P.W. CIRCUITS LTD

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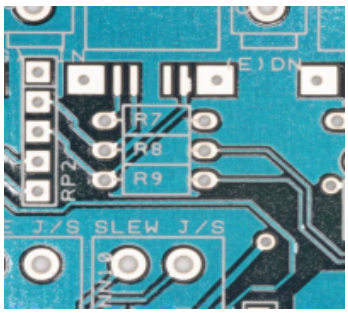

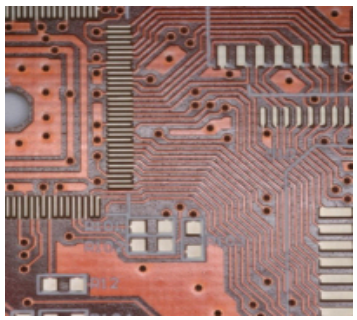

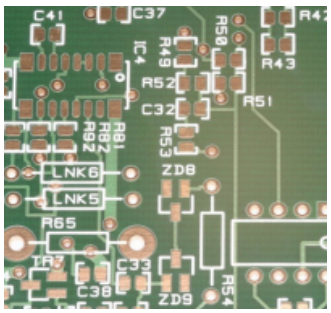

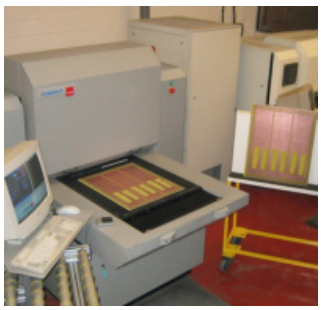

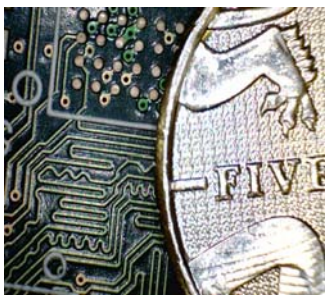

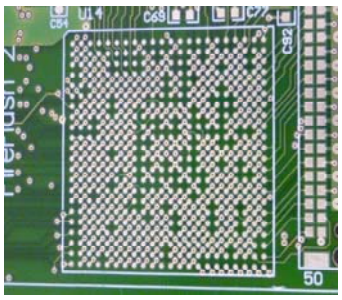

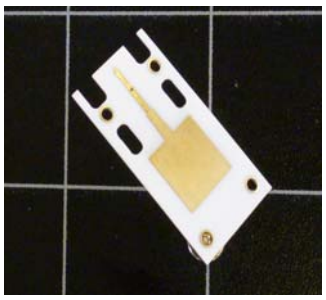

M1035 IECQ-CECC

FM91440

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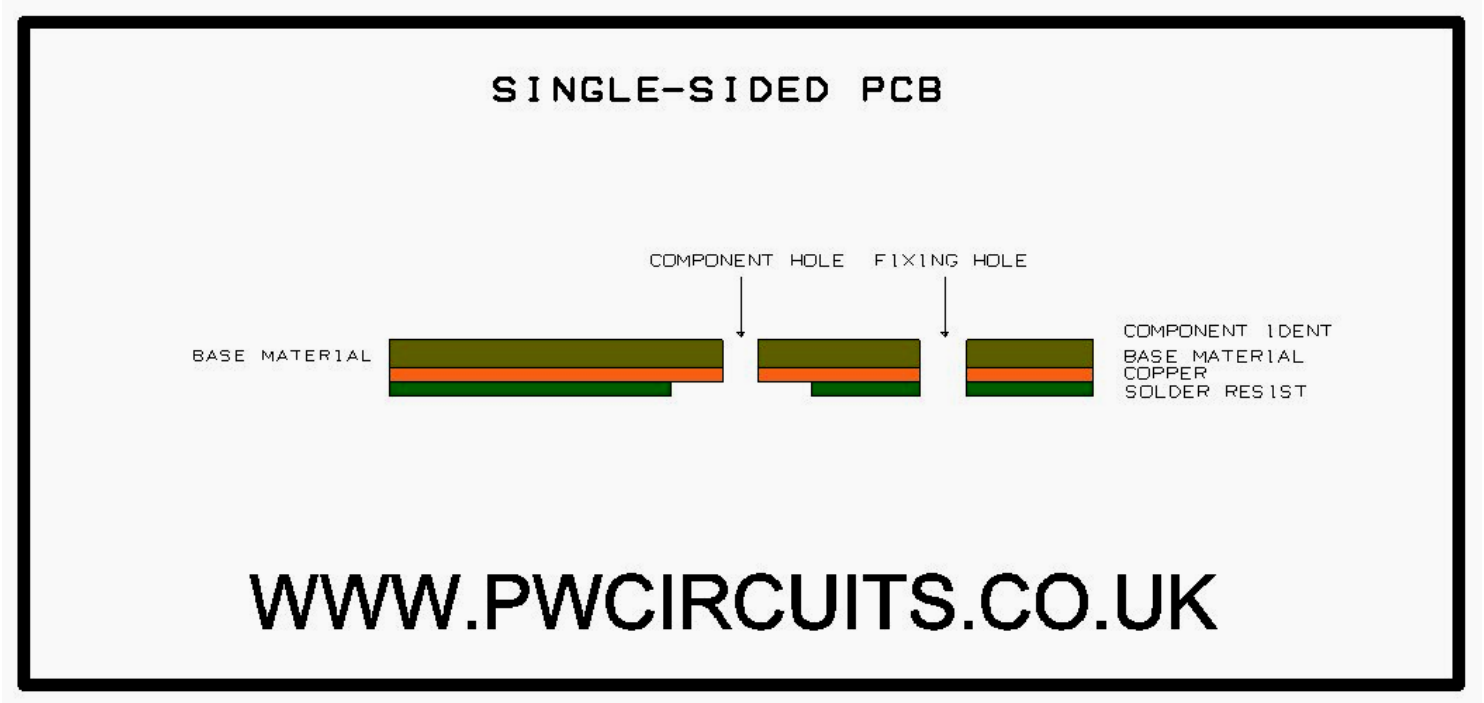
Single-sided pcb's are the simplest and the cheapest type of boards, with a single layer of copper on a rigid base material, solder resist and indents can also be added. This type of pcb can be used for both through hole and surface mount components (figure 1).

