Company Profile

Shanghai Zhongchen Electronic Technology Co, Ltd.

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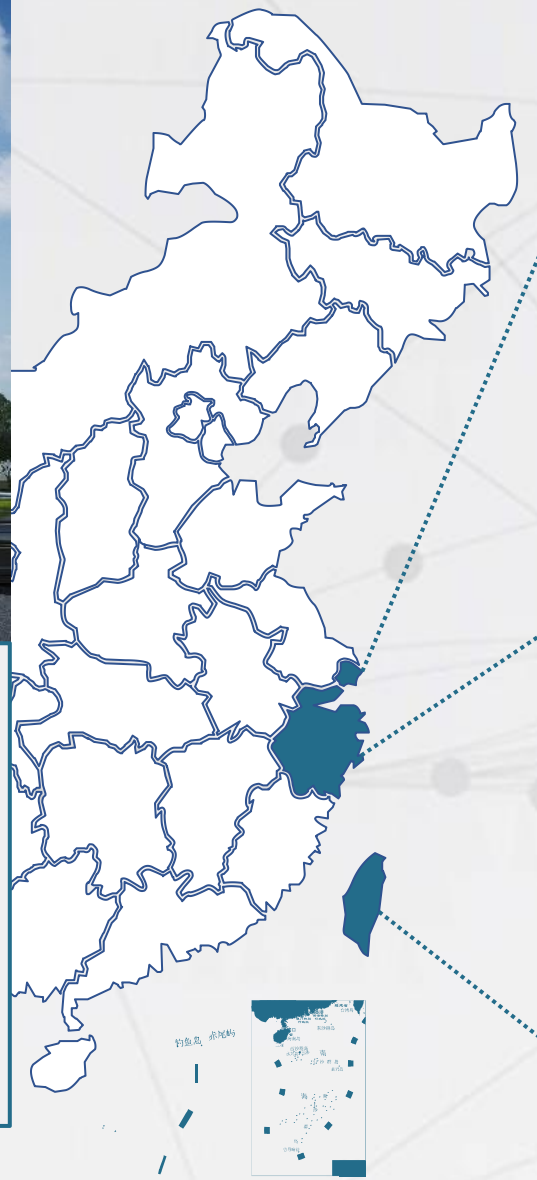
www.zoncn.cn

Version: ZONCN - CP - MKT 2404

ZONCN

Shanghai Zhongchen Electronic Technology Co, Ltd.

- Founded in 2020
- Focus on R&D and system application of power semiconductors
- Devoted to realizing the localization of high-end power module products imported from abroad
- An innovative technology enterprise collects together R&D, manufacturing, sales



Shang Hai HQ

- R&D Center
- Advanced Laboratory: product evaluation
- Operation Center: application evaluation
- Manufacture Factory: 2 production lines

  1 million pcs IGBT/ Annual Production

Zheng Jiang Manufacturing Base

- Advanced Laboratory
- Manufacture Factory (Phase IV projects)

  Phase I project : 3 production lines

  325 million pcs IGBT/ Annual Production

Tai Wan R&D Center

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2020

- **ZONCN Semi was incorporated**

  located in Songjiang District at Shanghai
  95 million RMB registered capital

2022

- **Shanghai manufacture factory was built**

  About 100 million RMB investment

- **Advanced laboratory at Shanghai was built**

2023

- **Shanghai factory started production**
- **Certificated by ISO9001, REACH, RoHs and UL**
- **Mass production of IGBT at Shanghai factory**
- **ZONCN Microelectronics was incorporated and Zhejiang manufacture factory was in construction**

  located in Wenling, Zhejiang Province
  100 million RMB registered capital
  900 million RMB investment
  plant area 20000m²
  clean-workshop 15000m²

- **Apply for IATF16949**

2024

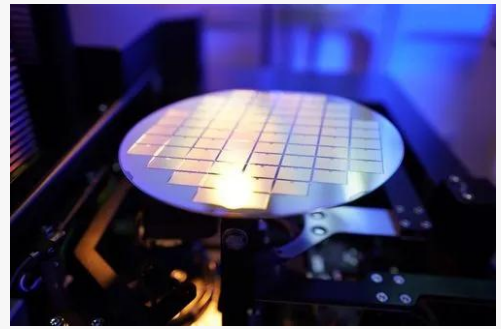
- **Zhejiang manufacture factory was built**

  10 production lines are planned (Phase IV projects) :
  7 production lines for industrial modules
  3 production lines for new energy vehicle modules
  Estimated annual output value about 1.5 billion RMB

- **Expected to start production in mid-2024**

2025

- **The future is expected ···**



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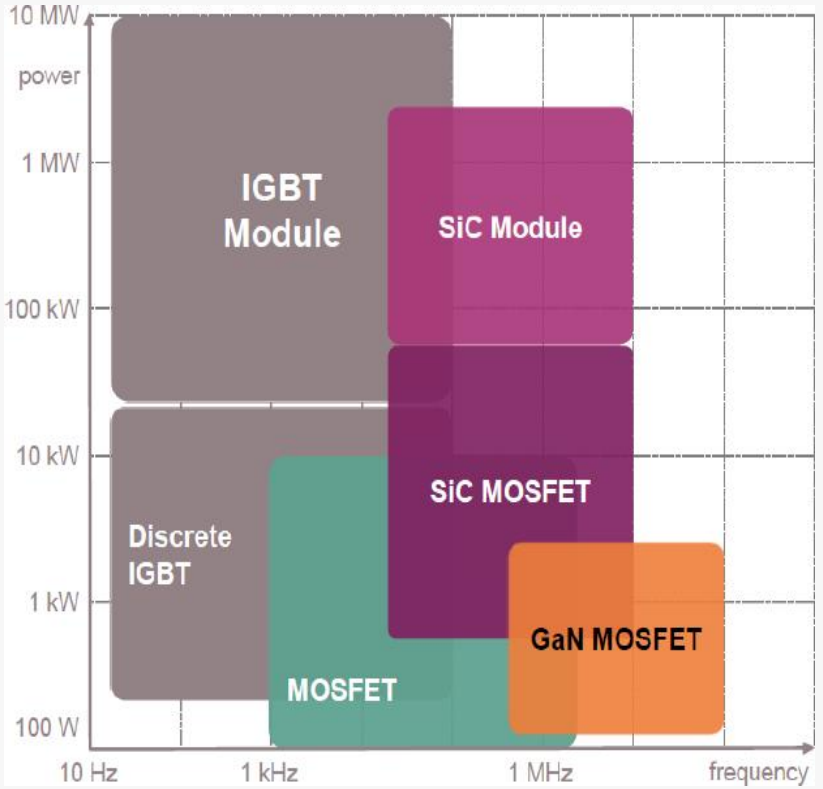
IGBT Excellent Comprehensive Performance

Core Component for Power electronics industry

- **IGBT:**
  Insulated Gate Bipolar Transistor
- **Components:**
  Insulated gate field-effect transistor
  and bipolar transistor
- **Advantages:**
  MOSFET has high input impedance
  low control power
  simple drive circuit
  high switching speed
  BJT has heavy saturation current
  low breakdown voltage
  low consumption
- it represents one of the main development directions of power semiconductors in the future.

Suitable for Power Semiconductor Devices with Different Power and Frequency



Source publication from Soochow Securities

IGBT vs. BJT & MOSFET

	BJT	MOSFET	IGBT
Drive Method	Current	Voltage	Voltage
Drive Circuit	Complex	Simple	Simple
Input Impedance	Low	High	High
Drive Power	High	Low	Low
Switching speed	Slow (μs)	Fast (ns)	Medium
Operating frequency	Low (≤100kHz)	Fast (≤1MHz)	Medium
Safe Operation Area (SOA)	narrow	wide	wide
Saturation Current	Low	High	Low

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IGBT
Wide Downstream Market Applications

■ Features :

- High power density, simple drive circuit and wide safe operation area
- Preferred power electronic equipments with medium or high power and low or medium frequency
- silicon-based IGBT is the first choice of power semiconductor devices for the working frequency range below 105Hz, power ranges from several kilowatts to 10 megawatts

■ Typical application fields:

- **New energy:**
  New energy vehicles (main electric drive, OBC, air conditioning, steering, etc.)
  New energy power generation (photovoltaic inverter, wind power converter)
- **Industrial control:**
  Frequency converters, inverter welder, UPS, etc.
- **Domestic appliances and others:**
  Intelligent Power Management (IPM)
  Rail transit (traction converter)
  Smart grid, etc.

