Bias-Dependent TID Effects and Annealing Recovery in Power COTS GaN HEMTs

Hadrien Couillaud*[1], Marc Gaillardin[1], and Laurent Artola[2]

[1]CEA, DAM, CEA Gramat, F-46500 Gramat, France – Commissariat à l'Énergie Atomique et aux Énergies Alternatives (CEA) - Gramat – F-46500 Gramat, France, France
[2]DPHY, ONERA, Université de Toulouse – ONERA-DPHY – F-31000, Toulouse, France, France

Abstract

This work investigates the response of the commercial normally-off GaN HEMT transistor GS66508B to total ionizing dose (TID) effects under various bias conditions. The study focuses on the physical mechanisms responsible for the observed degradations. It then examines the recovery of key static parameters, namely VTH and gm using two different annealing methods.

Keywords: GaN HEMT, power devices, COTS, TID effects, annealing, interface traps.

*Speaker