China IGBT (Rail Transit/Electric Vehicle/Wind Power/Photovoltaic/Home Appliance) Industry Report, 2016-2020

Aug. 2016

ResearchInChina
www.researchinchina.com

ResearchInChina

The Vertical Portal for China Business Intelligence

STUDY GOAL AND OBJECTIVES

This report provides the industry executives with strategically significant competitor information, analysis, insight and projection on the competitive pattern and key companies in the industry, crucial to the development and implementation of effective business, marketing and R&D programs.

REPORT OBJECTIVES

- To establish a comprehensive, factual, annually updated and cost-effective information base on market size, competition patterns, market segments, goals and strategies of the leading players in the market, reviews and forecasts.
- To assist potential market entrants in evaluating prospective acquisition and joint venture candidates.
- To complement the organizations' internal competitor information gathering efforts with strategic analysis, data interpretation and insight.
- To suggest for concerned investors in line with the current development of this industry as well as the development tendency.
- To help company to succeed in a competitive market, and

METHODOLOGY

Both primary and secondary research methodologies were used in preparing this study. Initially, a comprehensive and exhaustive search of the literature on this industry was conducted. These sources included related books and journals, trade literature, marketing literature, other product/promotional literature, annual reports, security analyst reports, and other publications. Subsequently, telephone interviews or email correspondence was conducted with marketing executives etc. Other sources included related magazines, academics, and consulting companies.

INFORMATION SOURCES

The primary information sources include Company Reports, and National Bureau of Statistics of China etc.

Room 509, Building 1+1, No.10, Caihefang Road, Haidian District, Beijing, 100080
Phone: +86 10 82600828 ● Fax: +86 10 82601570 ● www.researchinchina.com ● report@researchinchina.com

Abstract

An IGBT is a complex device with the Darlington configuration. Using GTR as the dominant component and MOSFET as the drive component, IGBTcombines the merits of BJT and MOSFET, such as low drive power, low saturation voltage and the like.

With the development of IGBT chip technology, the maximum operating junction temperature and power density of chips keep increasing. In future, the IGBT module technology will be improved in two aspects -- chip backside welding & fixing and front electrode interconnection: 1) The technology without welding, wire bonding or liner/substrate packaging; 2) internally integrated temperature sensors, current sensors, Driving circuits and other functional components.

Benefiting from the electric vehicle market and the mature IGBT technology, the global IGBT market will grow at a compound annual rate of 9% during 2014-2020 and reach USD6.5 billion in 2020. The market share of IGBTs used for consumer and white goods will gradually decrease, while IGBTs for power grid, PV, uninterruptible power supply (UPS) as well as electric vehicle will be a major growth engine in the next five years.

Thanks to the rapid development of distributed energy, new energy vehicle, charging piles and rail transit, China's potential IGBT demand is huge. In 2015, Chinese IGBT market size hit about RMB8.5 billion, accounting for about one-third of the global market. By 2020, Chinese IGBT market will garner over RMB20 billion with a CAGR of 19.4%, equivalent to nearly half of the global market.

Market Competition Pattern
In recent years, China's IGBT industry has developed rapidly under the guide of national policies and the market, and has shaped a complete industrial chain with IDM and OEM models. However, Chinese IGBT supply market is mainly controlled by foreign companies, for example, all of the top five suppliers were foreign vendors who enjoyed the combined market share of 51.9% in 2015. The advantages of European and American companies (such as Infineon, Semikron, Fairchild, etc.) are mainly reflected in power, electronics and communications, while Japanese brands (such as Mitsubishi, FUJI, Toshiba, etc.) target home appliances. China seized 1/3 of the global IGBT market share in 2015 and will master nearly 1/2 by 2020, with the AAGR of about 19%.

Subdivision of Applications:
The current saturated Chinese home appliance market will see limited incremental space in the next five years. Among white household electrical appliances, inverter refrigerators with low permeability will generate the fastest growing demand for IGBT in the next five years.

