

Inductor Value Selection for LTC1625 / ISUS Power Supply.

$V_{out} := 6.0$ Voltage out of switcher feeding 5VDC linear post regulator.

$V_{inmax} := 24$ Maximum Input Volatage = 24VDC.

$I_{max} := 2.0$ Maximum Switcher Current = 2.0A

$freq := 150000$ Switcher Frequency.

$$L_{select}(I_{Lmax}) := \frac{V_{out}}{freq \cdot I_{Lmax}} \left(1 - \frac{V_{out}}{V_{inmax}} \right) \quad L_{select}(I_{max} \cdot 0.4) = 3.75 \times 10^{-5}$$

$L := 33 \cdot 10^{-6}$ Inductance (as L goes up core losses go down but $I^2 R$ goes up).

$V_{in} := 7,7 + 0.1 \cdot V_{inmax}$

$$I_L(V_{in}) := \frac{V_{out}}{freq \cdot L} \left(1 - \frac{V_{out}}{V_{in}} \right) \quad I_{Lmax} := I_L(24) \quad I_{Lmax} = 0.909$$

$$R_{DSon} := \frac{0.120}{I_{max} \cdot 1.3}$$

$$I_{limit} := \frac{0.150}{R_{DSon} \cdot 1.3} - \left(\frac{1}{2} \right) \cdot I_{Lmax} \quad I_{limit} = 2.045 \quad I_{Burst} := \frac{0.03}{R_{DSon}} \quad I_{Burst} = 0.65$$

