



Electronics for the Future

ROHM Introduces a New MOSFET for AI Servers with Industry-Leading* SOA Performance and Low ON-Resistance

Endorsed by a major global cloud platform provider

July 1, 2025

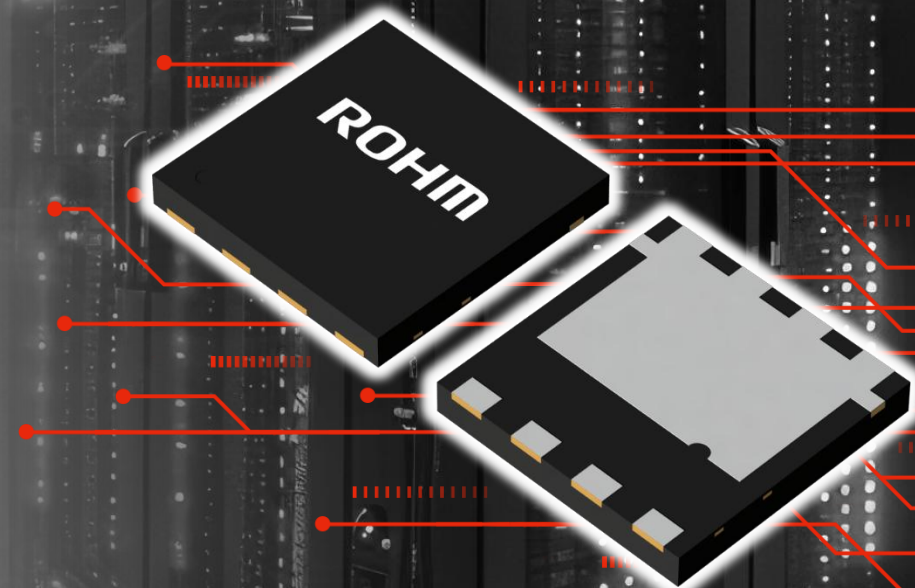
ROHM Co., Ltd.

Marketing Communication Department

*ROHM July 1, 2025 study on existing 8080-size 100V power MOSFETs

EcoMOS™ is a trademark or registered trademark of ROHM Co., Ltd.

This document is current as of the date of publication. Subject to change without notice.



Market Background

[Market background →](#)

[Differences between AI servers and conventional servers →](#)

Technology Trends

[What is hot-swapping in servers? →](#)

[Hot-swap circuits →](#)

What is a MOSFET?

[Key devices in power control →](#)

What is EcoMOS™?

[ROHM power MOSFETs →](#)

New Product

[Product overview: RY7P250BM →](#)

[Product video →](#)

[Feature 1: Wide SOA →](#)

[Feature 2: Low ON-resistance →](#)

