

All Products

Power Supplies & Power Semiconductor
Product information



SanRex

Moving society forward through power electronics and creativity.

Since our company's founding, we have tackled "the conversion and control of electricity". This is something that will never change. Commitment to one-of-a-kind technologies and services, continuing as a company that advances society toward a bright future. These form our reason for being and our ambition.



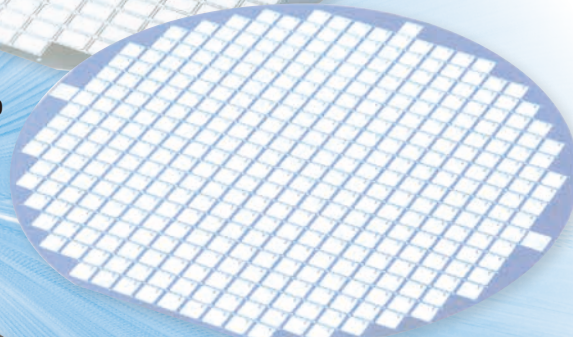
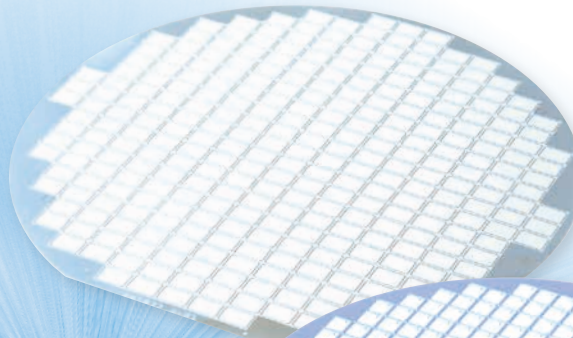
Information Technology



Environment



Power Semiconductor



Wafer & Chip



Power Module



Discrete



Power Supplies

Inverter Technology



Product information
All Products

Power Supplies &
Power Semiconductor



All Products Contents



Industrial Use

- Power Supplies for Surface Treatment Ultrasonic Cleaner
- Thyristor type Electric Power Regulator
- Power Supplies for Light Sources
- Uninterruptible Power Supply
- Grid Connected Inverter
- Power Supplies for Testing and Evaluation Charge / Discharge System
- Large Capacity Industrial Power Supplies
- Power Semiconductor

Total Solution

Our diverse range of products provides a total solution. We can help you solve a variety of issues.

Power Supplies for Surface Treatment

DCAUTO HKD-G / HKE-G

High Precision Rectifier

- Superior model with high functionality and great environmental resistance

Supports Open field network

DeviceNet™ CC-Link



HKE type
(HKE: Limited functions)

HKD type

- Achieves more energy savings thanks to high efficiency switching circuit
- High power factor converter reduces input current value
- 37% smaller than previous models
- Cooling fan with self diagnosis
- High speed communication (RS-485)
- Current integration function
- GOLDWAVE (Free waveform) mode (Option)

Common specifications

Control Method		PWM Control Switching Method	
Input specifications	Voltage	Single-Phase 100/200V switching*1 100V ~110V/200V ~230V*2 Except 15V 100A: for single-phase 200V only	
		3-phase 200/400V switching*1 200V ~220V/380V ~440V	
	Frequency	50/60Hz	
	Voltage Tolerance	±10%	
Output specifications	Control	Constant Voltage (CV) or Constant Current (CC)	
	Accuracy Range	10% to 100% of rated value (voltage/current)	
	Accuracy	Input power variance	Rated value max. ±0.5%
		Load variance	Rated value max. ±0.5%
Ripple	RMS max. 1% (of rated value at rated input/output)		

*1 : Input voltage is automatically detected and can be selected with a single press of a button.

*2: 120V, 208V models are available thru special order.

Input Capacity (kVA)

Output Current (A)	5	10	20	30	50	100	200	300	
Output Voltage	8V	0.11	0.15	0.23	0.32	0.53	1.01	2.56	4.00
	15V	0.14	0.22	0.37	0.54	0.90	1.76	3.92	6.38
Dimensions	A			B			C	D	

We offer products with different voltage / current in addition to the above. Contact us for inquiries.

External dimensions

Chassis Type	Case Dimensions (mm)			Weight (Approx.)(kg)	Cooling Method
	W (Width)	H (Height)	D (Depth)		
A	285	145	335	7	Natural cooling
B	420	145	335	10	Forced air cooling
C	420	145	500	18	Forced air cooling
D	420	145	670	24	Forced air cooling

MINIREX MRM (500A ~4000A)

Module type Inverter Power Supplies

- Flexible output current capacity

Air-cooled / Water-cooled model Common specifications

Model	▼Blank : Air-cooled model W : Water-cooled model	MRM-PM-15005- ▼
Input specifications	Voltage tolerance	3-phase 200V~240V/380V~480V 50/60Hz
	Input voltage selection	Manual
	Input Capacity	10.5kVA
Dimensions W × H × D		435mm × 150mm × 550mm
Weight (Approx.)		24kg/29kg
Air-cooled model/Water-cooled model		
Cooling system		Air-cooled model: Forced air cooling Water-cooled model: Water-cooled (Pure water and industrial water)
Output specifications		15V/500A
Output	Control	Constant Voltage (CV) or Constant Current (CC)
	Accuracy	Both voltage/current Rated value ±1% (FS) or below (10% to 100% of rated value)
Model		MRM-CM Control module
Input specifications	Voltage tolerance	Single-Phase 200V~240V/380V~480V 50/60Hz
	Input voltage selection	Auto
Input Capacity		0.2kVA
Dimensions W × H × D		435mm × 128mm × 300mm
Weight		Approx. 6kg
Cooling Method		Natural cooling

Product list [Air-cooled model , Water-cooled model]

Air-cooled model : MRM-□□	Water-cooled model : MRM-□□-W	15005	15010	15015	15020	15025	15030
Output specifications		15V/500A	15V/1000A	15V/1500A	15V/2000A	15V/2500A	15V/3000A
Power module		1 unit	2 units	3 units	4 units	5 units	6 units
Rack dimension MRM-RK W × H × D		3 stacks configuration 520mm × 835mm × 570mm			6 stacks configuration 520mm × 1370mm × 570mm		
Weight kg	Air-cooled	60	85	111	154	182	206
	Water-cooled model	69	99	130	178	213	242
Input Voltage		3-phase 200V~240V/380V~480V 50Hz/60Hz					
Input Capacity kVA		10.7	21.2	31.7	42.2	52.7	63.2
Output	Control	Constant Voltage (CV) or Constant Current (CC)					
	Accuracy	Both voltage/current Rated value ±1% (FS) or below (10% to 100% of rated value)					

●1 control module controls up to 8 units (of power module)

●15V/3500A and 15V/4000A also available as standard.



