

Since we chose our switching frequency as 32 kHz, let's check the skin effect in that frequency.

$$\delta = \sqrt{\frac{2 * \rho}{\omega * \mu}} = \sqrt{\frac{2 * 1.72 * 10^{-8}}{2 * \pi * 32000 * 1.256629 * 10^{-6}}} \cong 0.37 \text{ mm}$$

Therefore, a wire with 0.7 mm thickness would be enough.

When we look at the awg table, we see that awg 20 or awg 21 would be enough.

Firstly, let's try to figure out how much of the wire we would need.

From the data sheet, the perimeter of the surface we will wind the wire is:

$$l = 2 * 5.94 + 2 * 20 = 51.88 \text{ mm}$$

$$\text{we will need 15 turns, therefore } 15 * 51.88 = 778.2 \text{ mm} = 0.7782 \text{ m}$$

$$\text{for awg 20, } R = 0.7782 * 33.31 * 10^{-3} = 0.0259 \text{ ohm}$$

$$\text{for awg 21, } R = 0.7782 * 42 * 10^{-3} = 0.0327 \text{ ohm}$$