

1 Introduction

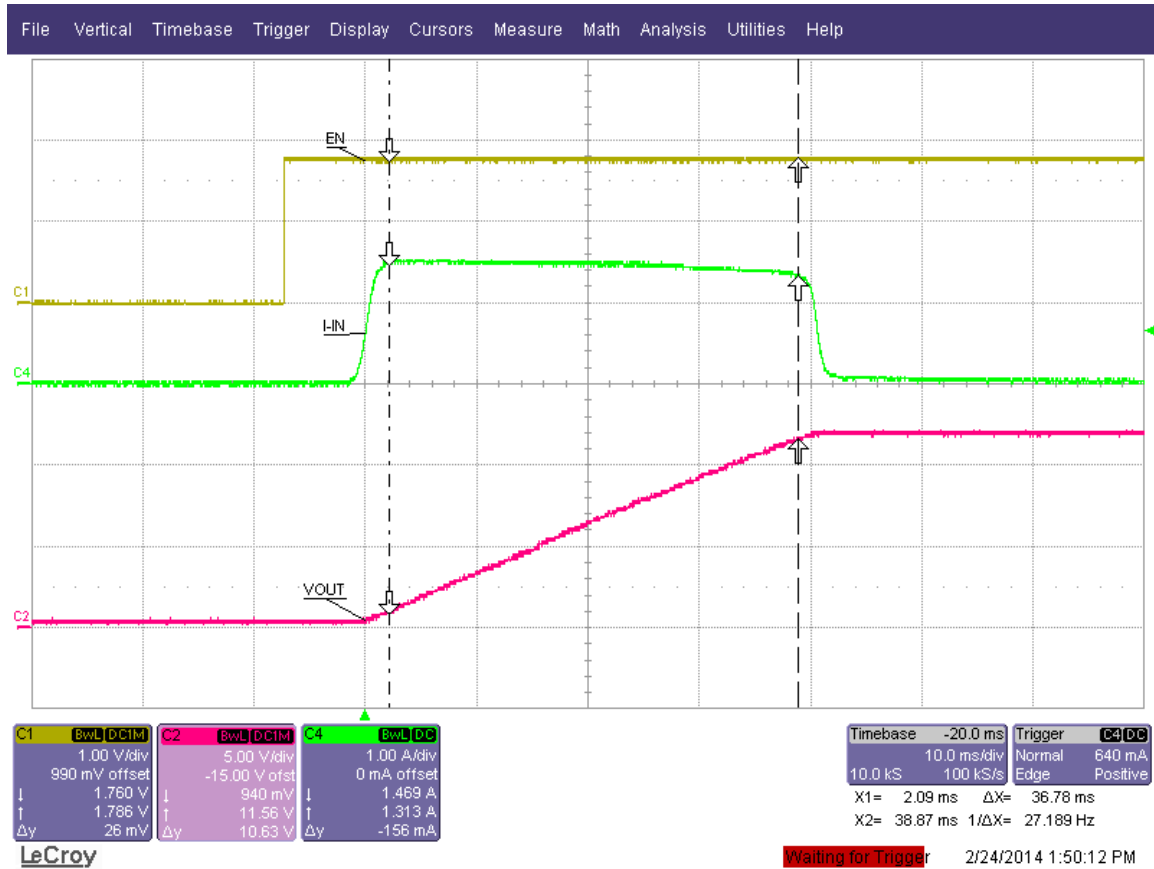
PMP9616B is a TPS2490 based hotswap for 12VDC bus, high current applications. Constant current start up using dV/dT control is implemented to keep the inrush current between 1 and 2 amps. This is built on PR763 Rev B PCB which was designed for an application report (SLUA500)

2 Customer requirements

The customer requirement was 12V, 700W, with an output capacitance of 3000uF. Inrush current should be between 1 and 2 A.

