New Release

LTEC Corporation

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Si IGBT (1200V) : ROHM Gen4 RGA80TRX2EHRC15
IGBT and FWD Structure Analysis Reports


Package / Internal layout

Si IGBT Die

Si FWD Die

Overview

In November 2024, ROHM released its 4th-generation 1200V IGBT for automotive applications, certified to the AEC-Q101 automotive standard. This fourth-generation 1200V IGBT is said to have a revised device structure, including the outer periphery, and is an IGBT characterized by a high breakdown voltage of 1200V, an industry-leading short circuit withstand time of 10µsec. (at Tj = 25° C), low switching loss, and low conduction loss.
LTEC released a structure analysis report on the new IGBT and FWD.

Product features

- Product type: RGA80TRX2EHRC15 VCES=1200V, Ic=69A
- Released data: November 2024
  https://fscdn.rohm.com/en/products/databook/datasheet/discrete/igbt/rga80trx2ehrc15-e.pdf
- TO-247-4L package
- Automotive Field Stop Trench IGBT
- Applications: Electric compressors for automobiles, Inverters for industrial equipment

Analysis Results (For details of the analysis, see pages 2 and 4)

(1) Si IGBT Structure Analysis Report : (65page)

- When compared with Infineon products (IGBT7), the current density of this product's IGBT is 4.1A/mm2 (calculated from collector current/transistor area), which is approximately 17% higher than Infineon's IGBT7. In addition, the IGBTs in this product use high-density trench technology that is almost equoal with the micropattern trench technology used in IGBT7.

(2) Si FWD Structure Analysis Report: (34page)

- This FWD is a PN junction diode.

Report price

Delivered one week after order placement Please contact us for report pricing.

LTEC Corporation US Representative Office www.ltec-biz.com/en/
2310 Homestead Rd, C1 #231 Los Altos, CA 94024
Phone: +1-(650) 382-1181
Contact2@ltec.biz

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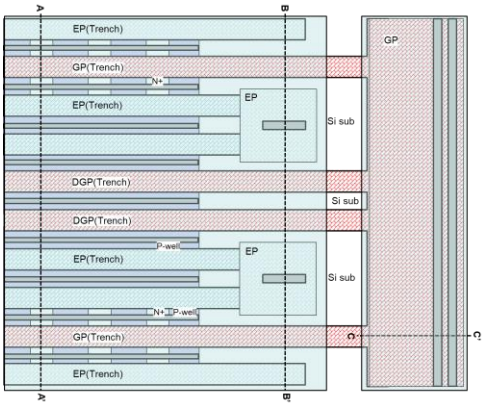
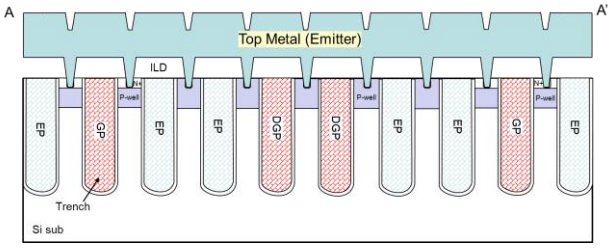
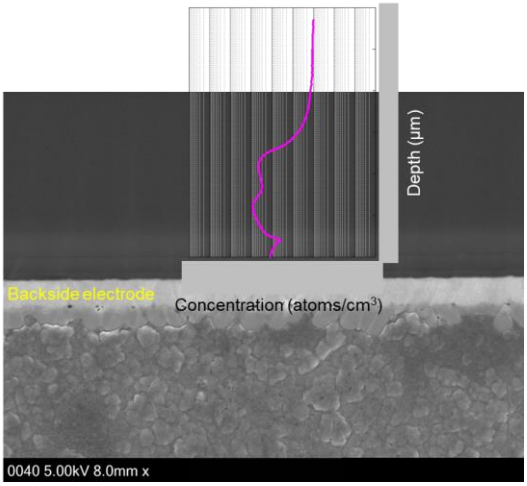
Excerpt from (1) Si IGBT Structure Analysis Report



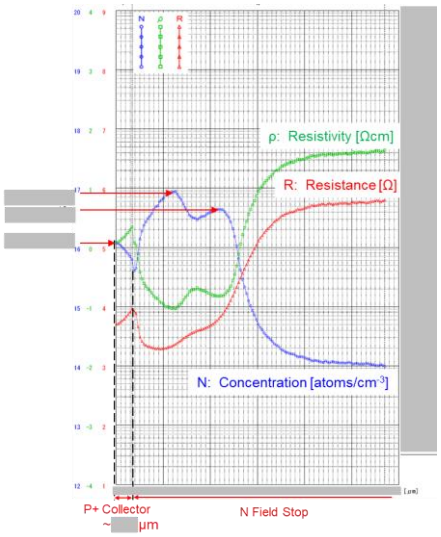
Schematic plane view of the cell array



Schematic cross-sectional view of the cell array



IGBT SR analysis point (Backside of die)



