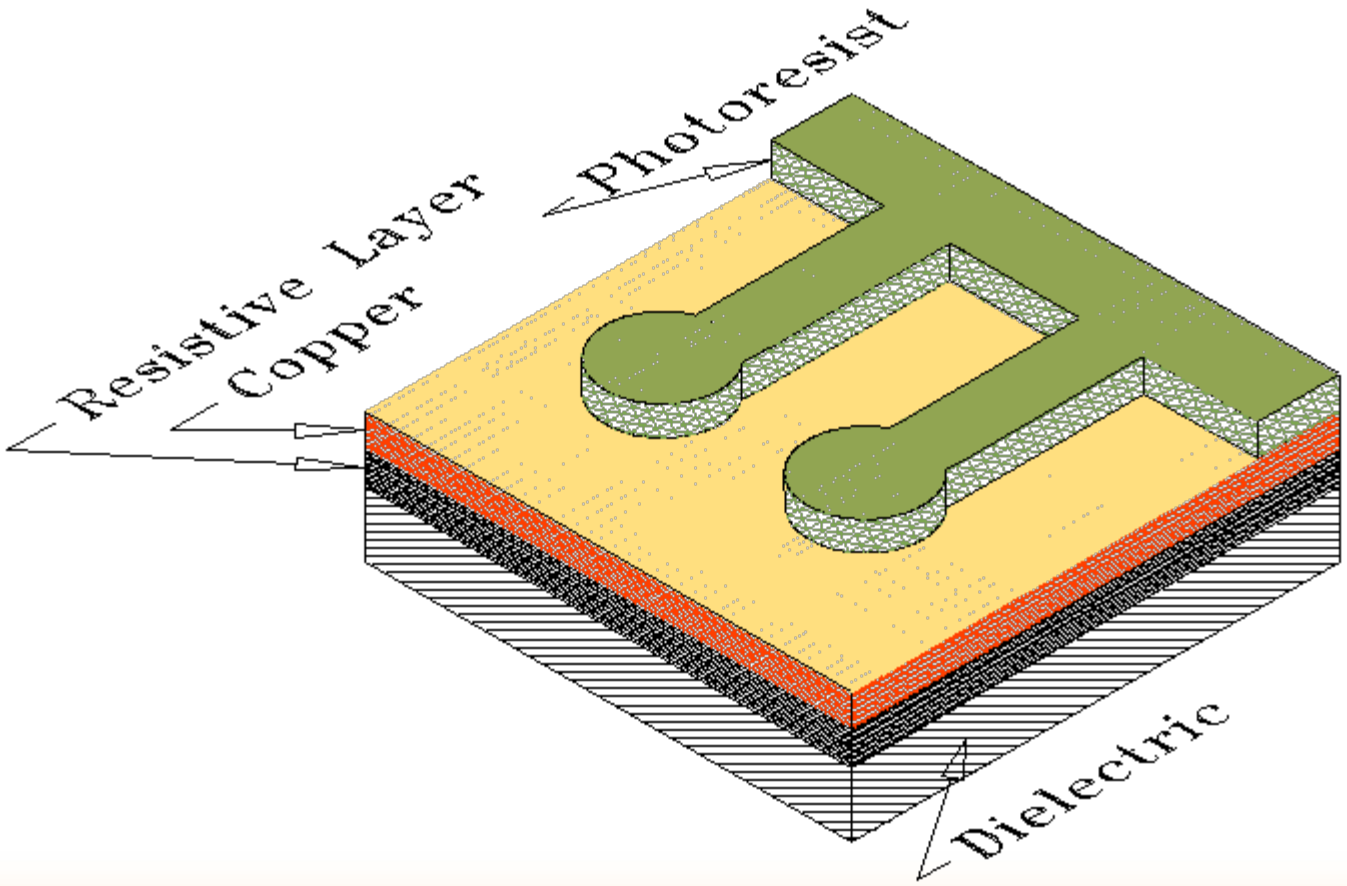
PCB Processing of Ohmega-Ply®

- Step 1: Apply Photoresist to OhmegaPly laminate



