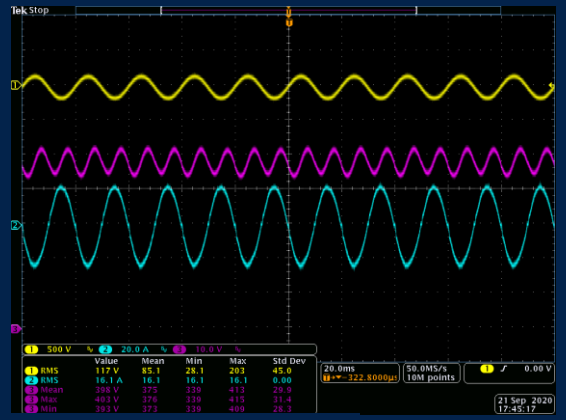
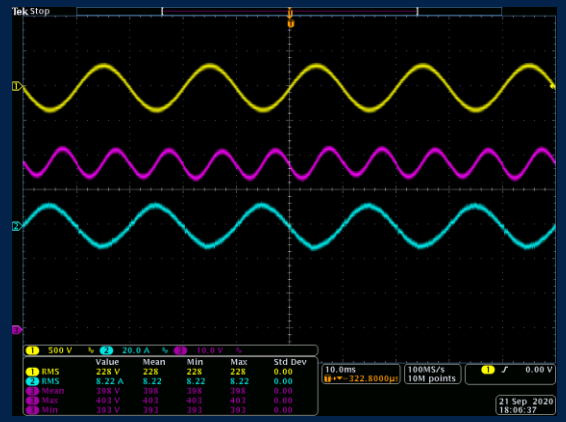
AC input current measurement

