

Cree Fayetteville, Inc.



Project Title: Removing Customer Concerns to Support Industry Adoption of Medium Voltage SiC Power Modules

Objectives: Add in low-risk, high ROI protections and develop data suite and education and reference designs to support and broaden the knowledge-base of how to implement WBG-optimized packages into systems.

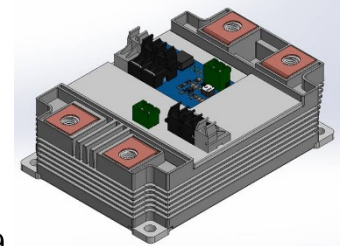
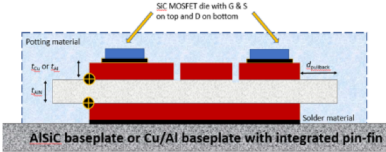
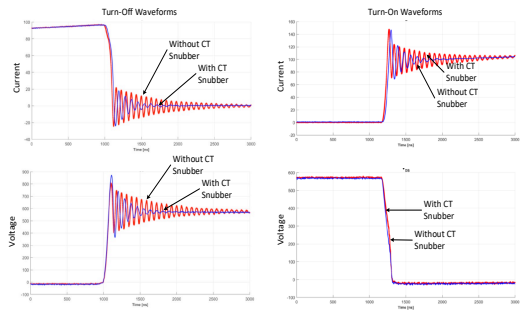
Major Milestones:

- PD Design, Testing Ruggedness
- Application Note Development for MV Parallel Driver/Bussing Design
- Implementation of Integrated Protections/Sensor PCB for Ease of Utilization
- Acceleration Factor / Degradation Analysis Under Application Conditions

Significant Equipment Acquisition: None

Deliverables: Release of application notes and educational reference design material to reduce system designer burden and promote SiC adoption.

A CREE COMPANY



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WBG Technology Impact

1. Increase in efficiency, increase in volumetric / gravimetric density, with a reduction in losses in MV power electronic systems – using new industry standard MV (1.7 – 10 kV) footprints.
2. Market segments impacted: Rail, high-speed MV drives, grid-tied distributed generation & energy storage, FACTS controllers applied to sub-transmission & transmission systems
3. High-Power, Paralleled Module Reference Design Sampling Starting Month 6
4. Education material to promote adoption of SiC, replacing Si IGBT modules, to enable an increase in end-system performance, while de-risking inherent technical challenges.

Additional Impacts

1. WBG MFG Cost is reduced as device & module volumes start to approach economy of scale. Ease of Use if key component of adoption.
2. Job creation for technical R&D / MFG / Process Control personnel, as well as University education and outreach.
3. Proposed Publications, App Notes, & Reference Designs are focused on WBG module/system design education for WBG industry development of all levels; supplemented through development of supporting module circuit simulation models.
4. Supports Supply Chain Development for the ONLY vertically-integrated WBG supplier.