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Semiconductor & Device Marketing Dept.A and Dept.B
Mitsubishi Electric Corporation

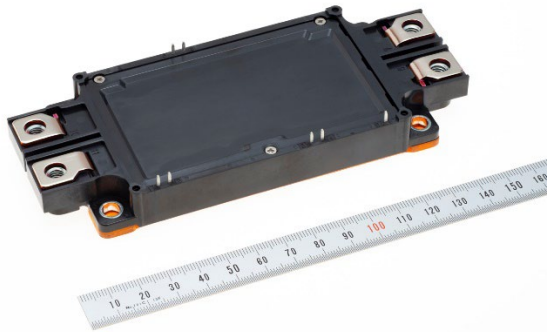
Public Relations Division
Mitsubishi Electric Corporation

www.MitsubishiElectric.com/semiconductors/

prd.gnews@nk.MitsubishiElectric.co.jp
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Mitsubishi Electric to Ship Samples of NX-type Full-SiC Power Semiconductor Modules for Industrial Equipment

*Will contribute to more efficient, smaller and lighter industrial equipment
by reducing internal inductance and incorporating an SiC chip*



NX-type full-SiC power semiconductor module for industrial equipment

TOKYO, June 13, 2023 – [Mitsubishi Electric Corporation](https://www.mitsubishielectric.com) (TOKYO: 6503) announced today that it will begin shipping samples of its new NX-type full-SiC (silicon carbide) power semiconductor module for industrial equipment on June 14. The module, which reduces internal inductance and incorporates a second-generation SiC chip, is expected to contribute to the realization of more efficient, smaller and lighter-weight industrial equipment. Power semiconductors are increasingly being utilized to convert electric power extra efficiently and thereby help to lower the carbon footprint of global society. Expectations are particularly high for SiC power semiconductors because of their capability to significantly reduce power loss. The demand is expanding for high-power, high-efficiency power semiconductors capable of improving the power-conversion efficiency of components such as inverters used in industrial equipment.

Mitsubishi Electric began releasing power semiconductor modules equipped with SiC chips in 2010. The new module, which features a low-loss SiC chip and optimized electrode structure, reduces internal inductance by 47% compared to its existing predecessor,¹ enabling reduced power loss.

Development of this SiC product have been partially supported by Japan's New Energy and Industrial Technology Development Organization (NEDO).

Product Features

1) Optimized electrode structure and SiC chip contribute to more efficient, smaller and lighter equipment

- Electrode structure optimized with laminated electrodes, etc. to achieve internal inductance of 9nH,² 47% lower than that of the existing module.
- Reduced internal inductance suppresses voltage surges to protect equipment, allowing fast switching while also lowering switching and power loss.
- Low-loss second-generation SiC chip incorporates junction field-effect transistor (JFET) doping technology³ to reduce power loss approximately 72% compared to the existing module,¹ contributing to more efficient equipment.
- Reduced power loss helps to reduce heat generation, allowing use of smaller and lighter-weight coolers.

2) NX-type package compatibility allows new module to easily replace current version

- External dimensions and pin configurations are compatible with NX-type module despite inclusion of SiC chip, facilitating easy replacements that will help to speed up the design of new equipment.

Next Step

Mitsubishi Electric will continue to expand its lineup of power semiconductor modules to further contribute to more efficient, smaller and lighter industrial equipment.

Main Specifications

Type	FMF600DXE-34BN
Voltage rating	1700V
Current rating	600A
Isolation voltage	4000Vrms
Connection	2in1
Dimensions (W×D×H)	62×152×17mm
Sample shipments	June 14, 2023
Environmental awareness	Compliant with RoHS ⁴ directive 2011/65/EU and 2015/863/EU

Website

<https://www.MitsubishiElectric.com/semiconductors/>

¹ Compared with 1700V/600A NX-type Si IGBT Module T-series (CM600DX-34T) based on measurements using Mitsubishi Electric-determined conditions

² Nanohenry: unit that expresses the magnitude of inductance

³ Increases device density by increasing impurity density in JFET area

⁴ Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment

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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 5,003.6 billion yen (U.S.\$ 37.3 billion*) in the fiscal year ended March 31, 2023. For more information, please visit www.MitsubishiElectric.com

*U.S. dollar amounts are translated from yen at the rate of ¥134=U.S.\$1, the approximate rate on the Tokyo Foreign Exchange Market on March 31, 2023