transformer Specifications:
AC Voltage: 110~230v
Min DC Voltage: 150Vdc
Switching frequency: 75KHz

Output Voltage: 40v
Output Current: 1A

$$\frac{V_1}{V_2}=\frac{N_1}{N_2}=\frac{I_2}{I_1}=\frac{\sqrt{L_1}}{\sqrt{L_2}}$$

Primary Current is: 266 mA
10% of Primary: 26.6 mA

$$X_{L_1}=\frac{V_{DC}}{I_L}=\frac{150\,v}{26.6\,mA}=5639.09\,ohm$$

$$X_{L_1}=2\,\pi\,FL$$
$$5639.09\,ohm=2\,.\,3.14\,.\,75000\,.\,L$$
$$L=11.97\,mH\simeq 12\,mH$$

core type: PQ 3220
For calculating primary winding I use this equation:

$$\frac{N_t}{N_1}=\frac{\sqrt{L_t}}{\sqrt{L_1}}$$
$$N_t=4\,turns$$
$$L_t=142\,uH$$
$$L_1=12\,mH$$

Primary turns: 36.77 ≃ 37 turns
Secondary turns : 9.86 ≃ 10 turns

For calculating diagonal of wire in primary and secondary winding, I use J-F curve and select 3.75 (A/mm^2) for 75KHz switching frequency. According to below equation, calculate wire diameter.

$$d=1.13\sqrt{\left(\frac{I_{MAX}}{J}\right)}$$

in this equation instate of I(max) I use RMS current

$$I_{pirmary}=I_P+(0.2\,I_P)$$
$$I_{RMS}=I_{primary}\sqrt{Duty\,Cycle}$$

Primary wire diameter: 0.329 mm
Secondary wire diameter: 0.464 mm