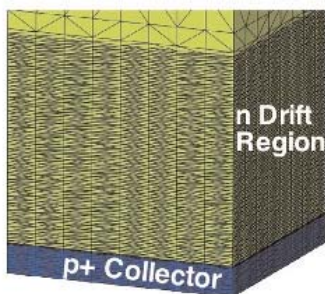
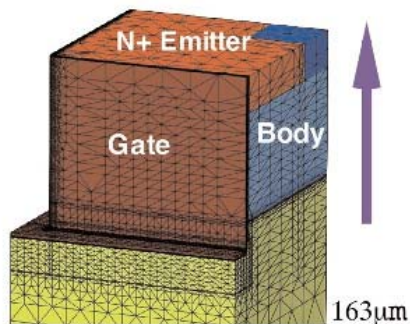


EECS 598 Power Semiconductor Devices

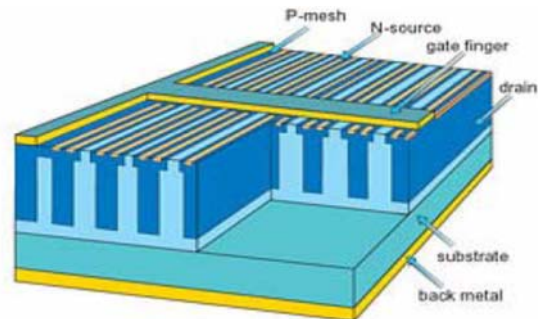
Fall 2020 – 4 credits

Power devices drive our society, from the power grid and renewable energy integration to hybrid and electric vehicles, trains, space exploration, and industrial and consumer electronics. This course will cover design and operating principles of semiconductor devices for discrete and integrated power electronics. Devices we will discuss include the power MOSFET, IGBT, HEMT, Schottky and PIN diodes, as well as emerging device architectures. We will study wide bandgap semiconductor materials, device fabrication and packaging required for power devices, including GaN, SiC, and Ga₂O₃. Students will be exposed to numerical device modeling using commercial

TCAD software (Synopsys Sentaurus and Silvaco Atlas), and will do a final group presentation on a topic of their choice. *This course is pre-approved as a Flexible Technical Elective for undergraduate EE majors and an EECS elective for CE majors. Within the ECE graduate program, this course has been pre-approved as a Major Course for Solid State/Nano and as category "E" for VLSI/IC and Power and Energy.*



SiC IGBT simulation



Merged PIN-Schottky Diode

Course: F20 EECS 598 Section 001 LEC + 011 DIS

Prerequisites: EECS 320 or 421 or graduate standing or instructor approval

Lectures: LEC MW 1:30-3:00pm; DIS F 2-3pm

Instructor: Prof. Becky Peterson, EECS, blpeters@umich.edu