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(54) Title: COMPLEX WAVEFORM FOR ELECTROLYTIC PLATING

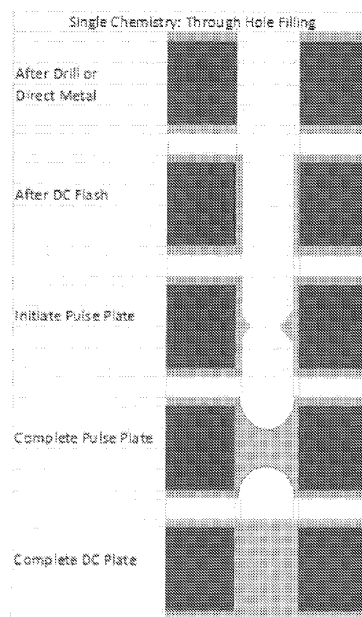


Figure 1

(57) Abstract: A method of copper electroplating in the manufacture of printed circuit boards. The method is used for filling through-holes and blind micro-vias with copper. The method includes the steps of: (1) preparing an electronic substrate to receive copper electroplating thereon; (2) forming at least one of one or more through-holes and/or one or more blind micro-vias in the electronic substrate; and (3) electroplating copper in the at one or more through-holes and/or one or more blind micro-vias by contacting the electronic substrate with an acid copper electrolyte. The acid copper electrolyte is used to plate the one or more through-holes and/or the one or more blind micro-vias using a complex waveform including pulse reverse plating, DC plating and/or synchronous pulse plating. The complex waveforms can be used for filling through-holes and blind microvias with copper without defects.

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WO 2022/271390 A1

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