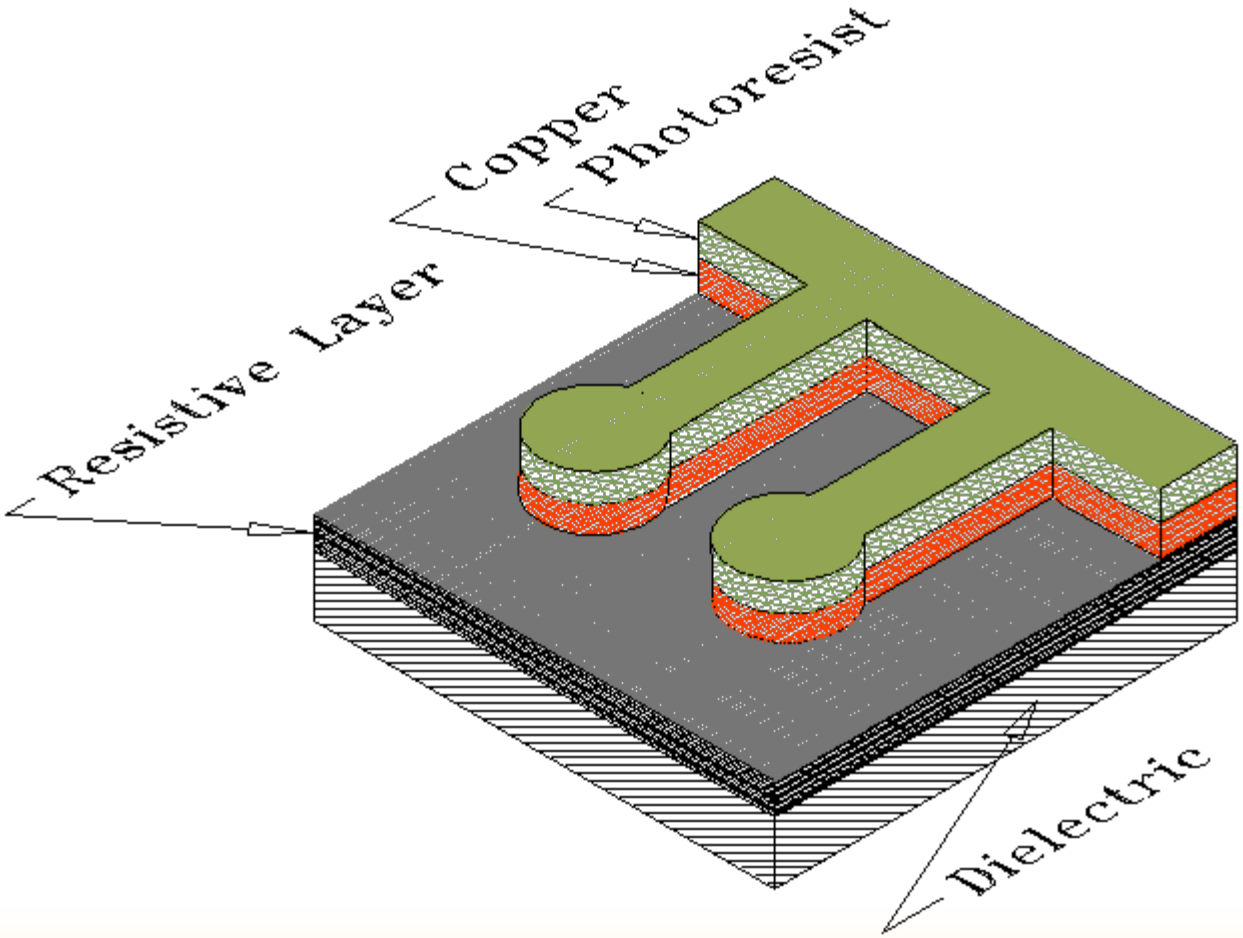
PCB Processing of Ohmega-Ply®

- Step 2: Print and Develop Composite Image