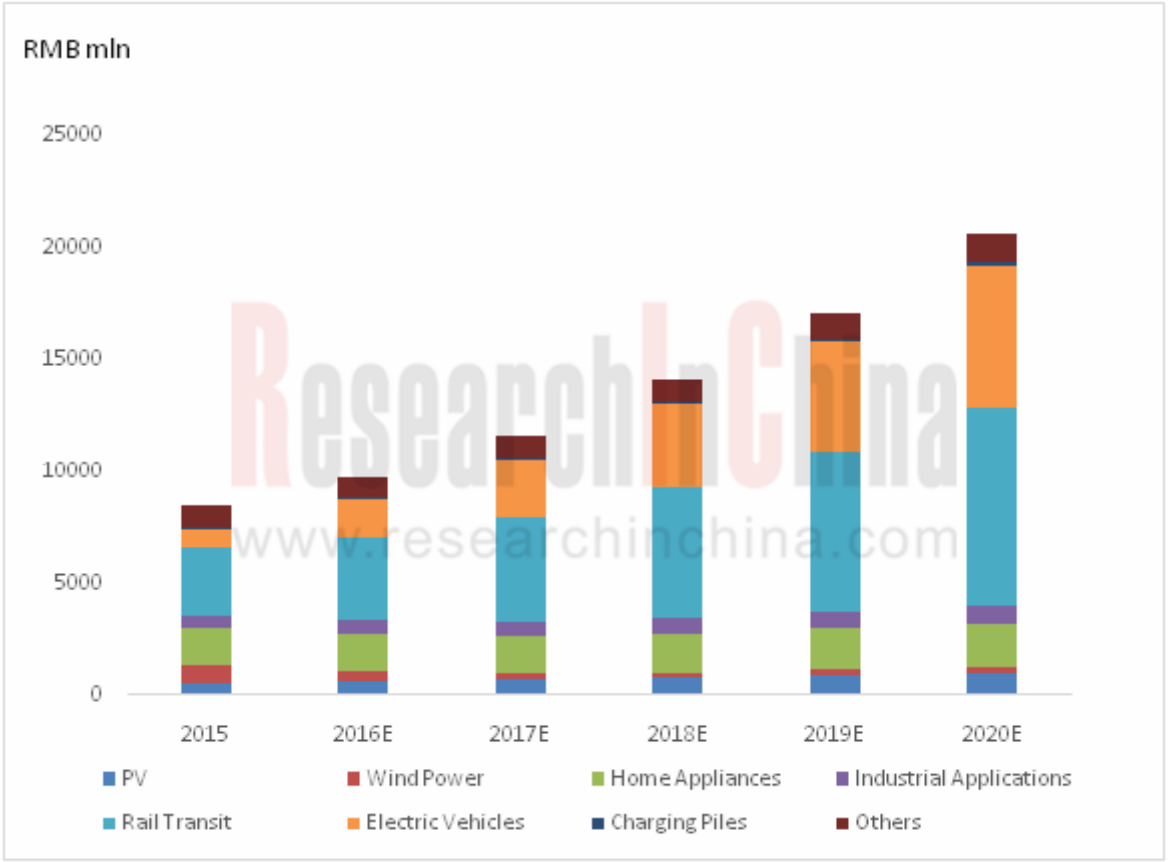
Affected by the government's development plan, China's wind power and PV industries may follow different development paths in the next five years. By 2020, China's PV installed capacity will cumulate to above 160GW, which means the IGBT demand will value RMB1 billion or so. Given the serious wind energy curtailment, China's total wind power installed capacity is planned to be 210GW by 2020, which indicates that China's additional wind power installed capacity will witness sharp drop in the next five years, so that the demand for IGBTs will shrink.

The major cities in China plan to invest RMB3.18 trillion in rail transit in 2010-2021. As for high-speed rail, China will own over 4,300 CRH trains by 2020, which will need 1.2 million IGBTs, four times that in 2015.

