Abstracts

The Reverse Bias Requirement for PIN Diodes in High Power Switches and Phase Shifters

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A key design and cost parameter in a high power PIN diode application is the selection of the applied DC reverse bias voltage. Up to now, this voltage has been chosen either by conservatively using the magnitude of the peak RF voltage or by empirical trials to determine a possible lower value. This paper explores the reverse bias requirement for a PIN diode operating in a high power RF and microwave environment. It demonstrates that the minimum reverse bias voltage is equivalent to the PIN diode's self generated DC voltage under similar RF conditions. An expression for this voltage was developed and experimentally verified that will assist the design engineer in more accurately selecting an appropriate minimum value for the applied reverse bias voltage setting.

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