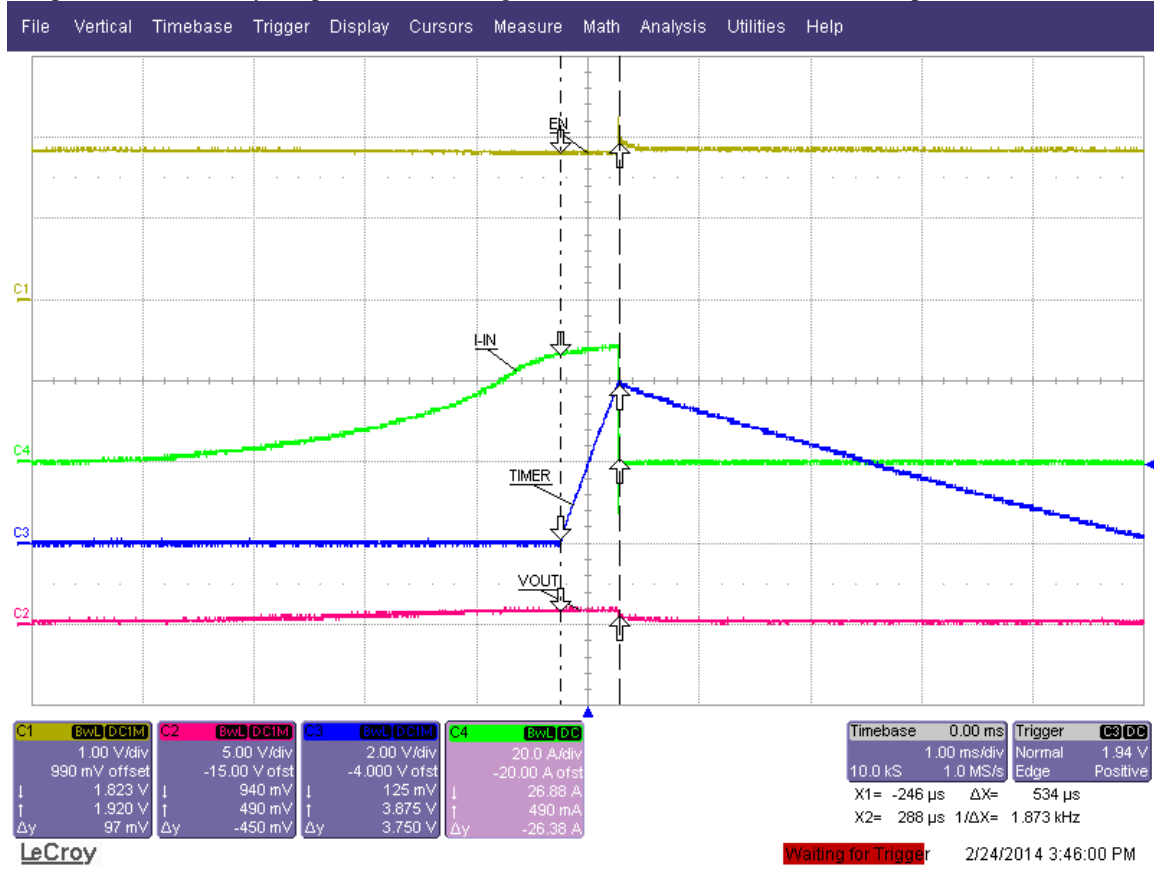
3 Start up waveform

Unloaded start up is shown below. The total output capacitance on PMP9616B is 2x 2200uF capacitors and the inrush current to charge these capacitors is ~1.5A as shown below. Ramp up time is on the order of 40ms.