With the development of new energy electric vehicles, the proportion of electronic devices in a vehicle has jumped from less than 20% to over 50%, and the application of IGBTs and other power device modules has been intensified obviously. Fairchild, Infineon and ST enjoy superiority in the automotive market. BYD and Advanced Semiconductor Manufacturing Co., Ltd (ASMC) cooperate in IGBTs. By 2020, China's electric vehicle (including EV, PHEV, HEV, electric bus / truck) sales volume is expected to exceed 3 million, which will stimulate the IGBT demand to go beyond RMB6 billion.

The report covers the followings:
- Overview, technology development course and trends, and applications of IGBT;
- Status quo and IGBT demand trends of Chinese IGBT application market segments (including rail transit, wind power, PV, electric vehicle, UPS, home appliances, etc.)
- Size, competition pattern and supply chain of Global and Chinese IGBT markets;
- Development, operation and IGBT technology/business of 16 Chinese IGBT companies (including IDM, modules, OEM);
- Operation and IGBT technology / business of 9 global IGBT vendors.

China's IGBT Market Demand (by Terminal Application), 2015-2020



ResearchInChina

The Vertical Portal for China Business Intelligence

Table of contents

Room 509, Building 1+1, No.10, Caihefang Road, Haidian District, Beijing, 100080

Phone: +86 10 82600828 ● Fax: +86 10 82601570 ● www.researchinchina.com ● report@researchinchina.com

Table of contents

Table of contents

Selected Charts

- Classification of Power Semiconductors
- Performance Comparison between BJT, MOSFET and IGBT
- Structure Diagram of IGBT Modules
- Common IGBT Modules
- Comparison between Different Types of IGBTs
- IGBT Structure Sketch (Left) and Equivalent Circuit Diagram (Right)
- Main Parameter Comparison between All Generations of IGBTs
- Development Trend of IGBT Structure
- Role and Development Trend of New IGBT Technology
- Characteristics and Structure of All Generations of IGBT Chips
- Structure of Welded IGBT Modules
- Packaging Process of Welded IGBT Modules
- Press-fit IGBT Modules
- Main IGBT Applications
- IGBT Applications by Voltage
- Global Capacitor Market Size, 2009-2019E
- China’s Capacitor Market Size, 2009-2019E
- China’s Film Capacitor Output and Sales Volume, 2010-2014
- Film Capacitor Industry Chain
- Film Capacitor Manufacturing Processes and Barriers
- Main Domestic and Overseas Film Capacitor Enterprises
- China's PV Installed Capacity, 2006-2020E
- China's Solar PV Demand, 2015 / 2020E
- China's Solar PV Scale (by Region), 2020E
- PV Inverter IGBT Brands

Selected Charts

- IGBT Supplied to PV Inverter Vendors
- Demand of Chinese PV Market for IGBTs, 2015-2020E
- China's Wind Power Installed Capacity, 2006-2020E
- China's New Wind Power Installed Capacity by Provinces (Autonomous Regions and Municipalities), 2015
- China's Cumulative Wind Power Installed Capacity by Provinces (Autonomous Regions and Municipalities), 2015
- China's Cumulative Wind Power Installed Capacity by Power of Wind Turbines, by 2015
- Ranking of China's New Wind Power Installed Capacity, 2015
- Share of China's Cumulative Wind Power Installed Capacity, by the end of 2015
- Topological Structure of Doubly Fed Wind Power Units
- Demand of Chinese Wind Power Market for IGBTs, 2015-2020E
- Performance of Air Conditioner Terminal Retail Market, Jan-Feb 2016
- Air-conditioner Product Structure, 2015-Q1 2016
- Sales Structure of Wall-hanging Air Conditioner Market by Energy Efficiency, Q1 2016
- Average Price of Wall-hanging Air Conditioner Market by Energy Efficiency, Q1 2016
- Sales Volume Proportion of Upright Air-conditioners by Energy Efficiency, Q1 2016
- Average Price of Upright Air-conditioners by Energy Efficiency, Q1 2016
- Sales Volume Proportion of Main Air-conditioner Brands by Energy Efficiency, Q1 2016
- MoM Average Price of Air Conditioner Industry by Brand, Q1 2016
- YoY Average Price of Air Conditioner Industry by Brand, Q1 2016
- China’s Output of Air Conditioners, 2010-2020E
- Penetration Rate of Inverter Air Conditioner in China, 2010-2020E
- Demand of Air Conditioner for IGBTs in China, 2015-2020E
- China’s Refrigerator Sales Volume and Revenue, First 11 Weeks of 2016
- Retail Sales of Chinese Refrigerators by Number of Doors, First 11 Weeks of 2016
- Retail Sales of Chinese Refrigerator Market Segments, First 11 Weeks of 2016

