

EE 322 Advanced Electronics, Spring 2012 Homework #3 assignment

1. Plot, to scale, the voltage across, and current through the inductor of a step-down switching voltage regulator with $V_{\text{in}} = 10 \text{ V}$ and $V_{\text{out}} = 3 \text{ V}$
2. If the cycle-averaged input current is 1 mA, what is the cycle-averaged output current?
3. If the cycle frequency is 10 kHz what are T_C and T_O in continuous mode?
4. What size inductor current will cause the current to vary by 100 mA during a cycle?
5. To obtain continuous mode operation to a load current of 10 mA, what size inductor is required? Is this a minimum or maximum inductor size for that operation?
6. For that same inductor what is T_C which results in a 1 mA current?
7. Plot, to scale, inductor voltage and inductor current which results in one third the output current of the minimum continuous mode output current.