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**FOR IMMEDIATE RELEASE**

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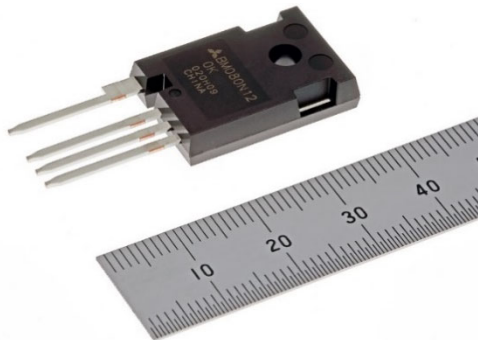
## **Mitsubishi Electric to Launch 4-terminal N-series 1200V SiC-MOSFETs**

*Helps to reduce power consumption and physical size of power-supply systems*

**TOKYO, November 5, 2020** – [Mitsubishi Electric Corporation](https://www.mitsubishielectric.com) (TOKYO: 6503) announced today the coming launch of a new series of silicon-carbide metal-oxide-semiconductor field-effect transistors (MOSFETs), the N-series of 1200V SiC-MOSFETs in a TO-247-4 package,<sup>1</sup> which achieves 30% less switching loss compared to the existing TO-247-3 package<sup>2</sup> products. The new series will help to reduce the power consumption and physical size of power-supply systems requiring high-voltage conversion, such as electric vehicle (EV) on-board chargers and photovoltaic power systems. Sample shipments will start this November.

<sup>1</sup> Separates the driver-source-terminal from the power-source-terminal, unlike conventional 3-pin packages

<sup>2</sup> Mitsubishi Electric press release on June 16, 2020: <https://www.MitsubishiElectric.com/news/2020/0616.html>



N-series 1200V SiC-MOSFET in TO-247-4 package

### **Product Features**

#### **1) *Four-pin package helps reduce power consumption and physical size of power-supply systems***

- SiC-MOSFET chip with good figure of merit (FOM<sup>3</sup>) of 1,450mΩ-nC and high self-turn-on tolerance is mounted on TO-247-4 package, which is equipped with independent driver source terminal as well as conventional 3-pin package.
- Adopts four-pin package to reduce parasitic inductance, a problem in high-speed switching. Eliminating gate-source voltage drops due to current variations helps to reduce switching loss by approximately 30% compared with TO-247-3 products.

- Using a higher carrier frequency<sup>4</sup> to drive the new power semiconductors helps to reduce switching-power loss, enabling smaller and simpler cooling systems as well as smaller reactors and other peripheral components, thereby helping to reduce the power consumption and physical size of overall power-supply systems.

<sup>3</sup> Performance index of power MOSFETs, calculated by multiplying on-resistance by gate-drain charge (100°C junction temperature). Smaller values indicate better performance.

<sup>4</sup> Frequency that determines the ON/OFF timing of switching element in inverter circuit

## 2) Six models for diverse applications, including AEC-Q101 compliant models

- New lineup includes models compatible with Automotive Electronics Council's AEC-Q101 standards for use not only in industrial applications, e.g. photovoltaic systems, but also EV applications.
- Creepage distance (shortest distance over surface between two conductive parts) between drain terminal and source terminal made wider than in TO-247-3 package products for more flexible application, including in outdoor installations where dust and dirt easily accumulate.

### Sales Schedule

Product	Standards	Model	V <sub>DS</sub>	R <sub>DS(on)_typ.</sub>	I <sub>Dmax@25°C</sub>	Package	Sample availability
SiC-MOSFET	AEC-Q101	BM080N120KJ	1200V	80mΩ	38A	TO-247-4	Nov. 2020
		BM040N120KJ		40mΩ	68A		
		BM022N120KJ		22mΩ	102A		
	—	BM080N120K		80mΩ	38A		
		BM040N120K		40mΩ	68A		
		BM022N120K		22mΩ	102A		

In the face of rising demands for energy savings and environmental awareness, SiC power semiconductors are attracting increasing attention due to their potential to significantly reduce power loss. Mitsubishi Electric, since commercializing its first power module incorporating silicon-carbide Schottky-barrier diodes (SiC-SBD) and SiC-MOSFETs in 2010, has continued to contribute to the size reduction and energy efficiency of inverter systems for home appliances, industrial equipment and railway locomotive systems.

Note: Development of these SiC products have been partially supported by Japan's New Energy and Industrial Technology Development Organization (NEDO).

### Main Specifications

Model	BM080N120K(J)	BM040N120K(J)	BM022N120K(J)
V <sub>DS</sub>	1200V		
R <sub>DS(on)_typ.</sub>	80mΩ	40mΩ	22mΩ
I <sub>Dmax@25°C</sub>	38A	68A	102A
Package	TO-247-4		
Size	15.9 × 41.0 × 5.0mm		

### Environmental Awareness

These products are compliant with the Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment (RoHS) directive 2011/65/EU and (EU)2015/863.

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**About Mitsubishi Electric Corporation**

With nearly 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 corporate statement, “Changes for the Better,” and environmental statement, “Eco Changes.” The company recorded a revenue of 4,462.5 billion yen (U.S.\$ 40.9 billion\*) in the fiscal year ended March 31, 2020. For more information, please visit [www.MitsubishiElectric.com](http://www.MitsubishiElectric.com)

\*U.S. dollar amounts are translated from yen at the rate of ¥109=U.S.\$1, the approximate rate on the Tokyo Foreign Exchange Market on March 31, 2020