

### Measured Variables

$$f_{\text{line}} := 120 \text{ Hz} \quad t_c := 1.82 \text{ ms} \quad \text{Measured diode conduction time} \quad V_{\text{acin}} := 129 \text{ V}$$

$$T := \frac{1}{f_{\text{line}}} \quad \omega := 2\pi \cdot f_{\text{line}} \quad V_{\text{dc}} := 172 \text{ V}$$

$$i_{\text{PK}} := 328 \text{ mA} \quad \text{Measured peak current}$$

$$i_{\text{av}} := \frac{1}{T} \cdot \left( \int_0^{t_c} i_{\text{PK}} \sin(\omega \cdot t) dt \right) \quad \text{Average current in; over one 120Hz period}$$

$$i_{\text{av}} = 0.042 \text{ A}$$

$$i_{\text{rms}} := \sqrt{\left( \frac{1}{T} \right) \cdot \int_0^{t_c} (i_{\text{PK}} \sin(\omega \cdot t))^2 dt} \quad \text{Rms current in; over one 120Hz period}$$

$$i_{\text{rms}} = 0.1 \text{ A} \quad \text{Kill A Watt says 0.09 Arms}$$

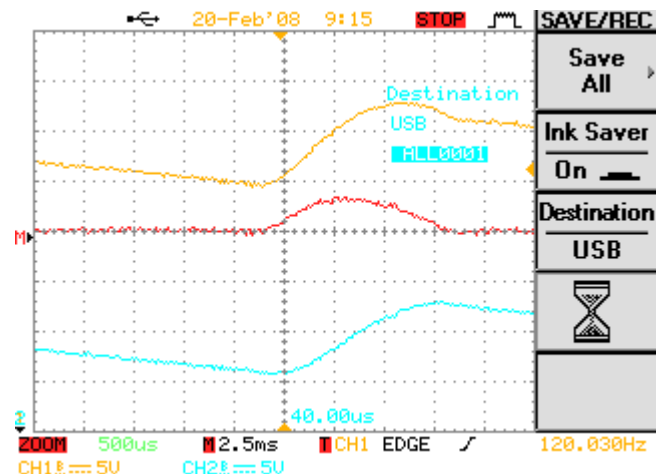
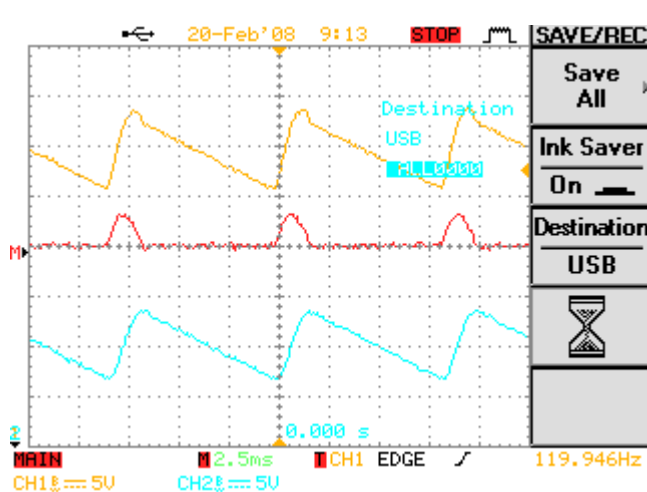
### Power real and apparent

$$P_{\text{inreal}} := V_{\text{dc}} \cdot i_{\text{av}} \quad P_{\text{ina}} := V_{\text{acin}} \cdot i_{\text{rms}}$$

$$P_{\text{inreal}} = 7.208 \text{ W} \quad \text{Kill A Watt 7W} \quad P_{\text{ina}} = 12.96 \text{ W} \quad \text{Kill A Watt 11VA}$$

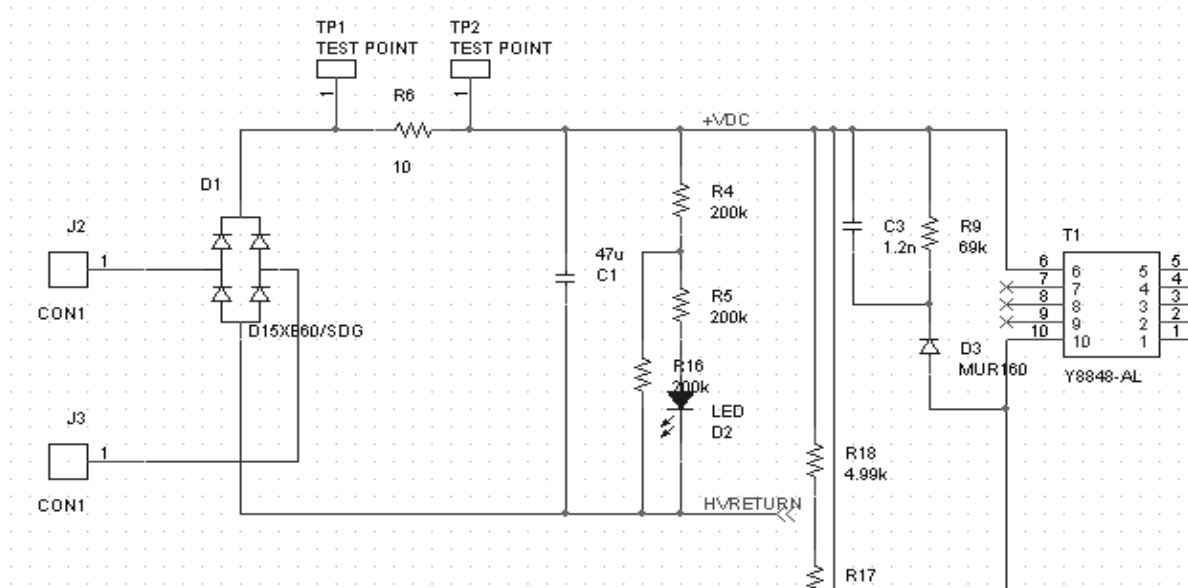
$$P_F := \frac{P_{\text{inreal}}}{P_{\text{ina}}}$$

$$P_F = 0.556 \quad \text{Kill A Watt says 59.9}$$



The scope traces above are TP1 (CH1)-TP2(CH2), and a zoom to five hundred microseconds so the cursors could be used more accurately for the peak and conduction time.

This is the relevant portion of the flyback where I took the measurement.



This is the spice cct I used. It gave a slightly higher peak current 0.387A.