Air-cooled model

Water-cooled model

MINIREX MRT (500A ~3000A)

Plating rectifier (Switching mode)

- Inverter system with IGBT



Common specifications

Input voltage	3-phase AC200/220V ±10% or AC380/400/440V ±10% 50/60Hz
Output Range	10% to 100% of rated value (voltage/current)
Rating. Cooling	Continuous/Forced air cooling
Main circuit system	PWM inverter controlled by IGBT

Input Capacity (kVA)

Output Voltage	Output Current (A)				
	500	1000	1500	2000	3000
10V	6.5	13.0	20.0	26.0	39.5
15V	11.1	20.4	30.2	40.7	—

MINIREX MRT-HPR

Pulse Reverse Rectifier (High Speed)

- Positive / Reverse High Speed Pulse Control
- Positive / Reverse High Speed Switching



Common specifications

Model		MRT-800.4HPR	MRT-8001HPR	MRT-8003HPR	MRT-8005HPR
Output	Normal peak current	40A	100A	300A	500A
	Reverse peak current	100A	300A	900A	1500A
	Constant current control accuracy	±3.0%			
	Normal polarity pulse width	10~99.9ms			
	Reverse polarity pulse width	0.1~2.0ms			
	Normal/reverse current switching time	50 (TYP) μs			
	Normal polarity voltage peak value	8V			
	Reverse polarity voltage peak value	15V			
	Normal/reverse pulse ratio	5 : 1 or over			
Input voltage		3-phase AC200/220V ±10% 50/60Hz			
Rating. Cooling		Continuous/Forced air cooling			
Main circuit system		PWM inverter controlled by IGBT			

MINIREX MRS / MRS-PR

Plating Rectifier/ Pulse Reverse Rectifier (High Speed)

- Large Capacity Thyristor Based Series



Common specifications

Input voltage	3-phase AC200V ±10% 50/60Hz
Output Range	Voltage: 1/3 - rated voltage Current: 10 - 100% of the rated current
Rating. Cooling	Continuous/Forced air cooling
Control	Continuous non-staged control using thyristor

Input Capacity (kVA)

* The values in red are for the MINIREX MRS-PR

Output Voltage	Input Capacity (kVA)	Output Current (A)													
		500	1000	1500	2000	3000	4000	5000	6000	7000	8000	10000	12000	15000	
12V		8	16	24	32	47	63	79	96	110	126	158	191	239	
		9	18	25	35	50	71	89	—	—	—	—	—	—	

Ultrasonic Cleaner [Clean Rex]

Single/Sweep/Shot

- Three operation modes
- Output adjustment range widened from 25% to 100%

[Oscillator] High reliability and stable output power
[Vibrator] High-powered, low frequency cleaning with no uneven cleaning effect

Supports open field network

DeviceNet™ CC-Link



Ultrasonic Oscillator



Ultrasonic Vibrator

Ultrasonic Oscillator specifications

Output	600W		1200W	
Model	GED028060	GED040060	GED028120	GED040120
Nominal frequency	28kHz	40kHz	28kHz	40kHz
Power supply	Single-phase AC200V +40V 50/60Hz -20V			
Power capacity	1.2kVA		2.4kVA	
Dimensions W×H×D	415mm ×95mm ×345mm			
Weight (Approx.)	Approx. 9kg			

Ultrasonic Vibrator specifications

Input	Model	
28kHz / 600W	TE028063H Standard	TE028067H Semi high-powered
	TE028066H High-Powered	TE028064H Wide area
28kHz / 1200W	TE028121H Semi high-powered	
40kHz / 600W	TE040063H Standard	TE040066H High-Powered
40kHz / 1200W	TE040121H Semi high-powered	

Thyristor type Electric Power Regulator

CALPOTE
CALPOTE UG·UF series

High Performance Power Regulator Units



UG1
series

● Single-Phase Applications /
25~1200A

Supports open field network

CC-Link / ModbusRTU

High-performance



UF3
series

● Three-Phase Applications /
25~1200A

Supports open field network

CC-Link / DeviceNet

High-performance

Common specifications

Input specifications	Number of Phases	Single-Phase / 3-phase	Control Method	Phase Control, Cycle Control		
	Voltage	100V unit (100/110/120V ±10%) 200V unit (200/220/254V ±10%) 400V unit (380/400/440/460/480V ±10%) * Control Power Requirement AC200/220V		Control Input	(1) ON / OFF signal (Output is enabled when temperature is lower than the set temperature) (2) Current signal DC 4 - 20mA (input resistance 250Ω) (3) Voltage signal DC 1 - 5V, DC 0 - 5V (input resistance 13k Ω) (4) For other current or voltage signal levels, a signal converter is required.	
	Frequency	50/60Hz ±5%			Start / Stop Method	Soft Start / Soft Stop (Standard: 0.5 sec., setting adjustable by using the display panel)
Output	Current	25/35/50/75A (Self-cooling) 100/150/250/350/450A (Air-cooling) 600/800/1200A (Output specifications)	Current Control	UG1	Adjustable from 50 - 110% of the units rated current (phase control only)	
		Operating Environment		Ambient Temperature: Operation : -10~50°C Storage : -20~70°C Relative Humidity: 30~90%RH Atmosphere: No exposure to corrosive gases, dust or vibrations	UF3	Adjustable from 50 - 110% of the units rated current (phase control only)
Dielectric Strength	Dielectric Strength Voltage	AC2000V/1min. (100 · 200V unit) AC2500V/1min. (400V unit)	Output Characteristics	Linearity: ±3% of F.S. at 10 - 90% of the output Low point setting: Minimum output voltage setting. Gradient setting: Maximum output voltage setting.		
		Dielectric Resistance		20M Ω or higher (DC 500V megger)	Protection Features	(1) Overcurrent protection (2) Short circuit protection (3) Overtemp protection (100 A and higher rated units)
			Accessories (per unit)	Variable resistor (1), Knob (1)		

UG1 Single-Phase Unit Ratings

Model	Rated Current (A)	Cooling Method
UG1-※1 025 ※2	25	Natural cooling
UG1-※1 035 ※2	35	
UG1-※1 050 ※2	50	
UG1-※1 075 ※2	75	
UG1-※1 100 ※2	100	
UG1-※1 150 ※2	150	Forced-Air cooling
UG1-※1 250 ※2	250	
UG1-※1 350 ※2	350	
UG1-※1 450 ※2	450	
UG1-※1 600 ※2 (made to order)	600	
UG1-※1 800 ※2 (made to order)	800	
UG1-01200 ※2 (made to order)	1200	