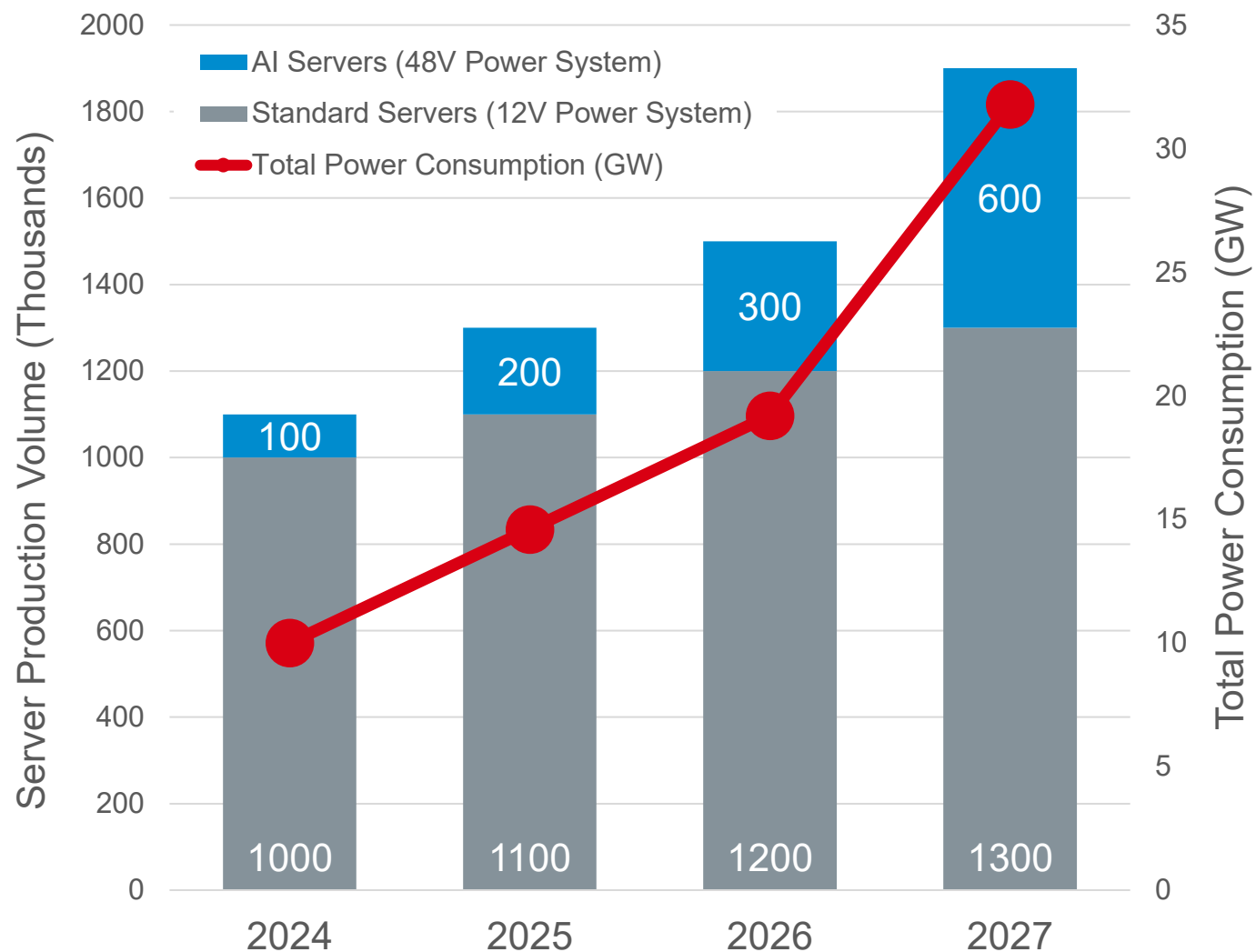
[Recommended product by cloud platform provider →](#)

Roadmap

[Future product outlook →](#)



Server Production Forecast and Power Consumption Trend



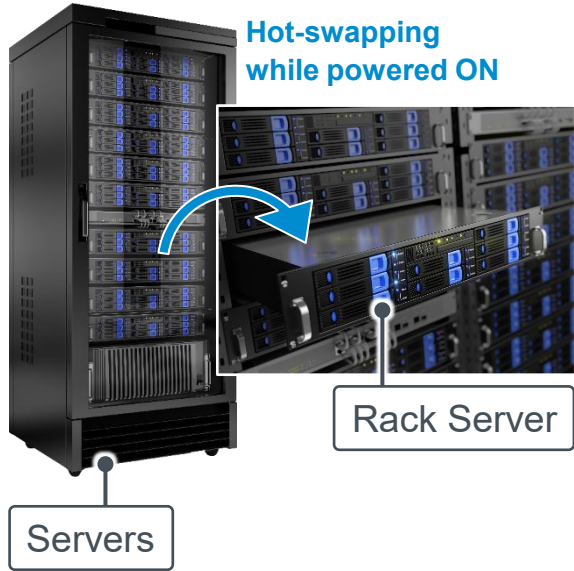
The AI server market is projected to expand by sixfold over the four years starting from 2024



As AI technology rapidly evolves
Power consumption is projected to increase by threefold

Parameter	AI Servers	Conventional Servers
Primary Applications	AI inference/training, large-scale data processing, etc.	Web services, file servers, business systems, etc.
Embedded Processors	GPUs, AI accelerators, etc.	CPU-centered
Power Supply Configuration	48V systems are mainstream	12V systems are mainstream
Power Consumption	High (Approx. 3000W or more per unit)	Low (Approx. 600W per unit)
Cooling Method	Liquid cooling (Air cooling may be insufficient in some cases)	Air cooling is common
Network Bandwidth	High bandwidth (e.g. high-speed interconnects)	Standard ethernet

