



www.kpdia.or.kr

Our Dreams, Our Challenge!
**Achieving Semiconductor
Powerhouse Status**

KPDIA

Korea Power Device Industry Association

About Us

KPDIA



Association Establishment Purpose

Our Association Strives to contribute to the regional and national economy by promoting the power semiconductor industry through:

- Facilitating the dissemination and mutual exchange of achievements in research and development within the power semiconductor industry.
- Strengthening ties and fostering common interests within the power semiconductor industry.
- Addressing common challenges to enhance business activities and drive technological innovation.

Business Goals

- Fostering the growth of the national power semiconductor industry.
- Enhancing communication and strengthening the capabilities of power semiconductor companies
- Establishing power semiconductor industry clusters and promoting collaborative technology development.
- Expanding industry-academia-research collaboration in power semiconductors and supporting training of human resource.

Implementation Directions

- Establishing power semiconductor industry clusters.
- Upgrading the industrial structure through convergence with key industries.
- Supporting research and development of next-generation power semiconductors.
- Providing comprehensive support for materials, development, manufacturing, analysis & reliability, and prototype module production.

Business Activities

- Operation of the organized association.
- Recruitment of member companies
- Preparation of a report on the power semiconductor industry
- Hosting power semiconductor technology seminars and conferences.
- Organizing international power semiconductor symposiums.
- Holding Power semiconductor industry development forums (including national forums).
- Organizing the World Congress for Power Semiconductors
- Promoting domestic and international cooperation projects (national projects, MOUs, etc.).
- Establishment and fostering of the power semiconductor industry ecosystem and promotion of investment attraction.

Organization



Main Activities

Main Activities

- Regular General Meeting : Mid-April Annually
- Technical Seminars, Forums, Symposiums, and Conferences : Regularly
- Newsletter Publication : Providing company information and news, domestic and international event information
- Company Visits : Visiting member companies, etc.
- In-house Events : Holding Association meetings, investment attraction briefings, etc.
- External Evnets : Hosting international and domestic symposiums
- Industry-Academia-Research Exchange Meetings : Regularly

2024 Major Achievements



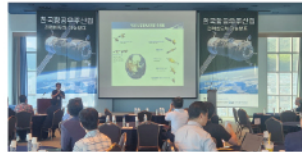
Busan-Ulsan-Gyeongnam Power Semiconductor Industry-Academia Cooperation Workshop (March 29, 2024)



Electric Semiconductor Local K-Forum (June 26, 2024)



Technology Exchange between Korea Aerospace Industries (KAI) and Partner Companies (August 19, 2024)



Technology Exchange between Korea Aerospace Industries (KAI) and Partner Companies (August 19, 2024)



Taiwan Exhibition and *SEMI Taiwan* Meeting (October 23-25, 2024)



8th WBGS Symposium (November 21, 2024)

2025 Major Achievements



2025 Annual General Meeting (April 24, 2025)



Workshop & Golf Tournament (May 30, 2025)



Opening of the Association's Honam Regional Office (June 19, 2025)



2nd Power Semiconductor Industry-Academia K-Forum (November 4, 2025)



National Assembly Policy Seminar (December 3, 2025)



KPDI A Year-End Night (December 4, 2024)

Membership Recruitment

Members

Representatives and experts of power semiconductor-related academia and industry (Participation by institutional representatives or individuals is possible)

Annual Fees

Association fee based on corporate member sales General members (Organizations and individuals)