※1 ⇒ 2 : 100V unit, 200V unit
4 : 400V unit

※2 ⇒ F: Equipped with internal fuse

Blank: Not fuse equipped (Note: All 400V units are manufactured with internal fusing as standard and are thus marked with F)

UF3 Three-Phase Unit Ratings

Model	Rated Current (A)	Cooling Method
UF3-0025 ※1 F	25	Natural cooling
UF3-0035 ※1 F	35	
UF3-0050 ※1 F	50	
UF3-0075 ※1 F	75	
UF3-0100 ※1 F	100	
UF3-0150 ※1 F	150	Forced-Air cooling
UF3-0250 ※1 F	250	
UF3-0350 ※1 F	350	
UF3-0450 ※1 F	450	
UF3-0600KF (made to order)	600	
UF3-0800KF (made to order)	800	
UF3-01200KF (made to order)	1200	

※1 ⇒ K: Six-arm configuration. Recommended for inductive loads.
(Note: All units 600 - 1200A are manufactured 6-arm as standard)
(Three-Phase is common for Full range)

CALPOTE UG·UF series contributing to society

Features of the CALPOTE UG and UF Series

- Equipped with our semiconductor devices
- Various options (conversion board, communication board) can be installed after delivery
- Supports various input voltages : 100 to 120 VAC, 200 to 254 VAC, and 380 to 480 VAC
- Current limit function and open-load detection embedded as standard
- Printed circuit board coating improves environmental performance
- Supports transformer load cycle control (special spec.)

Features of the CALPOTE UG1 Series

- Display panel as standard equipment
Allows setting of various parameters and monitoring of voltage, current, and power values
 - Supports open field network
ModbusRTU added in addition to existing CC-Link
* ModbusTCP (Ethernet) and DeviceNet to be supported in the future
 - Space-saving
Built-in feedback CT for constant current and power control
Built-in communication board (option)
 - No power supplies needed for the communication board (required for conventional machines)
 - External dimensions and mounting dimensions are compatible with those of the current UF1 series
 - Heater disconnection detection function can be used for loads with fluctuating resistance (e.g., silicon carbide heaters) (option)
 - Two alarm contacts can be selected as desired
 - Current limit setting range expanded from 50% to 110% to 10% to 110%
- * Please contact our sales representative for details, including installation environment.

SPU series

- Single-Phase Applications / 20~100A



Common specifications

Input specifications	Number of Phases	Single-Phase
	Voltage	100V unit (100/110/200V ±10%) 200V unit (200/220/254V ±10%) (Control Power AC200/220V)
Output	Frequency	50/60Hz
	Current	20/30/45/60/80/100A (Natural cooling)
Operating Environment	Ambient Temperature	Operation : -10~50°C Storage : -20~70°C
	Relative Humidity	30~90%
	Atmosphere	No exposure to corrosive gases, dust or vibrations
Dielectric Strength	Dielectric Strength Voltage	AC2000V/1min
	Dielectric Resistance	20M Ω or higher (DC 500V megger)

SPU Unit Ratings

Model	Rated Current (A)	Cooling Method
SPU-2020	20	Natural cooling
SPU-2030	30	
SPU-2045	45	
SPU-2060	60	
SPU-2080	80	
SPU-2100	100	

Other heating equipment




We also manufacture heater control panels, DC heating power supplies, and induction heating power supplies

Suitable for high-precision heating control


Aircraft

- Carbon fiber
- Body molding



Thin display panels

- Glass substrates
- Filters
- Films
- Polarization plates



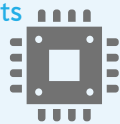
Automotive

- Sheet Steel
- Tires
- Aluminum
- Lamps
- Harnesses




Electronic components

- Capacitors
- LEDs
- Resistors
- Semiconductors



Others

- PET bottles
- Biomass
- Food processing machines
- Fuel cells, batteries, etc. ...



Power Supplies for Light Sources

SanRex is and will continue to lead the industry

The power supply unit for projection, that we have been producing since our foundation more than 90 years ago, uses semiconductors we have developed throughout many years of experience.

Using the most advanced power electronics technology, we also develop compact, light, efficient and superior power supplies for any projector of digital cinema and other projection applications. The "SanRex" brand attached to our products' superiority has been recognized by major projec-

tor manufacturers in Japan, as well as in the United States and in Europe, and we are an essential name of the industry. In addition, we are developing power supplies for lasers to meet today's market demands.

Light source technology became widely used in all industries, and our power supply for light source equipment is used in many production areas such as PCBs, semiconductor manufacturing, optical fiber and digital home appliances.

Lamp Power Supplies for Digital Cinema

To meet the strict requirements of digital cinema, we developed low ripple and flickerless in addition to reliable 4kW/7kW thyristor type power supplies. We have a wide lineup of high-frequency inverters to dim delicate light control in addition to the simplicity and robustness of thyristor models.

Features

- Communication function
- Universal input voltage available
- Comply to EMC standard and safety standards of each country



●7kW



●2kW

●1kW

Lamp Power Supplies for Film projector

This equipment has been part of our product line from the company's foundation, and is still a best-seller in various movie theaters. This thyristor rectifier has been redesigned to be light and compact while maintaining best-in-class performances for lamp applications.



●2kW ~8kW

Lamp Source Power Supplies for photolithography

A high-stability, high-power light is required for printing exposure of wiring patterns using the photolithography process such as high-density and high-definition PWBs. There is a growing demand for high-power light source power supplies to match such lamps. The lithography equipment increases the lamp output to high power like 10 kW to 35 kW in order to improve the definition and increase the productivity. As for the standard type, demand for highly versatile 5kW to 8kW lamp output equipment is expanding overseas.

Features

- Improved external output adjustment function
- Supports worldwide voltage 200/400V
- 75% reduction in size and weight compared to previous model



●5kW

Lamp Power Supplies for UV Irradiation

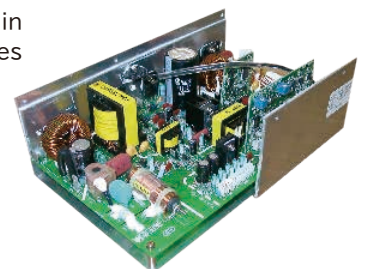
Used in combination with UV equipment, our power supplies are used for various purposes in industrial and consumer manufacturing field such as wafer cleaning and sterilization processes and resin curing.