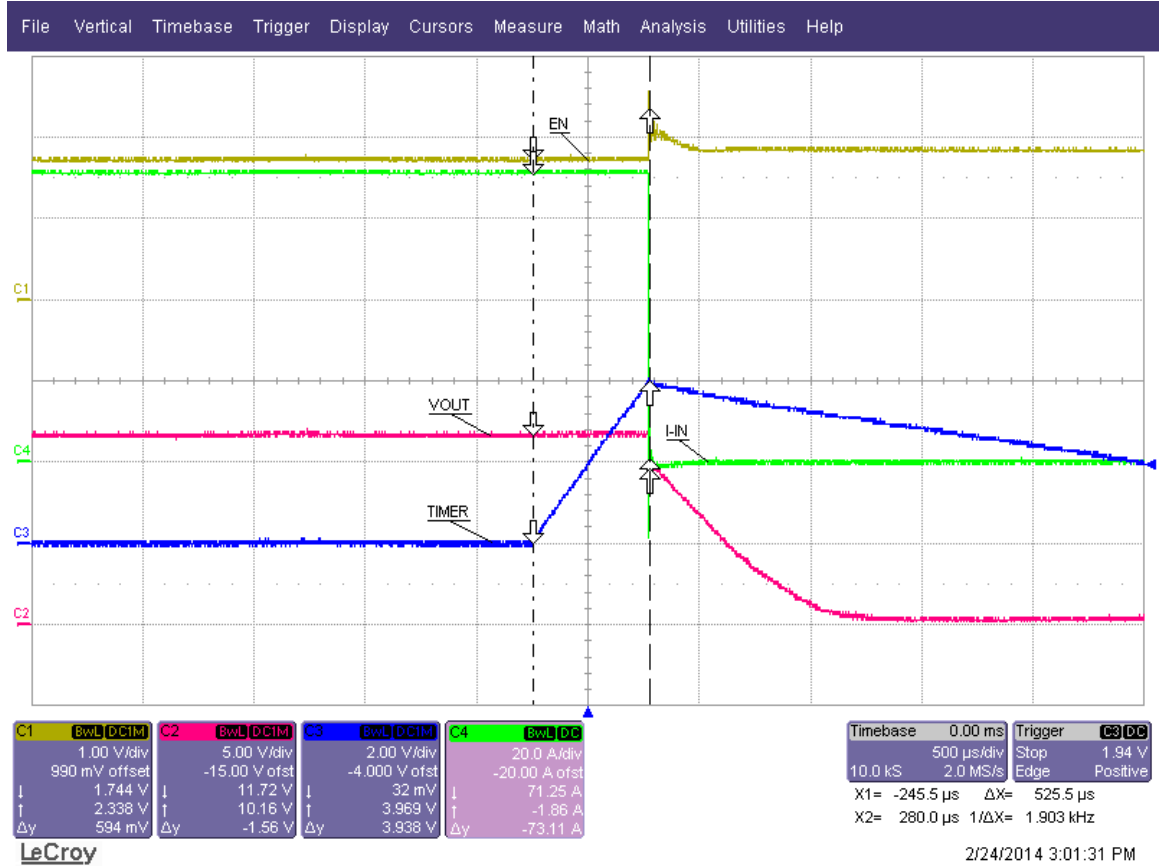
4 Start up waveform into shorted output

The plot below shows the start up if the output is shorted. In this case, when the input current gets to ~26A (set point determined by the power limit setting) the timer runs and shuts the hot swap off.

