New Release

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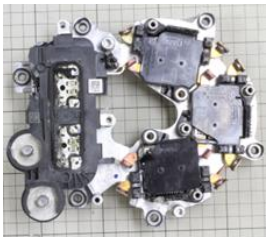
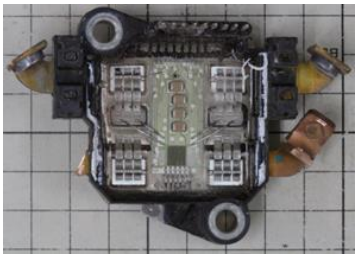
Si-MOSFET power module: Valeo (mounted in Citroen Ami)
Module and mounted Si-MOSFET Structure Analysis Report

Citroen Ami

Mounted motor and inverter





Module appearance

https://ymworks.com/new/wp-content/uploads/2021/12/citroen-ami-1-scaled.jpg

Overview

Citroen, a major French automobile manufacturer, has been manufacturing and selling the micro EV Citroen Ami since 2020. The vehicle is equipped with a 5.5kWh lithium-ion battery and a 6kW electric motor (inverter drive voltage 55V), with a driving range of approximately 70km.

The inverter module of the Citroen Ami is equipped with a Valeo custom power module, and this report will provide a structural analysis of this power module, as well as a structural analysis of the installed Si-MOSFET.

Product features

- Product number : Unknown
- Product release date : 2020～(estimation)
- Micro EV Citroen Ami - Equipped with inverter module

Report Contents (Please see pages 2 to 5)

1. Module Structure Analysis Report (49 pages)

- A current sense is built into the output terminal of the module.
- Al ribbon wire is used.
- A spacer has been confirmed between the Si MOSFET chip and the lead frame to eliminate thermal stress issues, and analysis has clarified the material and layer structure of the spacer.

2. Si-MOSFET Structure Analysis Report (66 pages)

- To clarify the die's features from the standpoint of reliability and performance, cross-sectional structure analysis and electrical characteristic evaluation (Ron, voltage resistance measurement) are being conduct.
- Additionally, based on the results of this analysis, we have identified the manufacturer and process technology of the Si MOSFET.

Report price

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

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Release day : 2024.07.29

1. Module Structure Analysis Report

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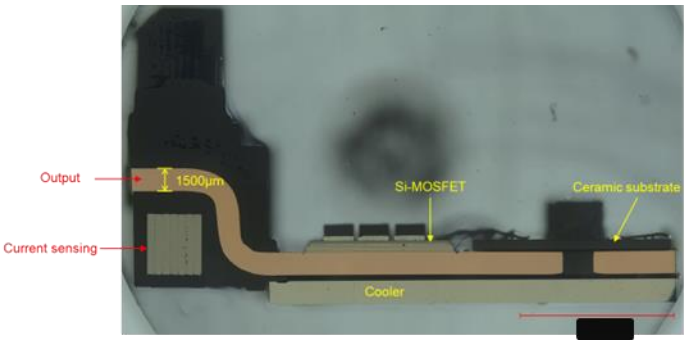
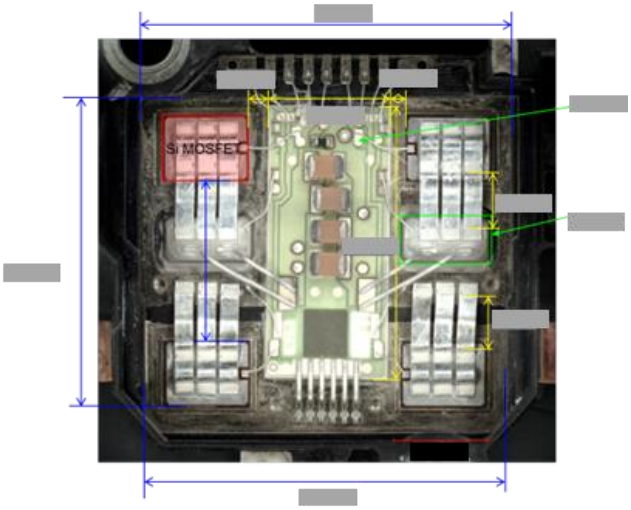
1. Module Structure Analysis Report