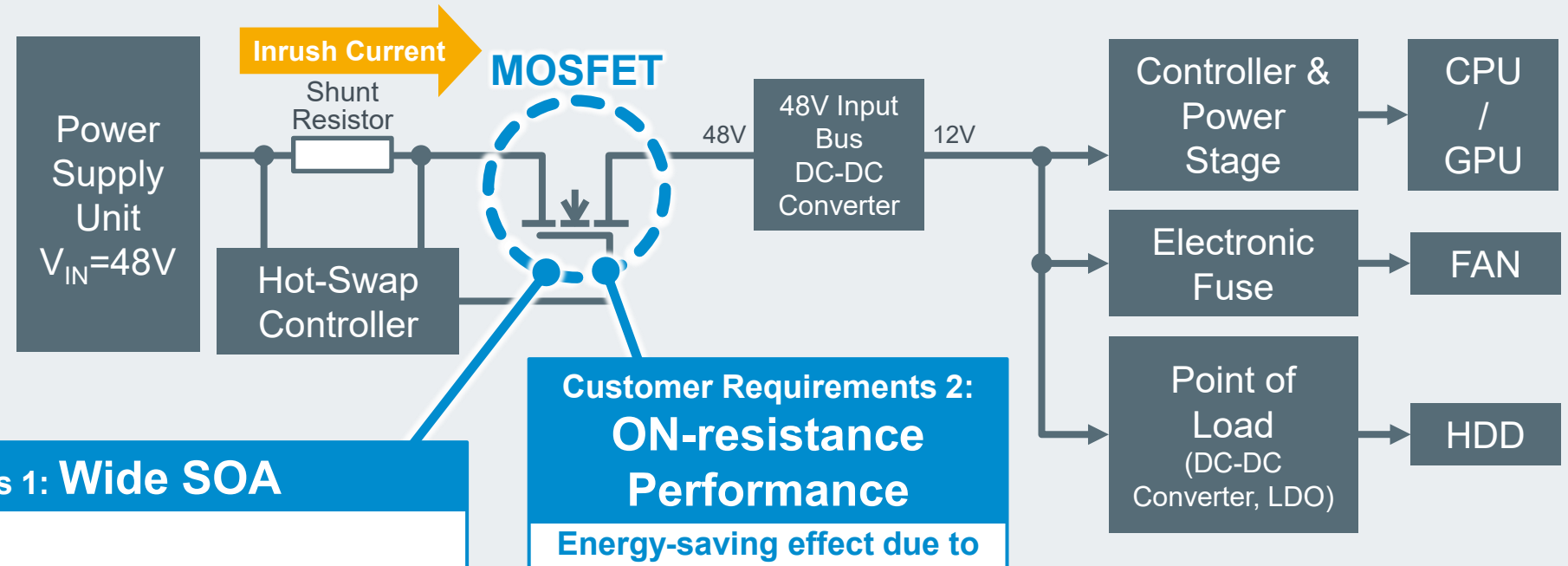
AI servers require higher density, higher load, and higher efficiency power supplies



Sample Schematic Diagram of a Server Power Supply

SOA: Safe Operating Area
HSC: Hot-Swap Controller

HSC Operation: Prevents inrush current from being instantaneously applied to components



