

Power Semiconductor Device Education: Which Topics and What Depth?

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Power electronics is a significant enabling technology in many areas of electrical engineering and the introduction of wide bandgap power devices utilizing silicon carbide and gallium nitride will make it even more important and pervasive in the future. In developing the power electronics workforce going forward, two major questions arise concerning power semiconductor devices. First what device topics should be covered and second what should be the depth of the topical coverage? There is no one size fits all answer to these questions because there will be a wide variety of target audiences each with different backgrounds and needed levels of understanding of device operation. Two examples will be discussed in which these questions were addressed. The first example will be a description of which power semiconductor device topics are taught at the undergraduate and graduate level at the University of Minnesota and to what depth. The second example will be an ongoing effort to design a broad-based curriculum in power electronics with specific emphasis on the device topics and depth of coverage to meet the needs of all personnel involved in the wide bandgap power device manufacturing supply chain ranging from material growth to OEM manufacturers utilizing the wide bandgap devices.