V_D = Voltage drop over diode = 0.5V.

V_{OUT} = 9V.

V_{IN} = 3.7V.

I_{OUT} = wanted = 1.5A | 2A | 2.5A

$$D = \frac{V_{OUT} + V_D - V_{IN}}{V_{OUT} + V_D}$$

$$= \frac{9 + 0.5 - 3.7}{9 + 0.5}$$

$$= 0.6105263$$

Choose f_{sw} to be 240kHz, according to the table on P.8 you need to use a 43kΩ resistor to set f_{sw} to this. This means:

$$I_{OUT(CRIT)} = \frac{(V_{OUT} + V_D - V_{IN}) \times V_{IN}^2}{2 \times (V_{OUT} + V_D)^2 \times f_{sw} \times L}$$

$$= \frac{(9 + 0.5 - 3.7) \times 3.7^2}{2 \times (9 + 0.5)^2 \times 240 \times 10^3 \times L}$$

$$= \frac{5.8 \times 13.69}{2 \times 90.25 \times 240 \times 10^3 * L}$$

$$= \frac{79.402}{43.32 \times 10^6 \cdot L}$$

$$= \frac{1.8329 \times 10^{-6}}{L}$$

7356-1400 If I choose L to be 1μH then $I_{out(crit)}$ will yield:

$$I_{OUT(CRIT)} = \frac{1.8329 \times 10^{-6}}{1 \times 10^{-6}}$$

$$= 1.8329 \text{ A}.$$