Features

- Supports both 100 and 200 input voltage
- Easier to use with integrated igniter



●10kW



●100W~400W

We manufacture other light source power supplies for a variety of discharge lamps and lasers.

Uninterruptible Power Supply (UPS)

Supporting advanced industrial facilities by providing backup for voltage drop and outages

BACKUPS1000 Series

Medium Standard UPS

5~100kVA

- Auto return function, wide range of current wave rates, and high overload capacity enable continuous operation under a wide range of conditions
- Meticulous service life management of parts
- Full color touch screen for better operability
- Compatible for lithium-ion batteries
- Customization available
- Input capacitance reduction by high power factor converter method



Redundancy operation series

Reliable parallel redundancy operation

20~4000kVA (500kVA x 8 in parallel)

- Improved reliability thanks to parallel redundancy operation
- Possible to expand according to load increase
- Displays various system information
- Compatible for lithium-ion batteries
- Customization available
- Input capacitance reduction by high power factor converter method



“SRG” series Stand-By Type

Most effective for momentary power interruption

50~400kVA

5~50kVA (Supports DC100V load)

- Ideal as countermeasure against power failure and sudden voltage drop
- High efficiency (more than 97%) significantly reduces running costs
(reduced to 1/4 of our constant inverter power supply system)
(more than 96% for output capacity below 100 kVA)
- Meticulous service life management of parts
- Customization available (models for 100 VDC loads)
- Input capacitance reduction by high power factor converter method



Highly valued for its high reliability, the product has been installed in a large number of industrial facilities.



Traffic control

Production line

Broadcast

Hospital

Banks

Gas

OA

Data center

Public water and
wastewater
treatment facilities

Power plant
electricity

Grid Connected Inverter

For solar power generation

We offer a wide lineup from decentralized grid connected small capacity inverter to large capacity power generation system

Sunlight energy is converted into electric energy by the solar cell. We have developed these large capacity solar inverters that convert the photovoltaic energy of the solar cells into a stable, commercially accepted electrical power for local use or linked to the utility electric system to supply power.



Solar Inverter
(for outdoor solar power system, forced air cooling system)
500kW

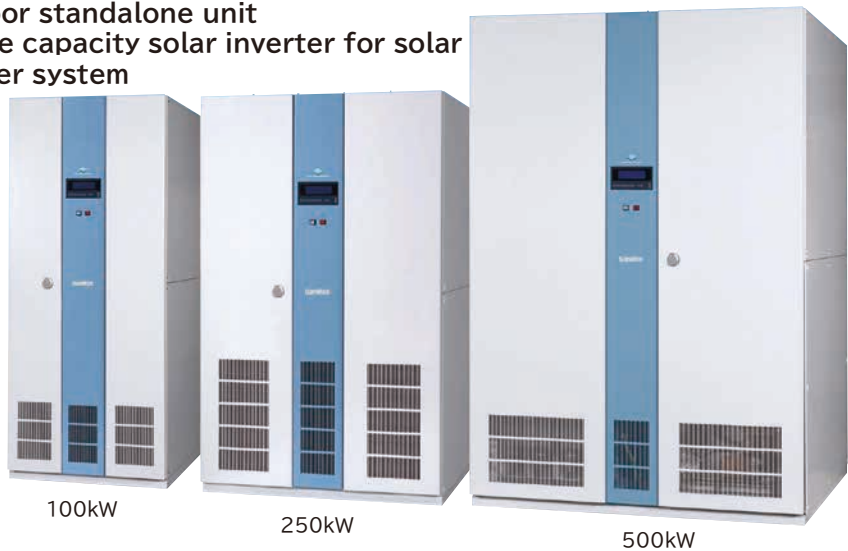
[High-efficiency power type]
Indoor standalone unit
Large capacity solar inverter for solar power system

Built-in Isolation Transformer
Models for Maximum Efficiency



96.0% (100kW)
96.6% (250kW)
96.8% (500kW)

DC 1000V Models
Available



Model		PV-100K-42/44T-03 MVJ	PV-250K-42/44T-03 MVJ	PV-500K-42/44T-03 MVJ	PV-500K-42/44T-13 MVJ
Rated Output Capacity	kW	100	250	500	500
Structure		Stand-Alone Indoor Unit			Outdoor Use
AC Rated Voltage	V	420/440 ^{*1, *2}		420/440 ^{*2}	
Linkage Point Electricity Method		Three-Phase 3-wire or Three-Phase 4-wire			
Isolation Method		Isolation using commercial transformer			
Output Power Factor	%	99 or higher (power factor available to be controlled to maintain a certain value)			
DC Rated Voltage	V	500 ^{*3}			
Maximum Input Voltage Allowed	V	750 ^{*3}			
Operable Voltage Range	V	330~750 ^{*3}			
MPPT Operation Range	V	340~650 ^{*3}			
Maximum Efficiency (including commercial transformer)	%	96.0	96.6	96.8	
Self-support Operation Function		Available as an option	None		
Operating Temperature Range	°C	-10~+40			
Size W×H×D	mm	1,100×2,150×900	1,300×2,150×1,200	1,600×2,350×1,300	2,250×3,010×2,480
Weight (Approx.)	kg	1,400	2,400	3,500	4,800

*1: AC input 200V systems model available. *2: 420V / 440V will be determined automatically according to the frequency

(*3) : Operable voltage range 270 - 600V (rated DC 400V) . Operable voltage range of 440 - 1000V (rated DC 650V) also available, please inquire.




*Efficiency tolerance: IEC / TC82 (CO) 19 (of JIS-C8961)

Power storage system (Powered by Li-ion battery)

The power storage system includes storage batteries, PV panels, solar inverters, EMS, demand measuring devices, etc., and it charges and discharges energy by receiving commands from the EMS (Energy Management Systems).

Electricity cost is reduced by leveling the power usage, thanks to the peak shift/peak cut functions used during power peak periods. Additionally, it helps reducing CO₂ emissions by using solar panels' electricity for personal consumption, and acting as a backup power in case of emergency conditions.