Customer Requirements 1: Wide SOA

HSC Operation



The HSC slowly turns the MOSFET ON

➡ Voltage and current applied with a fixed pulse width

Customer Feedback

- Pw=1ms to 10ms required
- Trend of increasing component power consumption

Large Current = Wide SOA

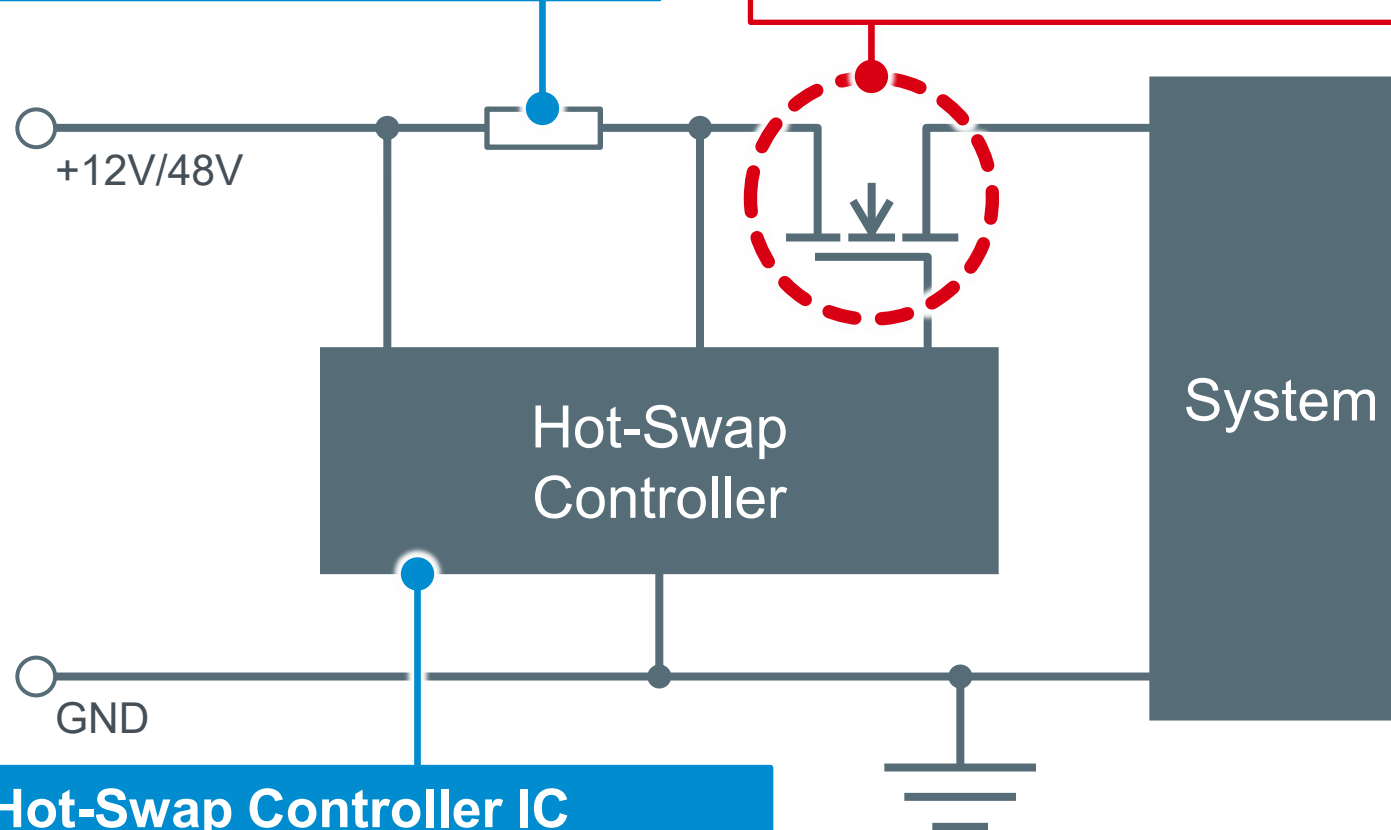
Resistor for Hot-Swap Circuits

PMR Series

(Conventional type for current detection)

N-channel MOSFETs for Hot-Swap Circuits

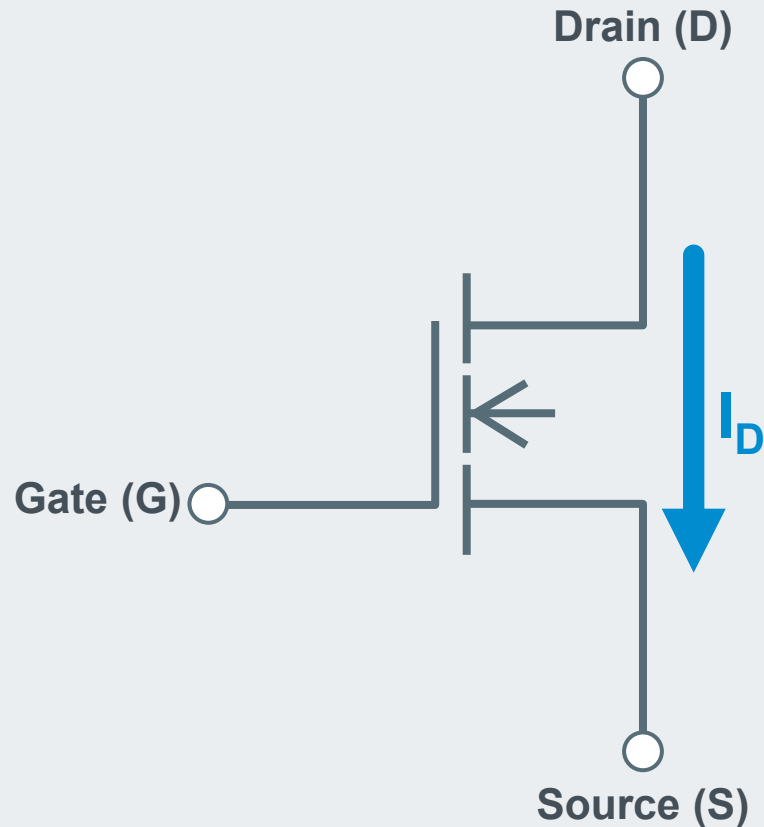
New RY7P250BM (100V)
RS7E200BG (30V)



12V Hot-Swap Controller IC

BD12780MUV-LB (Under development)

Circuit Diagram (N-channel)



MOSFET Basics

- MOSFET (Metal–Oxide–Semiconductor FET) is an electronic switch for ON/OFF power control
- Used for a wide range of power-related applications such as power conversion, switching, and control circuits

Primary Applications

- Power supply circuits (i.e. buck/boost converters, protection)
- Hot-swap function (safe component replacement while powered ON)
- Motor control circuits (for industrial equipment, home appliances, and power tools)
- Inverter circuits (e.g. solar power systems, electric vehicles)

