

Table of Contents

Preface

Peak Voltage and Switching Slope Dependency of Gate Switching Instability in SiC MOSFET	
R. Schnitzler, T. Fink, D. Halmer, D. Koch and I. Kallfass	1
Development and Evaluation of a 1.2kV SiC MOSFET-Based PTC Controller for Energy-Efficient xEV Heating Applications	
J.H. Jang, J.K. Lim, K. Ilves, K.S. Song, D.I. Yang, Y.J. Kim and K.B. Yeon	9
A Multi-Manufacturer Test Campaign to Assess the Power Cycling Capability of Silicon Carbide MOSFETs in TO-247 Packages	
F. Hoffmann and N. Kaminski	17
Temperature Dependence of the AC-BTI in SiC MOSFETs	
K. Takei, H. Kishigami and T. Setoya	25
Reliability Challenges of SiC MOSFETs under Continuous Dual-Bias Stress in EV Applications	
J.H. Zhu, J.J. Cui, J.Y. Yu, B. Hu, M. Jiang and B.C. Yuan	31
Gate Oxide Stability and Degradation Modes of Next Generation SiC MOSFETs	
R. Paul, R. Soleimanzadeh and S. Wirths	39
Impact of Packaging on Discrepancy of Datasheet Static Measurements of SiC Power MOSFETs in Bare Dies and TO-247 Packaged Form-Factors	
S. Jahdi, K. Floros, I. Ludtke, O. Alatise and M. Kuball	47
Impact of the Negative Gate Bias on Short-Circuit Robustness of SiC MOSFETs with Measurements and Simulations	
M.L. Mysore, R.V. Chavda, J. Lutz and T. Basler	55
Effects of Dynamic Reverse Bias Stress on the Blocking Capability of SiC MOSFETs	
J.L. Wu, Z.W. Wang, Z.Y. Chen and R. Li	69
Enhanced Gate Oxide Reliability in Vertical SiC Power MOSFETs via Optimized Processing and Screening	
A.K. Biswas, C. Woods, D.J. Lichtenwalner, S. Sabri, S.H. Ryu, B. Hull, A. Barkley, D.A. Gajewski and E. Balkas	79
Cumulative Threshold Voltage Shift Induced by Surge Current in Planar SiC MOSFETs after Bipolar Gate Switching Stress	
K. Wei, W.C. Li, C.X. Li and H.X. Jiang	85
Degradation Mechanisms of 1200 V 4H-SiC Planar Power MOSFET under Negative HTGB Stress	
K.Y. Lee, P.C. Liao, T.P. Lu, R.C. Wu, P.C. Liao, S.M. Koo and Y.P. Lee	91
Understanding the Influence of Different Parameters on the Dynamic V_{SD} Behaviour of SiC MOSFETs during Power Cycling Test	
M.L. Mysore, M. Goller, R.V. Chavda, M. Alaluss, J. Lutz and T. Basler	99
Design Space Exploration of SiC Power Module Package via Surrogate Model	
L. Wan, N. Ripamonti, Y.F. Zhao, R. Soleimanzadeh and A. Schröder	115
Dynamic HV-H³TRB Test on 3.3 kV SiC MOSFET Modules	
J.H. Peters, M. Hanf, S. Clausner and N. Kaminski	121
Resonance Damping Optimization in 1200V Power Modules with Planar SiC MOSFET Devices for 200 kW Output	
P.S. Ying, D. Tsai, A. Ma, G. Wu, A. Kamisawa, S. Miyaoka, N. Machida and J. Wu	127
Power Cycle Failure Modes of 10 kV SiC-MOSFET Power Modules with Different Wire Bond Layouts	
M. Takahashi, Z.C. Sun, S. Munk-Nielsen and A.B. Jørgensen	135
Low-Inductance Packaging Design for SiC Power MOSFET Modules	
Z.B. Zhang, R. Yu, S. Jahdi, O. Alatise, F. Iannuzzo and B. Stark	143