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| Memorandum  To: E. Santi  From: L. Merza | The Campus of The USC  Columbia, South Carolina 29208  17 April 2013  Email: Ljmerza@gmail.com |
| Subject: Technical Memorandum: Current Mirrors. | |

This memo studies how to make an inductor. An important part of making a inductor is being able to measure the inductance given by equation one and measuring the DC resistance from the inductor design. In order to measure the inductance, the number of turns of wire is needed. In this lab, 18 turns of wire is used. The magnetic flux is also needed and is given by the product of the flux density and the area of the inductor core which is given in the datasheet. Finally, the maximum current going through the inductor is need and is given as 3 amps. In order to measure the inductance in a real world setting, a resistor will be used in series to measure the voltage across it. The transfer function of the simple circuit will be used to calculate the inductance of the inductor. Errors that may be present are the resistance value of the resistor not being completely correct and the oscilloscope not being able to read a completely correct voltage because of the limitation of the vertical resolution.

In order to measure the DC resistance of the inductor, the same circuit will be used. Equation 2 will be used to calculate the resistance with R being the resistance of the inductor. A small resistor is needed in order for the resistance to not affect the measurement. The output voltage of the circuit with the inductor and without the inductor will be measured and compared to see how the resistance of the inductor effects the circuit. The same problems will occur with measurement because the same resistor and oscilloscope will be used.

**Appendix**

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|  | (1) |
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