MOSFETs are essential switching devices for all types of power control

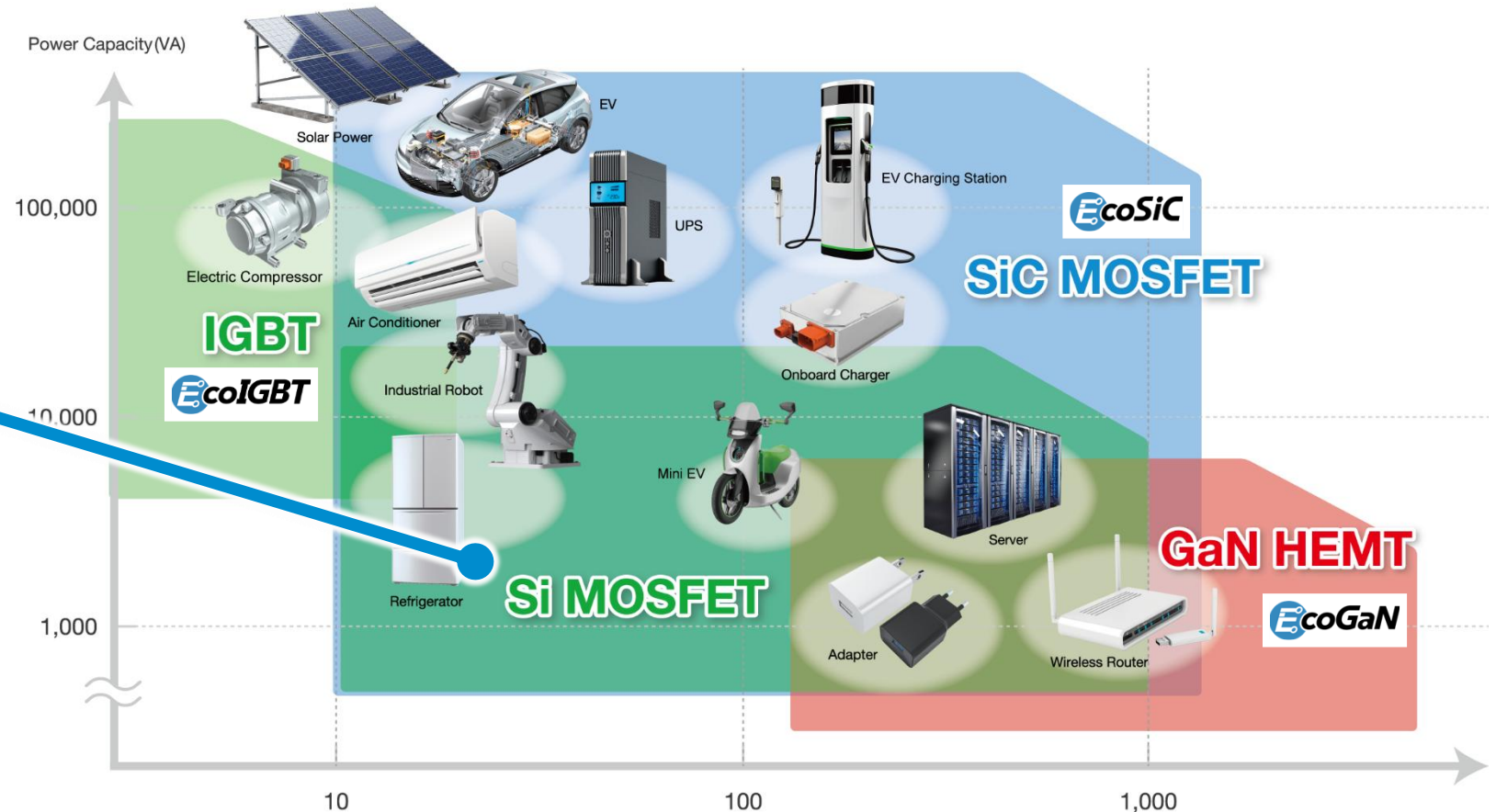
What is EcoMOS™?

The power capacity and operating frequency range of power devices can vary greatly depending on their materials and structure.

*EcoSiC™ is designed to operate as a SiC MOSFET, while EcoGaN™ is intended to function as a GaN HEMT



EcoMOS™ is ROHM's brand of silicon MOSFETs designed for energy-efficient applications in the power device sector. Widely utilized in applications such as home appliances, industrial equipment, and automotive systems, EcoMOS™ provides a diverse lineup that enables product selection based on key parameters such as noise performance and switching characteristics to meet specific requirements.