- 115Vac, 800W

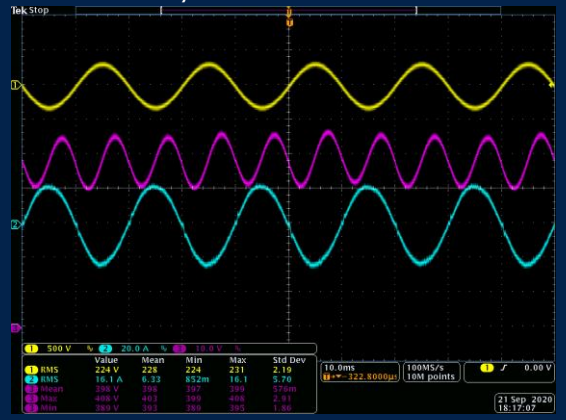
- 115VAC, 1600W



- 230Vac, 1800W

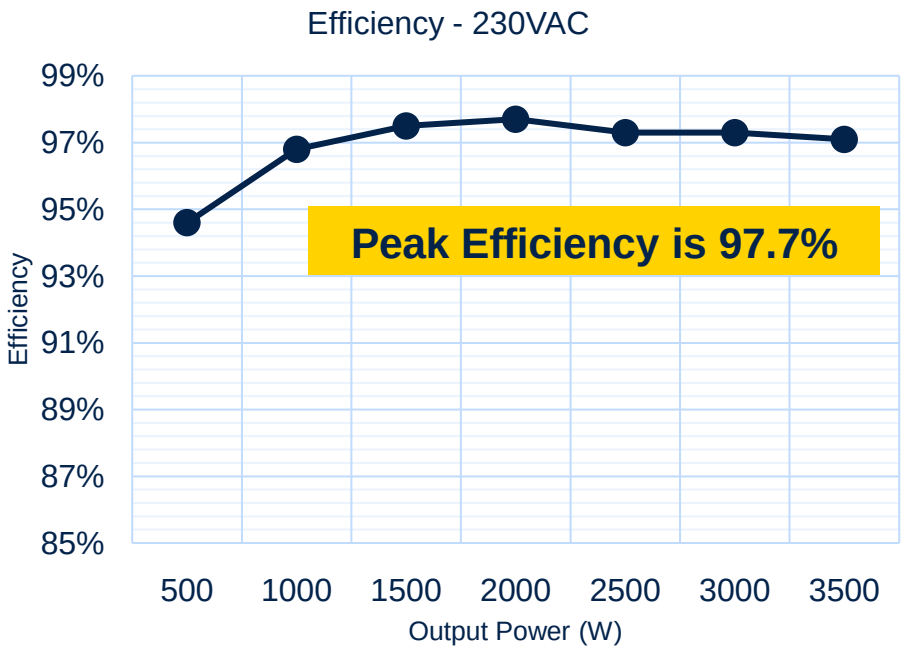


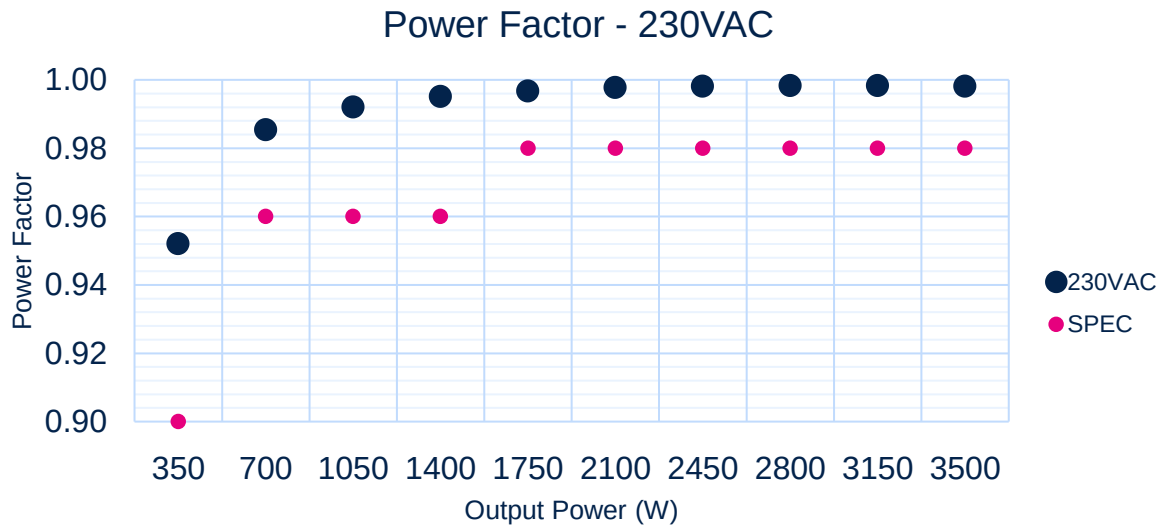
- 230VAC, 3500W