Optimum use of energy by relying on a power storage system

-  Electricity cost reduction
-  Power outage backup system
-  Reduction in greenhouse emissions (CO₂)



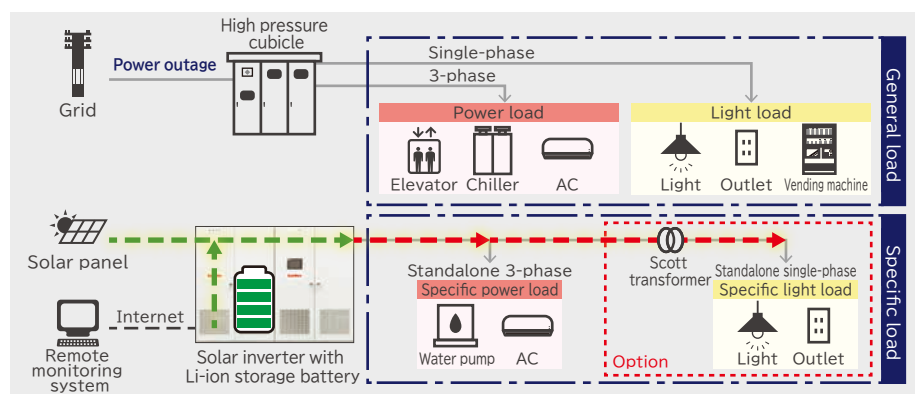
Features

- Parallel operation possible in independent operation mode
Easily add power storage system as the capacity of the critical load increases
- Frequency fluctuation support (smart inverter) option
Supports system stabilization, a foreseen request from the market
- Virtual power plant (VPP) option
Can be used in the supply and demand adjustment market

Typical operation pattern of storage battery system

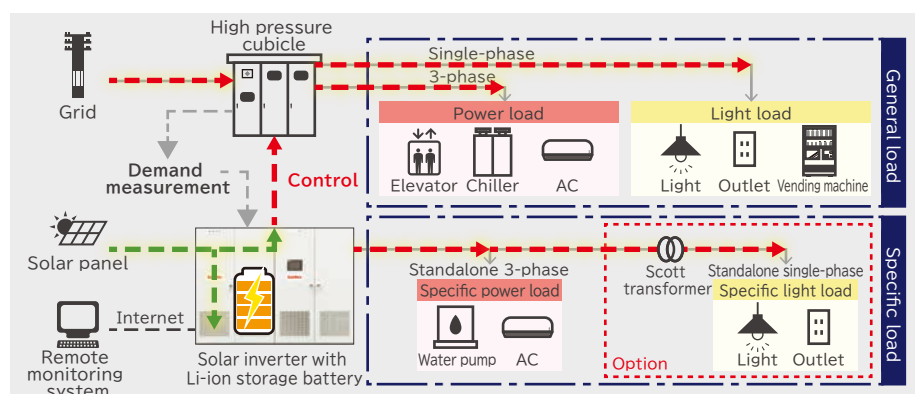
Standalone operation

Shifts automatically to standalone operation in case of power outage, and provides power to the specific load. During that time, solar panel surplus is stored in the battery, and when there is not enough sun the storage battery assists automatically. When power is resumed, it shifts to the grid connection.



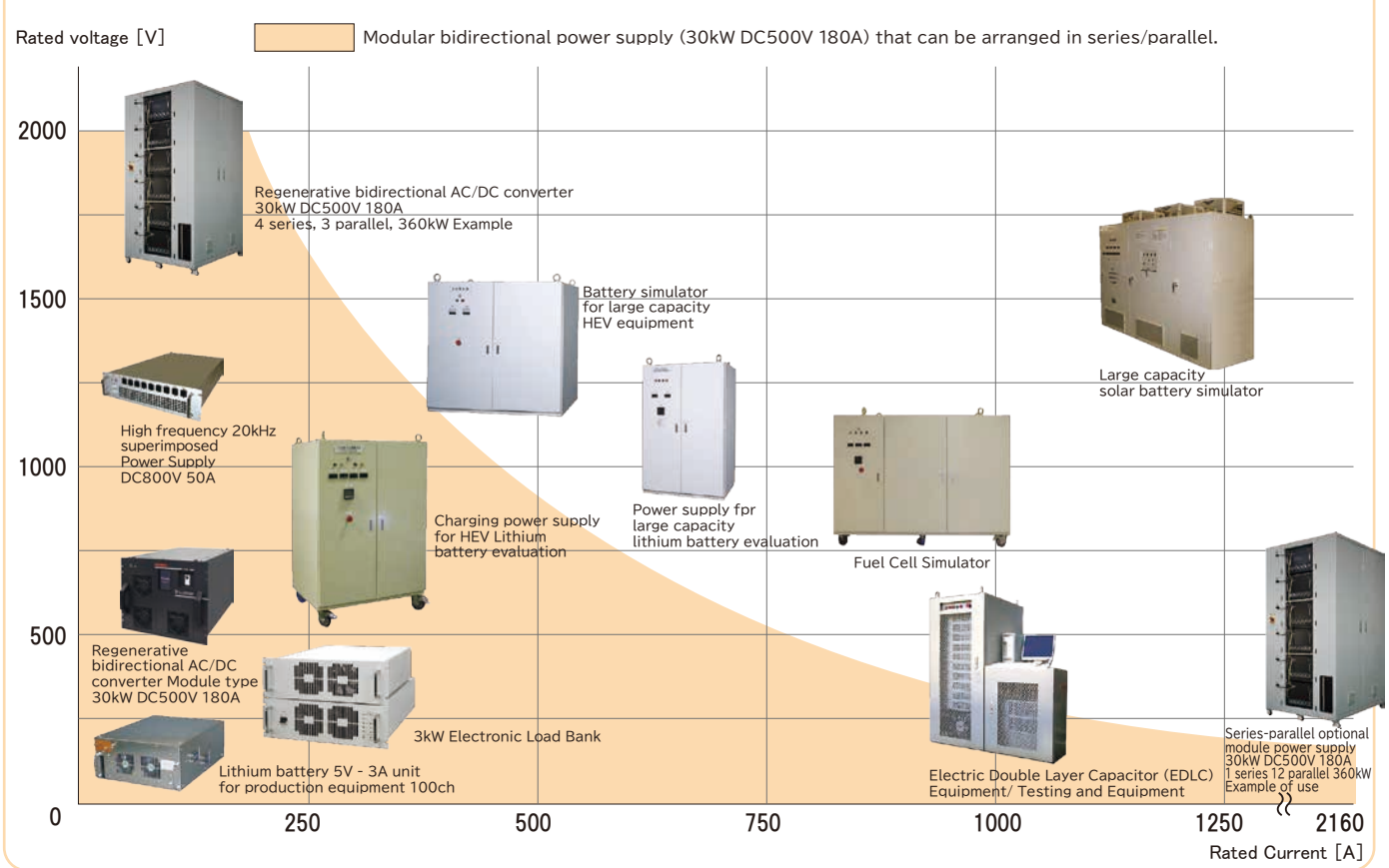
Self-consumption

It is possible to reduce electricity bill by managing electricity from the solar panels and the storage batteries. Batteries can be charged from PV energy or grid electricity. The demand is constantly measured and current is controlled so that there is no electricity return to the system.