EcoMOS™, EcoSiC™, EcoGaN™, and EcoIGBT™ are trademarks or registered trademarks of ROHM Co., Ltd.

Features

- 100V power MOSFET ideal for 48V hot-swap circuits
- Industry-leading* SOA and low ON-resistance ($R_{DS(on)}$)
- Standard 8080-size package
- Certified as a recommended component by US cloud provider

*ROHM July 1, 2025 study on existing 8080-size 100V power MOSFETs

**RY7P250BM**


DFN8080-8S

(8.0mm × 8.0mm × 1.0mm)

Online Distributors

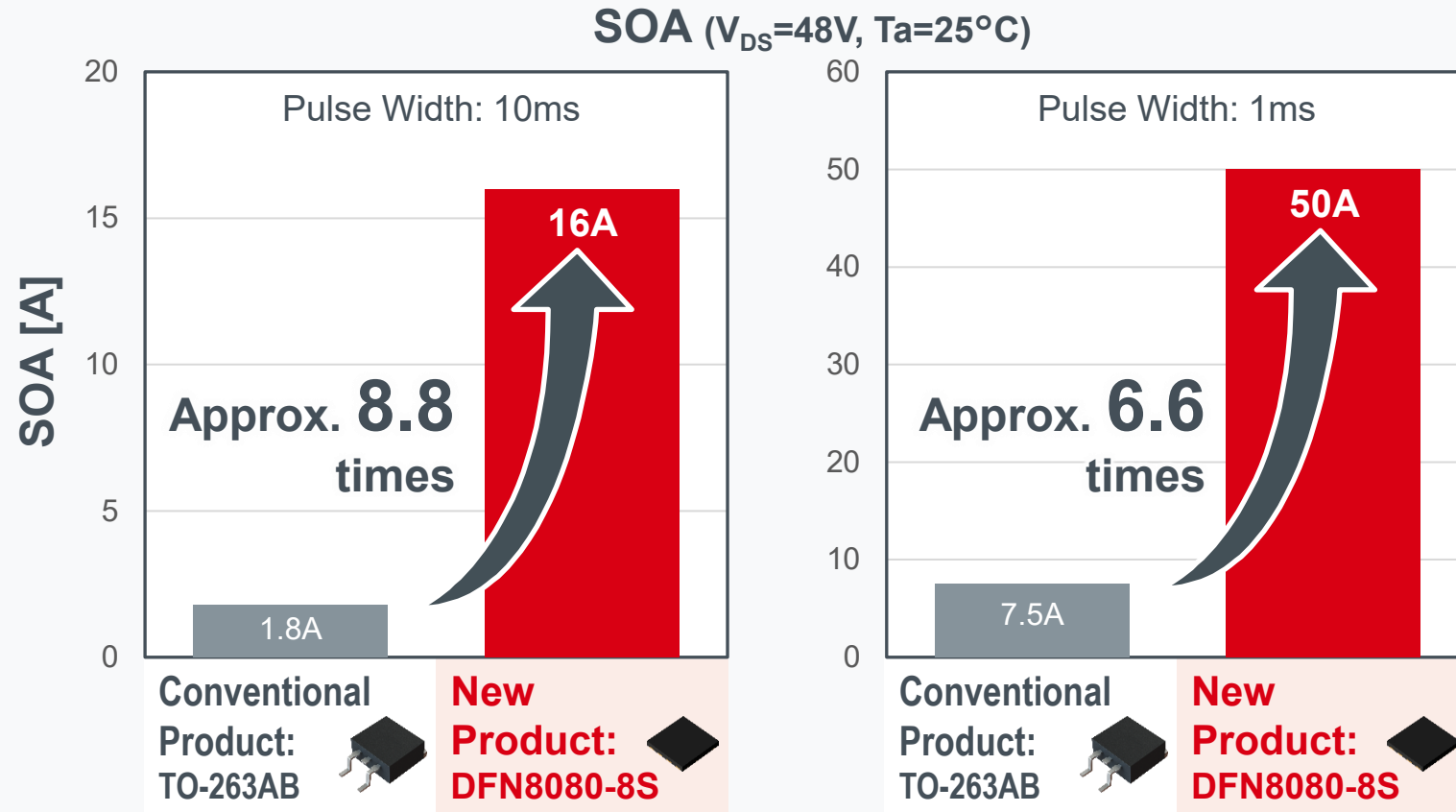


Key Specifications

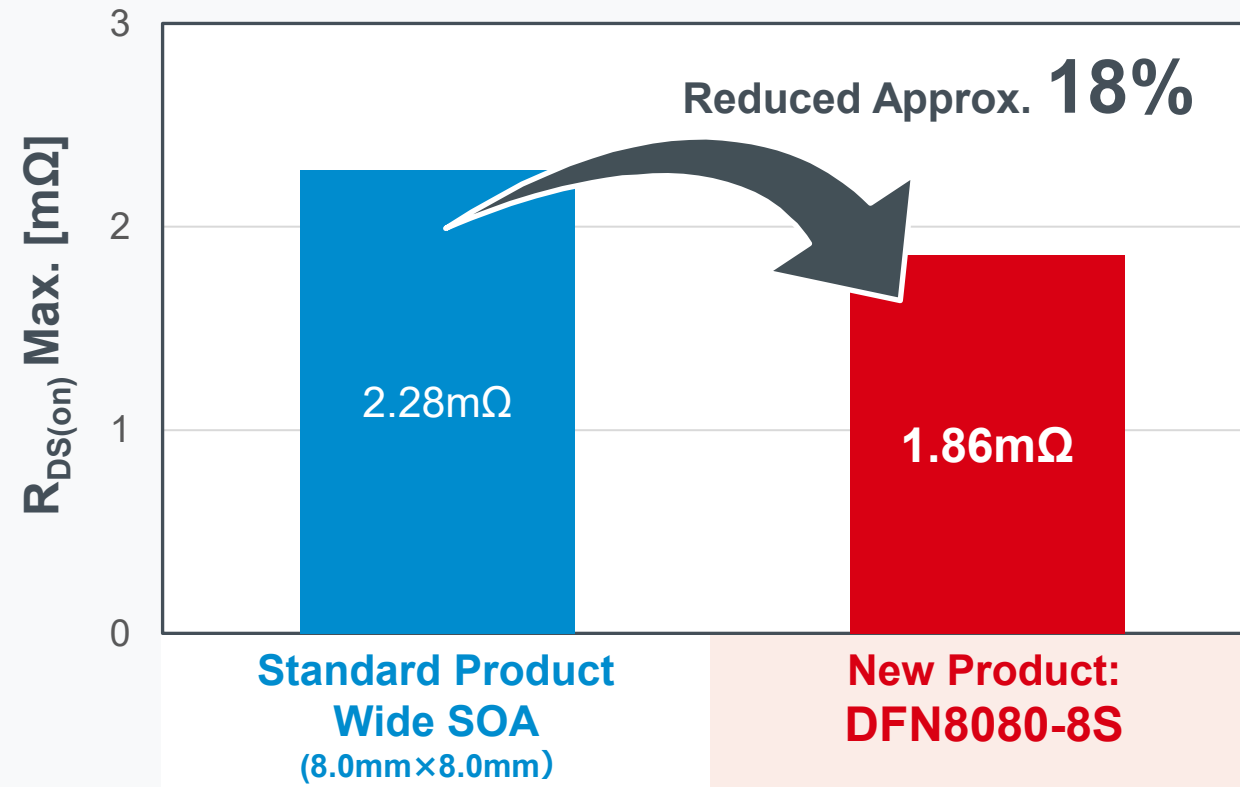
Part No.	Polarity	V_{DSS} [V]	I_D [A]	$R_{DS(on)}$ Max. [mΩ]	C_{iss} [pF]	Q_g [nC] $V_{GS}=10V$	SOA $V_{GS}=48V$ [A]		Package [mm]
				$V_{GS}=10V$			Pw=10ms	Pw=1ms	
New RY7P250BM	N-channel	100	250	1.86	11300	170	16	50	DFN8080-8S (8.0×8.0×1.0) 



SOA Performance Comparison





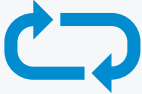

Significantly improved SOA tolerance enhances reliability and durability in high-load environments

ON-resistance Comparison vs Standard 8080-Size Product ($V_{GS}=10V$, $I_D=50A$, $T_j=25^{\circ}C$)

