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Mitsubishi Electric to Expand Lineup of IGBT Module T Series with 7th Generation IGBT

17 new models will better meet demand for low power loss, highly reliable industrial equipment

TOKYO, March 30, 2016 – Mitsubishi Electric Corporation (TOKYO: 6503) announced today that it would begin shipping samples of 17 new models of T series power semiconductor modules featuring seventh-generation insulated-gate bipolar transistors (IGBTs). The new modules have a 1.7kV rating and realize improved power loss and reliability for general-purpose inverters, uninterruptible power supplies (UPS), photovoltaic (PV), wind power-generation systems and other industrial equipment. Sample shipments will begin September 30.

The modules will be exhibited at major trade shows including MOTORTECH JAPAN 2016 during TECHNO-FRONTIER 2016 in Japan from April 20 to 22, Power Conversion Intelligent Motion (PCIM) Europe 2016 in Nuremberg, Germany, from May 10 to 12, and PCIM Asia 2016 in Shanghai, China, from June 28 to 30.

NX-type Solder Pin Package

NX-type Press Fit Pin Package

Standard-type Package

Product Features

1) Expanded lineup of 17 models with 1.7kV rating provides for wide range of inverter capacity

- The new models include 12 NX-types (six with solder pin package and six with press fit pin package) with current ratings ranging from 100A - 600A and five standard package models ranging from 75A - 300A.
- Provides for AC690V / DC1000V PV system inverters and wide range of inverter capacity.

2) Reduced power loss thanks to seventh-generation IGBT and diode

- 1.7kV rating seventh-generation CSTBT™[1] chip achieves low power loss and low EMI noise.
- Relaxed Field of Cathode (RFC) diode[2] chip incorporating new backside diffusion process achieves low power loss and suppression of recovery-voltage surge.

[1] Mitsubishi Electric's original IGBT chip construction incorporating carrier-store effect
[2] P layer is added partially on cathode side and the hole is injected during recovery term to soften the recovery waveform

3) Latest package technology enhances reliability of de facto standard package

- The internal structure is improved, keeping compatibility with de facto standard package.
- Integration of insulation and copper base in the substrate, along with improved internal electrode construction, help to increase thermal cycle life[3] and lower internal inductance, leading to more reliable equipment performance.

[3] The life proven in a stress test of relatively long-term temperature cycling between two case temperatures

Sample Shipments

Package	Voltage Rating	Current Rating	Shipment
NX-type Solder Pin Package	1.7kV	100, 150, 225, 300, 450, 600A	From September 30
NX-type Press Fit Pin Package		100, 150, 225, 300, 450, 600A	
Standard-type Package		75, 100, 150, 200, 300A	

Sample Shipment Targets

The new modules' high-efficiency energy use, long life, low power loss and high reliability will meet the demand of companies producing general-purpose inverters, UPS, PV, wind power-generation systems, servos, elevators and other industrial equipment.

Main Specifications

Package	Model	Voltage Rating	Current Rating	Circuit	Package Size W×D (mm)
NX-type Soldering Pin Package	CM100TX-34T	1.7kV	100A	6 in 1	62×122
	CM150TX-34T		150A		
	CM225DX-34T		225A	2 in 1	62×152
	CM300DX-34T		300A		
	CM450DX-34T		450A		
	CM600DX-34T		600A		
NX-type Press Fit Pin Package	CM100TXP-34T		100A	6 in 1	62×122
	CM150TXP-34T		150A		
	CM225DXP-34T		225A	2 in 1	62×152
	CM300DXP-34T		300A		
	CM450DXP-34T		450A		
	CM600DXP-34T		600A		
Standard-type Package	CM75DY-34T		75A	2 in 1	34×49
	CM100DY-34T		100A		
	CM150DY-34T		150A		48×94
	CM200DY-34T		200A		
	CM300DY-34T		300A		62×108

Package Details

NX type

- Internal inductance has been reduced 30 percent compared with conventional modules[4].
- Improved thermal cycle life and power cycle life5 realized with Solid Cover technology by combining a resin-insulated metal baseplate and direct potting resin6.
- The press-fit-pin package model can be fixed onto equipment without soldering, simply by pressing the pins into the PCB board.
- The resin filling reduces siloxane7 and improves the gas barrier effect to meet market demands.
- Standard type
- Internal inductance is reduced 30 percent compared with a conventional model8 thanks to improved internal electrode construction.
- The Thick Metal Substrate technology removes the solder layer and increases the thermal cycle life.
- The package can be downsized9 by increasing the thickness of the copper pattern and improving the thermal conductivity.

[4] Compared with Mitsubishi Electric's sixth-generation IGBT module (CM450DX-24S)
[5] The life proven in a stress test of relatively short-term temperature cycling between two junction temperatures
[6] Specially controlled epoxy resin matched to the thermal expansion rate and featuring improved adhesion
[7] Low molecular chemical compound in the silicone resin
[8] Compared with Mitsubishi Electric's sixth-generation IGBT module (CM600DY-24S)
[9] Base plate area decreased by 24 percent (CM600DY-24S: From 80×110mm to 62×108mm)

Other Features

PC-TIM module (optional)

- This module, which uses PC-TIM[10] of optimized thickness, eliminates the need for thermal grease.

[10] Phase Change Thermal Interface Material: high thermal conductivity grease, which becomes solid at room temperature and then softer as the temperature rises

Environmental Awareness

The products mentioned in this release are compliant with the Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment (RoHS) directive 2011/65/EU.

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About Mitsubishi Electric Corporation

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 4,323.0 billion yen (US$ 36.0 billion*) in the fiscal year ended March 31, 2015. For more information visit:
http://www.MitsubishiElectric.com
*At an exchange rate of 120 yen to the US dollar, the rate given by the Tokyo Foreign Exchange Market on March 31, 2015