New Energy


Wind Power Converter


New Energy Vehicles


(PV) Inverter

Industrial Control


Frequency Converters


Inverter Welder


UPS

Domestic Appliances and Others


Domestic Appliances


Rail Transit


Smart Grid

IGBT of ZONCN Semi | Product Roadmap

ZONCN

New Energy / Rail Transit

Industrial Control / New Energy

New Energy Vehicles

Current (A)

1400A

1200A

1000A

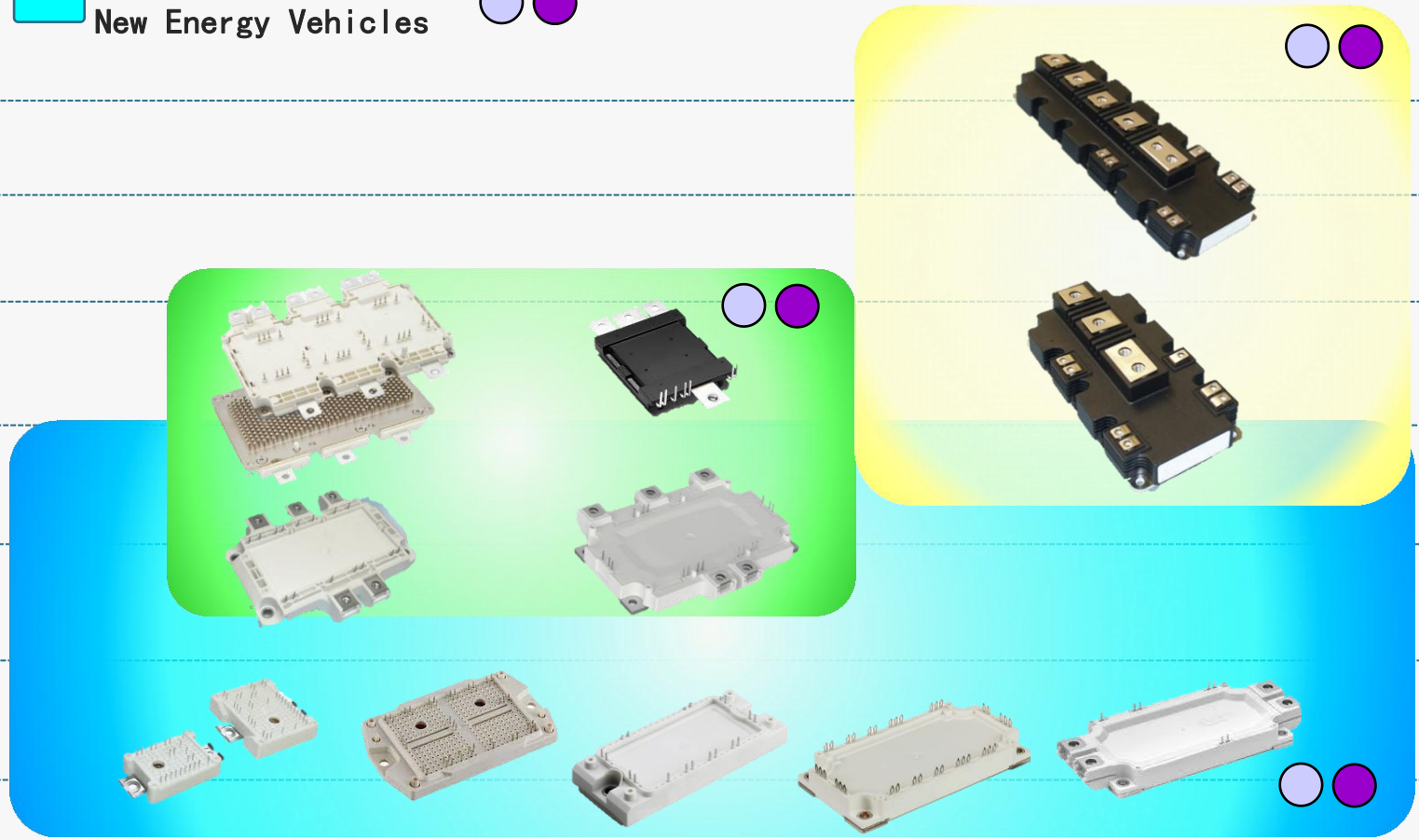
800A

600A

400A

200A

10A



600V-750V

1200V

1700V

Voltage (V)

IGBT

SIC MOS

IGBT of ZONCN Semi | Product Applications

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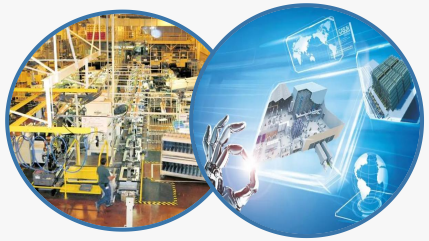
- Industrial grade & automotive grade IGBT power modules
- High-end SiC power modules

New Energy Vehicles & Rail Transit

Charging pile, vehicle thermal management system, charging inverter system, motor drive control system, high-power electric vehicle, rail transit, etc.



Intelligent Equipment Manufacturing

Frequency converters, electric tools, energy storage equipment, security UPS, servers, industrial motors, robots and mechanical arms, automatic control, etc.

PV inverter & Wind Power Generation

LED lighting, AC/DC conversion, photovoltaic inverter, high voltage grid, etc.

ZONCN

PA 075 G 120 K0 XXXXX

① Circuit Type

PA: 3 Phase Bridge + Brake
PB: 3 Phase Bridge
FB: 4 Phase Bridge
DA: Dual/Half Bridge
DB: Half Bridge without Rectifier
FA: Fourpack
ZA: Single Switch
SA: Sixpack

② Current Rating

010: Ic = 10A
015: Ic = 15A
020: Ic = 20A
025: Ic = 25A
035: Ic = 35A
040: Ic = 40A
050: Ic = 50A
075: Ic = 75A
100: Ic = 100A
150: Ic = 150A
200: Ic = 200A
275: Ic = 275A
300: Ic = 300A
400: Ic = 400A
450: Ic = 450A
600: Ic = 600A
800: Ic = 800A
820: Ic = 800A

③ Module Type

G: IGBT Module
M: Si MOS
C: SiC MOS
H: Hybrid IGBT
F: High Speed IGBT

④ Voltage

065: Vecs = 650V
075: Vecs = 750V
120: Vecs = 1200V
170: Vecs = 1700V
330: Vecs = 3300V

⑤ Package Type

K0: Econopack 3 2 Pin
K1: Econopack 3 3 Pin
K2: EconoPIM3 4 Pin
K4: EconoPIM3 4 - in - 1 package
K6: Econopack 3 6 - in - 1 package
M0: EconoDual 3
N0: Econopack 2
N1: EconoPack2 6-in-1 package
N2: EconoPIM2 KT3
A0: Hybrid Pack Drive
AL: Hybrid Pack Drive Long Tab
A1: Hybrid Pack 1
T1 : 34mm
T0 : 62mm
W1: Easy Pack 1B
W2: Easy Pack 2B
W3: Easy Pack 3B
W4: Easy Pack 4B
C0: DCM-1000

⑥ Custom

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■ DB series (Half Bridge without Rectifier)

Rated Voltage : 650V/1200V / 1700V
Current Range : 75A/100A/150A

■ Main Features:

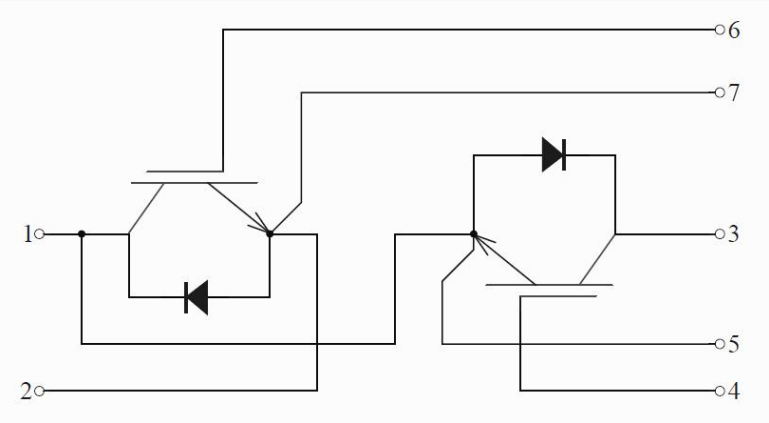
- Best design of heat conduction technology & heat disspation struture
- low consumption, low leakage inductance, strong short-circuit capacity
- High switching frequency
- Wide temperature range