Figure 1



Double sided pcb's consist of two copper layer on a rigid base material, the two copper layers are not connected (figure 2). Double sided pcb's with plated through holes have two copper layers that can be connected by a copper plated hole (figure 3), solder resist and indents can also be added. This type of pcb can be used for both through hole and surface mount components.

Figure 2

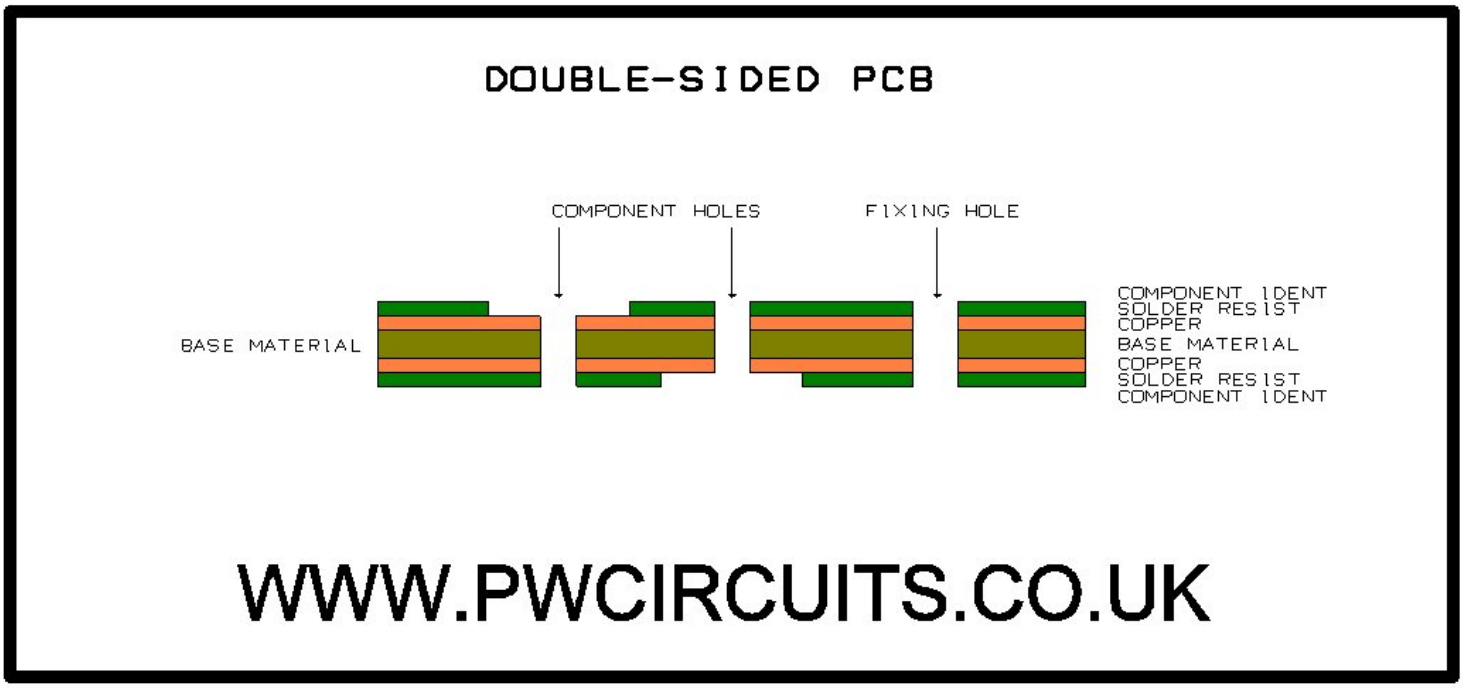


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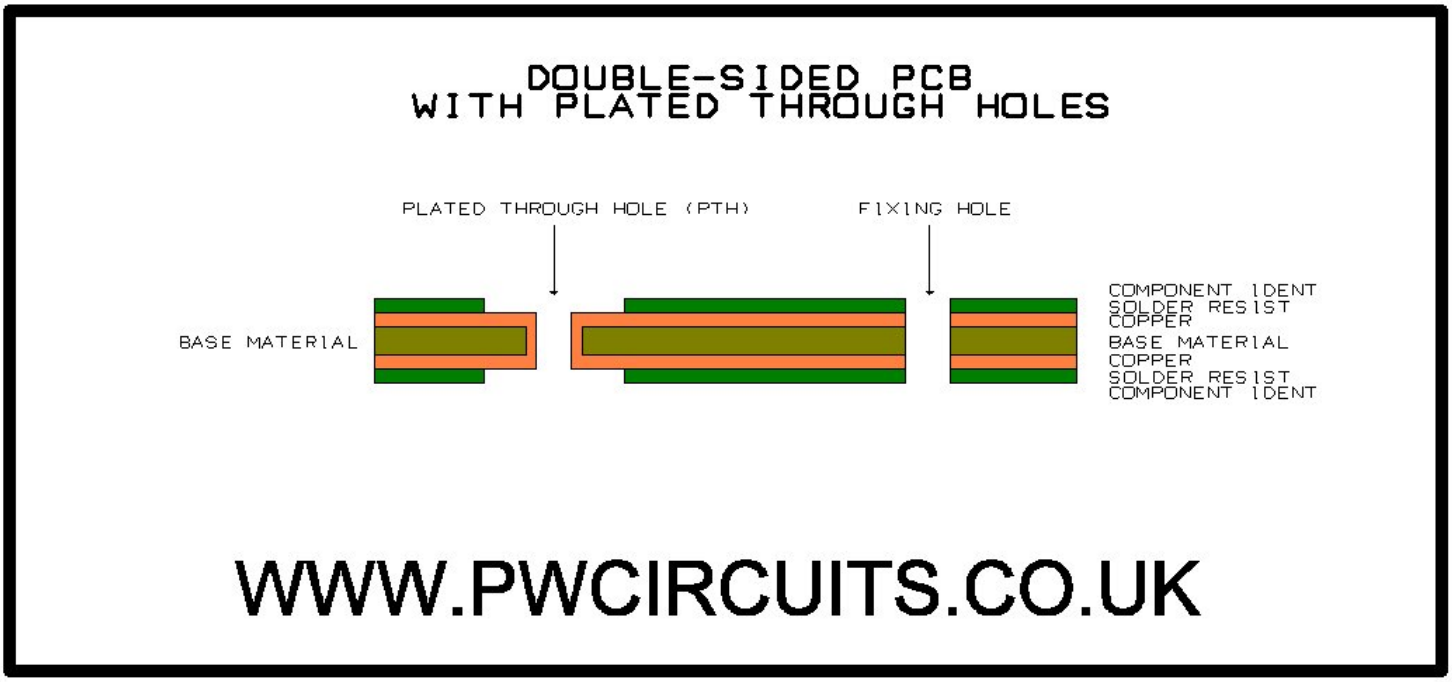
Figure 3



Materials

Rigid pcb's can be made from a wide range of base materials, the standard being FR4 which is a woven fibreglass cloth impregnated with an epoxy resin. The excellent electrical, mechanical and thermal properties of FR4 have made it an excellent material for a wide range of applications. The use of more exotic material such as polyimides, PTFE & Ceramics have been increasing steadily over the last 5 years and are now a large part of PW Circuits manufacturing output. See list below for materials.

