

Table of Contents

Preface

Proton Implantation–Induced Reduction of SSF Width and Associated Adverse Effects in 4H-SiC Epitaxial Layers	
K. Takano, Y. Igarashi, Y. Matsushita and T. Morita	1
Investigation on Bipolar Degradation Caused by In-Grown Stacking Fault in 3.3kV SiC-MOSFET	
H. Niwa, T. Tanaka, K. Tojima, H. Amishiro, Y. Kagawa, K. Sugawara and T. Watahiki	11
Process-Dependent Photoluminescence Behavior Evolution of Stacking Faults in 4H-SiC	
N. Kölbel, B. Kallinger, C. Kranert, S.G. Müller, A. Fuchs, T. Erlbacher, F. Faisal and J. Schulze	19
Trial Implementation of Operando PL Spectrum Mapping Using a Mini-Spectrometer in EVC Screening of 4H-SiC Wafers	
K. Takano, Y. Igarashi, Y. Matsushita and T. Morita	27
Quantitative Analysis of Excess Minority Carrier Density and Critical Duration in UV Irradiation-Based Screening for Bipolar Degradation in 4H-SiC	
Y. Igarashi, K. Takano, Y. Matsushita and T. Morita	37
Challenges in 1SSF Detection in 4H-SiC Epilayer and Related Failure	
C. Calabretta, C. Bottari, S. Adamo, B. Carbone, G. Maira, F. Vento, E. Fontana, N. Piluso, M.S. Alessandrino, A. Russo, P. Fiorenza, F. Roccaforte and A. Severino	43
Exploring the Ion Implantation Mechanism for Suppressing Stacking Fault Expansion in 4H-SiC: A Fundamental Approach	
T. Yoda, M. Sano, J. Kojima, S. Onda, A. Myalitsin, K. Kakushima, T. Ohba, A. Oshiyama and K. Shiraishi	49
Investigation of Spoke Pattern of Stacking Faults in 4H-SiC Wafers Grown by Physical Vapor Transport Method	
Z.Y. Chen, J.P. Zhang, S.S. Hu, K.X. Zhang, Y.Z. Li, H.C. Wang, B. Raghothamachar, Y.F. Liu, C. Bouch, R. Philpott, S. Turchetti, P. Schunemann and M. Dudley	55
Micropipes in SiC Die Observed by Molten KOH Etching	
F. Vento, N. Piluso, C. Calabretta, C. Nania, D. Raciti, R. Anzalone and A. Severino	63
Synchrotron X-Ray Topography Analysis of Low Angle Grain Boundaries Induced by Growth Step Flow in PVT-Grown 4H-SiC Crystals	
J.P. Zhang, Z.Y. Chen, Y.Z. Li, S.S. Hu, B. Raghothamachar, Y.F. Liu, C. Bouch, R. Philpott, S. Turchetti, P. Schunemann and M. Dudley	69
Polytype Transitions in Silicon Carbide: A Macroscopic View	
J. Pezoldt, V. Kurtash and F. Neubert	79
Depth-Dependent Suppression of Bipolar Degradation in 4H-SiC Diodes via Proton Implantation and Evaluation of Safe Operating Current Density Range	
A. Shimbori, R. Wada, N. Tokoro, T. Kuroi, H.Y. Wong and A.Q. Huang	89