Payment Account

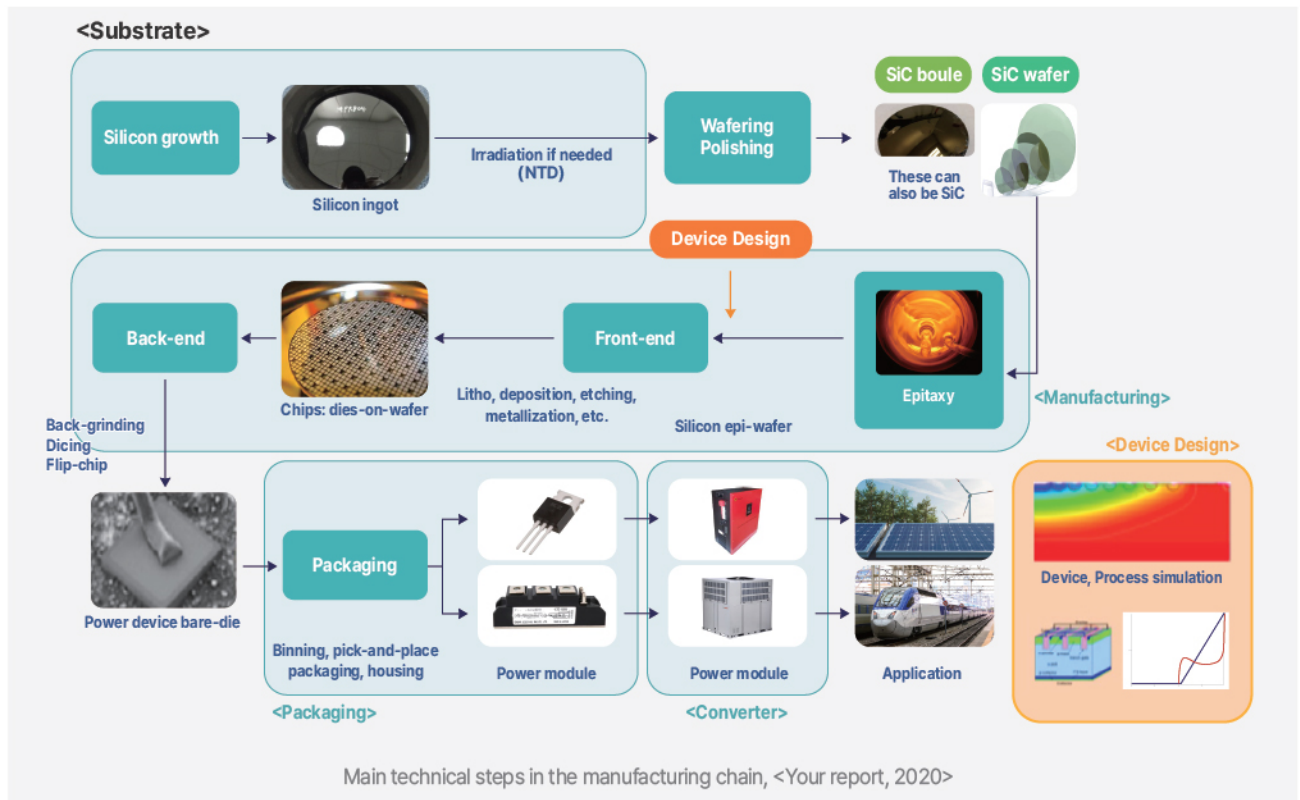
KB Bank 57153701002129
(Korea Power Device Industry Association)

Membership Type	Annual Revenue(KRW)	Fee(KRW)
Individual Member	-	100,000
Corporate Member	≥ 50 Billion	3,000,000
	≥ 20 billion, < 50 billion	2,500,000
	≥ 10 billion, < 20 billion	2,000,000
	≥ 5 billion, < 10 billion	1,500,000
	≥ 2 billion, < 5 billion	1,000,000
	< 2 billion	500,000

Power Semiconductors : A comprehensive Overview

Key functions and electrical appliances of power semiconductors

Power Semiconductors are semiconductor devices and components that perform power conversion, transformation, safety, distribution, and control functions generated by electronic devices. They are essential components for ensuring environmental friendliness, high efficiency, and high reliability in all electrical devices and power system.



Next-Generation Power Semiconductors

Next-generation power semiconductors move beyond traditional silicon-based devices and utilize wide-bandgap(WBG) materials such as SiC, GaN, and Ga2O3. These materials offer several advantages over Si, including: Superior Heat Properties, Faster Switching Speeds, Higher Voltage/Current Handling.

Lifecycle



Applications

Power semiconductors are utilized in a wide range of power applications, encompassing diverse voltage levels across various power-consuming devices, including power generation, transmission, and distribution, as well as demand-side appliances, automobiles, home electronics, and industrial equipment.

