MITSUBISHI ELECTRIC CORPORATION
PUBLIC RELATIONS DIVISION
7-3, Marunouchi 2-chome, Chiyoda-ku, Tokyo, 100-8310 Japan

FOR IMMEDIATE RELEASE **No. 3856**

Customer Inquiries

Semiconductor & Device Marketing Div.A
Mitsubishi Electric Corporation

www.MitsubishiElectric.com/semiconductors/

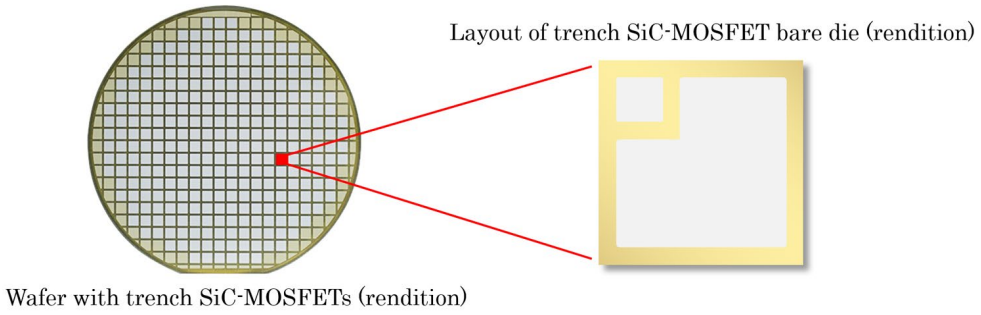
Media Inquiries

Public Relations Division
Mitsubishi Electric Corporation

prd.gnews@nk.MitsubishiElectric.co.jp
www.MitsubishiElectric.com/en/pr/

Mitsubishi Electric to Ship Samples of Four New Trench SiC-MOSFET Bare Dies for Power Semiconductors

Advanced bare dies for diverse embedding needs, enabling lower power consumption in power electronics equipment



(left) Wafer with trench SiC-MOSFETs (rendition)
(right) Layout of trench SiC-MOSFET bare die (rendition of shipping sample)

TOKYO, January 14, 2026 – Mitsubishi Electric Corporation (TOKYO: 6503) announced today that, beginning January 21, it will start shipping samples of four new trench[1] silicon carbide metal-oxide-semiconductor field-effect transistor (SiC-MOSFET) bare dies (chips not encased in protective housing) designed for use in power electronics equipment, such as electric vehicle (EV) traction inverters,[2] onboard chargers,[3] and power supply systems for renewable energy sources including solar power. These new power semiconductor bare dies will contribute to efforts to embed advanced bare dies in various power electronics equipment to lower power consumption while maintaining performance.

Mitsubishi Electric will exhibit the new trench SiC-MOSFET bare dies at the 40th Nepcon Japan R&D and Manufacturing show in Tokyo from January 21 to 23, as well as exhibitions in North America, Europe, China, India and elsewhere.

The market for power electronics equipment is expected to expand in line with global efforts targeting decarbonization. As part of this trend, the demand is growing for power semiconductors embedded with highly

[1] A structure where grooves (trenches) are etched into the surface of the wafer, and gate electrodes are embedded.
[2] Power conversion device for directly driving EV and HEV traction motors.
[3] One of the charging devices installed in an EV/PHEV, used to convert external AC power supply into DC power to charge the vehicle's battery.

efficient bare dies that enable EV traction inverters and renewable-energy power supply systems to consume less power while maintaining their high performance and quality.

Since 2010, Mitsubishi Electric has been selling SiC power semiconductor modules that significantly reduce the power consumption of air conditioners, industrial equipment and railway vehicle inverter systems. To meet the demand for advanced power semiconductor bare dies, Mitsubishi Electric is now introducing four new trench SiC-MOSFET bare dies that are similar to the company's existing trench SiC-MOSFET bare dies,[4] but utilize a proprietary trench SiC-MOSFET structure to reduce power loss by approximately 50%[5] compared to planar[6] SiC-MOSFETs. Furthermore, manufacturing processes including Mitsubishi Electric's proprietary gate oxide film manufacturing method suppress variations in power loss and on-resistance to ensure stable quality over a long period of use.

Product Features

1) Four new trench SiC-MOSFET bare dies to meet diverse embedding needs in power electronics equipment

- The four new bare die types expand the range of applications for Mitsubishi Electric SiC-MOSFETs as power semiconductor bare dies that can be embedded in power electronics equipment, including EV traction inverters, onboard chargers and renewable-energy power supply systems.

2) Proprietary structure, like those of existing trench SiC-MOSFET bare dies, reduces power consumption

- The trench structure leverages miniaturization technology cultivated in the manufacturing of Si power semiconductor bare dies, reducing on-resistance compared to conventional planar SiC-MOSFETs.
- A proprietary oblique ion implantation method reduces switching loss compared to conventional vertical ion implantation methods.
- Power loss is reduced by approximately 50%[5] compared to planar SiC-MOSFETs, contributing to lower power consumption in power electronics equipment.

3) *Proprietary manufacturing process helps power electronics equipment maintain quality*

- The bare dies leverage SiC-specific process control, cultivated over 20 years of researching and manufacturing planar SiC-MOSFETs and silicon-carbide Schottky-barrier diodes (SiC-SBDs),[7] and proprietary manufacturing processes including a unique gate oxide film manufacturing method for trench SiC-MOSFETs. These technologies help to suppress variations in power loss and on-resistance due to repeated on/off switching, thereby ensuring the stable, long-term quality and performance of power electronics equipment.

[4] Announced on November 12, 2024: https://www.MitsubishiElectric.com/en/pr/2024/1112/
[5] Comparison of on-resistance after aligning the threshold voltage to that of existing planar MOSFETs of the same rated voltage.
[6] A structure where gate electrodes are placed on the surface of the wafer.
[7] A diode that utilizes the Schottky barrier formed at the junction between a semiconductor and a metal.

Main Specifications

Type	WF0020P-0750AA	WF0040P-0750AA	WF0060P-0750AA	WF0080P-0750AA
Application	Power electronics equipment such as EV traction inverters, onboard chargers, and renewable-energy power systems			
Rated Voltage	750V			
On-Resistance	20mΩ	40mΩ	60mΩ	80mΩ
Surface Electrode Specification	Supports solder bonding			
Back Electrode Specification	Supports solder bonding and Ag sintering bonding			
Price	By individual quotation			
Sample Shipments	January 21, 2026			
Environmental Impact	Compliant with RoHS[8] Directive (2011/65/EU, (EU) 2015/863)			

Website

https://www.MitsubishiElectric.com/semiconductors/powerdevices/

###

About Mitsubishi Electric Corporation

With more than 100 years of experience in providing reliable, high-quality products, Mitsubishi Electric Corporation (TOKYO: 6503) is a recognized world leader in the manufacture, marketing and sales of electrical and electronic equipment used in information processing and communications, space development and satellite communications, consumer electronics, industrial technology, energy, transportation and building equipment. Mitsubishi Electric enriches society with technology in the spirit of its "Changes for the Better." The company recorded a revenue of 5,521.7 billion yen (U.S.$ 36.8 billion*) in the fiscal year ended March 31, 2025. For more information, please visit www.MitsubishiElectric.com

*U.S. dollar amounts are translated from yen at the rate of ¥150=U.S.$1, the approximate rate on the Tokyo Foreign Exchange Market on March 31, 2025

[8] Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment.