

# 2024 ROCS Workshop

Monday, May 20, 2024

Preceding the CS-MANTECH Conference

Room = Tucson Ballroom F

JW Marriott Tucson Starr Pass, Tucson, Arizona

## Session 1: Advanced Test Methods

### 1.1 Investigation of Drain Current Instability During On-Wafer HTRB/HTOL Step Stress Tests on Al<sub>2</sub>O<sub>3</sub> Passivated GaN HEMTs.

Vamsi Putcha<sup>1</sup>, K. Osipov<sup>1</sup>, M. Fagerlind<sup>1</sup>, L. Velikovskiy<sup>1</sup>, M. Damman<sup>2</sup>, Ampleon<sup>1</sup>, Fraunhofer IAF<sup>2</sup>

### 1.2 Investigation Into Hidden Degradation Modes of RF GaN and Low Ea Reliability Effects.

Holly Burton<sup>1</sup>, Nathan Grant<sup>1</sup>, Brian Poling<sup>2</sup>, Ronald Wilkerson<sup>3</sup>, KBR<sup>1</sup>, Air Force Research Laboratory<sup>2</sup>, Accel-RF Instruments Corporation<sup>3</sup>

### 1.3 Reliability Testing Considerations for RF GaN HEMTs.

Jeremy Bonsall, John Scarpulla, Andrew Hall, Brendan Foran, The Aerospace Corporation

### 1.4 Tracking Wireless Communication Performance Standards on RF Aged GaN HEMTs.

Nathan Grant<sup>1</sup>, Holly Burton<sup>1</sup>, Brian Poling<sup>2</sup>, Ronald Wilkerson<sup>3</sup>, Jeff Cotton<sup>3</sup>, Roland Shaw<sup>3</sup>, KBR<sup>1</sup>, Air Force Research Laboratory<sup>2</sup>, Accel-RF Instruments Corporation<sup>3</sup>

### 1.5 GaN Reliability: A Perspective on Power and RF.

Kurt Smith, VisIC Technologies

## Session 2: Invited Speakers

### 2.1 *Invited Speaker* - Development and Reliability of p-GaN Gate HEMTs on Sapphire.

Dr. Xiangdong Li, Xidian University

### 2.2 *Invited Speaker* - Application-Oriented Stability, Reliability, and Robustness of GaN Power Devices.

Dr. Yuhao Zhang, Virginia Polytechnic Institute

### 2.3 *Invited Speaker* - Deep Levels Effects and Reliability of Scaled GaN-Based High Electron Mobility Transistors.

Dr. Enrico Zanoni, University of Padova

## Session 3: Modeling and Analysis Techniques

### 3.1 Scalable Transistor Finger-Level Thermal Model for Improved Reliability and Performance Modeling in Bare Die and Packaged Form.

Gergana Drandova, Jose Jimenez, Jesse Wisch, Sourabh Khandelwal, Kirk Ashby, Qorvo

### 3.2 Thermal Characterization for GaN and AlGaIn-based HEMT.

Zeina Abdallah<sup>1</sup>, James W. Pomeroy<sup>1</sup>, Leo Norman<sup>1</sup>, Gergana Drandova<sup>2</sup>, Jose Jimenez<sup>2</sup>, Andy Xie<sup>2</sup>, Antonio Lucero<sup>2</sup>, Peter Raad<sup>3</sup>, Pavel Komarov<sup>4</sup> and Martin Kuball<sup>1</sup>, University of Bristol<sup>1</sup>, Qorvo<sup>2</sup>, Southern Methodist University<sup>3</sup>, TMX Scientific<sup>4</sup>

### 3.3 Analysis of High Power Microwave Thermal Effects in Compound Semiconductor Devices with 3D Green's Functions.

John Scarpulla, The Aerospace Corporation

### **3.4 Analysis of Accelerated Life Test Data in the Presence of Two Failure Modes.**

Charles S. Whitman, *JMP Statistical Discovery*

## **Session 4: Processing and Packaging**

### **4.1 Intrinsic Reliability of AlGaIn/GaN HEMTs with Sunken Source Connected Field Plate Design.**

P. Goeller<sup>1</sup>, S. Ganguly<sup>2</sup>, K. Bothe<sup>1</sup>, A. Niyonzima<sup>1</sup>, *MACOM*<sup>1</sup>, *Wolfspeed*<sup>2</sup>

### **4.2 Packaging Influences on RF GaN Reliability.**

Stephen Tetlak, *Air Force Research Laboratory*