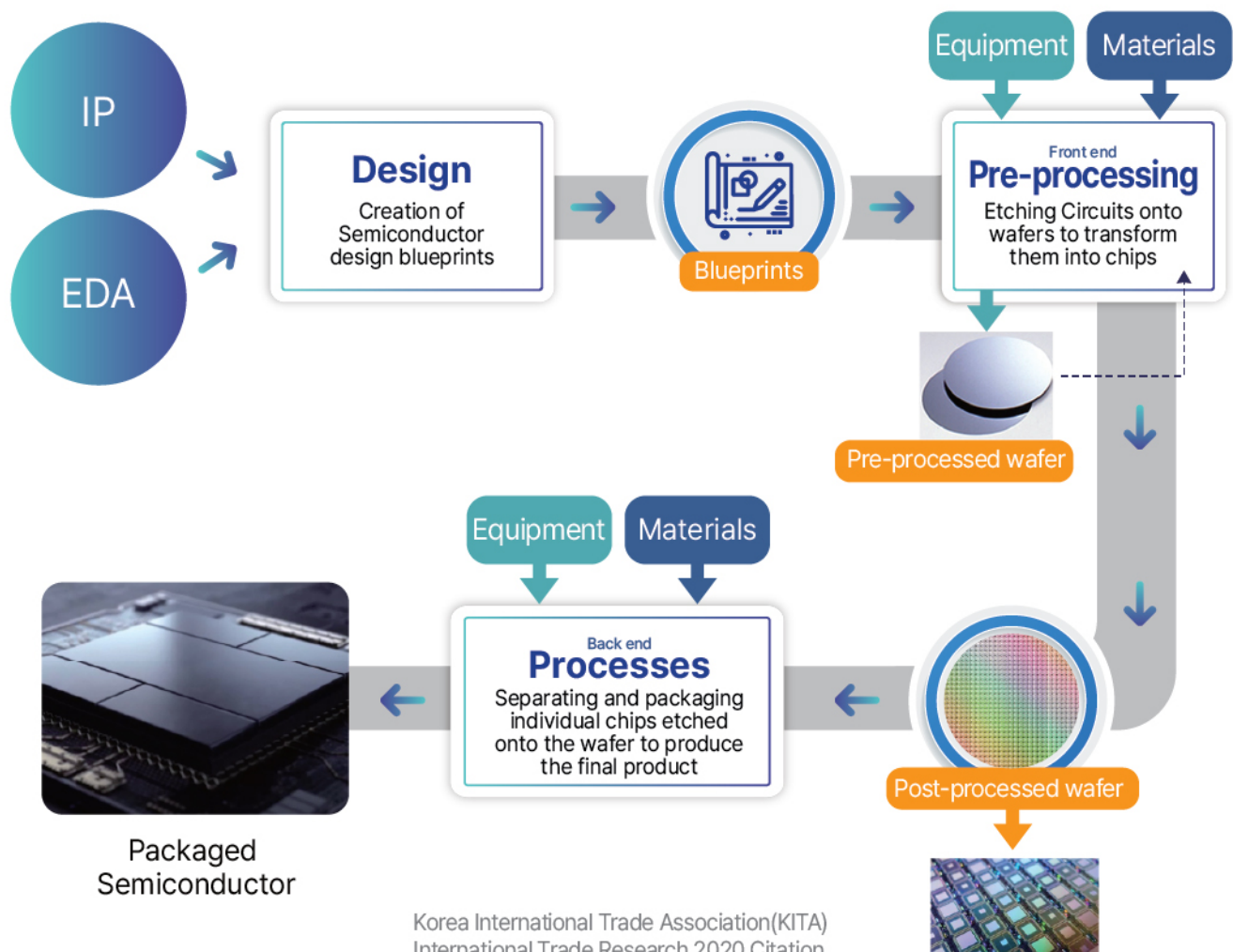
Their applications span across various domains, adapting to different power capacities and frequencies. Anticipated areas of utilization include railways, solar power, electric vehicles, household electronics, and transformers.

Distinctive Features of the semiconductor industry

Diversification of Manufacturing Processes

The semiconductor industry is highly specialized, segmenting its manufacturing processes into distinct stages: Design, fabrication, back-end processes, electronic design automation(EDA), intellectual property(IP), and manufacturing equipment.. Each stage plays a crucial role in the overall semiconductor production cycle.