■ Applications:

Frequency converters
Inverter welder
Induction heater
Uninterrupted power supply (UPS)
Motor control
PV solar

Part Number	Vces	Ic Tc=100℃	Vce(sat) @Tj=25 ℃typ(V)	Eon+Eoff @Tj=25 ℃typ(mj)	Rth(J-C) K/W
DB075G065T1	650V	75A	1.6	10 @Rg=10Ω	0.38
DB100G065T1	650V	100A	1.8	15.1@Rg=10Ω	0.4
DB150G065T1	650V	150A	2.0	12.5 @Rg=10Ω	0.27
DB075G120T1	1200V	75A	1.6	9 @Rg=10Ω	0.38
DB100G120T1	1200V	100A	1.8	14 @Rg=10Ω	0.4
DB150G120T1	1200V	150A	2.0	11 @Rg=10Ω	0.27
DB075G170T1	1700V	75A	2.0	32.5 @Rg=6.8 Ω	0.71
DB100G170T1	1700V	100A	2.0	43 @Rg=4.0 Ω	0.57
DB150G170T1	1700V	150A	2.10	43 @Rg=4.0 Ω	0.57

Circuit Diagram



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■ DB series (Half Bridge without Rectifier)

Rated Voltage : 650V /1200V /1700V
Current Range : 150A/200A/300A/400A /450A/600A

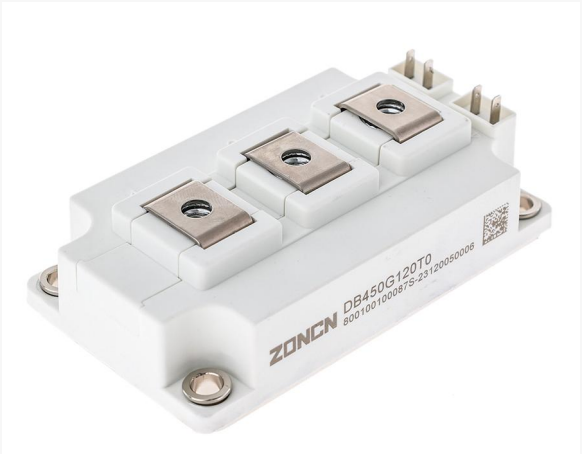
■ Main Features:

- Best design of heat conduction technology & heat disspation struture
- Low switching loss, low leakage inductance, low saturation voltage
- Strong short-circuit capacity
- High switching frequency

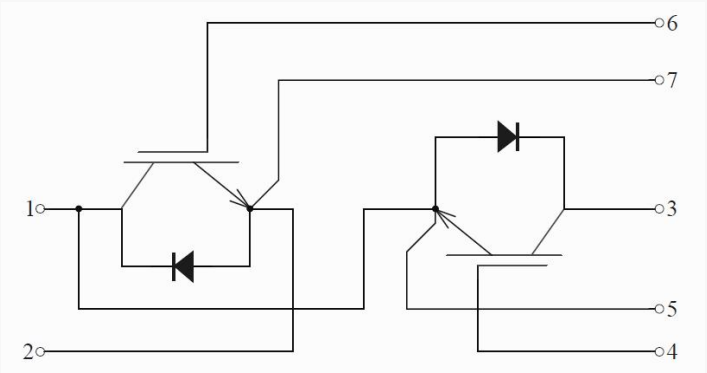
■ Applications:

Energy storage
Wind power converter
Frequency converters
Uninterrupted power supply (UPS)
Active filters
Renewable energy
Active Power Filter (APF)
Static VAR Generator (SVG), etc.

Part Number	Vces	Ic Tc=100℃	Vce(sat) @Tj=25 ℃typ (V)	Eon+Eoff @Tj=25 ℃typ (mj)	Rth (J-C) K/W
DB200G065T0	650V	200A	1.75	27 @Rg=7.5 Ω	0.126
DB300G065T0	650V	300A	1.6	19 @Rg=7.5 Ω	0.16
DB400G065T0	650V	400A	1.55	21 @Rg=5.5 Ω	0.13
DB200G120T0	1200V	200A	1.75	30 @Rg=7.5 Ω	0.135
DB300G120T0	1200V	300A	1.95	67@Rg=5.5 Ω	0.093
DB450G120T0	1200V	450A	1.95	67@Rg=5.5 Ω	0.093
DB600D120T0	1200V	600A	1.95	67 @Rg=5.5 Ω	0.046
DB150G170T0	1700V	150A	1.95	44 @Rg=4.0 Ω	0.67
DB200G170T0	1700V	200A	1.95	30 @Rg=7.5 Ω	0.135
DB300G170T0	1700V	300A	1.95	125 @Rg=7.5 Ω	0.083
DB400G170T0	1700V	400A	2.05	195 @Rg=5.5 Ω	0.056



Circuit Diagram



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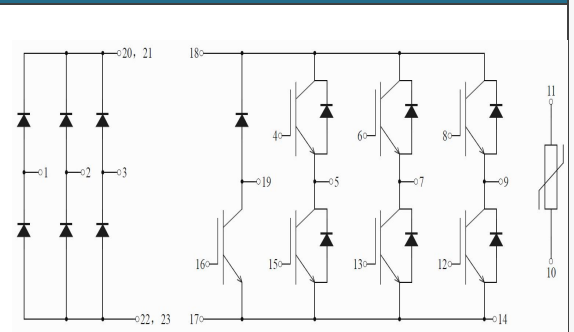
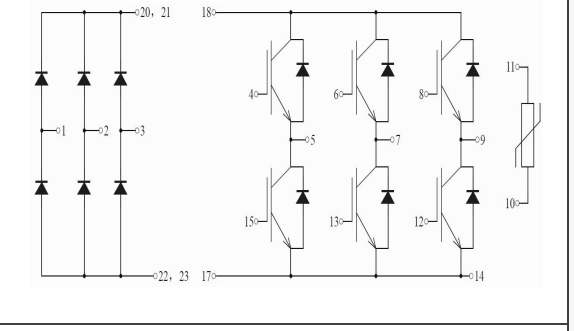
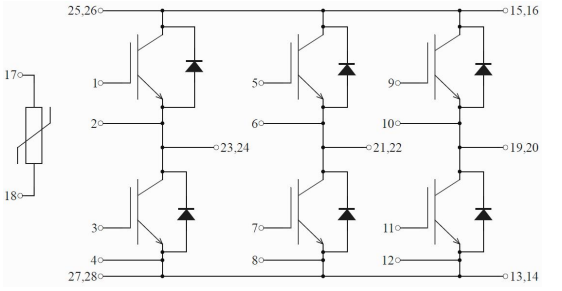
- **PA series (3 Phase Bridge+Brake)**
- **PB series (3 Phase Bridge)**
- **SA series (Sixpack)**

Rated Voltage : 650V /1200V
Current Range : 40A/50A /75A

- Main Features:
  - Best design of heat conduction technology & heat disspation structure
  - Low switching loss, low leakage inductance, low saturation voltage
  - Strong short-circuit capacity
  - High switching frequency
  - Good EMC performance

- Applications:

Frequency converters,
Industrial servo controller
UPS, Inverter welder, Induction heater,
Wind power, PV solar, Rail Transit, etc.