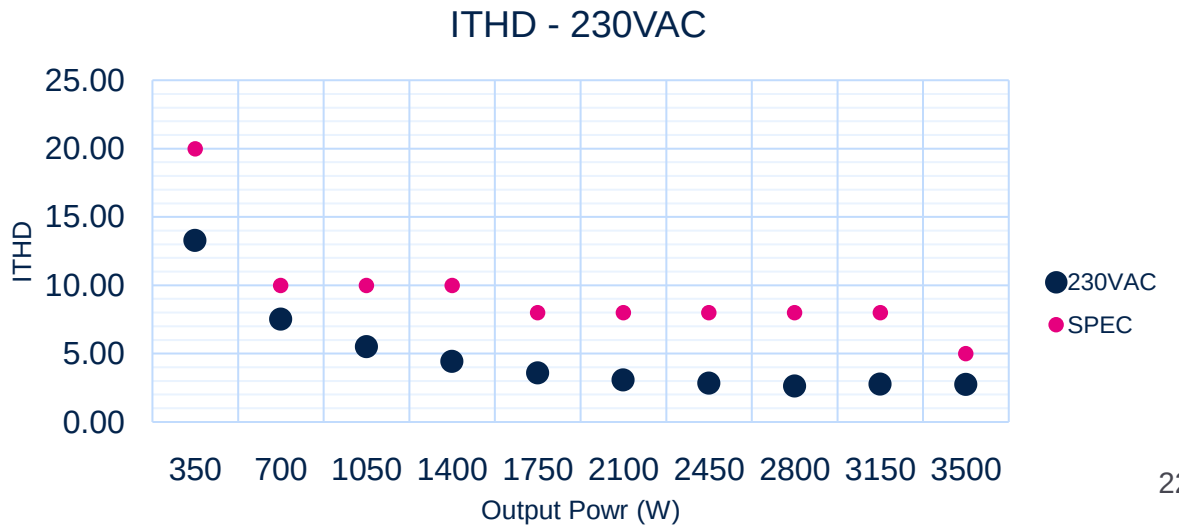


CH1: Input Voltage
CH2: Input Current
CH3: PFC Output Voltage

Efficiency / ITHD / power factor

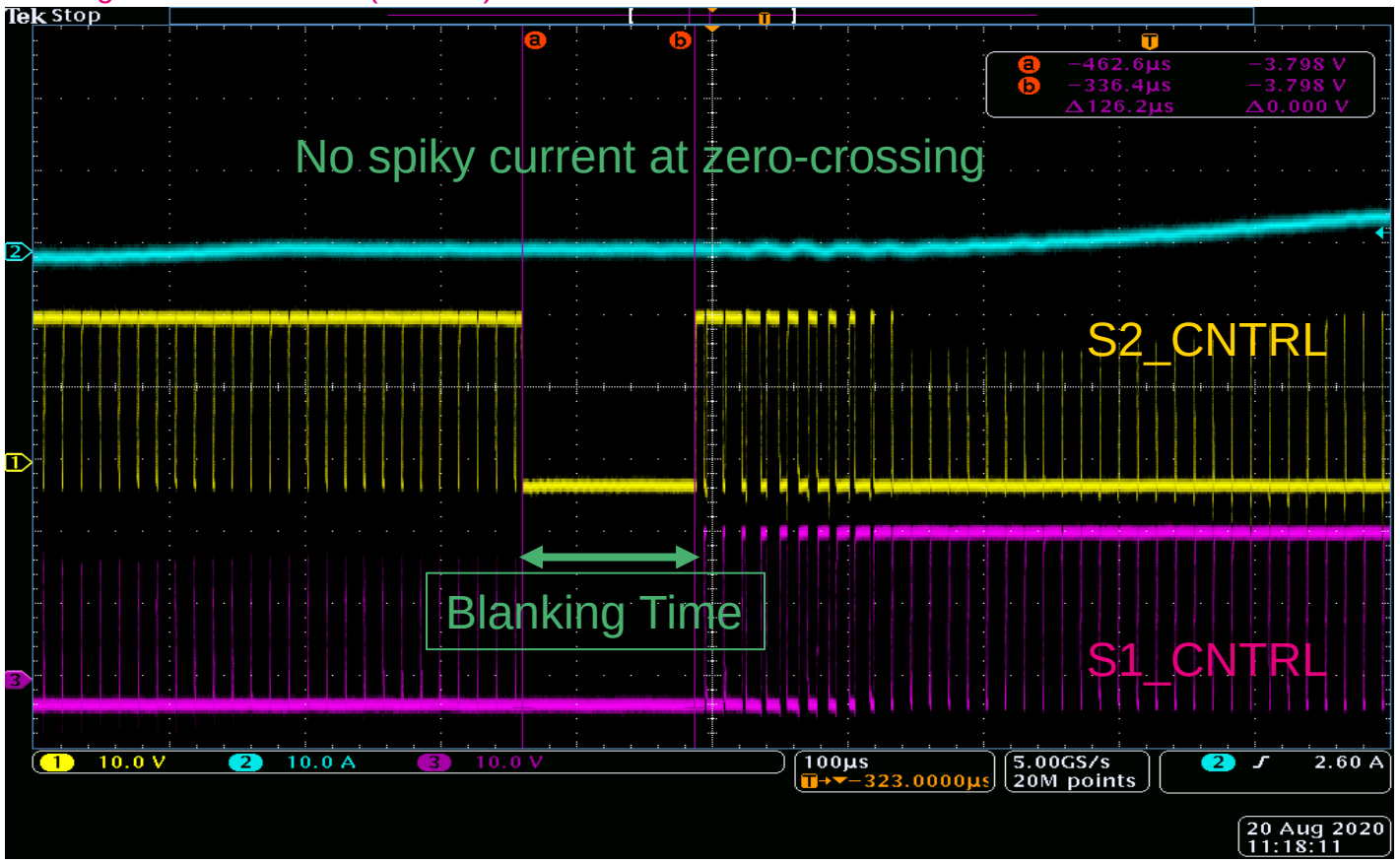