Overview of Semiconductor Manufacturing Processes



Types of Semiconductor Companies

FABLESS

Companies focused solely on semiconductor design



FOUNDRY

Companies specializing in frontend fabrication processes



OSAT

Companies specializing in backend processes



IDM

Companies encompassing the entire semiconductor manufacturing process

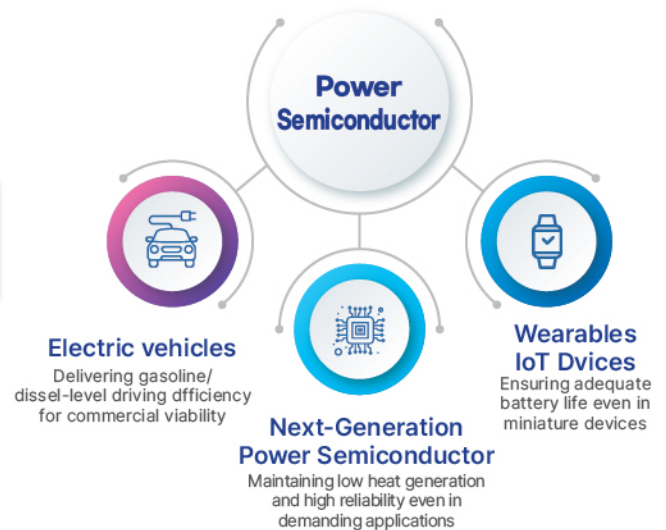


Power Semiconductor Concepts and Current Status

Driving High Value-Added Transformation in Key Industries



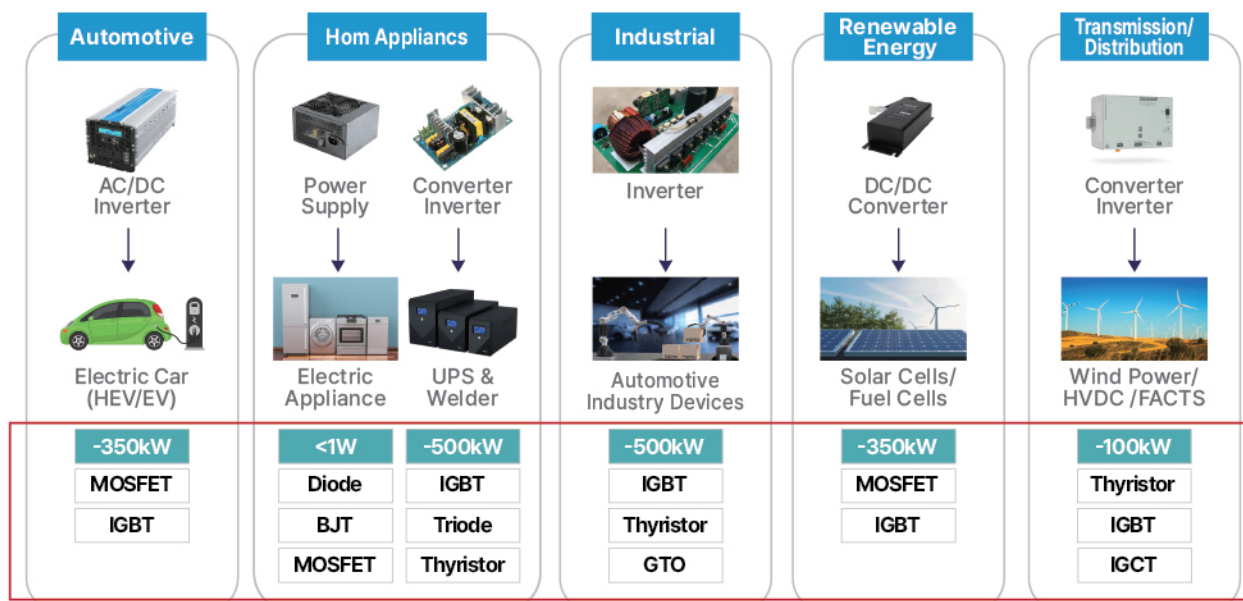
Key elements of next-generation market preoccupation



Favorable Conditions for Industry Growth and Diverse Applications

Solid Industrial Foundation and Broad Application Landscape

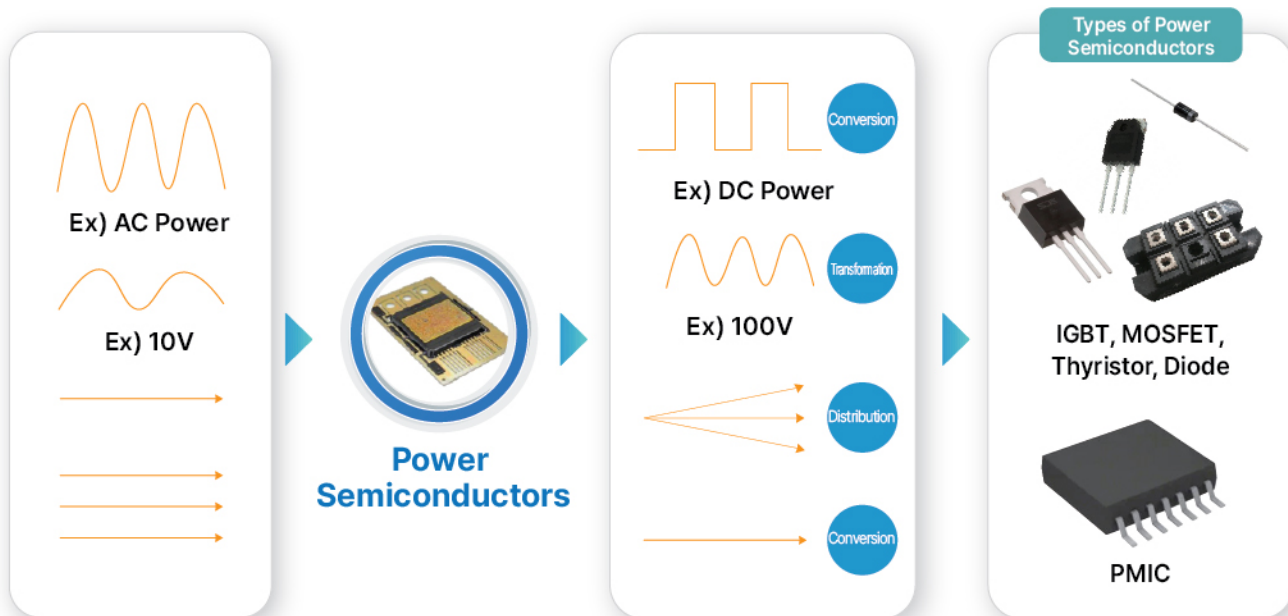
- Medium- and Small-Sized IT Companies: Catering to Multi-Variety, Small-Volume Production
- Expanding Demand for Hybrid and Electric Vehicles