Part Number	Vces	Ic Tc=100℃	Vce(sat) @Tj=25 ℃typ(V)	Eon+Eoff @Tj=25 ℃typ (mj)	Rth (J-C) K/W	Circuit Diagram
PA040G120N2	1200V	40A	1.7	5.5 @Rg=20Ω	0.82	
PA050G065N0	650V	50A	1.7	5.5 @Rg=20Ω	0.82	
PA050G120N0	1200V	50A	1.6	10 @Rg=10Ω	0.38	
PA075G065N0	650V	75A	1.7	5.5 @Rg=20Ω	0.82	
PA075G120N0	1200V	75A	1.6	10 @Rg=10Ω	0.38	
PB050G065N0	650V	50A	1.7	5.5 @Rg=20Ω	0.82	
PB050G120N0	1200V	50A	1.6	10 @Rg=10Ω	0.4	
PB075G065N0	650V	75A	2.31	9.76@Rg=15Ω	0.54	
PB075G120N0	1200V	75A	1.85	14.25@Rg=10.0 Ω	0.48	
SA050G065N1	650V	50A	2.31	9.76@Rg=15Ω	0.54	
SA050G120N1	1200V	50A	1.85	14.25@Rg=10.0 Ω	0.48	
SA075G065N1	650V	75A	2.31	9.76@Rg=15Ω	0.54	
SA075G120N1	1200V	75A	1.6	10 @Rg=10Ω	0.41	

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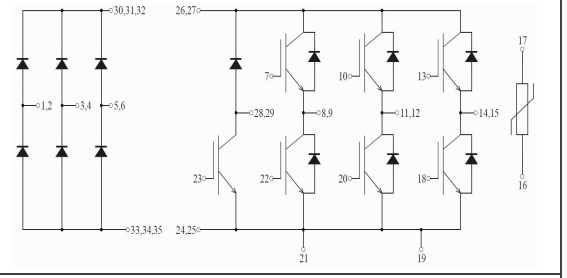
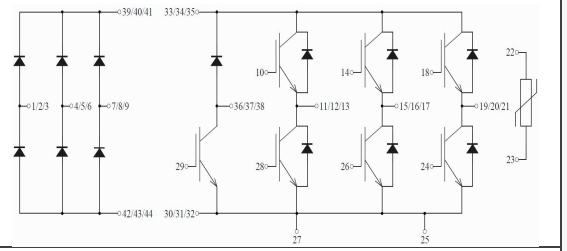
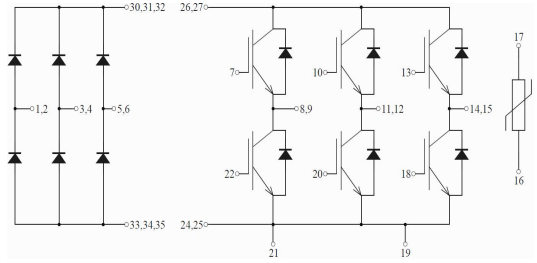
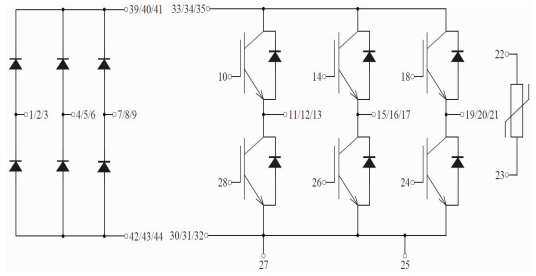
- **PA** series **(3 Phase Bridge + Brake)**
- **PB** series (3 Phase Bridge)

  Rated Voltage : 650V / 1200V

  Current Range : 75A / 100A / 150A

- Main Features:
  - Best design of heat conduction technology & heat disspation structure
  - Low switching loss, low leakage inductance, low saturation voltage
  - Strong short-circuit capacity
  - High switching frequency
  - Good EMC performance
- Applications:

  Frequency converters,
  Industrial servo controller
  UPS, Inverter welder, Induction heater,
  Wind power, PV solar, Rail Transit,
  New energy vehicles etc.

Part Number	Vces	Ic Tc=100℃	Vce(sat) @Tj=25 ℃typ(V)	Eon+Eoff @Tj=25 ℃typ (mj)	Rth (J-C) K/W	Circuit Diagram
PA075G065K0	650V	75A	1.6	10 @Rg=10Ω	0.38	
PA100G065K0	650V	100A	1.8	14 @Rg=10Ω	0.4	
PA075G120K0	1200V	75A	1.85	14.25@Rg=10.0 Ω	0.48	
PA100G120K0	1200V	100A	2.35	18.17@Rg=6.8 Ω	0.26	
PA150G065K1	650V	150A	2.0	11 @Rg=10Ω	0.27	
PA150G120K1	1200V	150A	2.15	32.08@Rg=6.8 Ω	0.25	
PB075G065K0	650V	75A	1.6	10 @Rg=10Ω	0.38	
PB100G065K0	650V	100A	1.8	14 @Rg=10Ω	0.4	
PB075G120K0	1200V	75A	1.85	14.25@Rg=10.0 Ω	0.48	
PB100G120K0	1200V	100A	2.35	18.17@Rg=6.8 Ω	0.26	
PB150G065K1	650V	150A	2.0	11 @Rg=10Ω	0.29	
PB150G120K1	1200V	150A	2.0	12.5 @Rg=10Ω	0.25	

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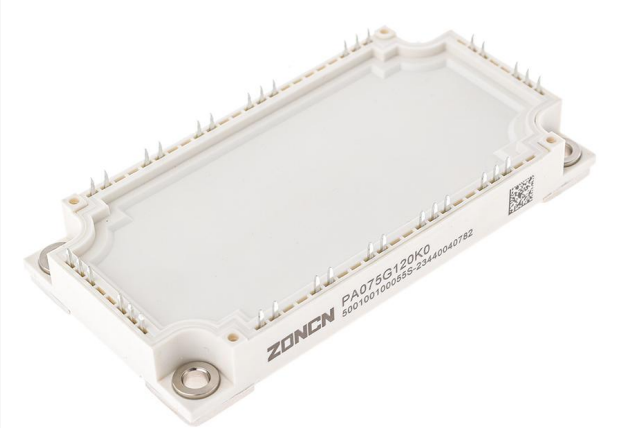
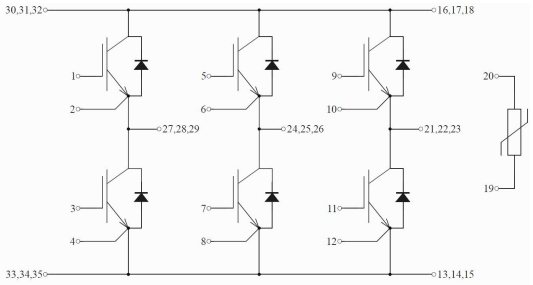
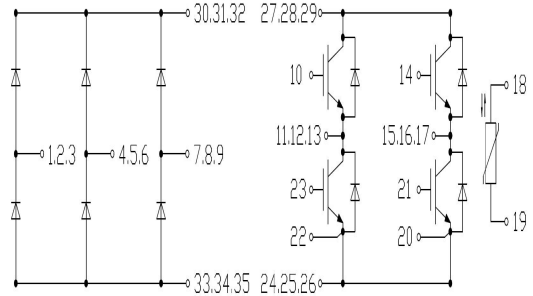
- **SA** series (Sixpack)
  Rated Voltage : 650V / 1200V
  Current Range : 150A / 200A
- **FB** series (4 Phase Bridge)
  Rated Voltage : 1700V
  Current Range : 50A/ 75A / 100A / 150A
- Main Features:
  - Best design of heat conduction technology & heat disspation structure
  - Low switching loss, low leakage inductance, low saturation voltage
  - Strong short-circuit capacity
  - High switching frequency
  - Good EMC performance
- Applications:
  Frequency converters, Industrial servo controller, UPS, Inverter welder, Induction heater, Wind power, PV solar, Rail Transit, New energy vehicles etc.



