# Article information:

An Adaptive Current-Source Gate Driver for High-Voltage SiC mosfets | IEEE Journals & Magazine | IEEE Xplore
<https://ieeexplore.ieee.org/document/9899743>

# Article summary:

1. This article presents a novel current-source gate driver for Silicon Carbide (SiC) metal oxide semiconductor field-effect transistors (mosfets) with adaptive functionalities.

2. The proposed driver aims to decouple and improve controllability of di/dt, dv/dt, as well as to decrease turn-on and turn-off delay times compared to conventional totem-pole voltage-source gate drivers and conventional current-source gate drivers.

3. The performance of the proposed gate driver is validated experimentally on a 3.3 kV/750 A SiC mosfet half-bridge power module, showing that it is capable of significantly reducing turn-on and turn-off delay times by approximately 57% and 33%, respectively, while enabling 233% controllability of di/dt and 87% of dv/dt.

# Article rating:

Appears well balanced: The article presents the information in a reliable and balanced way, without biases and prejudices. The claims made in the article are well supported and, where applicable, all sides of the argument are given opportunity to present their point of view. The article appears trustworthy and reliable.

# Article analysis:

This article provides an overview of an adaptive current source gate driver for high voltage SiC mosfets, discussing its circuit topology, working principles, mathematical analysis, experimental validation, and system level benefits. The article is well written and provides detailed information on the design considerations for SiC mosfets as well as the advantages of using the proposed driver over conventional voltage source or current source gate drivers.

The article does not appear to be biased or one sided in its reporting; it provides a comprehensive overview of the design considerations for SiC mosfets as well as the advantages of using the proposed driver over conventional voltage source or current source gate drivers. It also presents both sides equally in terms of discussing both the advantages and disadvantages of each type of driver.

The article does not appear to contain any unsupported claims or missing points of consideration; all claims are supported by evidence from experiments conducted on a 3.3 kV/750 A SiC mosfet half bridge power module which demonstrate that the proposed driver is capable of significantly reducing turn on and turn off delay times by approximately 57% and 33%, respectively, while enabling 233% controllability of di/dt and 87% dv/dt.

The article does not appear to contain any promotional content or partiality; it simply presents an overview of an adaptive current source gate driver for high voltage SiC mosfets without attempting to promote any particular product or brand.

The article does note possible risks associated with using high voltage SiC mosfets such as device switching losses due to hard

# Topics for further research:

* SiC mosfet gate driver design
* SiC mosfet switching losses
* SiC mosfet turn on and turn off delay
* SiC mosfet di/dt and dv/dt controllability
* Adaptive current source gate driver
* High voltage SiC mosfet power module

# Report location:

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