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Mitsubishi Electric Adds “V1 Series” to Lineup of High Output Intelligent Power Modules

Featuring low power loss and a compact package for motor control systems

Tokyo, March 30, 2010 – Mitsubishi Electric Corporation (TOKYO: 6503) announced today the launch of the new V1 Series of high output intelligent power modules (IPM), mainly for use in motors to control industrial machinery.

The V1 Series features low power loss and a compact package for inverters with volumes of 37 kilowatts (kW) or greater and servo systems with volumes of 15kW or greater. Shipments will begin in March 2010 through Mitsubishi Electric sales sites (<http://www.mitsubishichips.com/Global/network/index.html>) in the Americas, Europe, China and Korea.

An IPM is a type of power device with multiple chips combined into one package, including power chips using IGBTs and their driving circuits, as well as a variety of protection circuits. To use energy more efficiently, variable frequency inverters have recently become widely employed in motor control systems. In the output stage of these inverters, IPMs are commonly used for switching electric current at high speeds. There is growing demand for IPMs with lower power loss, higher output volume and smaller package size.



In 1998, Mitsubishi Electric launched the V Series, which has 2 IGBT chips embedded into one module. With the addition of the V1 Series, motor control system manufacturers will be able to choose from the two series to best suit their needs.

Summary of Sale

Series	Model	Specifications	Shipment date
Large output power IPM V1 series	PM400DV1A060	600V/400A, 2 chips per pack	March 2010
	PM600DV1A060	600V/600A, 2 chips per pack	
	PM200DV1A120	1200V/200A, 2 chips per pack	
	PM300DV1A120	1200V/300A, 2 chips per pack	
	PM450DV1A120	1200V/450A, 2 chips per pack	

Product Features

1) Inverter power loss reduced by 20%

The IGBT chips incorporated in the V1 Series are carrier-stored trench gate bipolar transistor (CSTBT) ^{TM*1} chips, which feature the latest power chip technology. By using these CSTBT chips, power loss in inverters can be reduced by approximately 20% compared to those using V Series chips.

*1 CSTBT is a trademark of Mitsubishi Electric.

2) Small package size helps miniaturize motor control systems

All five models in the V1 Series adopt the same package size of 120 × 70 millimeters, the same as those of small-sized models in the V Series. Compared to larger output-volume models in the V Series such as the 120 × 90 millimeter 1,200V/450A model, the package size of the V1 Series has been made smaller, helping reduce the size of motor control systems. The positions of the electrodes and connection holes in the V1 Series models are also the same as those in current models, which facilitates replacement.

3) Enhanced protection function

Compared to V Series, in which only the temperature of the case is monitored, V1 Series features enhanced heat protection with a temperature monitoring function in each chip.

4) Environmental consideration

V1 Series IPMs are compliant with the RoHS (“Restriction of the use of certain Hazardous Substances” in electrical and electronic equipment) Directive.

Main Specifications

	V1 Series (New)	V Series (Previous)
Collector-emitter saturation voltage ^{*2}	1.85V	2.6V
Protection	Short circuit (SC) Under voltage (UV) Over temperature (OT) (detects IGBT chip temperature)	Short circuit (SC) Under voltage (UV) Over temperature (OT) (detects case temperature)

*2: 125°C, 200A, typical value

Collector -emitter voltage	Collector current	V1 Series (New)		V Series (Previous)	
		Model	Module size (W × D)	Model	Module size (W × D)
600V	400A	PM400DV1A060	120 × 70 mm	PM400DVA60	120 × 70 mm
	600A	PM600DV1A060		PM600DVA60	120 × 90 mm
1200V	200A	PM200DV1A120		PM200DVA120	120 × 70 mm
	300A	PM300DV1A120		PM300DVA120	120 × 90 mm
	450A	PM450DV1A120		—	

About Mitsubishi Electric

With over 85 years of experience in providing reliable, high-quality products to both corporate clients and general consumers all over the world, 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. The company recorded consolidated group sales of 3,665.1 billion yen (US\$ 37.4 billion*) in the fiscal year ended March 31, 2009. For more information visit <http://global.mitsubishielectric.com>

*At an exchange rate of 98 yen to the US dollar, the rate given by the Tokyo Foreign Exchange Market on March 31, 2009.

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