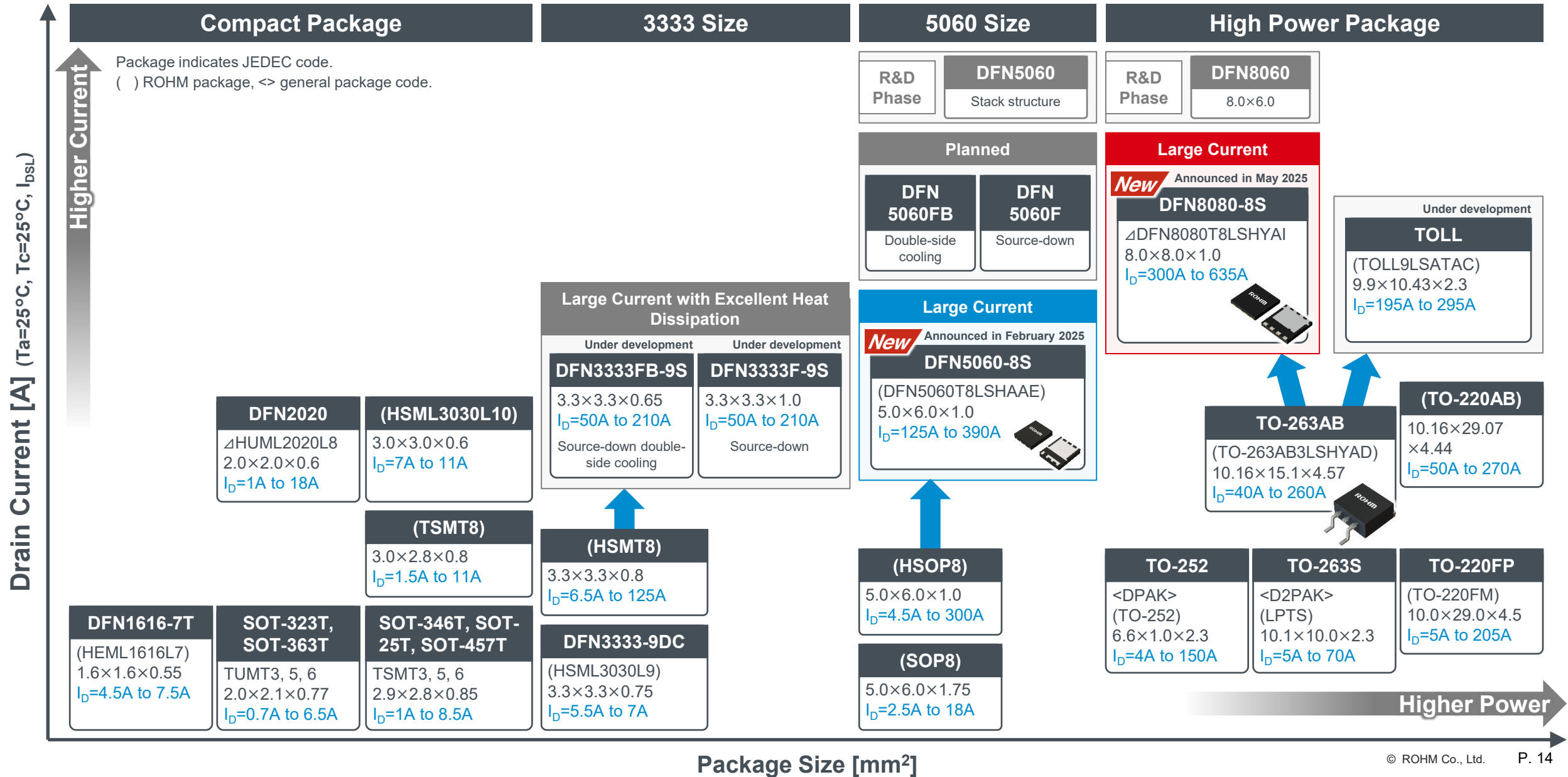
- Achieves a low ON-resistance of 1.86mΩ
- Deliver higher efficiency, reduced cooling requirements, and lower power costs for server-power supplies

The new product has been certified as a recommended component by leading global cloud platform provider

Key Points Evaluated

Features	Contents
 Wide SOA	Safely handles inrush current and high-current loads during AI processing Meets the reliability standards required for cloud applications
 High-efficiency through low ON-resistance	Reduces cooling load and power consumption by suppressing heat generation Ideal for high-density server operations
 Standard 8080-size package	Easily replaceable in existing circuit designs Mass production system capable of large-scale manufacturing
 Supply system	Stable supply was positively evaluated

Package Roadmap





Electronics for the Future

- The content specified herein is for the purpose of introducing ROHM's products (hereinafter "Products").
- If you wish to use any such Product, please be sure to refer to the specifications, which can be obtained from ROHM upon request.
- Great care was taken in ensuring the accuracy of the information specified in this document. However, should you incur any damage arising from any inaccuracy or misprint of such information, ROHM shall bear no responsibility for such damage.
- The technical information specified herein is intended only to show the typical functions of and examples of application circuits for the Products.
- ROHM does not grant you, explicitly or implicitly, any license to use or exercise intellectual property or other rights held by ROHM and other parties.
- ROHM shall bear no responsibility whatsoever for any dispute arising from the use of such technical information.
- If you intend to export or ship overseas any Product or technology specified herein that may be controlled under the Foreign Exchange and the Foreign Trade Law, you will be required to obtain a license or permit under the Law.
- The content specified in this document is correct as of July 2025.