Selected Charts

- Retail Sales Share by Product, 2015-First 11 Weeks of 2016
- Average Price of Refrigerators by Number of Doors, First 11 Weeks of 2016
- Retail Sales Penetration Rate of Smart Refrigerators, 2015-First 11 Weeks of 2016
- Performance of Inverter Market Segments by Brand, 2015-First 11 Weeks of 2016
- Retail Sales Penetration Rate of Air-cooled Refrigerators by Number of Doors, 2015-First 11 Weeks of 2016
- Retail Sales Penetration Rate of Two/Three-door Refrigerators by Price Range, First 11 Weeks of 2016
- China's Output of Refrigerators, 2010-2020E
- Penetration Rate of Inverter Refrigerator in China, 2010-2020E
- Demand of Refrigerators for IGBTs in China, 2015-2020E
- China's Washing Machine Revenue and Sales Volume, Jan-Feb 2016
- Retail Sales Share of Chinese Washing Machines by Washing Type, Jan-Feb 2016
- Average Price of Washing Machines by Washing Type, Jan-Feb 2016
- Retail Sales Share of Offline Pulsator Washing Machines by Price Range, Jan-Feb 2016
- Retail Sales Share of Online Pulsator Washing Machines by Price Range, Jan-Feb 2016
- Retail Sales Share of Offline Drum Washing Machines by Price Range, Jan-Feb 2016
- Retail Sales Share of Online Drum Washing Machines by Price Range, Jan-Feb 2016
- Online / Offline Retail Sales Share by Brand, Jan-Feb 2016
- Retail Sales Share of Cleaning-free Washing Machine in Pulsator Washing Machine Market
- Retail Sales Penetration Rate of Inverter Products, First 11 Weeks of 2016
- Retail Sales Penetration Rate of Pulsator Washing Machine Market by Capacity, First 11 Weeks of 2016
- China's Output of Washing Machines, 2010-2020E
- Penetration Rate of Inverter Washing Machine in China, 2010-2020E
- Demand of Washing Machines for IGBTs in China, 2015-2020E
- Average Selling Price of Induction Cookers in China, 2010-2015
- Market Share of Main Chinese Induction Cooker Companies, 2010-2015

Selected Charts

- Retail Sales Proportion of All Levels of Chinese Induction Cooker Markets, 2011-2015
- China's Output of Induction Cookers, 2010-2020E
- Demand of Induction Cookers for IGBTs in China, 2015-2020E
- TOP 10 Electric Welder Enterprises in China, 2015
- China's Electric Welder Output, 2010-2020E
- Electric Welder Penetration Rate of Chinese High Power/Heavy Industry, 2010-2020E
- Demand of Electric Welders for IGBTs in China, 2015-2020E
- China’s Electric Welder Export Volume Structure (by Region), 2015
- China’s Electric Welder Export Value Structure (by Region), 2015
- China’s UPS Output, 2010-2020E
- China’s UPS Market Share (by Power Range), 2015
- IGBT Penetration Rate of China's UPS industry, 2012-2020E
- Demand of UPS for IGBTs in China, 2015-2020E
- China's Metro Train Output, 2012-2020E
- China’s CRH Train Bidding, 2015
- China’s CRH Train Output, 2010-2020E
- Ownership Structure of China's Main CRH Train Vendors, June 2016
- Demand of Rail Transit for IGBTs in China, 2015-2020E
- Global IGBT Module Downstream Market Distribution (by Field), 2014
- Global IGBT Module Downstream Market Distribution (by Field), 2020E
- Global Electric Vehicle-use IGBT Market Size, 2014-2020E
- China's Electric Vehicle Motor Controller Demand and Market Size, 2015-2020E
- Demand of Electric Vehicles for IGBT Modules in China, 2015-2020E
- IGBT Application Distribution (by Voltage)
- IGBT Technology Evolution and Players Involved