Power Semiconductor Devices

Power Semiconductor Concepts and Current Status

Semiconductors that Handle or Regulate Power to Enhance Energy Efficiency



Global Trends Emphasizing on Environmental Friendliness and Energy Efficiency



Efficient Power Utilization and Minimizing Power Losses

The importance of high-efficiency Power semiconductors



Rising Demand for Hybrid and Electric Vehicles

Driving the adoption of low-power, environmentally, and high-performance power semiconductors

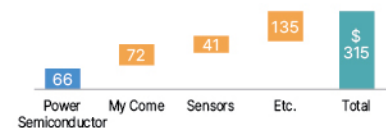


Low-Power Requirements for IoT and Wearable Devices

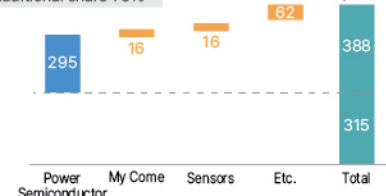
Addressing the need for extended battery life

Average number of semiconductor Components per Vehicle

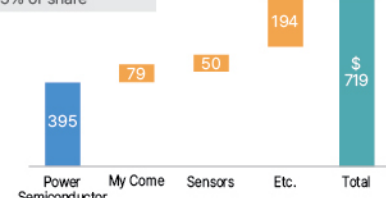
Internal combustion engine car 21% share of power semiconductors



Hybrid car Additional share 76%



Pure electric car 55% of share



Data : Strategy Analytic

Introduction of Members by Department

Devices

Company name	Business type	Major Products	Web Site	Branch
Power master semiconductor	Manufacturing	Power Semiconductor(SiC, Silicon)	www.powemastersemi.com	Devices
Uniquet	Sale	Semiconductor IC	www.uniquet.co.kr	Devices
Eyeqlab	Manufacturing	SiC Diode/SiC MOSFET	http://www.eyeqlab.com/	Devices
Wavepia	Manufacturing	GaN-on-SiC Device	www.wavepia.com	Devices
ALT	Manufacturing	System Semiconductor Testing and Post-processing	www.alt-skr	Devices
Okins	Manufacturing/Service	Burn-in Test socket, Semiconductor Test Service	www.okins.co.kr	Devices
Semience	Sale	RTP, Plasma, Plating, GaN on SiC Epi wafer	semience (sem-ence.co.kr)	Devices Package Module
Powercubesemi	Manufacturing	SiC MOSFET, SiC Diode SJ MOSFET, Heater, Ga ₂ O ₃ Sensot	www.powercubesemi.com	Devices Materials project planning
Nature flower semiconductor	Manufacturing	SiC and GaN devices	www.nature-flower-semiconductor.com	Devices/ External cooperation
Dicio	Manufacturing /Sale	IGBT, SiC MOSFET, SiC Module	www.dicio.io	Devices
Sigetronics	Manufacturing /Sale	GaN PW/RF FET, Photo TR, Photo Diode, ESD Diode	www.sigetronics.com	Devices
Codesemicon	Manufacturing /Sale	Power Device/Small Density Memory Device	www.codesemicon.com	Devices
KEC	Manufacturing /Sale	Semiconductors and Electronic Components (IGBT, MOSFET, IC, Diode, Bipolar Transistor...)	www.keccorp.com	Devices
NEXGEPOWER	Manufacturing	Power Discrete & Power Module	www.nexgenpwr.com	Devices
CHIPSK	Fabless /Sale	GaN-on-Si Product Line: GaN Power Transistors, GaN-Based Sensors GaN-on-SiC Product Line: GaN RF Transistors, HPA Modules	www.chipsk.com	Devices
MAGNACHIP	Manufacturing	Power SiC & Silicon discrete, PMIC	https://www.magnachip.com/kr/	Devices

