



## Temperature dependent IBIC study of 4H–SiC Schottky diodes

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### Abstract

Ion beam induced charge collection measurements have been performed on an epitaxial 4H–SiC Schottky diode with a focussed 1.5 MeV H beam in the temperature range of 120–380 K. The experimental procedure consisted in measuring the charge collection efficiency (CCE) at different bias voltages ( $V$ ) for each fixed temperature. The CCE versus  $V$  curves were analyzed in terms of the Schockley–Ramo–Gunn theory and the minority carrier (hole) diffusion length was obtained as a function of temperature.

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### 1. Introduction

IBIC (or IBICC: Ion Beam Induced Charge Collection) technique using focussed ion beams is a well established method to characterise semiconductor materials and devices [1]. The carrier drift length (mobility  $\times$  lifetime  $\times$  electric field) and diffusion length (square root of diffusivity  $\times$  lifetime) are the physical observables usually measured

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