Selected Charts

- Global IGBT Market Size (by Applications), 2014-2016
- IGBT Selling Price, Shipment and Market Size, 2014-2020E
- China's IGBT Market Size Estimation, 2015-2020E
- China's IGBT Market Size, 2015-2020E
- Market Share of Main IGBT Vendors Worldwide, 2015
- Market Share of Main IGBT Vendors in China, 2014
- Main Electric Vehicle-use IGBT Vendors Worldwide
- Global IGBT Supply Chain
- China's IGBT Supply Chain
- Main Local IGBT Vendors and Their Products in China
- Maximum Voltage and Current Values of Controlled Power Semiconductors Available in Market
- Different Levels of Power Module Integration
- Parameter Comparison between Main Materials and Silicon Materials
- Physical Parameters of Different Semiconductor Materials
- SPT+ IGBT Structure
- Schematic of Trench Gate Structure IGBT and CSTBT
- Structure of an RC-IGBT from ABB
- Shares Held by Actual Controller of Sino-Microelectronics
- Main Financial Indicators of Sino-Microelectronics, 2014-2016Q1
- Revenue and Gross Margin of Sino-Microelectronics (by Region), 2015
- Cost Structure of Sino-Microelectronics (by Product), 2015
- Top 5 Customers of Sino-Microelectronics, 2014-2015
- R&D Investment of Sino-Microelectronics, 2012-2015
- Capacity and Output of Main Products of Sino-Microelectronics, 2014-2015
- Sales of Main Products of Sino-Microelectronics, 2014-2015

Selected Charts

- IGBT Products of Sino-Microelectronics
- IGBT Development Route of Sino-Microelectronics
- Revenue and Gross Margin of Hua Hong Semiconductor, 2013-2015
- Revenue (by Region) of Hua Hong Semiconductor, 2015Q1-2016Q1
- Revenue (by Technology Platform) of Hua Hong Semiconductor, 2015Q1-2016Q1
- Revenue (by Technology Node) of Hua Hong Semiconductor, 2015Q1-2016Q1
- Technology Roadmap of Hua Hong Semiconductor
- SuperFlash Process and Supporting Logic Process of Hua Hong Semiconductor
- SONOS Flash Technology System of Hua Hong Semiconductor
- Power Management Process Specification Subdivision of Hua Hong Semiconductor
- RF Process Technology of Hua Hong Semiconductor
- Power Device Process of Hua Hong Semiconductor
- Capacity, Capacity Utilization and Shipment of Hua Hong Semiconductor's Foundries, 2015Q1-2016Q1
- Revenue and Net Income of CRRC Times Electric, 2011-2015
- Revenue of CRRC Times Electric (by Product), 2014-2015
- Cellular Cross-sectional View of IGBT based on DMOS and DMOS + Technologies of CRRC Times Electric
- IGBT Chips (8-inch Wafers) and 1 500 A / 3 300 V IGBT Modules with Such Chips
- Press-fit IGBT Structure of CRRC Times Electric
- BYD's Workforce, 2007-2015
- BYD's Automobile Output and Sales Volume, 2010-2015
- BYD's Revenue, Net Income and Gross Margin, 2007-2016Q1
- BYD's Revenue (by Product), 2007-2015
- BYD's Gross Margin (by Product), 2008-2015
- BYD's Revenue (by Region), 2008-2015H1
- Equity Structure of MacMic Science & Technology