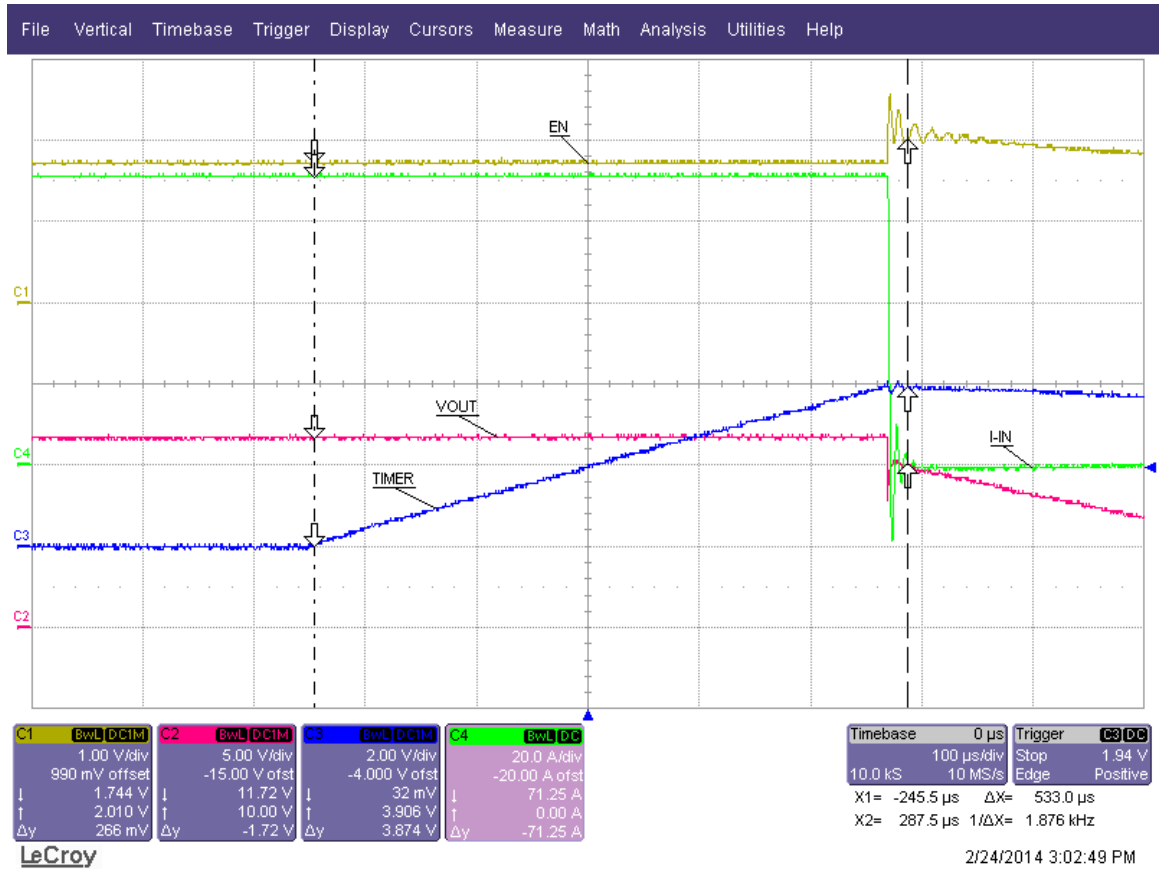


5 Output over-current trip point

The load current is slowly ramped up until the OCP kicks in and the output shuts off. The OCP trip point is ~71A and the fault timer runs for ~525us.