Our charge/ discharge control technology supports the development of the latest energy storage devices and reliability testings

We also have a wide variety of other power supplies for testing and evaluation of storage batteries and inverters.



Regenerative bidirectional AC/DC Converter Module type

A model offering a flexible series-parallel configuration while maintaining high accuracy performance

Perfect for all kinds of battery testing, converter, inverter, FCV, EV, etc.

S-Loop

Logo combining the [S] of [SanRex] and the loop representing the regenerative power



6 modules configuration:
2 units in direct connection and 3 in parallel (former design)



Our original SiC Module

[Techno Block*2]
Achieves small footprint and excellent heat dissipation in inverters and power supplies for the industry



*2 Our original semiconductor package uses transfer molding and both side solder process, achieving small footprint and excellent heat dissipation

Features

■ Various output currents and voltages

Several power modules can be connected in parallel or directly for a maximum output of respectively 2160 A (12 units) or 2000 V (4 units). (Max. 12 units connected = 360kW)

■ Small footprint and high efficiency

In addition to embedding 3LEVEL PFC and DAB*1 circuits and our proprietary SiC modules, the unit fits a 19" rack size promising over 93.5% efficiency (at 500V, 60A output)

*1 PFC : Power Factor Correction / DAB : Dual Active Bridge

■ High precision and fast response

During ramp up or ramp down of max 1 msec while in series-parallel, the setting accuracy is: constant voltage max. 0.05% (F.S.), constant current max. 0.1% (F.S.), constant power max. 0.3% (F.S.).

■ Communication with a host system

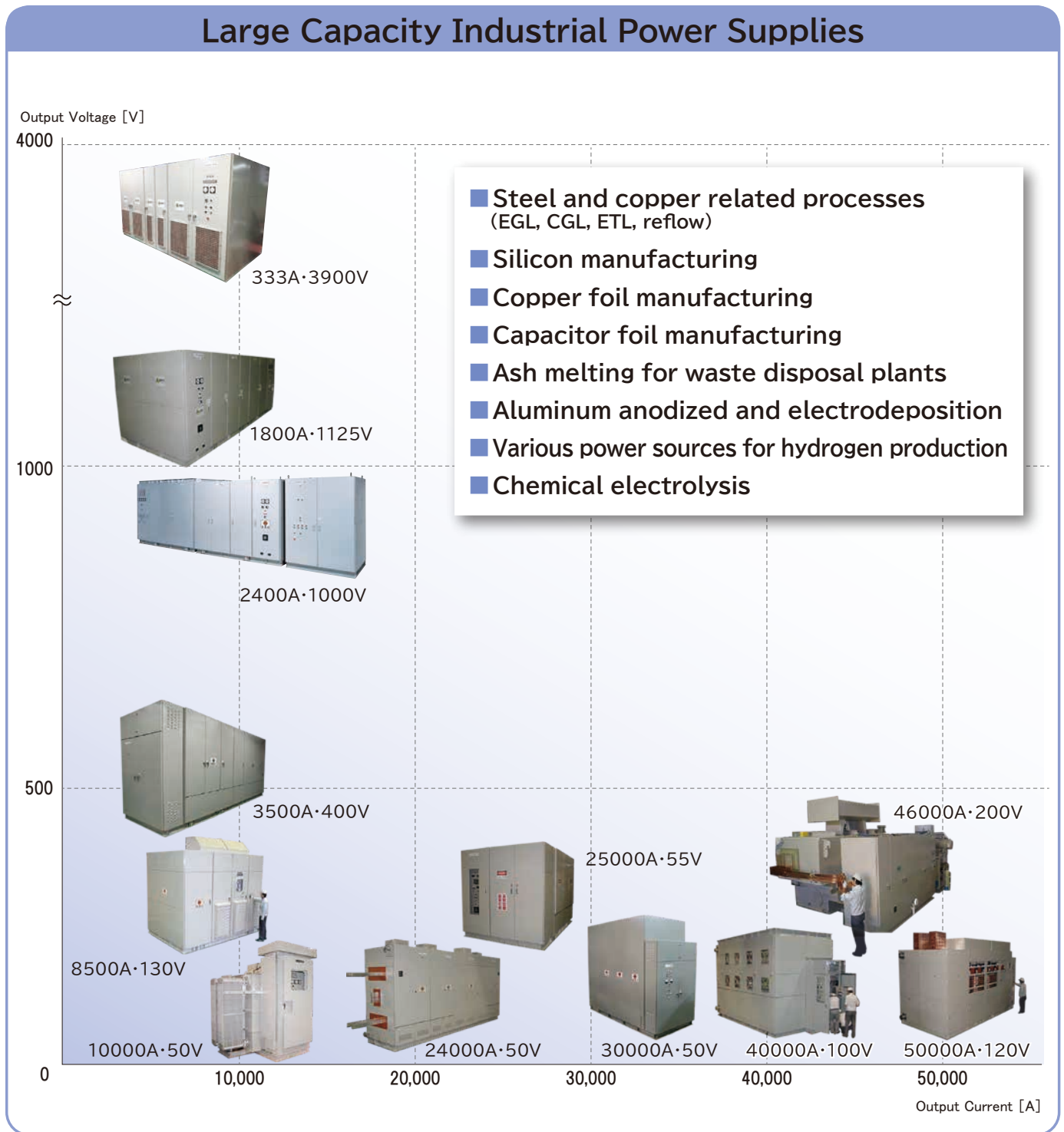
Communication with a host system via Ethernet is possible. Software provision and system construction as a test and evaluation system are also possible.

* Please contact our sales staff for details.

Large Capacity Industrial Power Supplies

The materials industry supports the basics for human society.

Many industries such as the automotive, information technology and the consumer product industry are manufactured using high value-added materials. For the chemical, construction, power generation and control, manufacturing and distribution industries, Sansha Electric's inverter technologies will support the daily businesses in key industries while being environmentally and energy conscious. Specify Sansha Electric's power supplies for your material production and processing equipment needs.

