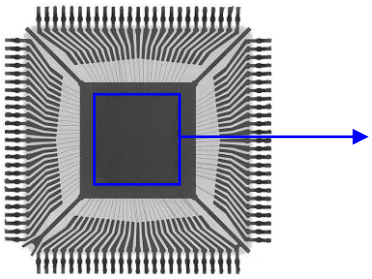
Battery Management IC : Floorplan and Structural Analysis Report for DENSO 28ch BMIC & 24ch BMIC

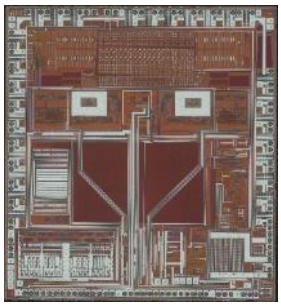
○28ch BMIC (Mounted in the bZ4X)



Package



Package X-ray

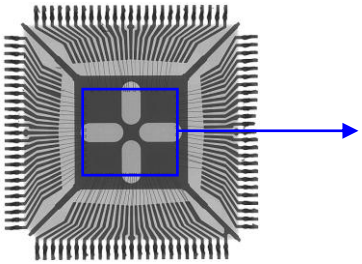


Die

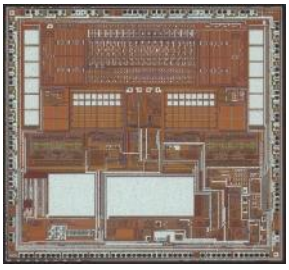
○24ch BMIC (Mounted in the Solterra)



Package



Package X-ray



Die

Report Overview

In a high-voltage battery system for BEVs, the BMIC (Battery Management IC) is a critical device that supports BMS performance by precisely monitoring the voltage and temperature of each cell, as well as enabling charge/discharge control and battery protection.

The BMIC installed in the TOYOTA “bZ4X” features the world’s first 28-channel cell voltage monitoring IC, utilizing DENSO’s proprietary high-voltage semiconductor technology. By monitoring the voltage of 28 cells with a single IC, the BMIC enables highly accurate battery monitoring while reducing the number of cell monitoring circuits by 20% compared with conventional technology.※1

Furthermore, compared with the 24-channel BMIC installed in the SUBARU “Solterra,” the 28-channel BMIC achieves an approximately 20% reduction in chip area, demonstrating further chip miniaturization while monitoring a greater number of cells.

In this project, we plan to conduct a floorplan analysis and structural analysis of the 28-channel BMIC installed in the TOYOTA “bZ4X” and the 24-channel BMIC installed in the SUBARU “Solterra,” along with a comparative analysis report of the two BMICs.

※1 DENSO Corporation, “DENSO Electrification Products Adopted for TOYOTA’s New ‘bZ4X’,” October 10, 2025. https://www.denso.com/jp/ja/news/newsroom/2025/20251010-02/

Product Overview

- 28-channel BMIC mounted in TOYOTA bZ4X (SOI technology), launched in 2025
- 24-channel BMIC mounted in SUBARU Solterra (SOI technology), launched in 2022

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Report Contents

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1	Floor Plan Analysis	DENSO 28ch BMIC	• Package photographs and package X-ray images • Optical chip photographs of M4 and M3 • Estimated floorplans of each functional block • Area of each functional block • Simplified block diagram (estimated)
2		DENSO 24ch BMIC	
3		Comparison of the Two BMICs	
4	Floor Plan Analysis （Option）	DENSO 28ch BMIC	• Circuit Analysis of the MUX Section • Estimation of the ADC Architecture
5		DENSO 24ch BMIC	
6		Comparison of the Two BMICs	
7	Cross-Sectional Analysis	DENSO 28ch BMIC	The analysis enables the identification of differences in process technology and gate oxide thickness among low-voltage devices, high-voltage devices, and ESD devices, as well as information on the SOI substrate and deep trench isolation structure. • Package photographs and package X-ray images • Optical chip photographs from M4 to M1 • Cross-sectional analysis of low-voltage devices (logic section) • Verification of the process node • Cross-sectional analysis of high-voltage devices • Verification of gate oxide thickness • Identification of ESD device structures through cross-sectional analysis • Cross-sectional analysis of device isolation structures • Verification of the SOI substrate and deep trench isolation structure
8		DENSO 24ch BMIC	
9		Comparison of the Two BMICs	
10	Layer Structure Analysis	DENSO 28ch BMIC	• Package photographs and package X-ray images • Optical chip photographs from M4 to Gate • SEM chip photographs from M4 to Gate
11		DENSO 24ch BMIC	

Please contact us for report pricing or more details if you are interested.

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