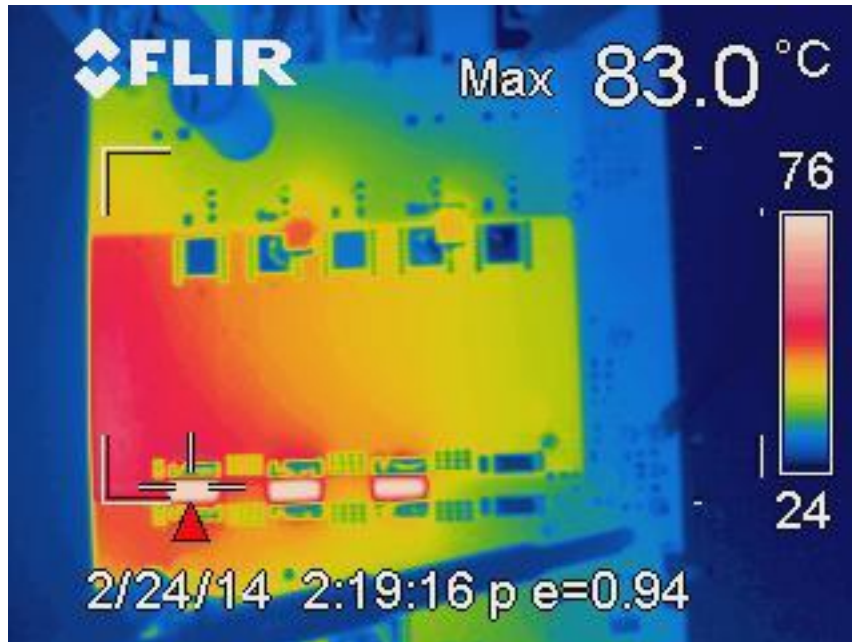


6 Output over-current trip point zoomed in.

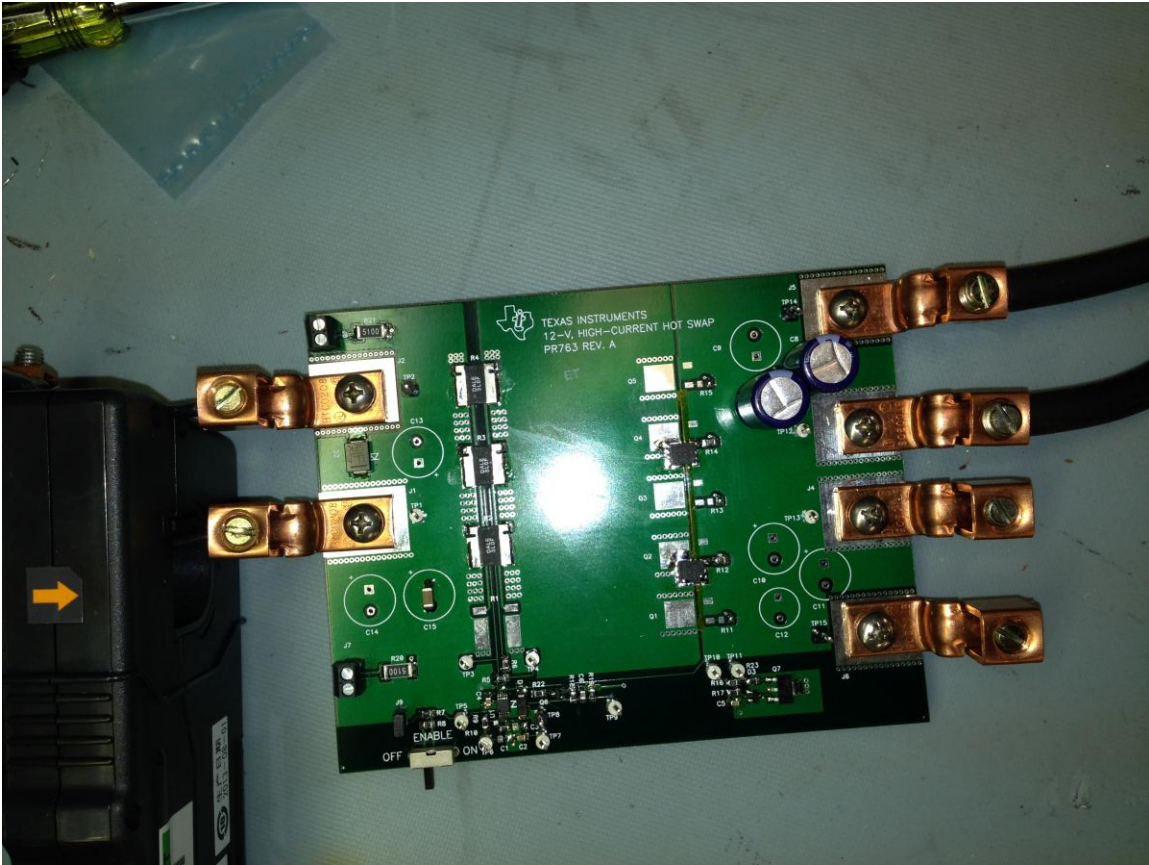


7 Thermal scan when operating at 60A

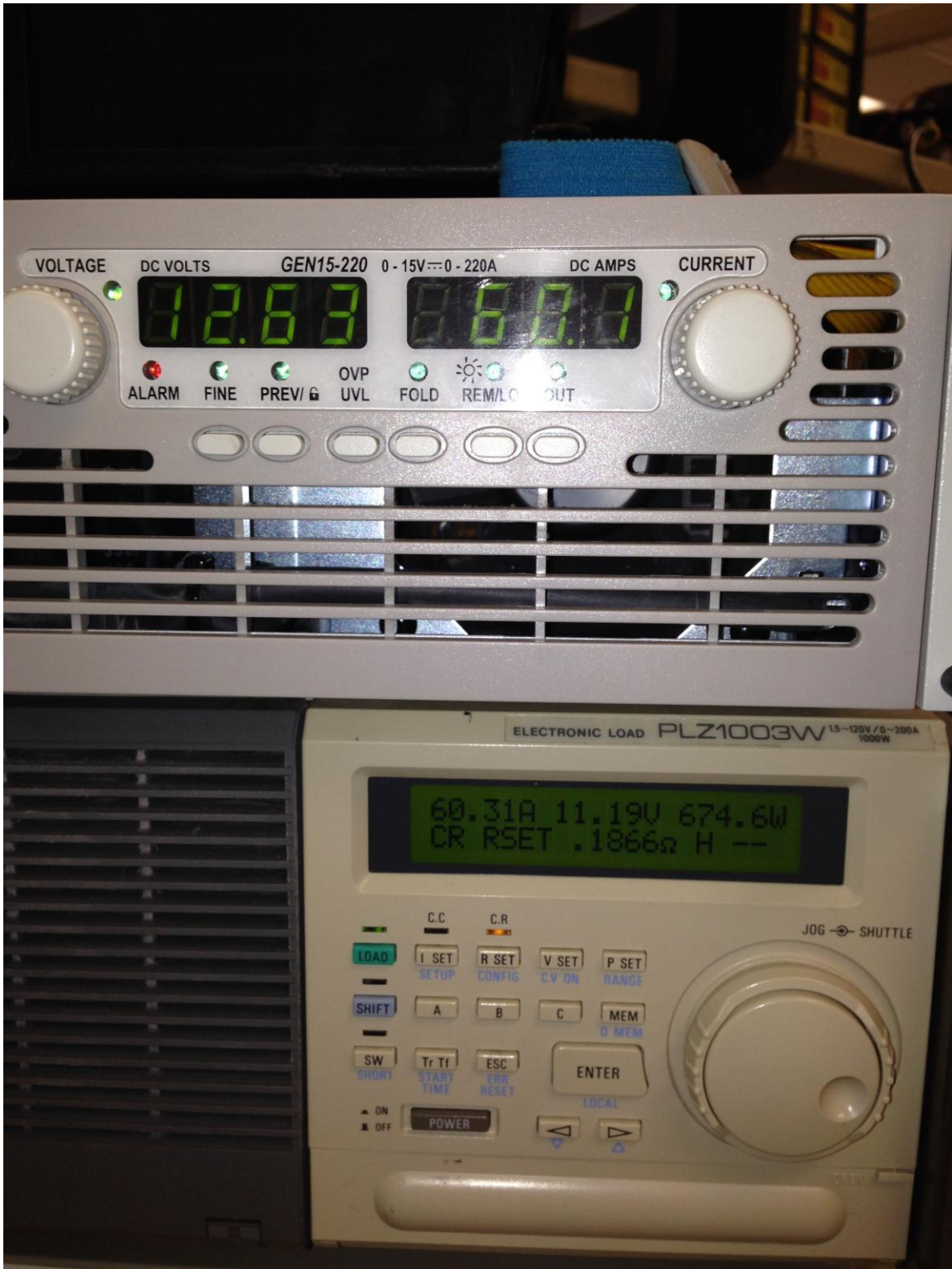
The scan below shows heating of the PCB when operating at 60A. The lower left current sense resistor shows a maximum of 83C while the FETS are ~60C.



8 PMP9616B Photograph.



9 Equipment Photograph.



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