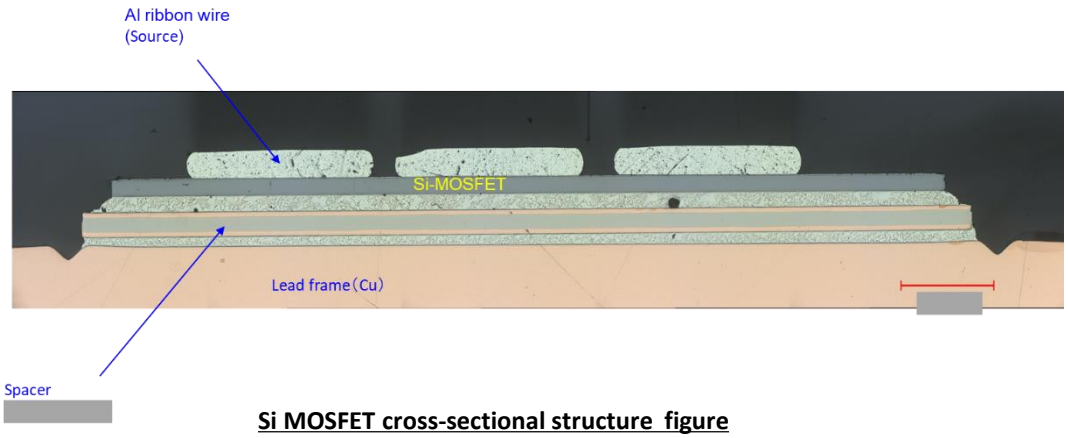
Module cross-sectional structure figure

Number	Measurement points		Thickness measuremen	Materials
1	Output terminal			
2	Si-MOS			
2-1		Ribbon wire		
2-2		Surface protection		
2-3		Top metal		
2-4		Snbstrate		
2-5		Backside metal-1		
2-6		Backside metal-2		
3	Die attach			
4	Spacer			
4-1		Upper Ni layer		
4-2		Spacer-1		
4-3		Spacer-2		
4-4		Spacer-3		
4-5		Lower Ni layer		
5	Solder			
6	Lead frame			
6-1		Ni layer		
6-2		Lead frame		
6-3		Ni layer		
7	Bonding adhesive			
8	Cooler			
8-1		Plating layer		
8-2		Cooler		
9	PCB Board			
9-1		Surface layer		
9-2		Wiring layer		
9-3		Ceramic substrate		
10	Current sensing			
11	Case			

Module structure summary



Module internal layout



Si MOSFET cross-sectional structure figure

2. Si-MOSFET Structure Analysis Report

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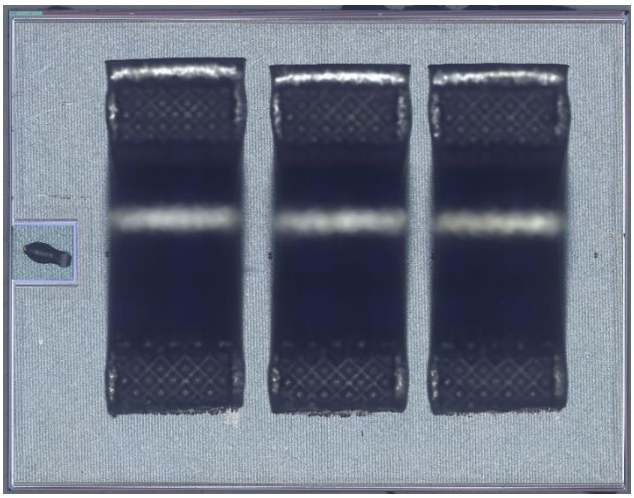
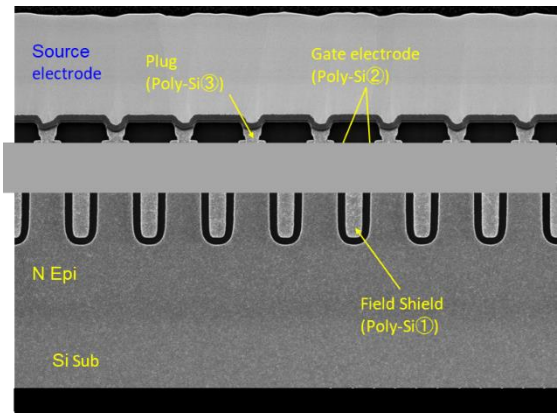
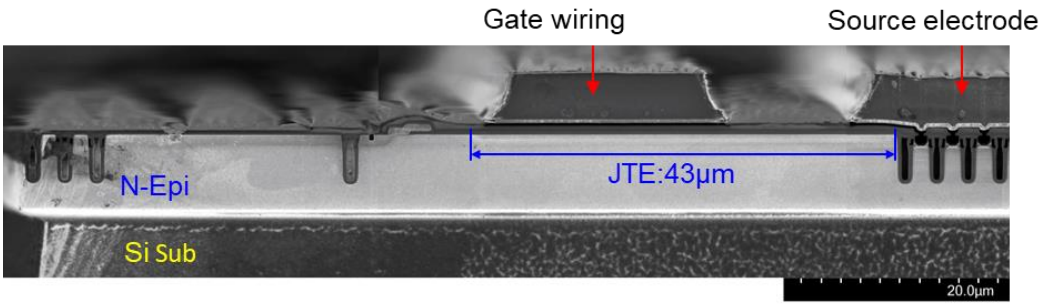
2. Si-MOSFET Structure Analysis Report



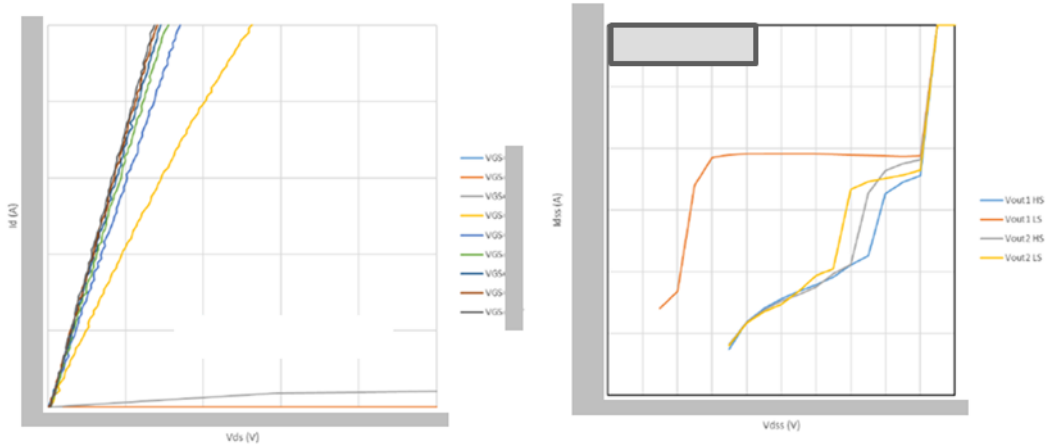
Die image（Top Metal）



Cross-sectional SEM image of Cell array



Cross-sectional SEM image of die outer periphery



Electrical characteristic evaluation

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