System

Company name	Business type	Major Products	Web Site	Branch
Hyoseong electric	Manufacturing	Automobile motor	www.hyoseong.co.kr	System
Hyowon power tech	Manufacturing	SiC/GaN Inverter	-	System
PST	Manufacturing	SiC Wafer Cleaning equipment	www.pstive.com	System
PM Tech	Manufacturing /Sale	Probecard Manufacturing and distribution of optical microscopes	-	System
Vctech	Manufacturing	ELECTRIC POWER CONVERSION DEVICE FOR MOBILITY AND RAILWAY	www.vctech.co.kr	System
Kostek systems	Manufacturing	Mounter, De-mounter, Sinter Bonder, DBC Bonder	www.kosteks.com	System
TES	Manufacturing	MOCVD for SiC	www. Hites.co.kr	System
QIT	Manufacturing	Plasma system Inverter, Special power supply	http://www.bestqit.com	System
Irondevice	Manufacturing /Sale	COMPOUND SEMICONDUCTOR POWER IC	www.irondevice.com	System
Korens EM	Manufacturing	Electric Motor, Reducer, Inverter, EOP, MISC	www.korensem.com/	System
AP systems	Manufacturing	Annealing, Cutting, RTP, bonding/application equipment Sputter, Descum, Thin Film Encapsulation	www.apsystems.co.kr	System
MDM	Manufacturing	BATTERY PACK, Vehicle electrical module, Power electronic module	www.mdm-studio.com	System/ Package Module
G&P tech	Manufacturing /Sale	CMP, Post CMP Cleaner	www.gnptech.com	System
Hanwool Semiconductor	Manufacturing /Sale	MLCC Visual Inspection Equipment / MLCC Characteristic Inspection Equipment FCCL A to Z (Copper Foil Automatic Optical Inspection Equipment)	www.hanwoolseomi.com	System
TRIVIS	Manufacturing	Optical Inspection Equipment (Photomask)	www.trivis.co.kr	System
HL ENG	Construction / Facilities	Industrial Clean Room, Biological Clean Room, Dry Clean Room, Utility System	www.h leng.net	System
GPxM.Inc	Manufacturing /Sale	Tug-car	www.gpxm.co.kr	System
HAN-A MACHINERY	Manufacturing /Facilities	Automated PCB Testing Equipment for Automotive Electronics Automated Production Equipment for IP Line Interior Materials	www.han-a.kr	System
SEMILAB KOREA	Manufacturing /Sale	Non-Contact, Non-Destructive Precision Measurement Equipment Metrology Equipment for Semiconductors, Wafers, Displays, Solar Cells, and R&D	https://www.semilabkr.com/ https://semilab.com	System
SEMI-SOL	Manufacturing	Heat Exchanger, IR Temp Sensor , FCV, LFC CCSS, CDS, ROBOT, Wet station, Scrubber	https://www.semi-sol.com/	System/Package Module Materials

Materials

Company name	Business type	Major Products	Web Site	Branch
JTNU	Manufacturing /Sale	SiC / GaN Epi Wafe Metal Substrate	www.jtnu.co.kr	Materials
Powelcorporation	Manufacturing /Sale	DACP	www.powelcorp.com	Material/Parts/ Device
DOOSAN	Manufacturing	IMS / CCL	www.doosan.com	Materials
TL high-tech	Manufacturing	Semiconductor mounting film and UV responsive special tape	-	Materials
Teraon	Manufacturing	Sinterable chip bonding paste with high thermal conductivity for Power semiconductor PKGs & Modules	www.teraon.co.kr	Materials
Arche	Manufacturing	SiC Epi Wafer	www.archelab.kr	Materials
Sunkorea	Manufacturing	Semiconductor & DISPLAY part RF Equipment Parts	www.weldingsunkorea.com	Material/Parts/ Device
Btoz	Manufacturing	GaN power device GaN Wafer	www.btoz.kr	Materials/Devices
Hyosungchemical	Manufacturing /Sale	Special gas for semiconductors (NF ₃ , F ₂ /N ₂ , N ₂ O, HCl, Cl ₂ , etc.)	hyosungchemical.com	Materials
Bestenergy	Manufacturing	Lead tab film for secondary batteries Heterojunction film	www.bestenergy.co.kr	Materials
Wavelord	Manufacturing	Power Semiconductor(GaN HEMT) microLED	www.wavelord.co.kr	Materials/Devices
Epsilons	Manufacturing /Sale	Silver coated copper/Copper powder/ Ag powder DACP/Core-shell	www.epsilons.co.kr	Materials
Mke	Manufacturing /Sale	Bonding Wire, Solder Ball, Solder Paste, Pd alloy Wire for Pogo-pin, Si alloy anode material for secondary battery	www.mke.co.kr	Materials
Nepco	Manufacturing	PHOTO MASK(for SiC)	www.nepco.co.kr	Materials
Aprosemicon	Manufacturing /Sale	RF/For power semiconductors GaN on Si, GaN on SiC Epi wafer and Device, Package	www.aprosemicon.com	Materials/Devices
Microimage	Manufacturing /Sale	PHOTO MASK	www.microimage.co.kr	Materials
Schott Korea	Manufacturing /Sale	Packaging Glass Carrier/Glass Circuit Bpard/Interposer	www.schott.com	Materials
Nopion	Manufacturing /Sale	Self-assembled Conductive Adhesives and EMI Absorbing Films & Powders	www.nopion.com	Materials
FORCE4	Manufacturing /Sale	Semiconductor Organic & Inorganic Materials	www.force4.co.kr	Materials / Defense
SUNGJIN TECH	Manufacturing	Semiconductor Process Precision Tools	www.mswkorea.com	Material/Parts