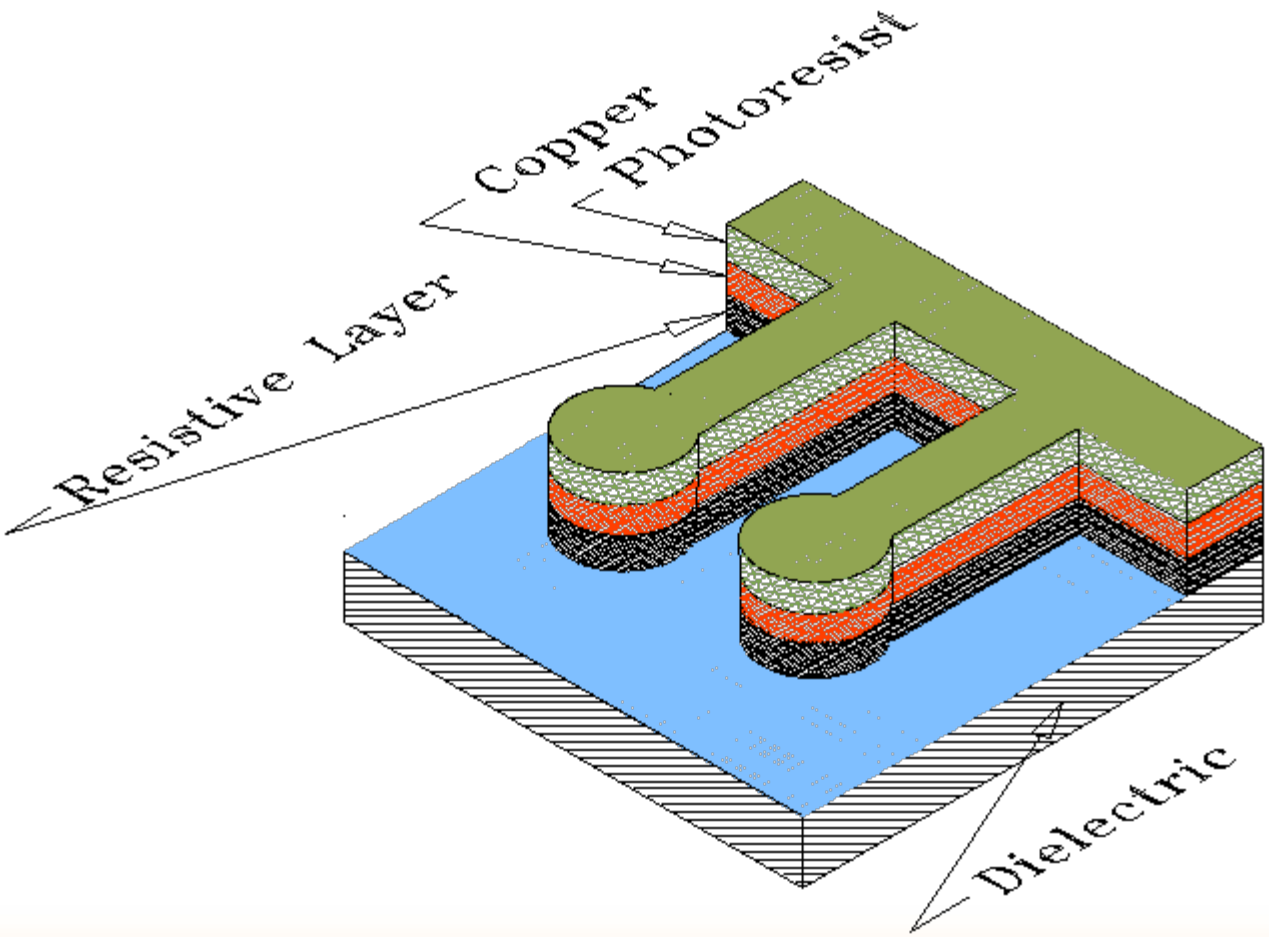
PCB Processing of Ohmega-Ply®

- Step 3: Etch unwanted copper using any conventional etchant (1st etch)



