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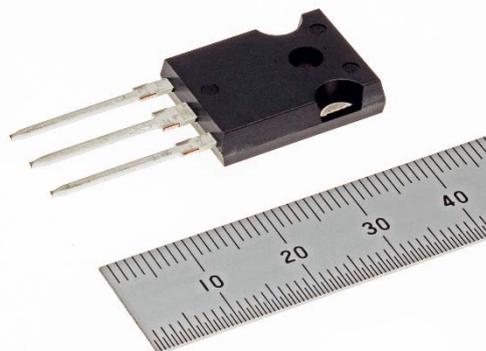
Mitsubishi Electric to Launch N-series 1200V SiC-MOSFET

*Low power consumption and miniaturization of power-supply systems, such as EV on-board chargers
and photovoltaic power systems*

TOKYO, June 16, 2020 – [Mitsubishi Electric Corporation](http://www.mitsubishielectric.com) (TOKYO: 6503) announced today the launch of its N-series 1200V SiC-MOSFET (silicon-carbide metal-oxide-semiconductor field-effect transistor) featuring low power loss and high tolerance¹ to self-turn-on. The new series will help to reduce the power consumption and miniaturize power supply systems requiring high-voltage conversion, such as electric vehicle (EV) on-board chargers, photovoltaic power systems and more. Sample shipments will start this July.

Mitsubishi Electric will exhibit its new N-series 1200V SiC-MOSFET at major trade shows, including PCIM Asia 2020 in Shanghai, China from November 16 to 18.

¹ Input capacitance/mirror capacitance (Ciss/Crss), as calculated by Mitsubishi Electric



N-series 1200V SiC-MOSFET

Product Features

1) Reduced power consumption and miniaturization of power-supply systems

- Junction field effect transistor (JFET) doping technology reduces both switching loss and on-resistance, achieving an industry-leading² figure of merit (FOM³) of 1,450mΩ · nC. Power consumption in power-supply systems is reduced by approximately 85% compared to using conventional Si-IGBTs.
- By reducing mirror capacitance⁴, self-turn-on tolerance improves by 14 times compared with competitor's products. Thus, fast switching operation can be realized and helps reduce switching loss.
- Reduced switching-power loss enables the downsizing and simplification of cooling systems as well as the

downsizing of peripheral components, such as reactor by driving the power semiconductor with a higher carrier frequency⁵, thereby helping to reduce the cost and size of overall power-supply systems.

² As of June 16, 2020 according to Mitsubishi Electric research

³ Performance index of Power MOSFET, calculated by multiplying the on-resistance by the gate-drain charge (100°C junction temperature). Smaller values indicate better performance

⁴ Stray capacitance between Gate and Drain existing in MOSFET structure (Crss)

⁵ Frequency that determines the ON/OFF timing of the switching element in an inverter circuit

2) Six models for various applications including AEC-Q101 compliant models

- The product lineup includes models which are qualified with Automotive Electronics Council's AEC-Q101 standards. Therefore, the N-series SiC-MOSFET can be used not only in industrial applications such as photovoltaic systems, it can also be used in EV on-board chargers.

Sales Schedule

Product	Standards	Model	V _{DS}	R _{DS(on)_typ.}	I _{Dmax@25°C}	Package	Sample availability
SiC-MOSFET	AEC-Q101	BM080N120SJ	1200V	80mΩ	38A	TO-247-3	July 2020
		BM040N120SJ		40mΩ	68A		
		BM022N120SJ		22mΩ	102A		
	—	BM080N120S		80mΩ	38A		
		BM040N120S		40mΩ	68A		
		BM022N120S		22mΩ	102A		

In recent years, with the rising energy-saving and environmental awareness, SiC power semiconductors have attracted increasing attention for their potential to significantly reduce power loss. Mitsubishi Electric, since commercializing its first power module incorporating silicon-carbide Schottky-barrier diode (SiC-SBD) and SiC-MOSFET 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	BM080N120S(J)	BM040N120S(J)	BM022N120S(J)
V _{DS}	1200V		
R _{DS(on)_typ}	80mΩ	40mΩ	22mΩ
I _{D max@25°C}	38A	68A	102A
Package	TO-247-3		
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 2015/863/EU.

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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

*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