

Press Conference

Tuesday, 10th of May 2016PCIM Europe, Messezentrum 1, 90471 Nuremberg (Germany)
NCC Ost, Level 1, Room Hongkong

Press release

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

17 new models for low power loss and highly reliable industrial equipment

TOKYO, March 30, 2016 – Mitsubishi Electric Corporation (TOKYO: 6503) announced today that sample shipments of 17 new models of the T series power semiconductor modules featuring seventh-generation insulated-gate bipolar transistors (IGBTs) are scheduled for September 30. The new modules with a voltage rating of 1.7 kV offer low power loss and high reliability, perfectly meeting the demands of companies producing general-purpose inverters, uninterruptible power supplies (UPS), photovoltaics (PV), wind power generation systems, servos, elevators, and other industrial equipment.

Product Features

The lineup is expanded by 17 models with 1.7 kV rating, providing for a wide range of inverter capacity. The new models include 12 NX-type package models (six with solder pin package and six with press-fit pin package) with current ratings ranging from 100 A to 600 A, and five standard-type package models ranging from 75 A to 300 A. The expanded lineup provides for AC 690 V / DC 1000 V PV system inverters, offering a wide range of inverter capacity.

With an improved internal structure, the latest package technology enhances the reliability of the existing standard-type package while keeping compatibility to it. An insulation and copper base integrated in the substrate, along with an improved internal electrode construction, help to increase the thermal cycle life, i.e. the life proven in a stress test of relatively long-term temperature cycling between two case temperatures, and to lower the internal inductance, finally leading to a more reliable equipment performance.

Thanks to 1.7 kV rated seventh-generation CSTBT™ chips with incorporated carrier-store effect, power loss and EMI noise could be reduced.



IGBT-T NX-Type PressFitPin



IGBT-T NX-Type Solder



IGBT-T std-Type

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Relaxed Field of Cathode (RFC) diode chips incorporating a novel backside diffusion process, with the P layer being partially added on the cathode side and the hole injected during the recovery period to soften the recovery waveform, also contribute to the low power loss and the suppression of a recovery voltage surge.

Package Details

As to the NX-type package, the internal inductance is reduced by 30 percent compared with conventional sixth-generation IGBT modules. Using Solid-Cover- (SLC-) technology, the thermal cycle life could be improved by combining a resin-insulated metal baseplate with direct potting resin, which is a specifically controlled epoxy resin matched to the thermal expansion rate that features improved adhesion. The press-fit pin package model can be fixed to the equipment without soldering, simply by pressing the pins into the PCB board. The resin filling reduces siloxane, a low molecular chemical compound in the silicone resin, and improves the gas barrier effect to meet the market demands.

With regard to the standard-type package, the internal inductance is reduced by 30 percent compared with a conventional sixth-generation IGBT module thanks to an improved internal electrode construction. The Thick-Metal-Substrate- (TMS-) technology removes the solder layer and increases the thermal cycle life. The package can be downsized by decreasing the baseplate area by 24 percent from 80 × 110 mm to 62 × 108 mm, increasing the thickness of the copper pattern and improving the thermal conductivity.

Other Features

The optional PC-TIM module is based on a Phase Change Thermal Interface Material, a high thermal conductivity grease which becomes solid at room temperature and softer with rising temperature. The module uses PC-TIM of optimized thickness, eliminating the need for thermal grease.

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

With more than 90 years of experience in providing reliable, high-quality products to both corporate clients and general consumers all over the world, Mitsubishi Electric Corporation 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 as well as air conditioning and heating technology.

With around 129.000 employees the company recorded consolidated group sales of 36.0 billion US Dollar* in the fiscal year ended March 31, 2015. Our sales offices, research & development centres and manufacturing plants are located in over 30 countries.

Since 1978 Mitsubishi Electric is represented in Germany as a branch of Mitsubishi Electric Europe. Mitsubishi Electric Europe is a wholly owned subsidiary of Mitsubishi Electric Corporation in Tokyo.

* At an exchange rate of 120 yen to the US dollar, the rate given by the Tokyo Foreign Exchange Market on March 31, 2015

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