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## **GENERAL REQUIREMENTS**

### **PCB DESIGN**

- Polarity of polarity-sensitive components indicated on the overlay (standard practice is: for diodes mark the cathode, capacitors mark the positive, IC's or multiple pin components mark pin 1)
- Designators supplied in BOM match the PCB overlay
- Sufficient clearance between components
- No solder mask or overlay on SMD pads
- Sufficient solder mask on tracks to stop solder migration from SMD pads to other parts of the circuit (via's, through-hole pads or other SMD pads)
- No via's-in-pads unless absolutely necessary, any via not isolated from an SMD pad by solder mask to be "tented"
- No via or other heatsinks attached to SMD pads without thermal relief
- SMD pad size correct for component being mounted
- PCB with a long thin shape should have approximately equal copper load on top and bottom sides
- Even on PCB's with single sided tracks, double-sided plated through-holes are preferred for component pads

### **THROUGH HOLE REQUIREMENTS**

- Holes in pads are large enough to allow component pins to fit easily
- Pad size sufficient for the size of the through hole
- Pad integrity maintained when waved or hand soldered

### **SPECIAL ASSEMBLY INSTRUCTIONS**

- Special instructions supplied if required (eg, gluing/staking, component mounting height, wire links etc)
- Labelling or serial numbering information supplied if required
- Conformal coating requirements specified if required

### **BOARD QUALITY**

- Solder mask will retain integrity through reflow oven/solder wave
- No etching shorts or opens (Bare board testing advised)
- Plating in via/component pad holes is continuous and the adhesion of the plating to the wall is sufficient to withstand reflow process
- Solderability of tinning/plating on pads adequate for reflow/wave soldering process

**PARTS PURCHASING/BILL OF MATERIALS**

- All component part numbers & package type specified
- SMD or Through Hole specified
- Footprint or Lead pitch specified
- Brand name and manufacturer part number specified if critical
- Preferred supplier and suppliers part number if you have a preferred source
- Any other relevant specifications noted (such as power rating, voltage rating, capacitor dielectric, tolerance, temp rating, etc) - specify minimum requirements
- Cross reference to Farnell part numbers for non-critical components
- Specifications to which the PCB's are to be manufactured

**CUSTOMER SUPPLIED MATERIALS**

- SMD components and packaging supplied are appropriate for Pick & Place machine
- Each reel of SMD components must have a leader of 200mm for use on the P&P machine
- IC Tubes & waffle trays have not had contents tampered with, and all have the same orientation
- Components are not to be oxidized or have aged terminations

**COMPONENTS NOT MEETING THE ABOVE REQUIREMENTS WILL BE REJECTED AND MAY CAUSE DELAYS**

**PICK & PLACE MACHINE REQUIREMENTS**

**MAXIMUM PANEL AREA**

- 450mm x 330mm expandable to 450mm x 500mm

**FIDUCIAL MARKS**

- 1mm diameter plated disk with good contrast between disk and surrounding area
- Minimum of 2 fiducial marks at diagonally opposite corners of PCB
- Fine pitch fiducial at diagonally opposite corners external to package outline
- No fiducial marks required for the panel

**SOLDER PASTE STENCIL**

- No restriction on size, but Surtek uses 30mm<sup>2</sup> box aluminium 650mm x 590mm frame with 530mm x 430mm stainless steel shim, thickness of 5 thou, laser cut with only fine pitch apertures reduced in size.

**BOARD GEOMETRY**

- No restriction: Surtek uses moveable magnetic edge holders

**COMPONENT ORIENTATION**

- No restriction

**PANEL SET-UP**

- Vee grooving is preferred if space permits
- 10mm tooling strip
- 4mm tooling holes in each corner of the tooling strip
- Identical step and repeat across panels is preferred
- Surtek prefers to use "A4" or "A5" size panels depending on actual PCB size (half & quarter sub panels of a 420mm x 270mm usable panel)