Part Number	Vces	Ic Tc=100℃	Vce(sat) @Tj=25 ℃typ(V)	Eon+Eoff @Tj=25 ℃typ (mj)	Rth (J-C) K/W	Circuit Diagram
SA150G065K6	650V	150A	2.0	11 @Rg=10Ω	0.27	
SA200G065K6	650V	200A	1.75	27 @Rg=7.5 Ω	0.126	
SA150G120K6	1200V	150A	2.0	12.5 @Rg=10Ω	0.27	
SA200G120K6	1200V	200A	1.75	27 @Rg=7.5 Ω	0.126	
FB050G170K4	1700V	50A	2.40	31.0 @Rg=8.0 Ω	0.42	
FB075G170K4	1700V	75A	2.40	34.8 @Rg=6.8 Ω	0.40	
FB100G170K4	1700V	100A	2.40	39.3 @Rg=4.1 Ω	0.323	
FB150G170K4	1700V	150A	2.40	81.5 @Rg=9.1 Ω	0.277	

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■ **DA** series (Dual/Half Bridge)

Rated Voltage : 650V /1200V/ 1700V
Current Range : 300A/450A/600A/800A

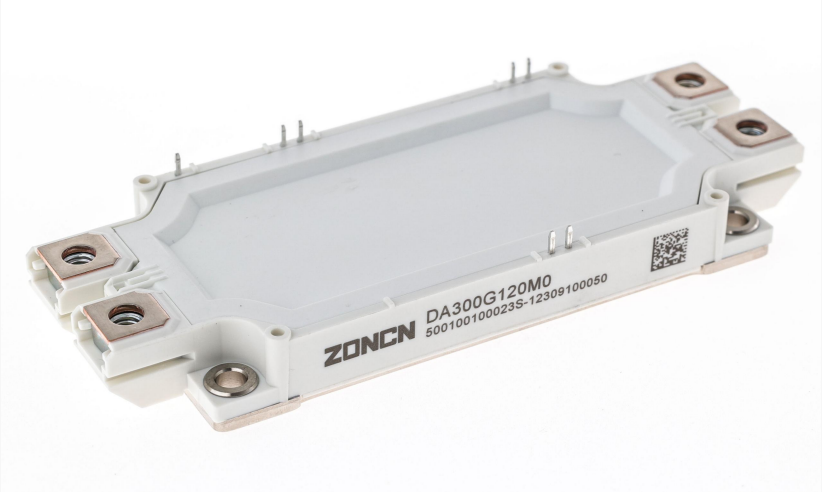
■ Main Features:

- Best design of heat conduction technology & heat disspation structure
- Low leakage inductance, strong short-circuit capacity
- Mature current evenness technology
- High reliability (Hi-Rel)

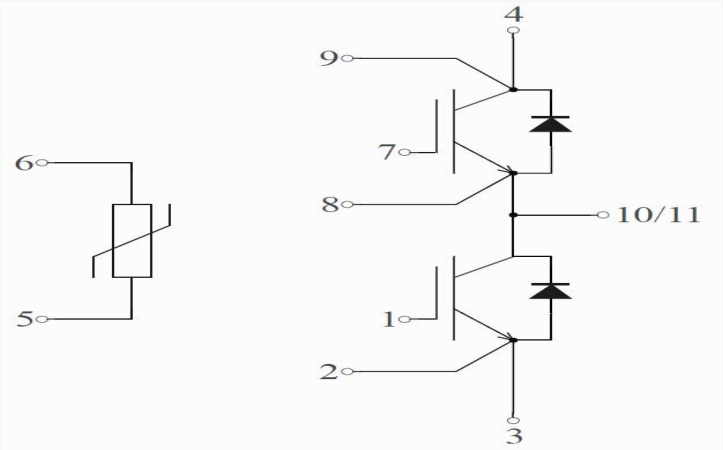
■ Applications:

Frequency converters,
Industrial servo controller,
UPS, Induction heater, Energy storage
Wind power, PV solar, Rail Transit,
New energy vehicles etc.

Part Number	Vces	Ic Tc=100℃	Vce(sat) @Tj=25 ℃ typ(V)	Eon+Eoff @Tj=25 ℃ typ(mj)	Rth (J-C) K/W
DA300G065M0	650V	300A	1.6	19 @Rg=7.5 Ω	0.16
DA450G065M0	650V	450A	1.75	21 @Rg=5.5 Ω	0.19
DA600G065M0	650V	600A	1.65	45 @Rg=5.5 Ω	0.13
DA300G120M0	1200V	300A	2.0V	32.08@Rg=10.0 Ω	0.13
DA450G120M0	1200V	450A	1.6V	105@Rg=2.0 Ω	0.0875
DA600G120M0	1200V	600A	1.75	93 @Rg=2.0 Ω	0.05
DA800H120M0	1200V	800A	1.75	170 @Rg=2.0 Ω	0.07
DA300G170M0	1700V	300A	2.0	145 @Rg=2.0 Ω	0.09
DA450G170M0	1700V	450A	1.75	210 @Rg=2.0 Ω	0.06
DA600G170M0	1700V	600A	2.0	260 @Rg=2.0 Ω	0.06
DA800H170M0	1700V	800A	2.0	280 @Rg=2.0 Ω	0.04



Circuit Diagram



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■ SA series (Sixpack)

Rated Voltage : 750V
Current Range : 820A

Part Number	Vces	Ic Tc=100℃	Vce (sat) @Tj=25 ℃typ(V)	Eon+Eoff @Tj=25 ℃typ(mj)	Rth (J-F) K/W
SA820G075A0	750V	820A	1.30V	125mJ	0.15

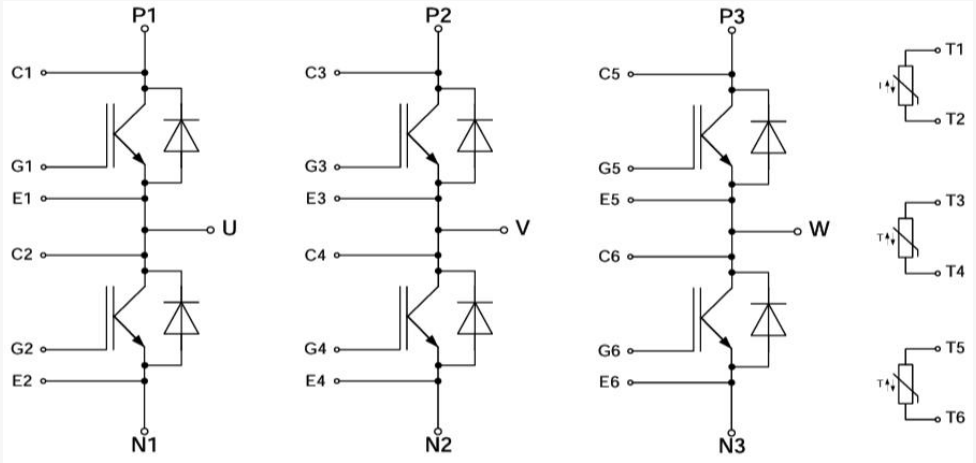
■ Main Features:

- Best design of heat conduction technology & heat disspation structure
- Low leakage inductance, strong short-circuit capacity
- Mature current evenness technology
- High reliability (Hi-Rel)

■ Applications:

Uninterrupted power supply (UPS)
Power quality solutions, Energy storage
Wind power, PV solar, Rail Transit,
New energy vehicles etc.

Circuit Diagram



ZONCN

■ **SA series (Sixpack) SiC**

Rated Voltage : 1200V
Turn-on Resistence : 2mΩ/3mΩ

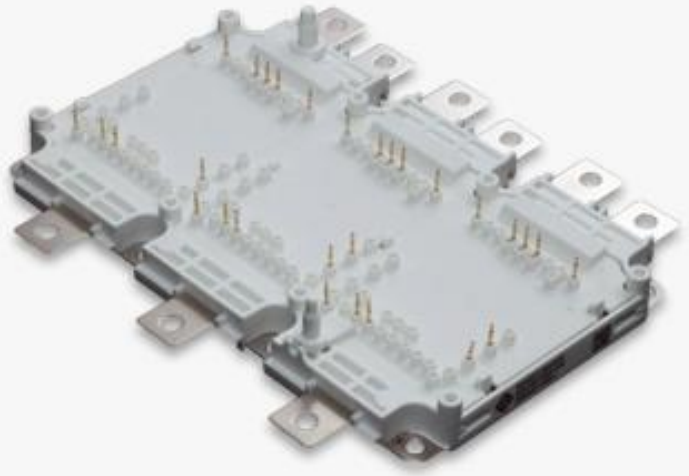
Part Number	Vces	Rds(on) Tc=25℃	Eon+Eoff @Tj=25 ℃typ(mj)	Rth (J-F) K/W
SA02C120A0	1200V	2mΩ	65.0mJ	0.15
SA03C120A0	1200V	3mΩ	46.3mJ	0.13