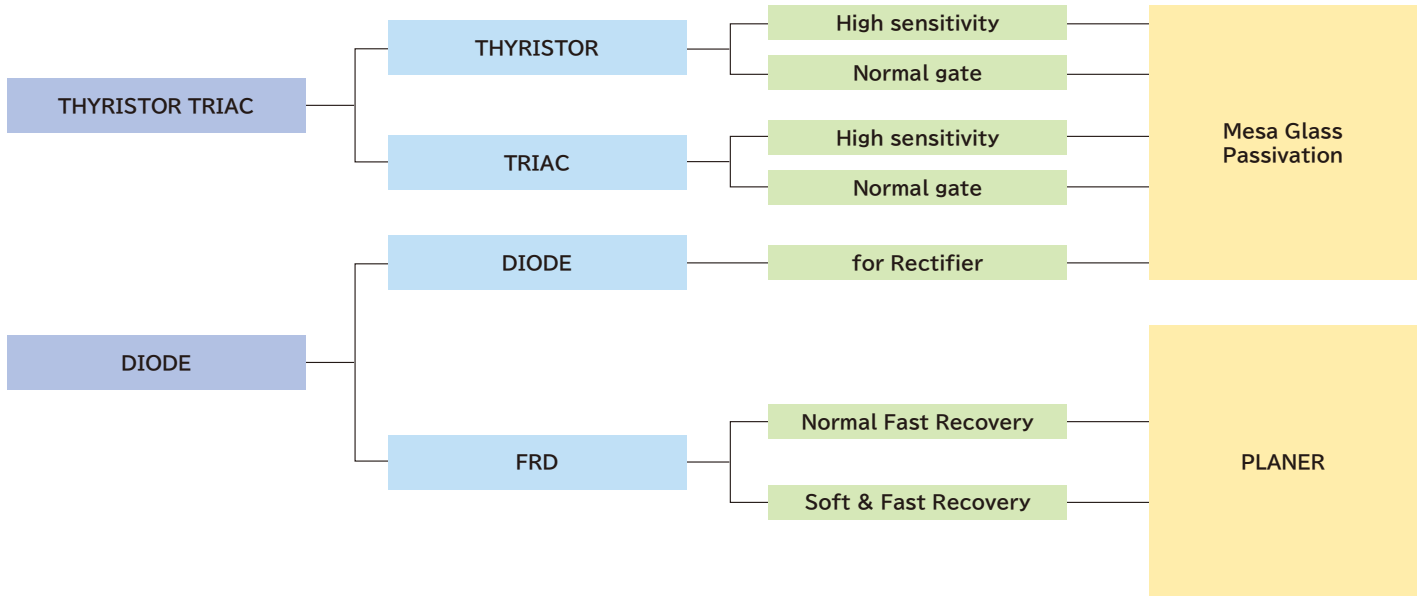
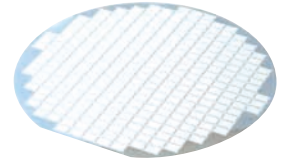


Custom Power Supplies are our specialty. Please contact us for your large capacity power supply requirements.

Power Semiconductor

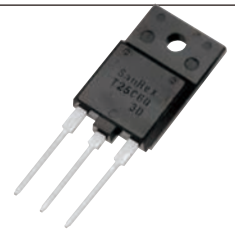
WAFER/ CHIP

Our product line includes high voltage diodes/ thyristors/ triac chips, all developed based on our knowledge of modules used in primary side rectification and AC control. The high speed diode chips were designed to reduce electricity loss and noise generation when rectifying the high frequency secondary side output of inverters.



DISCRETE SEMICONDUCTOR

Our Triac product line includes specific series for high withstand voltage, high sensitivity and $T_j=150^{\circ}\text{C}$ guaranteed in addition to the standard types. Our thyristors line also includes series that support both consumer and industrial purposes. Semiconductor packages include through-hole and surface-mount types. We've recently added SiC MOSFET, the next-generation power devices, to our product offer.

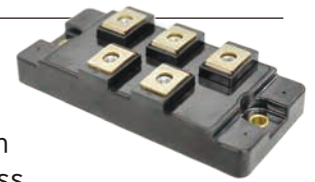


	TO-92	TO-251 (Ipack)	TO-220AB	TO-220F	TO-247	TO-247 4pin
Triac	Sensitive Gate	Standard Product Sensitive Gate	Standard Product $T_j=150^{\circ}\text{C}$ product	Standard Product Sensitive Gate $T_j=150^{\circ}\text{C}$ product	-	-
Thyristor	Sensitive Gate	Sensitive Gate	Standard Product	Standard Product	Standard Product	-
Diode	-	-	Standard Product	-	-	-
SiC MOSFET	-	-	-	-	-	Standard Product 4PIN
		Non-isolated	Non-isolated	Isolated	Non-isolated	Isolated

	TO-3P	TO-3PF	SOT-89	TO-252 (Dpack)	TO-263 (D2pack)	TO-3 (Fast-on Package)
Triac	Standard Product $T_j=150^{\circ}\text{C}$ product	Standard Product $T_j=150^{\circ}\text{C}$ product	Standard Product Sensitive Gate	Standard Product Sensitive Gate $T_j=150^{\circ}\text{C}$ product	Standard Product	Standard Product
Thyristor	-	-	Sensitive Gate	Sensitive Gate	Standard Product	Standard Product
Diode	Standard Product (FRD)	-	-	-	-	Standard Product (FRD) Standard Product
	Non-isolated	Isolated	Non-isolated	Non-isolated	Non-isolated	Isolated

POWER MODULE

Our power modules, such as the FRD (Fast Recovery Diode), are perfect for today's high frequency inverter technology, and the SBD (Schottky Barrier Diode) aims at reducing power loss. All specifications are designed with our users' requirements in mind and by fully applying the know-how gained from our industrial product business.



FRD	SBD	DIODE		THYRISTOR DIODE		THYRISTOR	SiC	IGBT
<p>DCA, DKA, FRS, DKR etc.</p>	<p>BKR, BKA</p>	<p>DD, KD, DKA</p>	<p>DF</p>	<p>DFA</p>	<p>PD, SCE</p>	<p>PK, SCA</p>	<p>FCA</p>	<p>GSA</p>
25A~400A 200V/400V/ 500V/600V/ 650V/1200V/ 2000V	200A 50V/100V	60A~300A 800V/1600V/ 2200V	20A~200A 800V/1600V	50A~200A 800V/1600V	25A~250A 800V/1600V 2000V (SCE)	25A~250A 800V/1600V	150A 1200V	75A 1200V, 100A 600V
Welding machine Large capacity SMPS		Inverter for industrial use Air conditioner		Welding machine Solar (PV) power generation		Power control Uninterruptible Power Supply	Industrial inverter	Welding machine

High Reliability Transfer Molding Modules



20/ 30A
Three-Phase
Bridge Module

60/ 75/ 100A
Three-Phase
Bridge Module

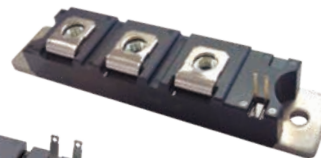


<Techno Block ✕>

Next generation package achieving small footprint and excellent heat dissipation. We cover from 20 A to 100 A and more. Inquire for more information.