Selected Charts

- Revenue and Net Income of MacMic Science & Technology, 2012-2015
- Revenue Structure of MacMic Science & Technology (by Product), 2015
- Business Chain of MacMic Science & Technology
- Outsourcing Processors and Processing Amount of MacMic Science & Technology, 2013-2014H1
- Main Product Outsourcing Costs of MacMic Science & Technology, 2013-2014H1
- Main Agents of MacMic Science & Technology
- Top 5 Customers of MacMic Science & Technology, 2015
- Top 5 Suppliers of MacMic Science & Technology, 2015
- IGBT Products and Applications of MacMic Science & Technology
- IGBT Modules of MacMic Science & Technology
- IGBT Module Applications of MacMic Science & Technology
- Revenue and Net Income of Keda Semiconductor, 2012-2015
- Total Assets and Net Assets of Keda Semiconductor, 2012-2015
- IGBT Single-tube Product Lines of Keda Semiconductor
- IGBT Module Product Lines of Keda Semiconductor
- Revenue and Net Income of Silan Microelectronics, 2011-2015
- Revenue Structure of Silan Microelectronics (by Product), 2015
- IGBT Chips of Silan Microelectronics
- IGBT Modules of Silan Microelectronics
- Process Roadmap of CSMC Technologies
- Power Devices and Technical Route of CSMC Technologies
- Main IGBT Chips of CSMC Technologies
- Revenue of ASMC, 2003-2015
- Capital Expenditure of ASMC, 2003-2015
- Revenue Breakdown of ASMC (by Product Size), 2015-2016

Selected Charts

- Revenue Breakdown of ASMC, 2015
- Four Major Technology Platforms of ASMC
- Technology Roadmap Planning of ASMC, 2015-2019E
- Main Domestic and Overseas Customers of ASMC
- Power Discretes and Technology Roadmap of ASMC
- Parameters and Applications of ASMC's Power Discretes
- IGBT Shipment of ASMC, 2004-2013
- Main IGBT Customers of ASMC
- Strategic Cooperation between ASMC and CNR in Forming Complete High-speed Rail IGBT Industry Chain
- Strategic Cooperation between ASMC and BYD in New Energy Vehicle-use IGBT
- Cooperation between ASMC and SGCC in Development of Smart Grid-use IGBT
- IGBT Technology Evolution of Advanced Semiconductor Manufacturing
- IGBT Back Injection Process of Advanced Semiconductor Manufacturing
- Production Capacity of Advanced Semiconductor Manufacturing, 2015-2016
- Capacity Utilization of Advanced Semiconductor Manufacturing, 2015-2016
- Main Modules and Applications of Silvermicro Electronics
- Technology Evolution of Founder Microelectronics
- Skysilicon's Business Network
- Overview of Skysilicon's Plants
- Skysilicon's Technology Evolution, 2012-2015
- Skysilicon's Capacity Expansion
- Skysilicon's Power Device Test Capacity
- Skysilicon's IGBT Discrete Device Product Lines
- Skysilicon's IGBT Module Product Lines
- Main Power Semiconductor Products of Yongdian Electric

Selected Charts

- High Voltage IGBT Chips of Yongdian Electric
- IGBT Modules of Xi'An IR-PERI
- IGBT Module Product Lines of WeihaiSinga Electronics
- Main Financial Indicators of Fuji Electric, FY2010- FY2016
- Revenue and Operating Income of Fuji Electric (by Business), FY2013- FY2016
- Revenue of Fuji Electric (by Region), FY2011-FY2016
- IGBT and SiC R & D Planning of Fuji Electric, 2015-2021E
- 7-generation IGBT Product Planning of Fuji Electric, 2016-2018E
- Industrial IGBT / SiC Loss Comparison, 2015-2017
- Development Path of Fuji Electric's Automotive Power Modules, 2005-2025
- Global Ranking of Infineon's Three Main Businesses, 2013
- Infineon's Revenue (by Region), FY2013-FY2015
- Infineon's Revenue (by Division), FY2013-FY2015
- Infineon's EiceDRIVER? Family IGBT Modules
- Denso's Workforce, FY2011-FY2015
- Denso's Revenue and Profit, FY2013-FY2015
- Denso's Operating Income & Net Income, FY2011-FY2015
- Denso's Revenue Structure (by Division), FY2013-FY2015Q1
- Denso's Revenue (by Division), FY2013-FY2015Q1
- Denso's Revenue and Operating Income (by Region), FY2013-FY2015
- Denso's Revenue (by Customer), FY2010-FY2014
- Denso's Customer Structure, FY2013-2014
- Japan NEDO's Projects in the field of Power Electronics
- ROHM's Financial Indicators, FY2010-2015
- ROHM's Revenue (by Business), FY2012-FY2017