■ **Main Features:**

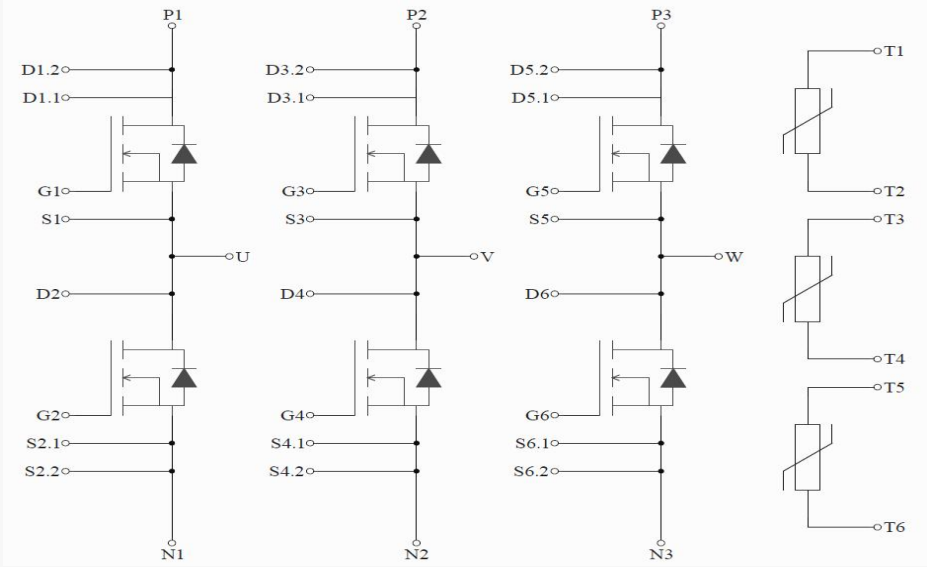
- Best design of heat conduction technology & heat disspation structure
- Low leakage inductance, strong short-circuit capacity
- Mature current evenness technology
- High reliability (Hi-Rel)

■ **Applications:**

Uninterrupted power supply (UPS)
Power quality solutions, Energy storage
Wind power, PV solar, Rail Transit,
New energy vehicles etc.



Circuit Diagram



ZONCN

■ SA series (Sixpack)

Rated Voltage : 750V / 1200V
Current Range : 550 A
Turn-on Resistence : 3mΩ

Part Number	Vces	Ic Tc=100℃	Vce(sat) @Tj=25 ℃typ(V)	Eon+Eoff @Tj=25 ℃typ(mj)	Rth (J-C) K/W
SA550C075A1	750V	550A	1.28	23.9 @Rg=2.2 Ω	0.11

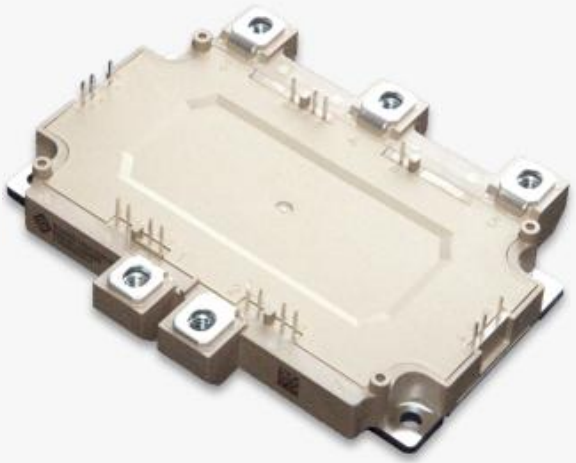
Part Number	Vces	Rds(on) Tc=25℃	Eon+Eoff @Tj=25 ℃typ(mj)	Rth (J-C) K/W
SA03C120A1	1200V	3mΩ	17.7 @Rg=6.8 Ω	0.11

■ Main Features:

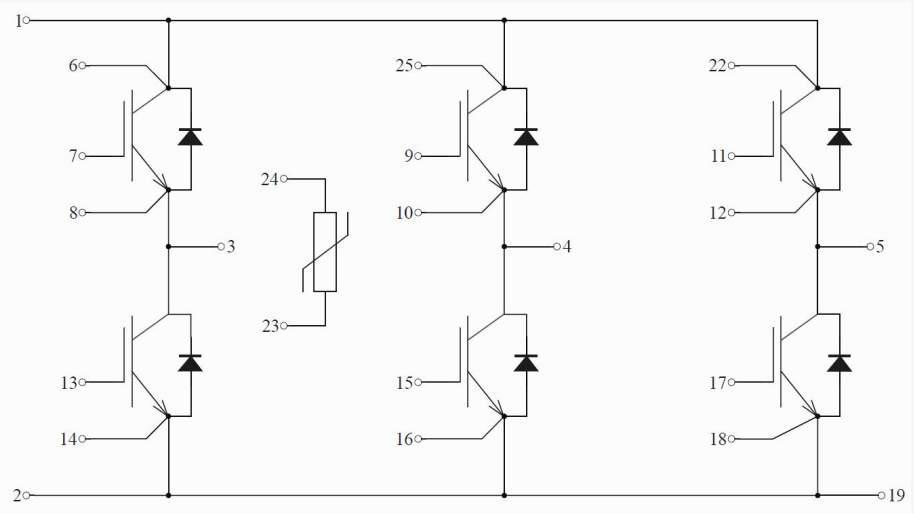
- Best design of heat conduction technology & heat disspation structure
- Low leakage inductance, strong short-circuit capacity
- High reliability (Hi-Rel)

■ Applications:

Frequency converters,
UPS, Induction heater,
Power quality solutions, Active filters,
Energy storage, Wind power, PV solar,
Rail Transit, etc.



Circuit Diagram



ZONCN

■ SA series (Sixpack)

Rated Voltage : 650V /1200V
Current Range : 10A/15A/20A/35A

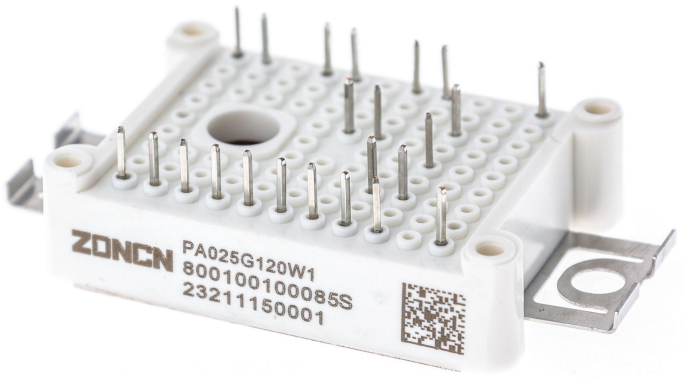
■ Main Features:

- High performance of ceramic substrate technology can greatly improve thermal properties
- High common-mode transient immunity
- Advanced packaging technology
- Good wire-bonding can improve temperature cycle
- Good EMC performance

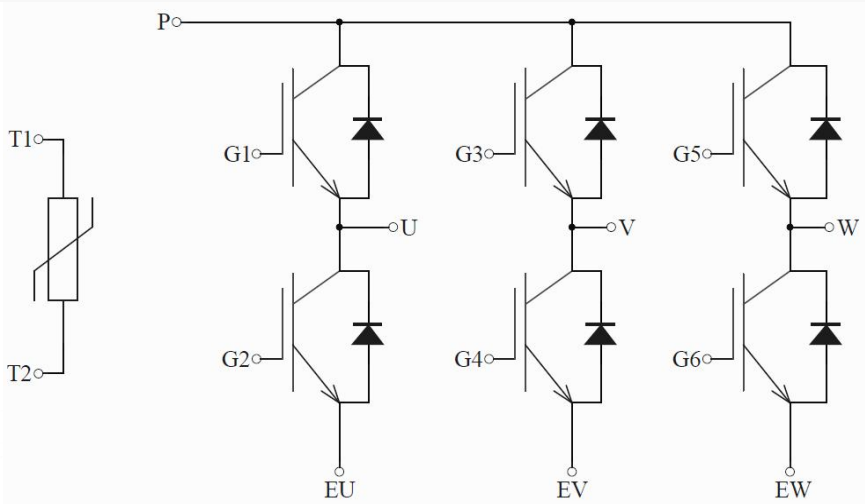
■ Applications:

Frequency converters,
Industrial servo controller
UPS, Inverter welder, Induction heater,
Wind power, PV solar,
New energy vehicles etc.