Soft duty cycle control to reduce current spike

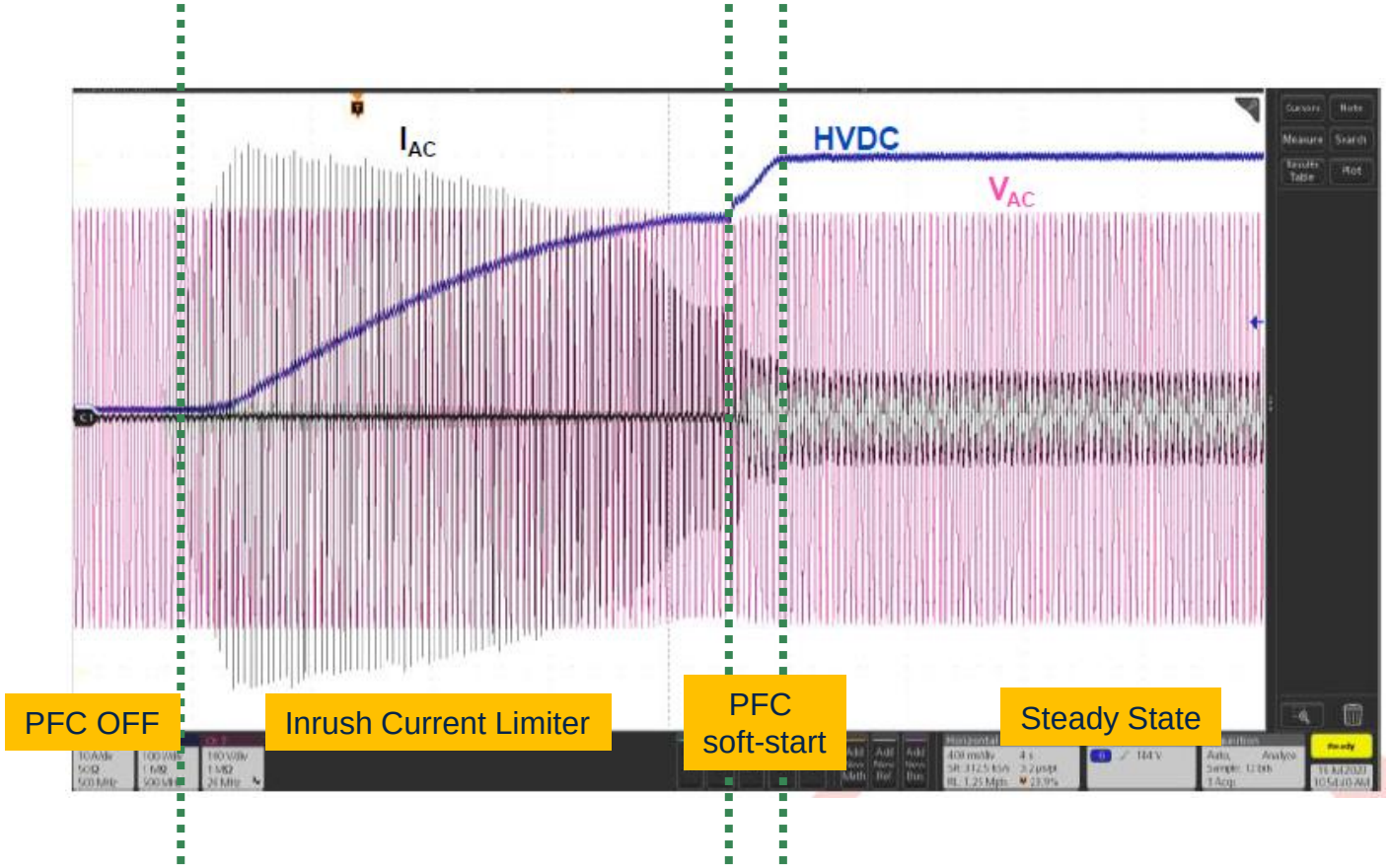
CH1: Vgs of high-side SiC (10V/div)
CH2: Input Current (10A/div)
CH3: Vgs of Low-side SiC (10V/div)