Selected Charts

- ROHM's Revenue (by Region), FY2012-FY2017
- ROHM's Revenue (by Application), FY2012-FY2017
- Main Technical Parameters of ROHM's Automotive IGBT Modules
- Development Course of ROHM's SiC Products
- SiC-based Power Device Lineup of ROHM
- IR's Revenue (by Division), FY2012- FY2014
- Semikron's Operation
- Semikron's Main IGBT Brands
- Product Portfolio of SEMIKRON's SKiM Modules
- Key Features of SEMIKRON's SKiM Modules
- Product Portfolio of SEMIKRON's SKiiP IPM
- Key Features of SEMIKRON's SKiiP IPM
- Structure of SEMIDRON's SKAI Power Electronic Platform
- Product Portfolio of SEMIKRON's SKAI Power Electronic Platform
- Key Features of SEMIKRON's SKAI Power Electronic Platform
- Overview of STMicroelectronics
- Main Financial Indicators of STMicroelectronics, 2011-2015
- Revenue Structure of STMicroelectronics (by Product Division), 2015
- Gross Margin of STMicroelectronics, 2014Q1-2016Q1?

ResearchInChina

The Vertical Portal for China Business Intelligence

How to Buy

You can place your order in the following alternative ways:

1.Order online at www.researchinchina.com

2.Fax order sheet to us at fax number:+86 10 82601570

3. Email your order to: report@researchinchina.com

4. Phone us at +86 10 82600828/ 82601561

Party A:			
Name:			
Address:			
Contact Person:		Tel	
E-mail:		Fax	

Party B:			
Name:	Beijing Waterwood Technologies Co., Ltd (ResearchInChina)		
Address:	Room 509, Building 1+1, No.10, Caihefang Road, Haidian District, Beijing, 100080		
Contact Person:	Liao Yan	Phone:	86-10-82600828
E-mail:	report@researchinchina.com	Fax:	86-10-82601570
Bank details:	Beneficial Name: Beijing Waterwood Technologies Co., Ltd Bank Name: Bank of Communications, Beijing Branch Bank Address: NO.1 jinxiyuan shijicheng,Landianchang,Haidian District,Beijing Bank Account No #: 110060668012015061217 Routing No # : 332906 Bank SWIFT Code: COMMCNSHBJG		

Title	Format	Cost
Total		

Choose type of format

PDF (Single user license) ……..2,500 USD

Hard copy …… 2,700 USD

PDF (Enterprisewide license)…..... 3,900 USD

※ Reports will be dispatched immediately once full payment has been received. Payment may be made by wire transfer or credit card via PayPal.

ResearchInChina

www.researchinchina.com

About ResearchInChina

ResearchInChina (www.researchinchina.com) is a leading independent provider of China business intelligence. Our research is designed to meet the diverse planning and information needs of businesses, institutions, and professional investors worldwide. Our services are used in a variety of ways, including strategic planning, product and sales forecasting, risk and sensitivity management, and as investment research.

Our Major Activities

- ***Multi-users market reports***
- ***Database-RICDB***
- ***Custom Research***
- ***Company Search***

For any problems, please contact our service team at:

Room 502, Block 3, Tower C, Changyuan Tiandi Building, No. 18, Suzhou Street, Haidian District, Beijing, China 100080
Phone: +86 10 82600828 ● Fax: +86 10 82601570 ● www.researchinchina.com ● report@researchinchina.com