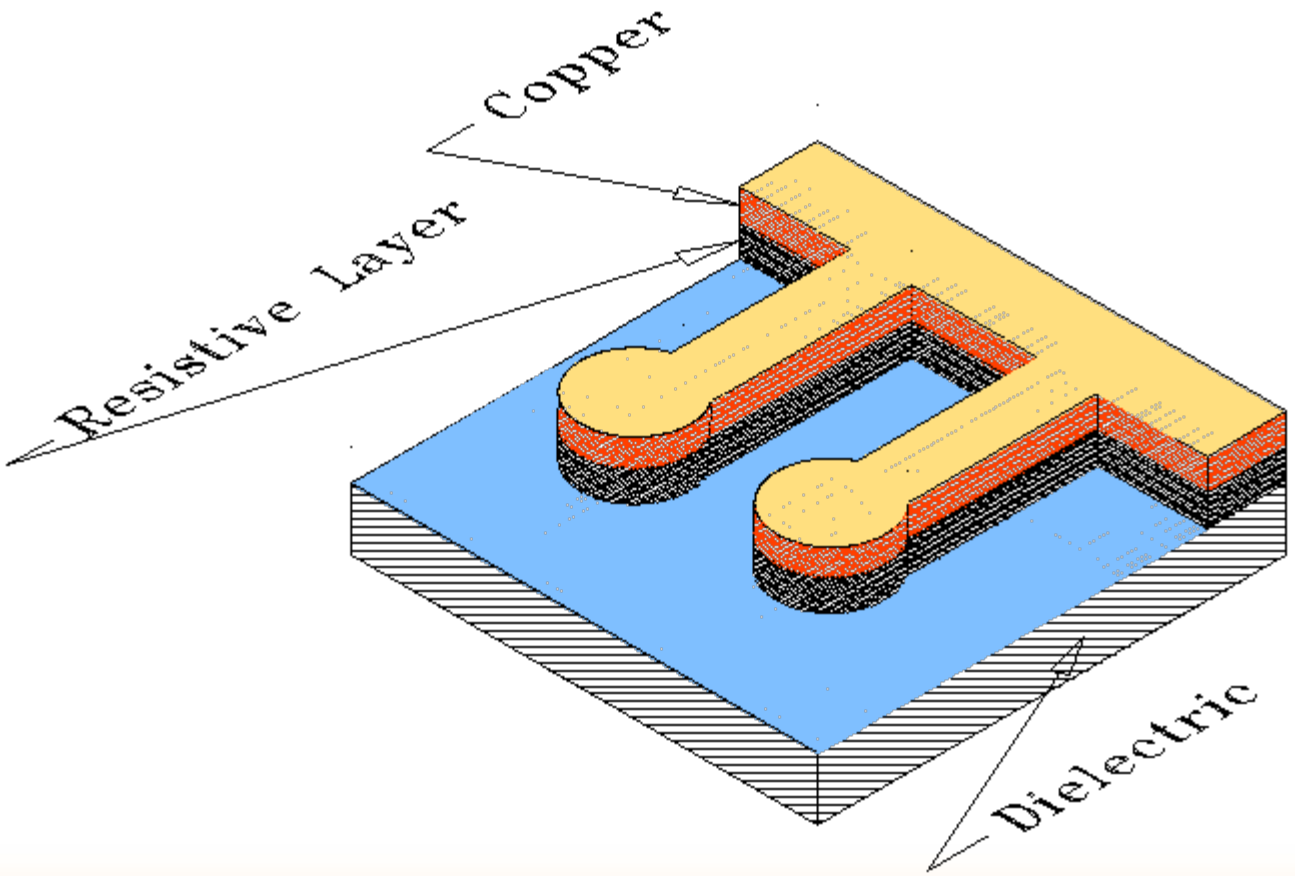
PCB Processing of Ohmega-Ply®

- Step 4: Etch unwanted resistive material with Copper Sulfate solution (2nd etch process)



