

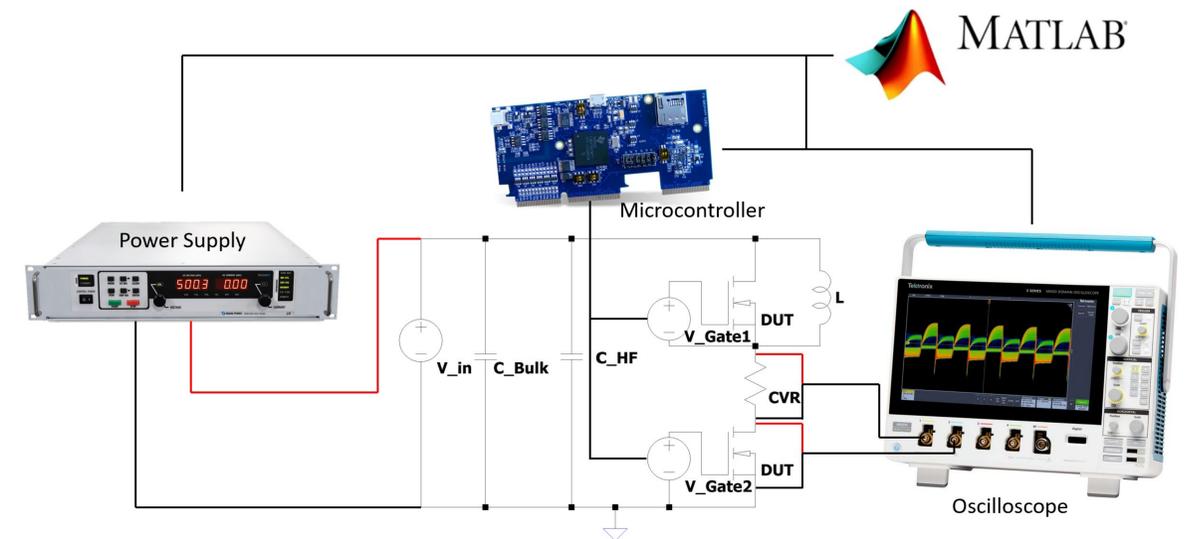
# Double Pulse MOSFET Tester

## Project

The Double Pulse MOSFET tester is a system used to characterize losses in Silicon-Carbide (SiC) high-power MOSFET semiconductor devices.

- Improve characterization of SiC switching losses
- Allow for better educated design decisions for power converters using these devices
- Perform automated sweeps of operating conditions across voltage, current, and temperature
- Objectives:
  - Test switching losses for SiC XM3 half bridge MOSFET modules
  - Improve understanding of losses in SiC MOSFETs
  - Allow for more informed decisions for power converters using these devices

## System



## Methods

- Utilized design of existing test fixture from Wolfspeed/Cree
- Designed inductor for system
- Use TI Launchpad microcontroller to time gate signals (TMS320F28069)
- Collect data with Tektronix 1 GS/s oscilloscope
- Current viewing resistor (2.5 m $\Omega$ ) from T&M Research



## Conclusion

- Tested losses of CAB400M12XM3 400A/1200V half-bridge module from Wolfspeed/Cree
- System works for characterizing losses of XM3 half-bridge modules
- Future development plan is to enable automated testing and control of device temperature
- Learned how to design air-core inductors with help from senior engineer at UPEL
- Will be able to help characterize losses for future projects at UPEL