Package Module

Company name	Business type	Major Products	Web Site	Branch
JMJKO	Manufacturing	Clip-LeadFrame/Automated equipment Power semiconductor package	www.jmjkorea.com	Package Module
SP SEMICONDUCTOR & COMMUNICATION	Manufacturing	Power semiconductor package & Module for Cars Plating for semiconductors	www.spsemi.co.kr	Package Module
Kostecsys	Manufacturing	Spacer,Base Plate / AMB Substrate	www.kostec.net	Package Module
HL OPTICS	Manufacturing /Sale	Sinterable bond for power semiconductor	www.hlo.co.kr	Package Module
mdm	Manufacturing	Battery pack, Electrical module Power Electronic module for Car	www.mdm-studio.com	Package Module /System
Hojeonable	Manufacturing	Epoxy solder paste Cu bonding material (Pressure/Non-pressure)	www.hojeonable.com	Package bonding material
IMH	Sale	Power Semiconductor IMS Substrate	www.imhpe.com	Package bonding /Materials
Rootsemicon	Manufacturing	Power Semiconducto IMS Substrate	www.rootsemicon.co.kr	Package Module
IPT	Sale	Soldering,Wire bonding equipment, heat dissipating substrate	www.ip-t.co.kr	Package Module
APPLIEDTHERMAL	Manufacturing	Vapor Chamber,Cooling plate	www.appliedthermal.co.kr	Package Module
SL Corporation	Manufacturing /Sale	Head/Rear Lamp,Shifter,Mirror, Camera Monitoring System,BMS,SBC,FEM 등	SL corporation (slworld.co.kr)	Package Module /System
Semipower	Manufacturing	WBG Power Semiconductor Module	www.semipower.co.kr	Package Module
Innomes	Manufacturing	IoT Smart Sensor Devices for Data Collection and Monitoring Platform	www.innomes.co.kr	Package Module /System

Reliability

Company name	Business type	Major Products	Web Site	Branch
LEENO	Manufacturing	Pinsocket for semiconductor testing	www.leeno.com	Reliability
Apro R&D	Business Services	Reliability Testing / R&D	www.apro.re.kr	Reliability
Youngil FA	Analytical Services	Failure analysis for customer samples	www.youngilfa.com	Reliability
Trinno technology	Manufacturing	Power semiconductor devices	www.trinnotech.com	Reliability
Delta ES	Sale	SIC Power Cycle Tester, Thermal resistance and K-factor meter, TIM Tester, Electrical equipment cooling thermal management simulation software	www.deltaes.co.kr	Reliability
Mold care	Sale & Service	StarCCM+, FloEFD, Nastran HEEDS, NX, Solid Edge	www.moldcare.kr	Reliability
Energy&Sensor	Sale	Battery Charger/Discharger, Bidirectional AC/DC Power Supply, Oscilloscope, Power Semiconductor Test Equipment, Fuel Cell Test Equipment	www.eands.co.kr	Reliability
SCV KOREA	Sale Manufacturing	Dynamic and Static Reliability Test Systems for Power Semiconductors, Automation Systems, Monitoring Systems, Data Acquisition Systems, Software Development Services, and Measurement & Test Equipment	www.scvkorea.com	Reliability/System