IGBT SR analysis result (Backside of die)

	Analysis object	Comparison objects		
Tc=25℃	RGA80TRX (Gen4)	IKW50N120CS7XK ((IGBT7) Gen7)	RGC80TSX8RGC11 (RC-IGBT)	RGS50TSX2DGC11
Die size A (mm x mm = mm^2)				
Transistor active area AA (mm^2)				
Collector Current Ic (A)				
Current Density, Ic/AA (A/mm^2)				
Vce(sat) (typ.) (V)				

Comparison with the company's previous generation IGBT and Infineon's IGBT7

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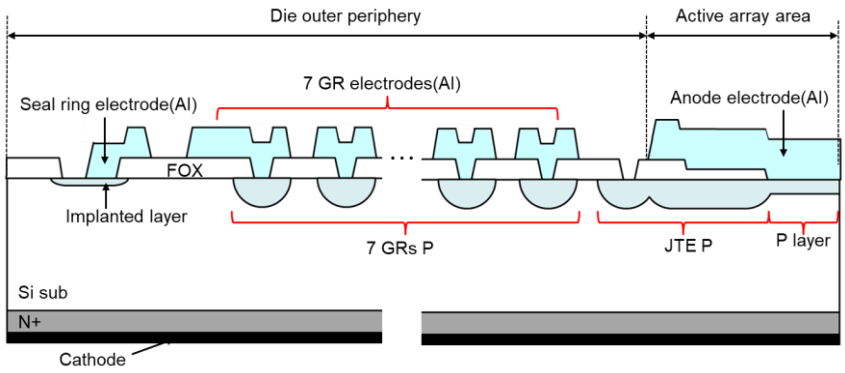
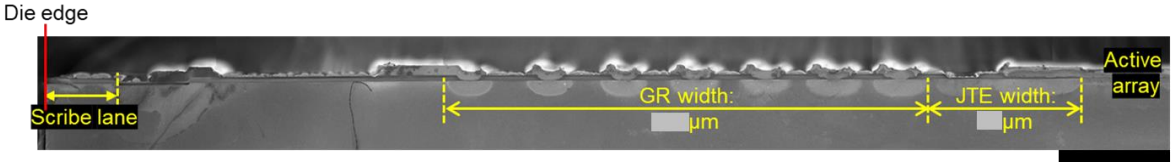
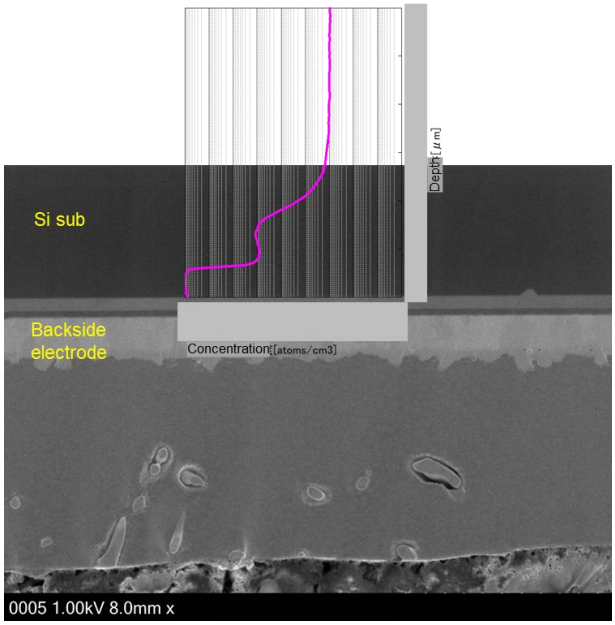
Excerpt from (2) Si FWD Structure Analysis Report



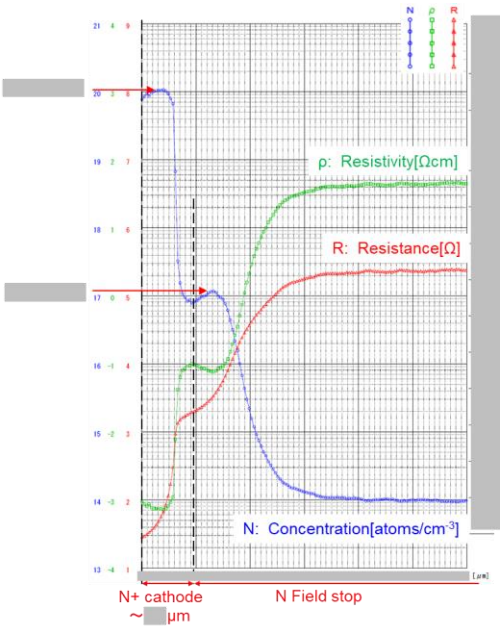
Schematic cross-sectional view of FWD



Cross-sectional SEM image of die outer periphery



FWD SR analysis point (Backside of die)



FWD SR analysis result (Backside of die)