

RCD CLAMP

$$V_{MAX} := 230 \text{ V} \quad (\text{Allowable max voltage across device})$$
$$V_{DS} := 160 \text{ V} \quad (\text{Voltage across the device})$$

$$V_{OUT} := 54 \text{ V} \quad \text{OUTPUT Voltage}$$

$$V_{OR} := V_{DS} - V_{OUT} = 106 \text{ V}$$

$$V_{CLAMP} := V_{MAX} - V_{OUT} = 176 \text{ V}$$

$$F_S := 100 \text{ kHz}$$

$$L_{LK} := 1 \text{ } \mu\text{H}$$

$$I_{PEAK} := 15 \text{ A}$$

$$R_{CLAMP} := 2 \cdot \frac{V_{CLAMP} \cdot (V_{CLAMP} - V_{OR})}{F_S \cdot L_{LK} \cdot I_{PEAK}^2} = (1.095 \cdot 10^3) \text{ } \Omega$$

$$C_{CLAMP} := \frac{5}{R_{CLAMP} \cdot F_S} = 0.046 \text{ } \mu\text{F}$$

$$P_{LOSS_CLAMP} := 0.5 \cdot L_{LK} \cdot I_{PEAK}^2 \cdot F_S \cdot \left(\frac{V_{CLAMP}}{V_{CLAMP} - V_{OR}} \right) = 28.286 \text{ W}$$