



# China IGBT Industry Report, 2010

Feb. 2011

## ***This report***

- ◆ **Analyzes the status quo and development of the global and china's IGBT industry.**
- ◆ **Focuses on the of China IGBT market, such as power semiconductor market and IGBT application market.**
- ◆ **Highlights the operation and development of international IGBT enterprises, IGBT chip design manufacturers, IGBT chip manufacturers, and IGBT Module packaging enterprises.**

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## Abstract

Chinese IGBT market has just emerged, and IGBT has not been widely applied. In 2009, the IGBT market of China only accounted for 7.1% of the power semiconductor discrete devices market. As the world and Chinese advocate energy saving and the low-carbon economy prevails, IGBT will become a mainstream technology in the power semiconductor market because it has such merits as high energy-saving efficiency, easy mass-production and easy realization of intelligent energy conservation.

In 2009, Chinese IGBT market valued RMB3.82 billion; and the figure rose to RMB4.14 billion in 2010, up 8.4% year on year.

Top 10 IGBT manufacturers are foreign companies, with 40% market shares. The market concentration degree is relatively low. In the field of home appliances, the penetration rate of Chinese inverter home appliances market is very low. Inverter home appliances have huge development potentials, especially the penetration rate of the inverter air-conditioner market will increase from 20% in 2010 to about 50% in 2015. IGBT modules for inverter home appliances are mainly supplied by

Mitsubishi Electric, Fuji Electric and Toshiba. Infineon and Fairchild occupy about 80% shares in the market of IGBT for induction cookers.

In the field of industrial inverters, to apply inverter electromotors can save energy by 20% -30%, even over 50%, with huge potentials in energy conservation. However, less than 10% of Chinese electromotors are installed with the inverters. In the next three years, high-voltage inverter will grow at a rate of above 40%, while the medium and low-voltage inverter will keep a growth rate of over 20%. IGBT is the core component of an inverter. At present, European and Japanese companies lead the competition in the R&D and fabrication of IGBT, especially Infineon and Mitsubishi Electric acquire around 80% shares in the international market totally.

In the arena of rail transport, IGBT power modules for electric locomotives, EMUs and urban subway generated the sales revenue of RMB5.9 billion in 2009, and it is anticipated that, from 2010 to 2013, such market size will maintain a CAGR of 26.5%. In 2009, CNR and CSR were big buyers of IGBT power modules in China, with 48.6% and 51.4% shares respectively. CSR Times Electric, Siemens, Toshiba, Alstom and Bombardier are the major suppliers of IGBT power modules for electric locomotives and EMUs in China.

Chinese IGBT enterprises have just arisen, and they should make progress in IGBT production process, including chip design, chip fabrication, chip module packaging and the single-tube packaging.

There are approximately 20 IGBT enterprises in China, and most of them are engaged in IGBT chip fabrication and module packaging. Keda Semiconductor and Wuxi Phoenix Semiconductor have independent R&D technologies, mainly in the field of induction cookers. Shanghai CNR Yongdian Electronics Co., Ltd. has developed the chips for industrial high-voltage and high-power IGBT modules independently, but far from the chip industrialization.

Jilin Sino-Microelectronics, Tianjin Zhonghuan Semiconductor and Shanghai Belling involves in IGBT chip fabrication as OEMs of Fairchild, Toshiba and other foreign enterprises. IGBT chips produced by Shenzhen BYD Microelectronics are mainly employed in its own hybrid electric vehicle and the chips are being tested. CSR Times Electric has obtained IGBT module production capacity by acquiring Dynex (UK), with its products supplied to electric locomotives of CSR.

It is easy for enterprises to enter the field of module packaging. By the outsourcing of chips, Chinese enterprises including Jiangsu Changjiang Electronics Technology, Nanjing Silvermicro Electronics and Jiaxing Starpower Semiconductor have set foot in this field. Their products are mainly used for motor control and industrial inverters.

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