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Nota di contenuto	Silicon Carbide: Volume 2: Power Devices and Sensors; Volume 2 Silicon Carbide: Power Devices and Sensors; Contents; Preface; List of Contributors; Part A View from Industry; 1 Present status and future prospects for electronics in electric vehicles/hybrid electric vehicles and expectations for wide-bandgap semiconductor devices; 1.1 Issues surrounding automobiles; 1.2 Past, present, and future of Toyota hybrid vehicles; 1.3 Newest hybrid vehicle; 1.4 Expectations for wide-bandgap semiconductors in HV inverter applications 1.5 Toyota Group research and development on wide-bandgap semiconductor devices1.6 Conclusions; References; 2 Silicon carbide power-device products - Status and upcoming challenges with a special attention to traditional, nonmilitary industrial applications; 2.1 Introduction; 2.2 SiC in power electronics; 2.3 Summary; References; Part B I Unipolar Devices Schottky Diodes; 3 Effect of an intermediate graphite layer on the electronic properties of metal/SiC contacts; 3.1 Introduction; 3.2 Experimental; 3.3 Results; 3.4 Discussion; 3.5 Conclusions; References

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6 Extreme temperature 6H-SiC JFET integrated circuit technology6.1 Introduction; 6.2 Transistors; 6.3 Circuits; 6.4 Summary & future work; References; 7 1200 V SiC vertical-channel-JFETs and cascode switches; 7.1 Introduction; 7.2 Large-area 1200 V 4H-SiC vertical JFET structures; 7.3 Investigation of the suitability of 1200 V normally-off vertical-channel SiC JFETs for power switching applications; 7.4 1200 V normally-off all-SiC VJFET based cascode switch; 7.5 Reliability of the 1200 V normally-off all-SiC VJFET cascode switch; 7.6 Thermal properties of VJFET/cascode
7.7 0.143 cm2 active-area 1200 V class vertical-channel JFETs7.8 Edge termination of large-area vertical-channel JFETs; 7.9 Summary; References; Part B III MOS Interfaces; 8 Alternative techniques to reduce interface traps in n-type 4H-SiC MOS capacitors; 8.1 Introduction; 8.2 Material, processing parameters, and analysis techniques; 8.3 Thermal oxidation in a tungsten lamp furnace combined with a microwave plasma; 8.4 Over-oxidation of N-implanted 4H-SiC; 8.5 Over-oxidation of N-/Al-implanted 4H-SiC; 8.5.1 Material and implantation parameters; 8.5.2 Results and discussion; 8.6 Summary References

Sommario/riassunto

Silicon Carbide - this easy to manufacture compound of silicon and carbon is said to be THE emerging material for applications in electronics. High thermal conductivity, high electric field breakdown strength and high maximum current density make it most promising for high-powered semiconductor devices. Apart from applications in power electronics, sensors, and NEMS, SiC has recently gained new interest as a substrate material for the manufacture of controlled graphene. SiC and graphene research is oriented towards end markets and has high impact on areas of rapidly growing interest like elect