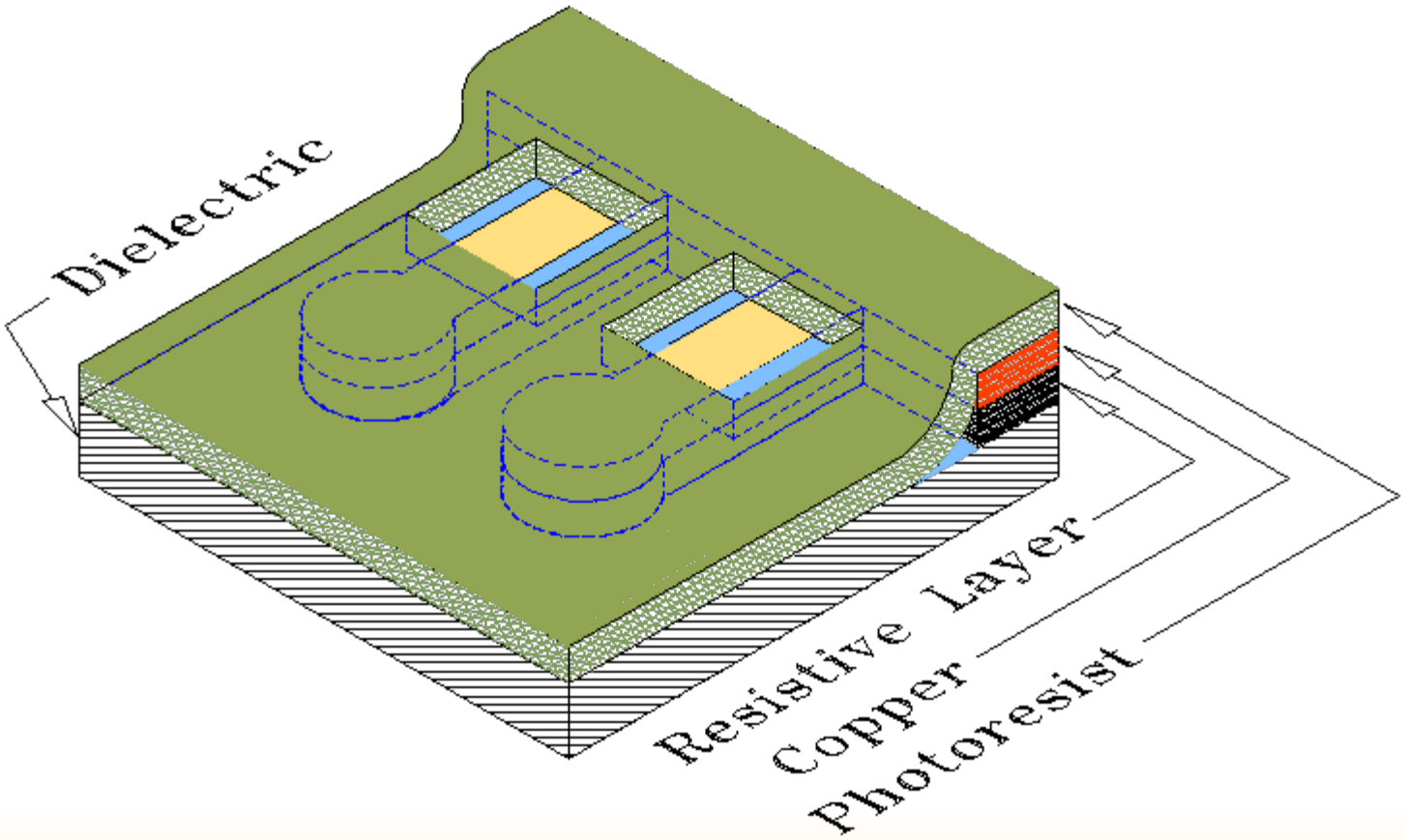
PCB Processing of Ohmega-Ply®

- Step 5: Strip Photoresist



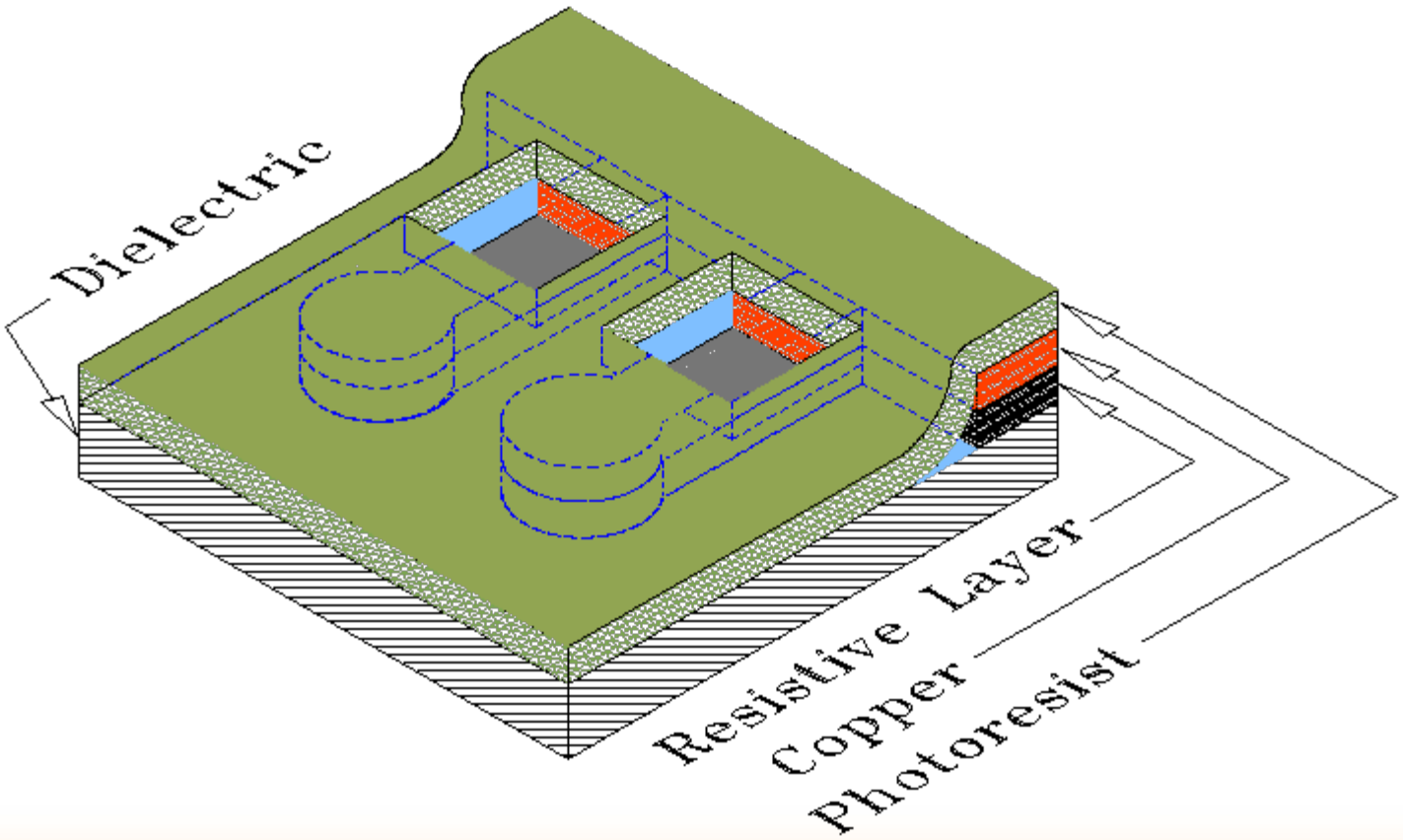
PCB Processing of Ohmega-Ply®

- Step 6: Apply Photoresist, print and develop conductor protect image (2nd print)



