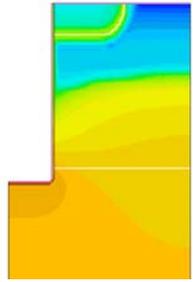
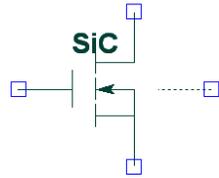
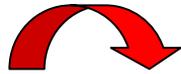


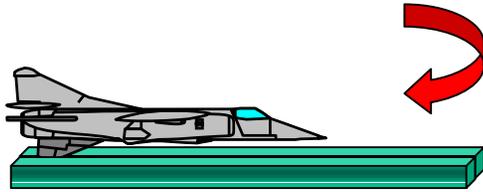
Graphic of Technology



High-T SiC
Device Simulation



Device Model
Development
/Circuit Simulation



Conceptual Application Design and Analysis

Goals, Objectives and Main Technical Approach

Goal:

Identify insertion opportunities in military and civilian applications that can maximize the utilization of 10 kV, 100 A, 100 kHz SiC devices

Objectives:

- Develop new application concept for high voltage, high frequency SiC device
- Study SiC device in existing applications that show competitive advantage over Si device
- Provide cost/performance data to justify SiC investment

Technical Approach:

- Explore the SiC performance by device simulation and behavioral loss modeling techniques
- Comprehensive comparison of device technology impact on application design, such as system cost, size and weight
- Justification of higher cost SiC through identification of cheaper systems

Major Technical Accomplishments (since start of contract)

- Behavioral loss model for 10 kV SiC power MOSFET developed, can be used in thermal-electrical simulation
- Two conceptual applications identified for further analysis
 - **Military: Electro-Magnetic Aircraft Launching Systems**
 - **Civilian Utility: Solid-State Power Substation**

Major Work Remaining to Completion of Contract

- Conceptual design of the identified application through the use of the SiC model developed
- Detailed analysis and comparison to be provided in a matrix that include performance, cost and size of the conceptual systems

Major Impact of Technology & Technology Transition Plan

- Behavioral device modeling technique to aid application design
- Application design guideline for high power military and utility applications
- Comparative study to justify SiC project investment