150A SiC
MOSFET 2 in 1 Module ✕



110A
Diode/ Thyristor
2 in 1 Module ✕



400A
Fast Recovery
Diode Module (2 in 1) ✕

SiC MOSFET Module



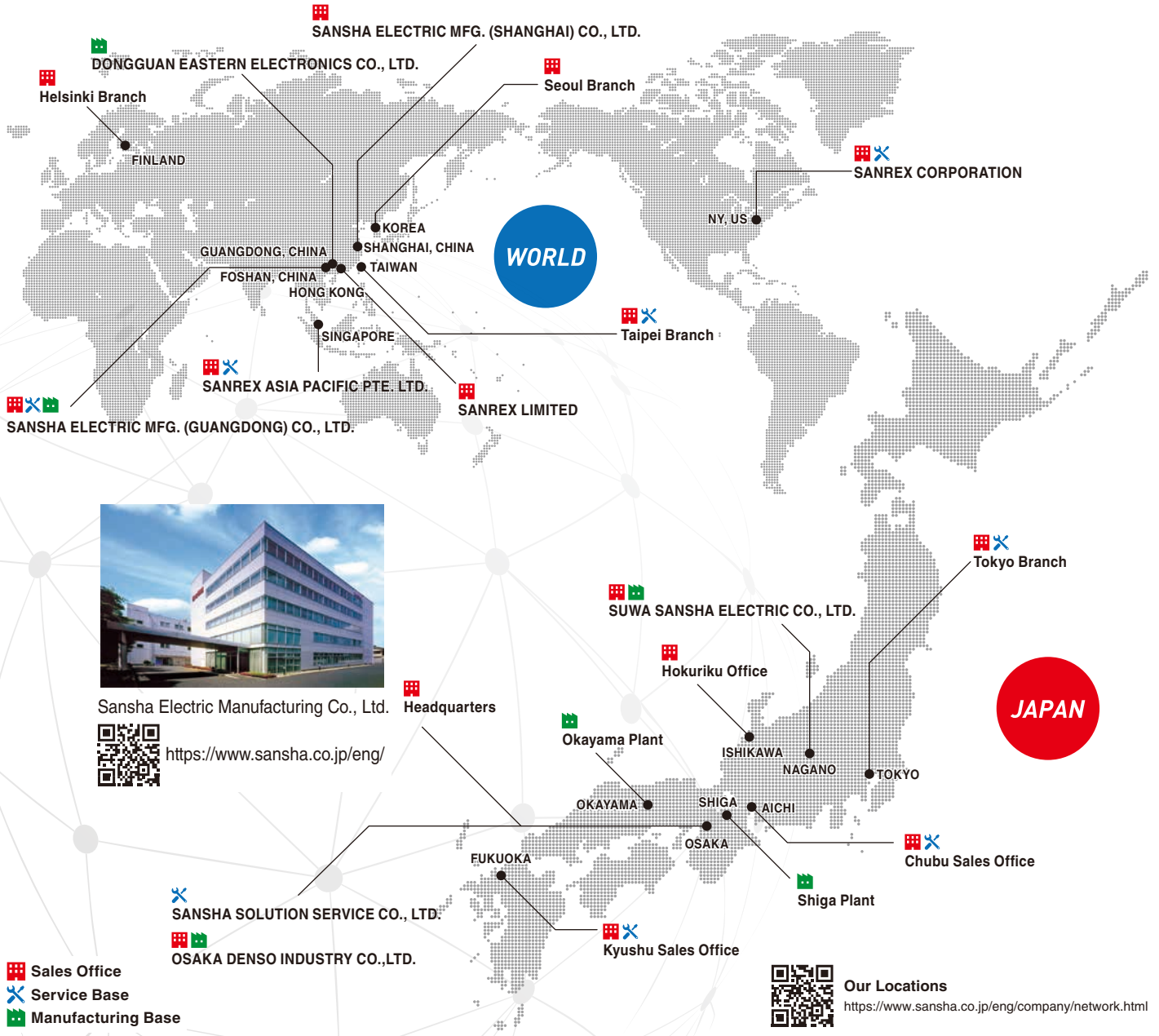
SiC power devices are next-generation devices with lower loss and faster operation than conventional Si devices.

<Features of our SiC MOSFET modules>

- SiC MOSFET chip with built-in reflux diode function and low on-resistance
- High V_{gs(th)} makes it resistant to malfunction
- Our proprietary "Techno Block" package, which improves long-term reliability and reduces size
- Low inductance design suppresses surge voltage

<Note>

- Although we make every effort to improve quality and reliability, semiconductor products may fail or malfunction due to various factors. When using this product, safety measures should be taken for the equipment on which the product will be used, such as redundancy design, design for prevention of the spread of fire, design for prevention of malfunction, etc. in which safety is taken into consideration, so that no accident resulting in personal injury or death, or no damages due to fire, will occur.
- We will not be held responsible for any accident or damage that have occurred due to use exceeding the rated values or failing to use caution.
- If a product described in this material is subject to regulations under the Foreign Exchange and Foreign Trade Act, permission for export is required from the Government of Japan under the said Act, in order to export the product.
- Do not use the product for purposes of development, etc. of weapons of mass destruction or for purposes of military utilization, etc.
- Consult us if you have any questions about the product.



Sansha Electric Manufacturing Co., Ltd.



<https://www.sansha.co.jp/eng/>



We can also customize to your requirements. Please feel free to contact us.

Inquiry

<https://www.sansha.co.jp/eng/contact/>

Attention

Read and understand the entire Operating Manual and your employer's safety practices before installing, or using the equipment. Do not install the equipment in an area where water, high humidity, steam, dust or oil are located. It may cause damage to the equipment or result in a fire or electrical shock.

If the product is intended to be used for any of the following applications, consult us in advance.

- a. Use for medical devices, systems, etc. directly influence human lives
- b. Use for transportation systems such as electric trains, elevators, etc. that can lead to damage to human bodies
- c. Use for trunk systems that play important roles socially and publicly
- d. Devices and systems that are similar to any of the above

For devices and systems that are involved in the safety of people and have serious influence on the maintaining of public functions, special considerations are required to be given to their operation, maintenance, and management, such as multiplexing of systems, installation of power generation equipment for emergency use, and the like.

Even in the case of an accident caused by our product, we are not in a position to make compensation for any and all damages including damages related to abnormality and failure of devices, connected equipment, and software as well as other secondary and consequential damages.

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