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U.S. DEPARTMENT OF
ENERGY

FEAST Switching Frequency Changes with Temperature

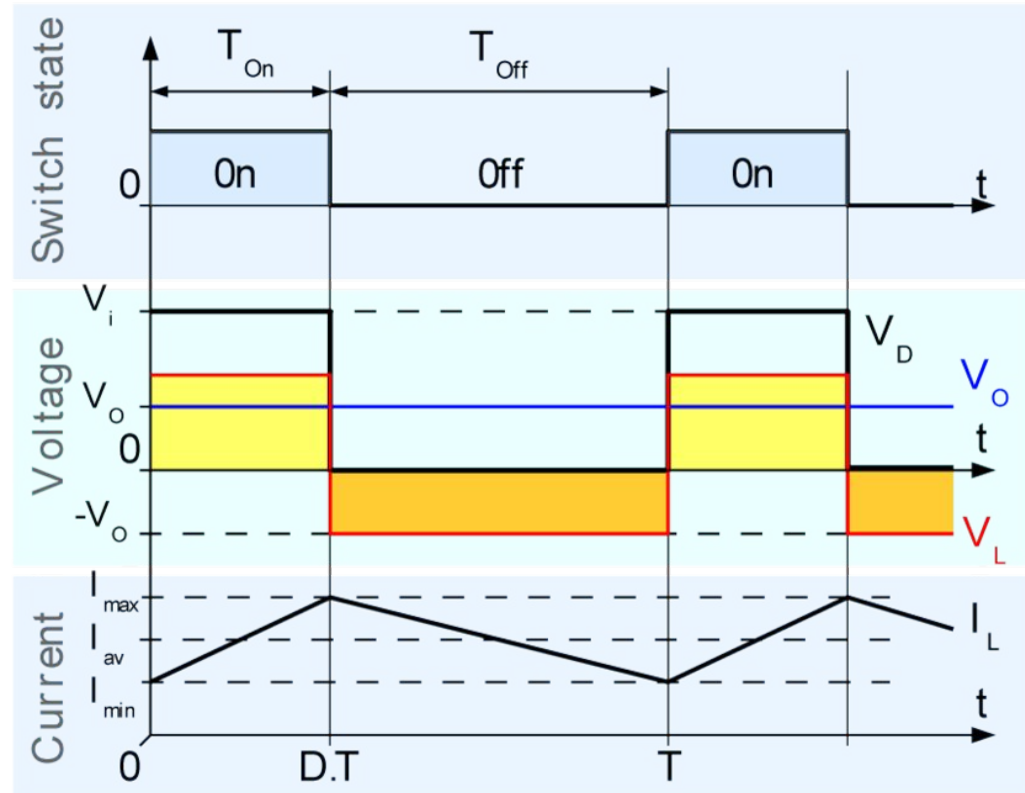
Evan Mladina, Karol Krizka, Timon Heim

