San Jose State University Academic Member

Project Title: Development of Low-Cost Graduate Course with Virtual Fab and Hands-on Circuit Lab Experience to Prepare Students to Work in the SiC Industry in Silicon Valley

Objectives: Prepare students for a career pathway in the WBG industry in the Silicon Valley

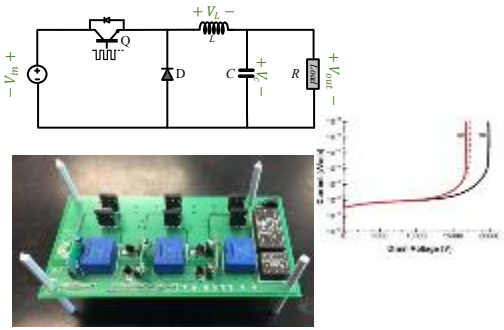
Major Milestones: Sept 2019: Creation of SiC DMOSFET Virtual Fab and corresponding teaching slides

Dec 2019: Creation of SiC DMOSFET Virtual Test Bench and corresponding teaching slides

Mar 2020: Creation of SiC Based Power Converter Schematic/PCB Design Training Materials and Tutorial Videos

June 2020: Creation of the SiC Based Power Converter Prototype and Evaluation Boards Along with Testing Training Material

Deliverables: Slides/Handouts on SiC process, device and circuit theory; TCAD and SPICE simulation templates; SiC DC-DC converter lab manual and report



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WBG Technology Impact

1. Prepare students to enter the SiC industry by providing insights and know-hows of SiC fabrication and device characteristics and emphasizing SiC circuit advantages over Si through low-cost TCAD/SPICE simulation.
2. Learning experience is further enhanced with hands-on SiC DC-DC converter building lab.
3. Enable fast conversion of Si technology engineers to SiC technology through a concise and a comprehensive course.
4. Enable rapid dissemination of SiC knowledge through low cost teaching materials.

Additional impacts

1. Each module of the course can be converted to short course and lab section for industrial use.
2. Each module of the course can be embedded into other classes (e.g. Device part into Advanced Device Physics class)
3. Course can be updated easily by replacing SiC MOSFET with other novel devices.