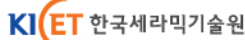
External/International Cooperation

Company name	Business type	Major Products	Web Site	Branch
panstar	Service	Land & sea transport, storage, etc	www.panstar.kr	External
EQ Techplus	Manufacturing	Deposition equipment for SiC	www.eqtechplus.com	International Cooperation
THE GREENLAP	Trade	Power Semiconductor Renewable energy sources (wood pellets, etc.)	-	International Cooperation
T-LAB	Service	R&D Planning and Management, Technology Transfer and Commercialization, Accelerating, Policy Research	티랩.com	External Cooperation /Project Planning

University/Institution/Research Institute

Company name	Business type	Major Products	Web Site	Branch
The Institute of Semiconductor Research, Pusan National University	Research Institute	Semiconductor process training and services	https://isrc.pusan.ac.kr	Project Planning
Major in Mechanical Design Engineering National Pukyong University	University	Package/module/system Research and development/ education on thermal management technology and heat dissipation design	https://mae.pknu.ac.kr/mae/1	Project Planning
The Plasma and Power Semiconductor Research Center, Department of Electrical Engineering, Pusan National University	Research Institute	Development of Power Devices and Plasma-Based Semiconductor Processes and Equipment	https://plasma.pusan.ac.kr	Devices/Module/ Reliability
The Digital Twin Research Institute, Dong-Eui University	Research Institute	Virtual Packaging and Digital Twin Technology Advisory Services	https://dtl.deu.ac.kr	Project Planning
The Core Research Support Center for Convergence Components and Materials, Dong-Eui University	Research Institute	Power semiconductor growth, Processing, Analysis, and Services	https://corefacility.modoo.at/?link=6v3810c2	Materials /Project Planning Devices
Korea Electrotechnology Research Institute (KERI)	Institution	Power semiconductor drive IC development, Analysis of Electrical Characteristics and Reliability Evaluation of Power Semiconductor Devices/Modules	https://www.keri.re.kr/html/kr/sub02/sub02_02130301.html	Package Module Reliability
Busan Power Semiconductor Talent Development Center	University	Power Semiconductor Education and Services	https://www.instagram.com/power_semiconductor_education/	Manpower training
Korea Electronics Technology Institute (KETI)	Institution	Material and process technology for power semiconductor packages and modules	www.keti.re.kr	Project Planning
Korea Institute of Industrial Technology (KITECH)	Institution	Study on the Research Institute	www.kitech.re.kr	Materials /Project Planning
Busan Power Semiconductor Talent Development Center	Institution	Support for business discovery, planning and attraction	www.bistep.re.kr	Project Planning
Kyungsung University	University	NCS Vocational Basic Competency Enhancement Education	www.ks.ac.kr	Manpower training
BUSAN Technopark	Institution	Power semiconductor process and reliability support	www.btp.or.kr	Devices/Project Planning External cooperation/ International cooperation /Planning
Electronics and Telecommunications Research Institute (ETRI)	Institution	Power semiconductor devices, process services, Power semiconductor package process, Manufacture of specialized modules, Analysis of electrical characteristics of power semiconductor devices/modules, Power supply	www.etri.re.kr	Package Module /Reliability
Inje University	University	Semiconductor major track business, specializing in power semiconductor sub-director, Technology development, evaluation, consultation, planning, and talent development	https://semi.inje.ac.kr	Project Planning
Korea Basic Science Institute	Institution	Semiconductor Analysis Fundamental Properties Research	https://www.kbsi.re.kr/	Project Planning
Gyeongnam Technopark	Institution	Smart Sensor Reliability and Semiconductor Technology Support	https://www.gntp.or.kr/	Project Planning/ Corporate Support Manpower training
POSTECH	University	Power Semiconductor Circuit Design, Gate Driver, Power Electronics, Integrated Circuit Design	https://sites.google.com/view/pictuslab/	Manpower training
DYETEC	Institution	Government project planning and research and development, Polymers for semiconductors, Research and development of chemical materials	https://www.dyetec.or.kr	Project Planning
Korea Polytechnic University Busan Campus	Education	Lead frame	https://www.kopo.ac.kr/busn	Package Module
KENTECH	University	Precision Evaluation and Demonstration of Power Semiconductors and Power Modules	https://www.kentech.ac.kr/main.do	Devices/Project Planning External cooperation/ International cooperation /Planning
Geumsaem High School	Specialized High School	Power Semiconductor Education Programs (Semiconductor Process, Semiconductor Applications)	http://geumsaem.hs.kr	Manpower training
Korea Nano Meister High School	Meister High School	Semiconductor Education (Nano Process Equipment, Nano Measurement & Analysis)	https://nano-h.gne.go.kr/jeonja-h/main.do	Manpower training

Partner Company





KPDIA

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