Part Number	Vces	Ic Tc=100℃	Vce(sat) @Tj=25 ℃typ(V)	Eon+Eoff @Tj=25 ℃typ(mj)	Rth (J-C) K/W
SA010G065W1	650V	10A	1.65	2 @Rg=15 Ω	0.18
SA015G065W1	650V	15A	1.65	2.6 @Rg=15 Ω	0.21
SA020G065W1	650V	20A	1.65	2.9 @Rg=15 Ω	0.17
SA035G065W1	650V	35A	1.65	4.6 @Rg=15 Ω	0.17
SA010G120W1	1200V	10A	1.7	4.6 @Rg=15 Ω	0.17
SA015G120W1	1200V	15A	1.7	2.2 @Rg=15 Ω	0.16



Circuit Diagram



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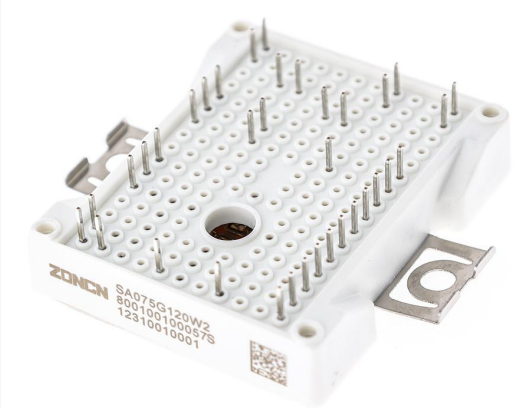
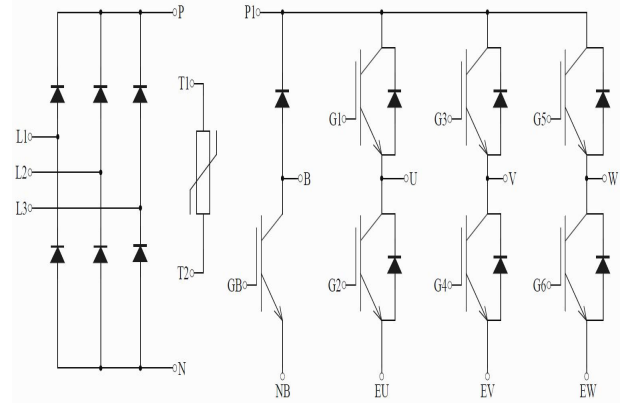
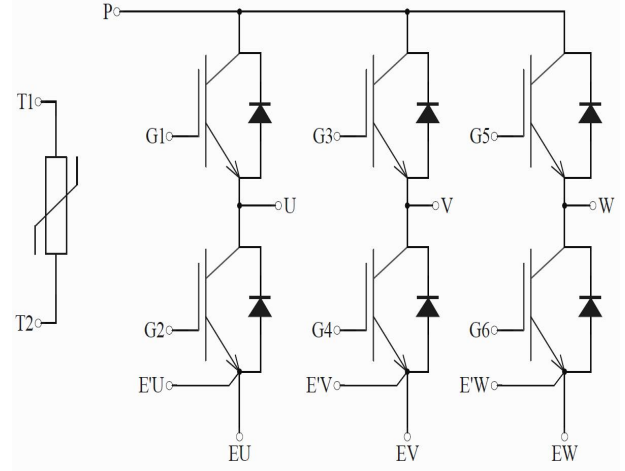
■ **PA** series (**3 Phase Bridge + Brake)**
■ **SA** series (**Sixpack)**
Rated Voltage : 650V /1200V
Current Range : 20A/ 25A/ 35A/ 50A/ 75A

■ **Main Features:**
- High performance of ceramic substrate technology can greatly improve thermal properties
- High common-mode transient immunity
- Advanced packaging technology
- Good wire-bonding can improve temperature cycle
- Good EMC performance

■ **Applications:**
Frequency converters,
Industrial servo controller
UPS, Inverter welder, Induction heater,
Wind power, PV solar,
New energy vehicles etc.



Part Number	Vces	Ic Tc=100°C	Vce(sat) @Tj=25 °Ctyp(V)	Eon+Eoff @Tj=25 °Ctyp(mj)	Rth (J-C) K/W	Circuit Diagram
PA025G065W2	650V	25A	1.65	3.5 @Rg=15 Ω	0.17	
PA035G065W2	650V	35A	1.65	4.6 @Rg=15 Ω	0.17	
PA020G120W2	1200V	20A	1.7	3.5 @Rg=15 Ω	0.14	
PA025G120W2	1200V	25A	1.7	4 @Rg=15 Ω	0.19	
PA035G120W2	1200V	35A	1.7	5.2 @Rg=15 Ω	0.17	
PA050G120W2	1200V	50A	1.5	7.08@Rg=15 Ω	0.91	
PA075G120W2	1200V	75A	1.65	3.5 @Rg=15 Ω	0.17	
SA025G065W2	650V	25A	1.65	4.6 @Rg=15 Ω	0.17	
SA035G065W2	650V	35A	1.6	2.5@Rg=15 Ω	0.5	
SA050G065W2	650V	50A	1.7	4 @Rg=15 Ω	0.19	
SA075G065W2	650V	75A	1.7	5.2 @Rg=15 Ω	0.17	
SA025G120W2	1200V	25A	1.9	6.1@Rg=15 Ω	0.45	
SA035G120W2	1200V	35A	1.85	8.6 @Rg=15 Ω	0.35	
SA050G120W2	1200V	50A	1.65	3.5 @Rg=15 Ω	0.17	
SA075G120W2	1200V	75A	1.65	4.6 @Rg=15 Ω	0.17	

ZONCN

■ DA series (Dual/Half Bridge) SiC

Rated Voltage : 1200 V
Turn-on Resistence : 2mΩ

Part Number	Vces	Ic Tc=100℃	Vce(sat) @Tj=25 ℃typ (V)	Eon+Eoff @Tj=25 ℃typ (mj)	Rth (J-C) K/W
DA02C120C0	1200V	2mΩ	65mJ	0.12	DA02C120C0

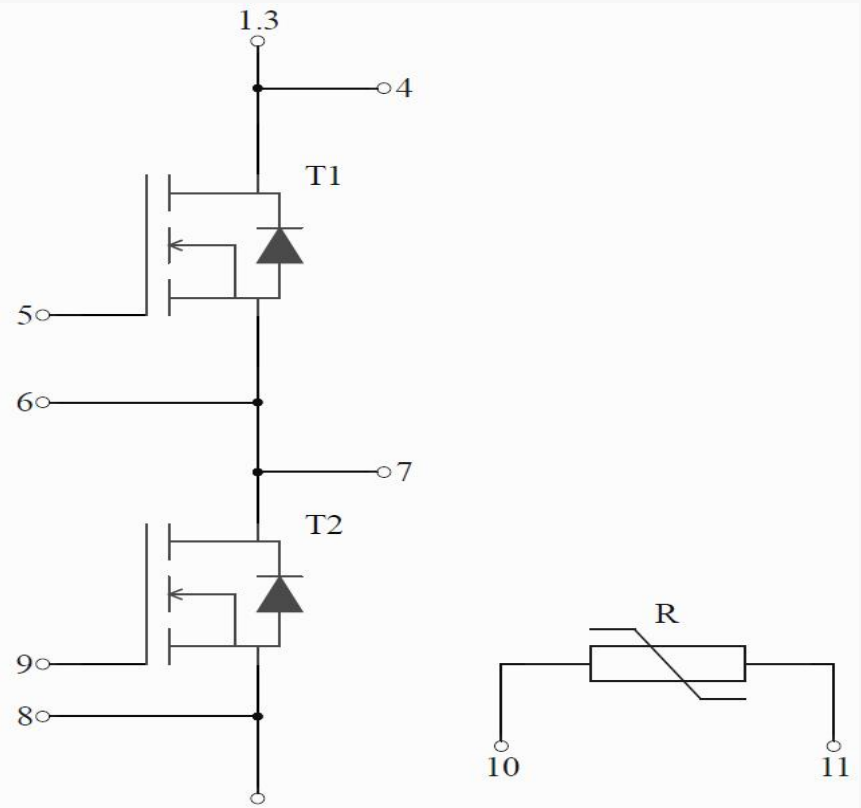
■ Main Features:

- Best design of heat conduction technology & heat disspation structure
- Low switching loss, low leakage inductance, strong short-circuit capacity
- Good EMC performance

■ Applications:

Frequency converters,
Active filters,
Energy storage
PV solar,
New energy vehicles etc.