Material Types

- FR4
- High TG FR4
- Polyimide
- PTFE
- Ceramic
- Metal Backed

Material Manufactures

- Isola
- PIAD
- Aismalibar
- Polyclad
- Nelco
- Rogers
- Taconic
- Arlon

Solder resist

Liquid photo imageable solder resist can be applied using our Vilon 3000 curtain coat line for standard green colour, other colours can be applied. Please note the colours below are only examples.

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Surface Finishes

A range of surface finishes can be applied, all produced in house and the thickness checked using our CMI XRF coating measurement System.

Hot Air Solder Level (HASL) SnPb Not RoHS Compliant

Leaded HASL was the traditional finish prior to RoHS, This finish is still available where RoHS exemption is permitted. It is applied by solder dipping the pcb followed by removal of excess solder by blowing with air-Knives to produce a flat solder finish.

Immersion Silver

Immersion silver is a RoHS compliant finish. It is produced by the selective displacement of the copper atoms by silver atoms on the exposed copper surface. It is compatible with surface mount, BGA and through hole components.

Electroless Nickel Immersion Gold (ENIG)

ENIG is a RoHS compliant finish. It is applied through the deposition of an initial layer of Nickel onto the copper surface, followed by a thin protective layer of gold, Nickel characteristics of hardness, wear resistance, solderability and uniformity of deposition makes this an excellent surface finish. The thin layer of gold preserves the solderability of the finish by preventing oxidisation of the highly active nickel surface. It is compatible with surface mount, BGA and through hole components.

Electrolytic Nickel Electrolytic Gold (Hard Gold)

Electrolytic Nickel – Gold is a RoHS compliant finish. Unlike electroless finishes, being an electrolytic process an electric current is required to plate the gold onto the board. The most common application of hard gold is edge connectors, hard gold may also be plated over the entire pcb.

Organic Solderability Preservatives (OSP)

OSP is a RoHS compliant finish. It is an anti-oxidant film applied to the exposed copper surface. It reacts with the copper to form an organo-metallic layer, the coating is virtually invisible.

Component Ident

Component idents (Legend) can be applied, standard colour is white but other colours are available. Please note the colours below are only examples.

Profiling

Pcb’s can be routed in to individual boards or can be supplied on panel form with the use of pips to hold the pcb’s into the panel, the use of internal breakout holes can also be used to allow a flat edge when pcb’s are removed from the panel. The standard router size is 2.40mm which would leave a 1.20mm radius on internal cut outs, other router sizes are available. Pcb’s can also be supplied in a scored panel, this can result in an increased number of pcb’s per panel.

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Capabilities

Attribute	Standard Production	Advanced Production	Future Development
Maximum Board Size	610mm X 508mm 24.00 X 20.00	762mm x 610mm 30.00 X 24.00	Call PW Circuits 0116 2785241
Maximum Board Thickness	2.40mm	6.00mm	10.00mm
Minimum Board Thickness	0.100mm	0.075mm	0.050mm
Copper Thickness	Up to 3oz (0.105mm)	Up to 15oz (0.525mm)	Call PW Circuits 0116 2785241
Minimum Track Width	0.1524mm (0.006”)	0.1016mm (0.004”)	0.0508mm (0.002”)
Minimum Track Space	0.1524mm (0.006”)	0.1016mm (0.004”)	0.0508mm (0.002”)
Minimum Drilled Hole	0.250mm	0.150mm	0.100mm
Minimum Router Size	0.80mm	0.60mm	0.40mm
Maximum Aspect Ratio	8:1	15:1	18:1
Minimum Annular Ring	0.1524mm (0.006”)	0.1016mm (0.004”)	0.0508mm (0.002”)
Profile Tolerance	+/- 0.200mm	+/- 0.150mm	+/- 0.100mm
Hole Size Tolerance (Drilled)	+/- 0.100mm	+/- 0.075mm	+/- 0.050mm
Hole Size Tolerance (Routed)	+/-0.200mm	+/-0.150mm	+/-0.100mm
Minimum Legend Line Width	0.2032mm (0.008”)	0.1524mm (0.006”)	0.1016mm (0.004”)
Legend To Copper Pad Clearance	0.2540mm (0.010”)	0.1524mm (0.006”)	0.1016mm (0.004”)
Solder Resist to Copper Pad Clearance	0.1524mm (0.006”)	0.1016mm (0.004”)	0.0508mm (0.002”)
Minimum Surface Mount Pad – BGA Pad Size	0.2032mm (0.008”)	0.0508mm (0.002”)	Call PW Circuits 0116 2785241

Please visit www.pwcircuits.co.uk/capabilities for a full list of P.W. Circuits capabilities.