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Mitsubishi Electric Develops Large-capacity SiC Power Module Technologies

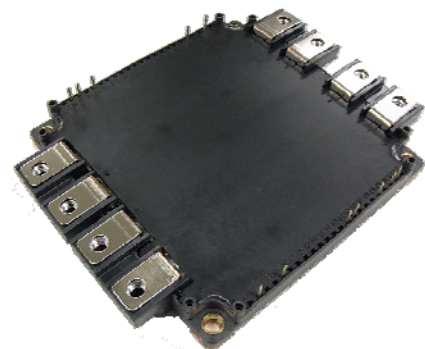
World-leading capacity will lead to smaller, lighter equipment

TOKYO, February 14, 2013 – [Mitsubishi Electric Corporation](#) (TOKYO: 6503) announced today that it has developed large-capacity silicon carbide (SiC) power module technologies incorporating all-SiC power devices for unprecedented 1,200-volt, 1,200-ampere performance. The new technologies, which have been incorporated in a prototype module, are expected to expand SiC-applications to factory automation equipment, elevators, escalators, photovoltaic systems, wind-power generation systems and other industrial applications.

The prototype is a dual module that incorporates SiC metal oxide semiconductor field effect transistors (SiC-MOSFET) and SiC schottky barrier diodes (SiC-SBD). Optimized structure limits surge voltage created during high-speed switching to the same extent as Si power modules, thereby reducing power loss and preventing power devices from being destroyed.

Power capacity was increased by using two parallel-connected circuit blocks, and current share between the blocks was equalized to balance the temperature in each block, preventing power devices from being destroyed. To equalize current share, Mitsubishi Electric optimized chip layout, main current wiring and control wiring.

High power capacity has the potential to easily destroy power devices when a short circuit occurs. Mitsubishi Electric also developed a rapid protection circuit by incorporating a current sensor function in the MOSFET to enable the use of low-resistance devices. The resulting 75% reduction of power loss allows cooling equipment to be downsized by some 50% in application equipment.



Large-capacity, full SiC
power module (1200V/1200A)

Existing power devices widely use Si, but recent developments have brought attention to SiC for its lower power loss attributed to a critical breakdown field that is 10 times higher. Mitsubishi Electric expects to see further development of SiC technologies lead to lower carbon dioxide emissions and further downsizing and weight reduction of industrial equipment.

Patents

Patents submitted for the technologies announced in this news release number 147 in Japan and 43 overseas.

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About Mitsubishi Electric

With over 90 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. Embracing the spirit of its corporate statement, Changes for the Better, and its environmental statement, Eco Changes, Mitsubishi Electric endeavors to be a global, leading green company, enriching society with technology. The company recorded consolidated group sales of 3,639.4 billion yen (US\$ 44.4 billion*) in the fiscal year ended March 31, 2012. For more information visit <http://www.MitsubishiElectric.com>

*At an exchange rate of 82 yen to the US dollar, the rate given by the Tokyo Foreign Exchange Market on March 31, 2012