Design and Routing of the Constant Current Source Board for SoLID

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Contents

• PCB Layers
  – All layers
  – Top layer
  – Power plane
  – Ground plane
  – Bottom layer

• Initial routing notes
PCB Layers (All)

- Minimum clearance: 20 mils
- Min. trace width: 15 mils
- Eight constant current channels
- Channel pitch: 895 mils
- Four layers each with 1oz. copper
Component Layer (Top)

- Eight heat sink pads are connected to the Tip29C transistor collector and are not connected to any planes.
- The heat sink is connected via the top through-hole pad with solder; the heat sink does not sit flat to the copper pour.
• Three areas of 1 oz. copper with 25 mils clearance:
  - 30 V, 15 V, 1 V
One continuous plane of 1 oz. copper
• Eight copper pours are connected to the Tip29Cs’ heat sink
• Regulator output trace (50 mils)
Layer Stack-up

PCB thickness is ~62 mils
Hall C’s Constant Current Source Board - Views

Max component height: 0.6 in. at TIP29c heat sink
The initial routing is complete

- The design has two voltage selections for each channel (15 V or 30 V)
  - What sensor types will utilize the alternate voltage?
  - Current CCS uses a single voltage (24 V)

- Design review has started

- Components to make 10 boards have been ordered
Conclusion

• Design and routing of CCS completed

• Design review started

• Components ordered
  – All parts are in stock and should arrive in January 2020
Thank You