Student Instrumentation Meeting --- 2/28/20

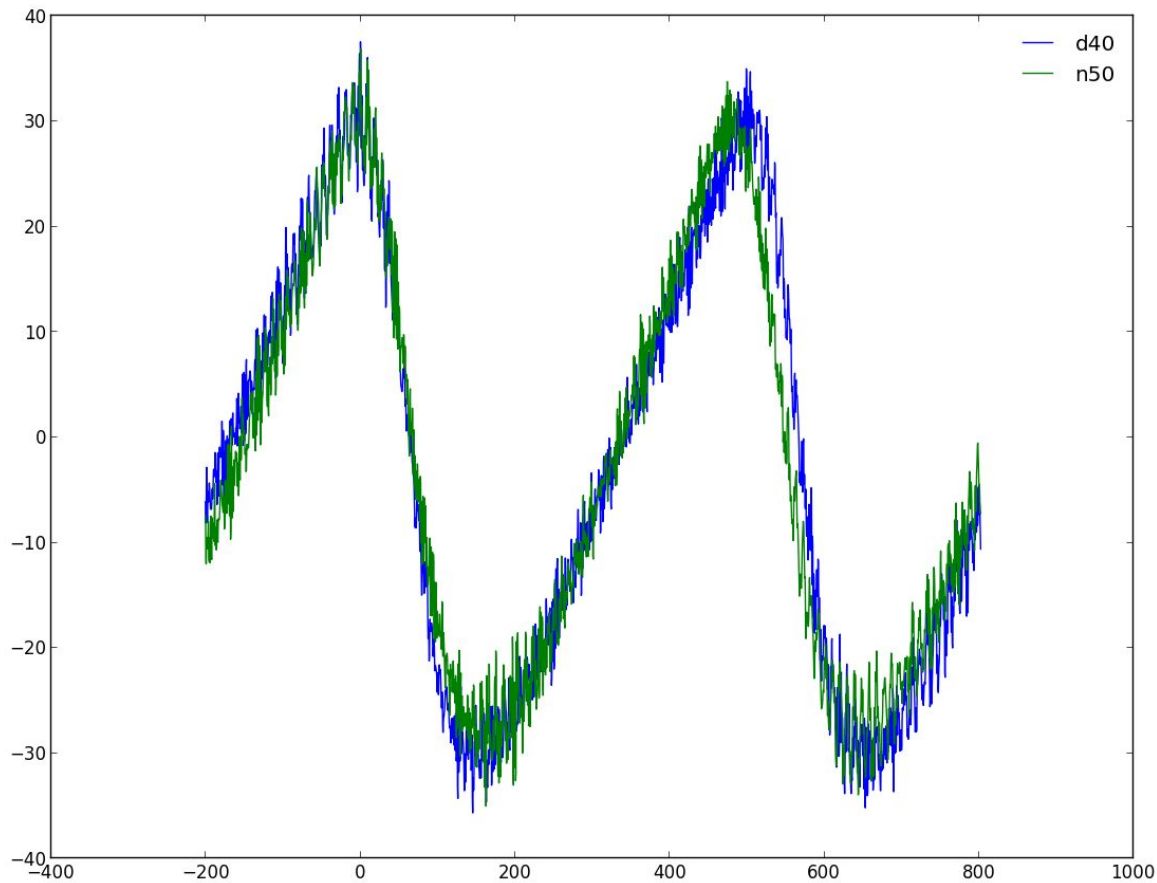


Buck Converter Switch State

- Duty cycle is the fractional on time:
Time on/Period.