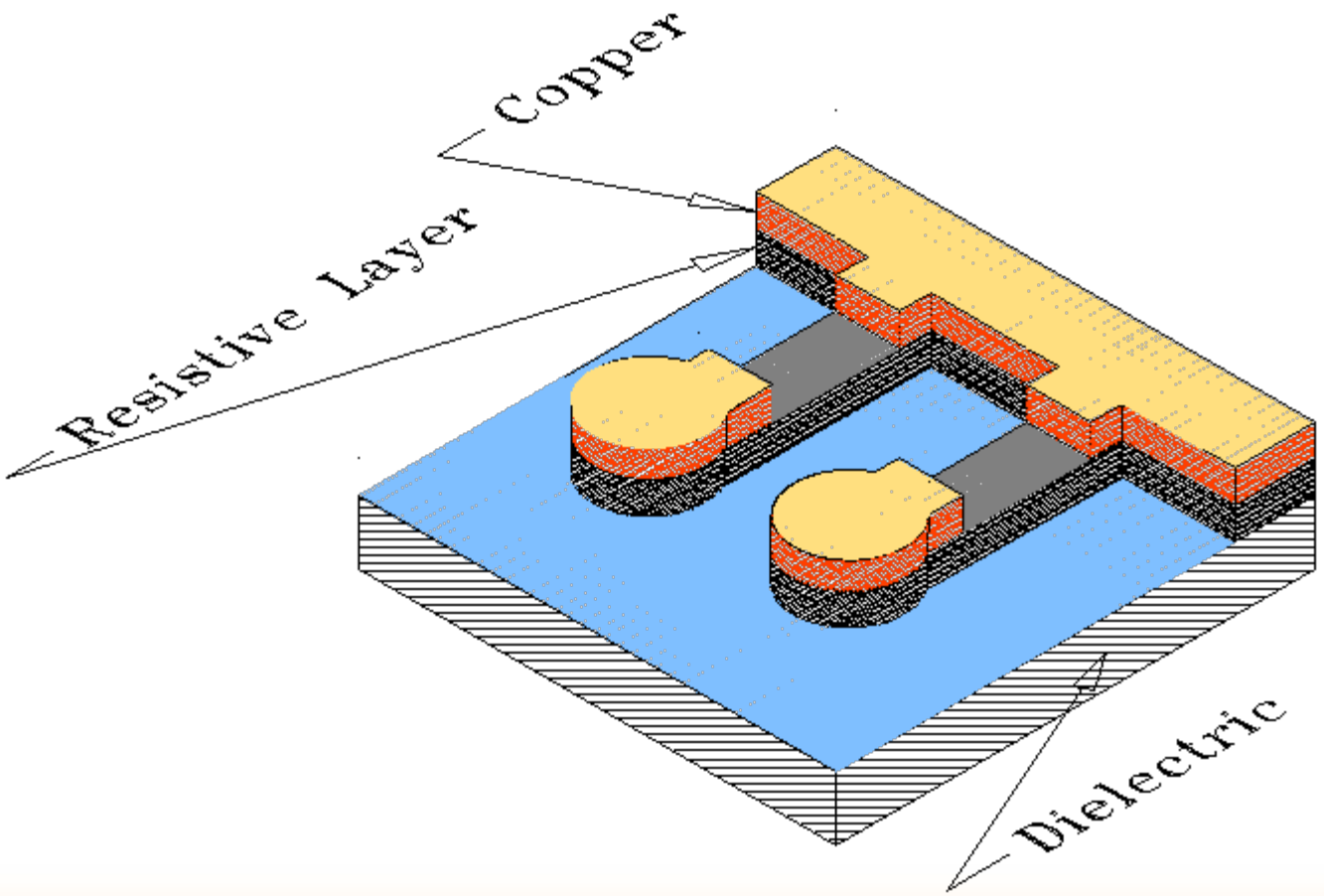
PCB Processing of Ohmega-Ply®

- Step 7: Etch away copper over the designed resistor area using a selective Alkaline etchant (3rd etch)



PCB Processing of Ohmega-Ply®

- Step 8: Strip Photoresist



Note: Additional processing recommendations are posted on the web site.

Surface Resistors and Embedded Resistors

For surface resistors, standard acrylic or epoxy soldermask or conformal coating is applied over the resistors to protect them from damage.

For embedded resistors, standard lamination and bonding cycles are used with the requirement that light weight glass with a high resin content be facing the Ohmega layer in the multilayer stackup.

For fusion bonding, high temperature fusion bonding may increase the sheet resistivity and require artwork correction or special Ohmega materials.

Basic Guidelines for OhmegaPly® Resistors

For detailed processing assistance and email contacts, please contact us:

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