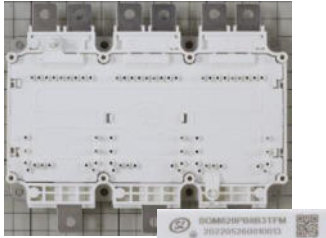


## IGBT Power Module (750V): Silan Microelectronics SGM820PB8B3TFM IGBT and FWD Structure Analysis Report



Module appearance



Si-IGBT die



Si-FWD die

### Overview

Silan Microelectronics is an integrated semiconductor manufacturer founded in 1997 and headquartered in Hangzhou, China. The company has 5, 6, 8, and 12 inch production lines and offers power semiconductors such as MOSFETs, IPMs, and IGBT modules using its own die.

SGM820PB8B3TFM is based on their high-density trench process IGBT technology and is suitable for hybrid and electric vehicle applications, featuring high current density and high short circuit capability .

This report clarifies the features of the IGBT and FWD mounted on the SGM820PB8B3TFM through a analysis of the cell structure and peripheral structure.

### Product features

- Product number : SGM820PB8B3TFM  $V_{CES}=750V, I_{CDC}=820A$
- Product release date : 2020~2021(estimation)
- Using Fine trench FS-V technology (from Datasheet)

Datasheet : <https://www.silan.com.cn/en/upload/2024/06/27/17194500514095fitvv.pdf>

### Report Contents

#### **1. IGBT Structure Analysis Report (70 pages)**

- Current density of mounted IGBTs is  $2.9A/mm^2$  (calculated from collector current/transistor area)
- Minimum processing dimensions equivalent to Infineon IGBT7
- SR analysis confirms carrier concentration in P+Collector, N Field Stop, and N-Base layers

#### **2. FWD Structure Analysis Report (34 pages)**

- SR analysis confirms carrier concentration in N+ cathode layer, N Field Stop layer, and N-Base layer

SR : Spreading Resistance Profiler

### Report price

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

# 1. IGBT Structural Analysis Report

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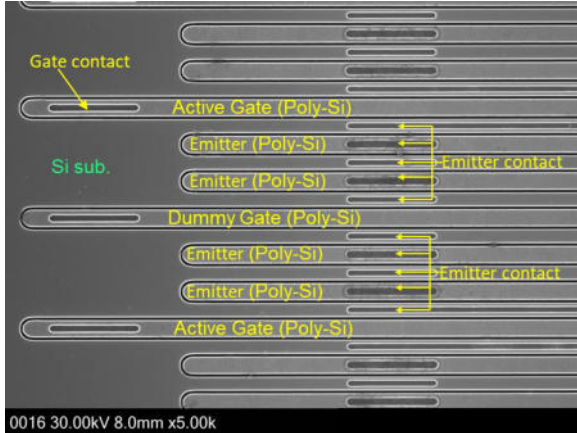
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## 2. FWD Structure Analysis Report

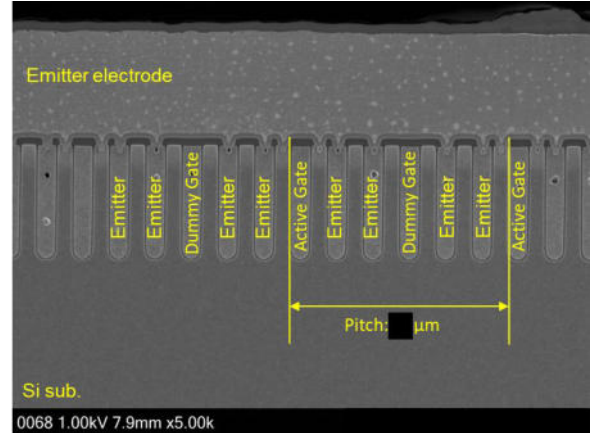
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## 1. Excerpt from IGBT Structure Analysis Report



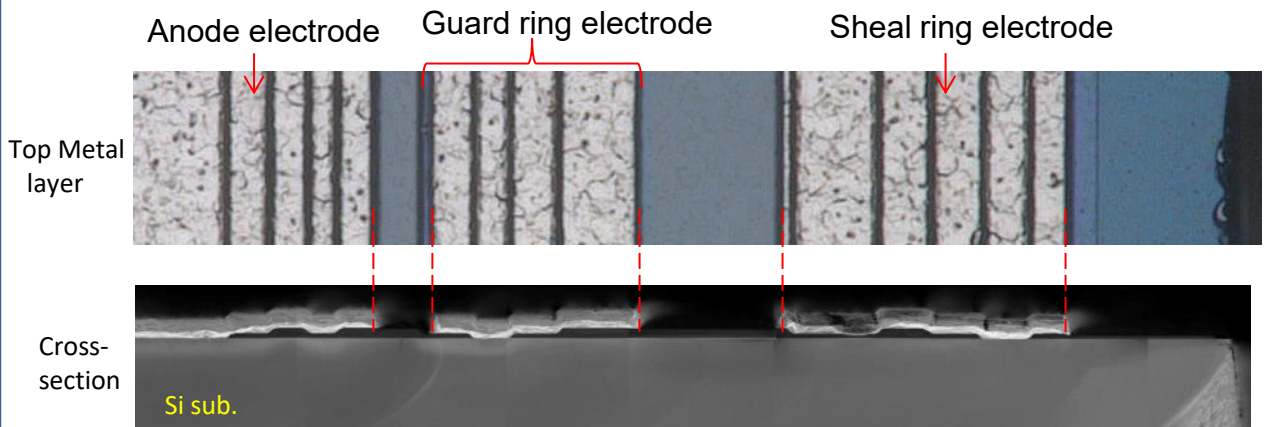
Plane view (Cell area)



Cell area cross section

Cross-sectional structure of the periphery and SR analysis of the back surface was performed.

## 2. Excerpt from FWD Structure Analysis Report



Backside SR analysis was performed.