- S1 or S2 (according to AC line polarity) starts a soft turn-on with a small pulse width and gradually increases.
- The control loop should freeze during this blanking time to avoid the integrator of the current loop generating a large PWM pulse, which can cause a large current spike.

Inrush Current measurement

VAC = 230VRMS @ 50Hz, POUT = 1kW



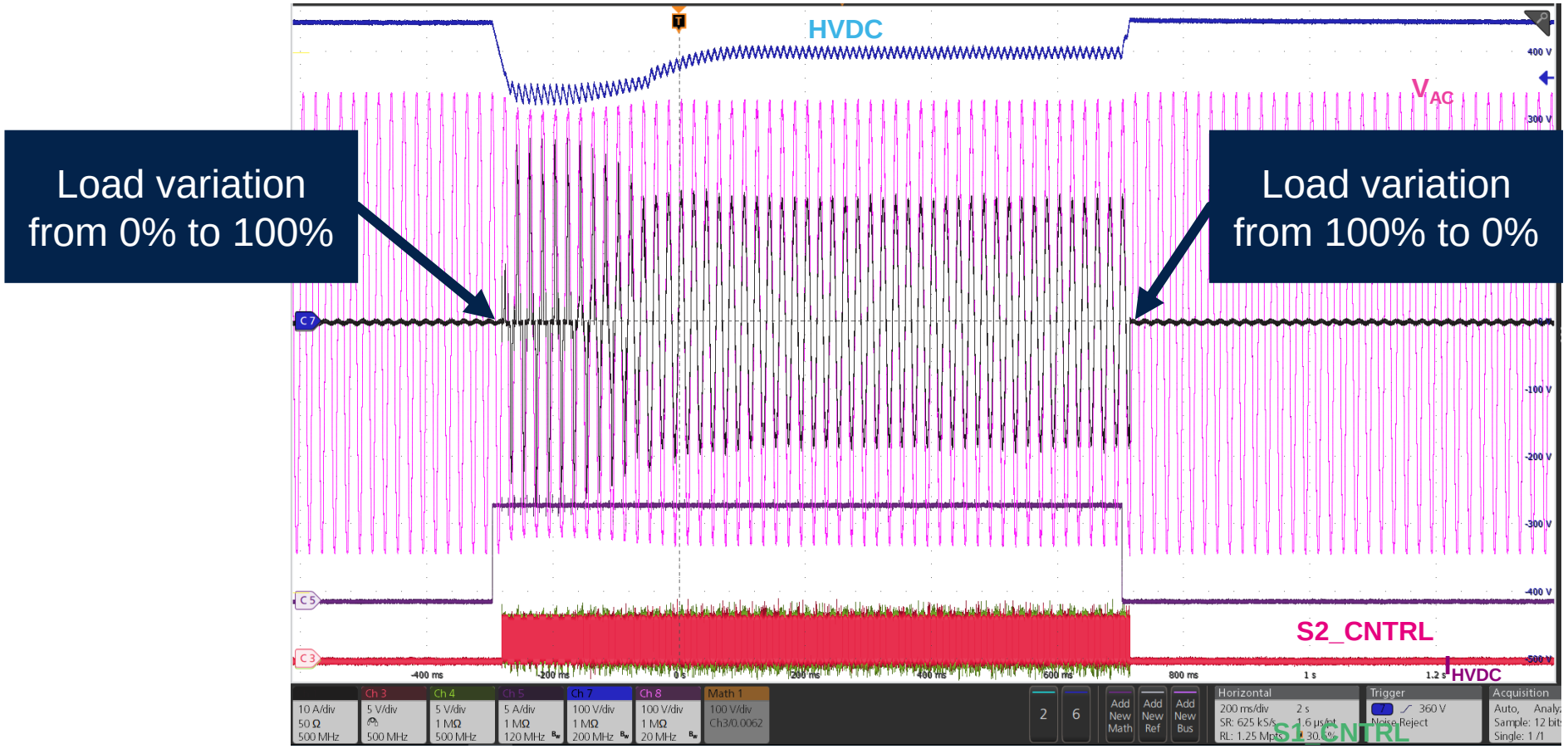
To ensure a smooth PFC start-up, a soft start routines has been implemented on the MCU firmware:

- **Inrush current limiter**: SCRs are controlled with a progressive phase control and the output capacitor can be smoothly up to the AC line peak voltage.
- **PFC soft start**: The output voltage reference is controlled from AC line peak voltage to 400V dc with a smoothly voltage ramp.

Load variation

Excellent transient load variation thanks to feed forward digital implementation

VAC = 230VRMS @ 50Hz

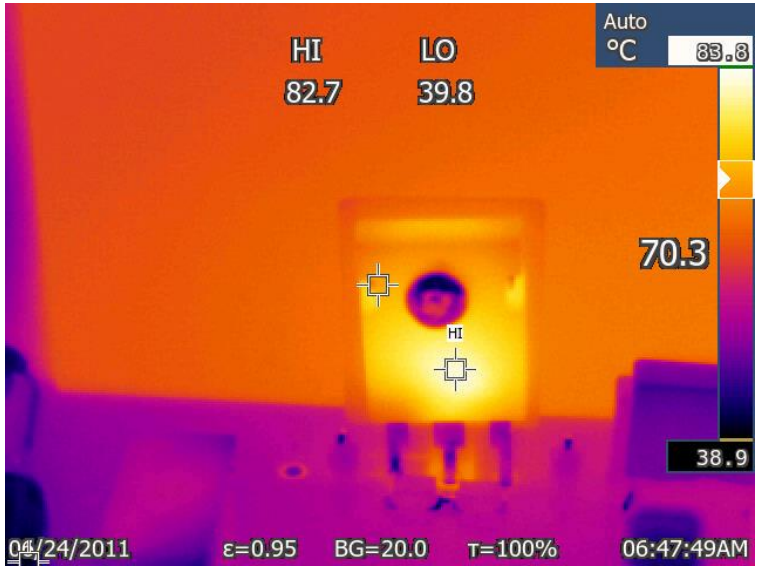


Power device temperatures

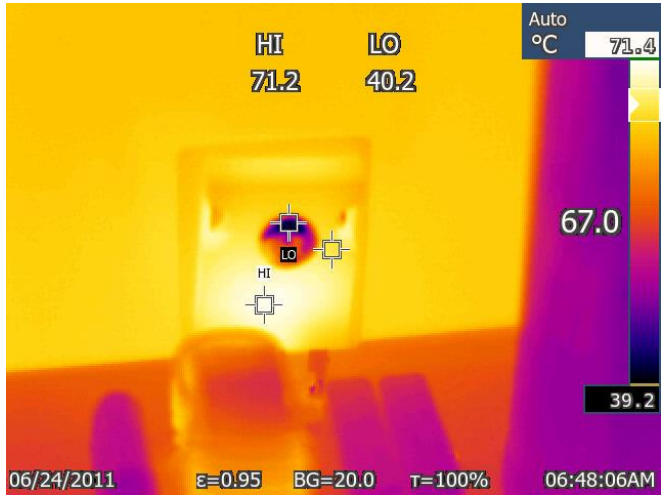
The board is equipped with overtemperature protection mounted on the heatsink

VAC = 230VRMS @ 50Hz
Pout = 3600W @ 28C ambient

Low side SiC MOSFET



High side SCR



High side SiC MOSFET