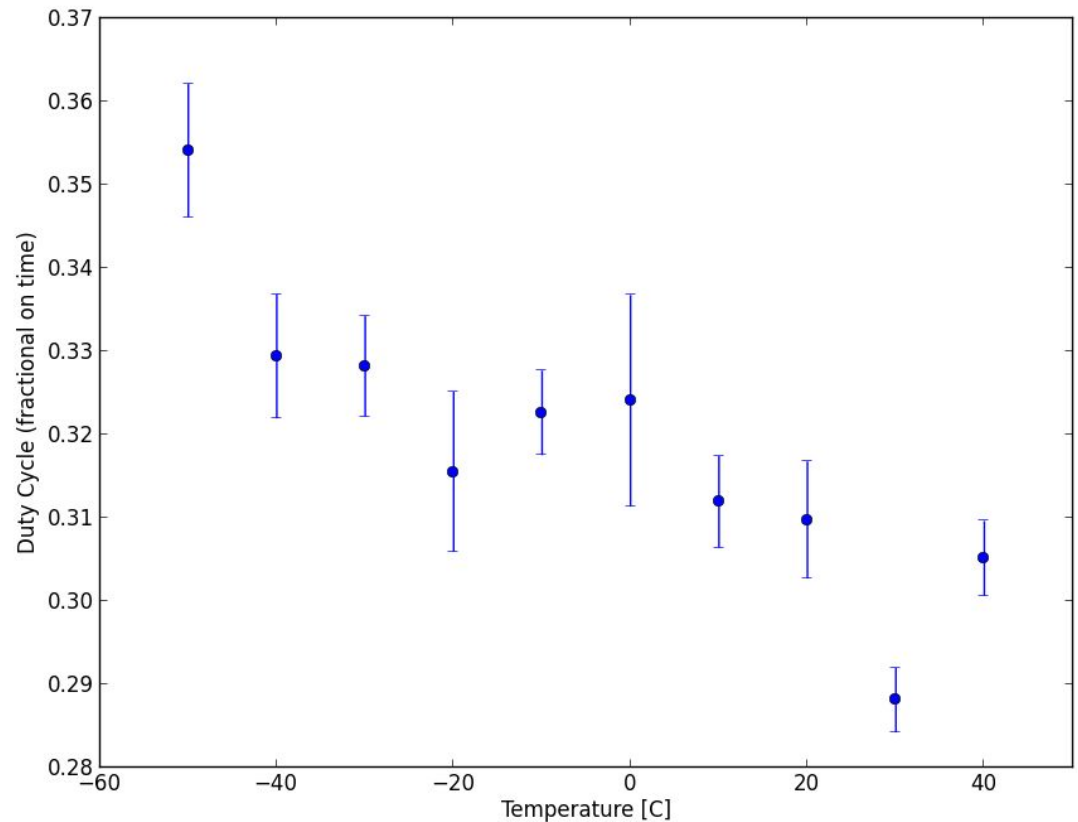


Comparison of Switching at -40C and 50C

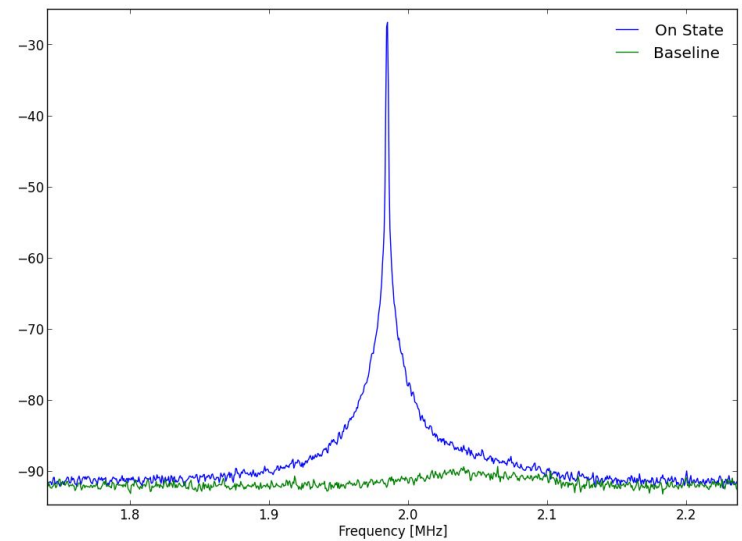
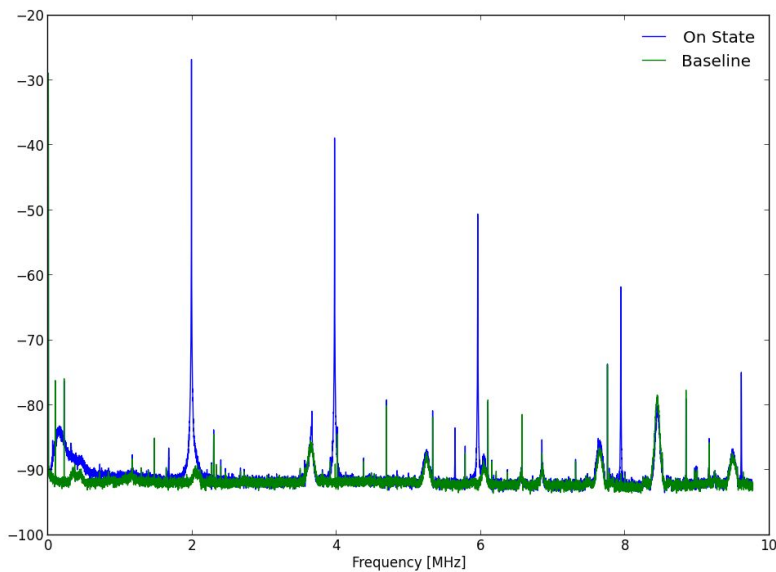


Measured Duty Cycle

- We expect the duty cycle to increase with temperature. This plot shows the opposite.



Fourier Peaks Calculated by Scope



2 MHz Peak comparison

- Min/Max method for determining frequency of magnetic probe readings is fairly consistent with fourier transform as calculated by the scope.