Circuit Diagram



Advantages & Benefits

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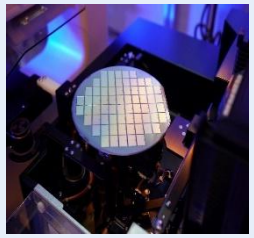
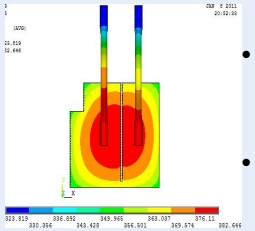
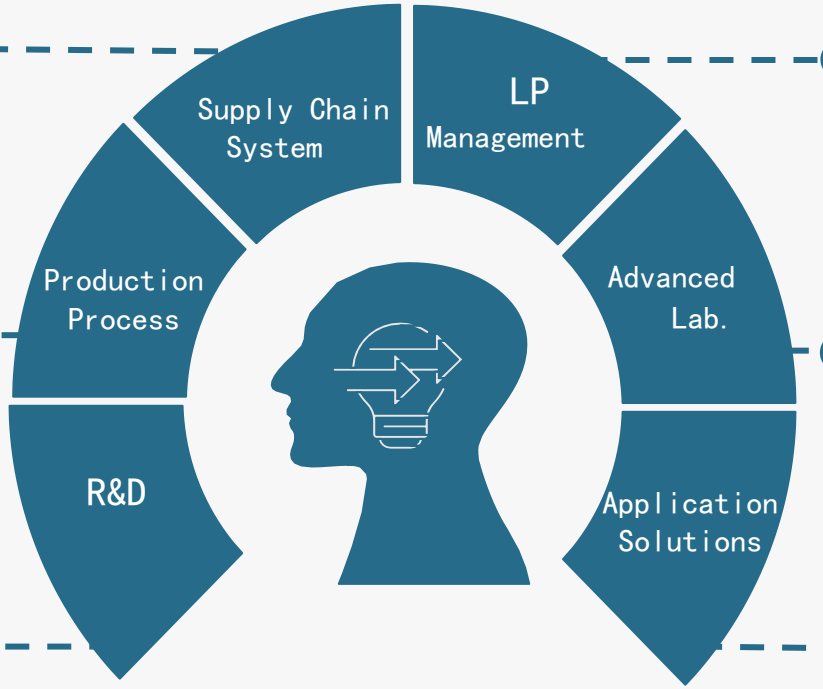


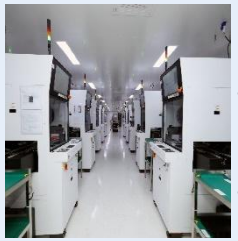
- Perfect supply chain system safe and controllable.
- Mature wafers from the top manufacturer, ensuring the consistency, reliability and stability of module products.

- Perfect production process, the unique process system instills the concept of refined management into every link such as IGBT module design, manufacturing, quality management and after-sales service.



- More than 30 years R&D senior professionals
- Rich experience and technical support in manufacture and product verification.
- The team comes from major power module companies. R&D and process technology talents account for more than 40%.





- Advanced production equipments, standardized manufacturing management process.
- Strong capacity of mass production and customization, rapid industrialization.
- Products can cover all application fields, high quality and stable performance.

- Perfect quality management system, laboratory-scale product analysis and detection capabilities.
- It obtained many patents, was certified to ISO9001, REACH and Rohs, and actively applied for other quality system certifications.
- Self-developed laboratory, able to independently carry out reliability testing and failure analysis.

- Strong application technology team
- Drive application solutions
- Smart module solutions
- System application solutions

1

Excellent R&D Team → Perfect Production Process → Safe & Reliable Supply Chain

2

LP Management → Perfect Quality System → Strong Application Team

Shang Hai HQ | Songjiang Manufactory

ZONCN

Shanghai Songjiang Manufactory
about **5000m²**

Clean-workshop
about **1000m²**

All kinds of advanced imported production equipments
Inspection instruments and test equipments

Manufacture various types of IGBT power modules for industrial grade & automotive-grade

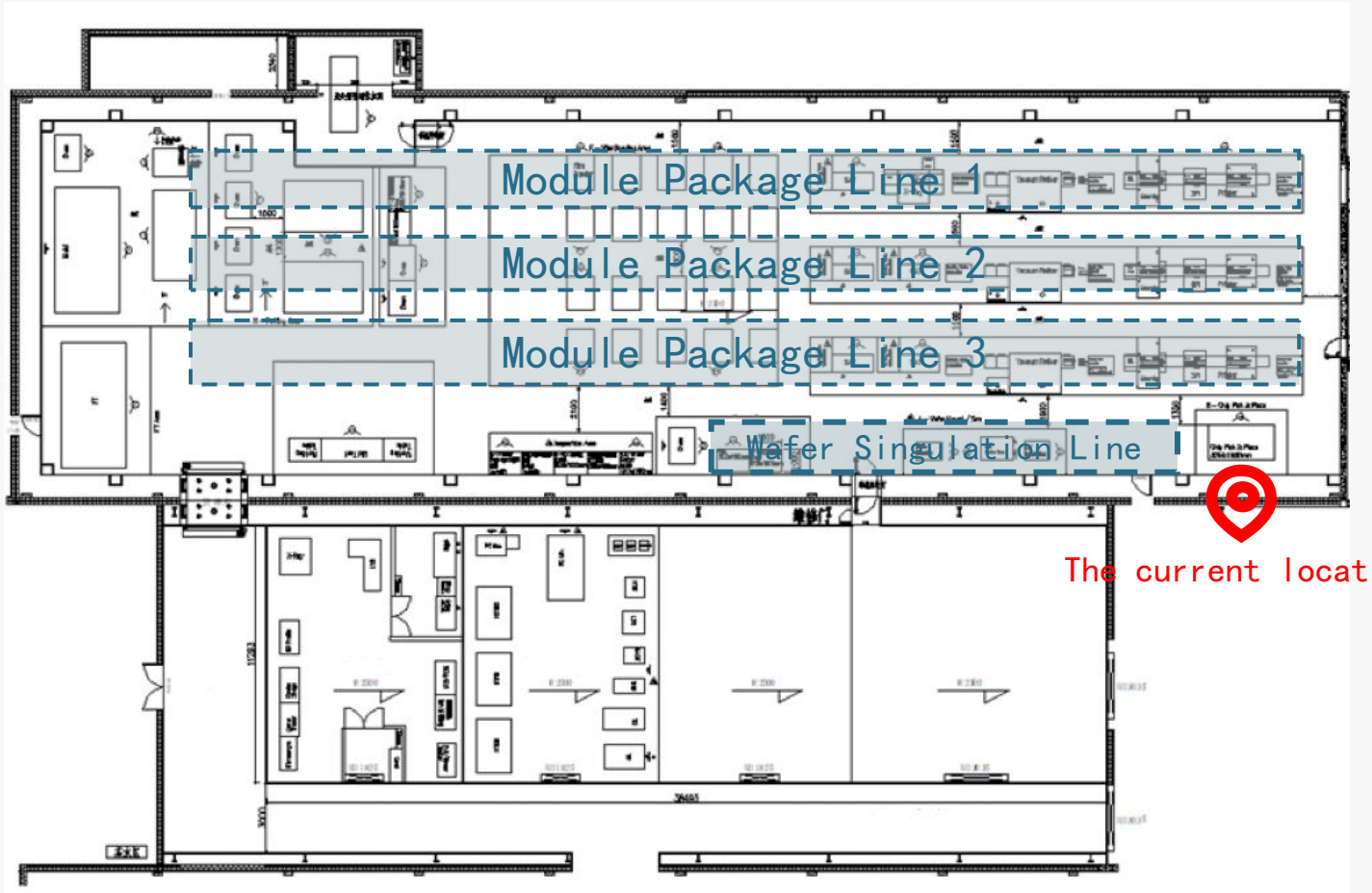
Perfect production process
LP Managemen Concept

- 1 Wafer Singulation Line:

  Pre-Assembly Process

- 3 Module Package Lines

Overall Layout of Production Lines



Shang Hai HQ | Production Process

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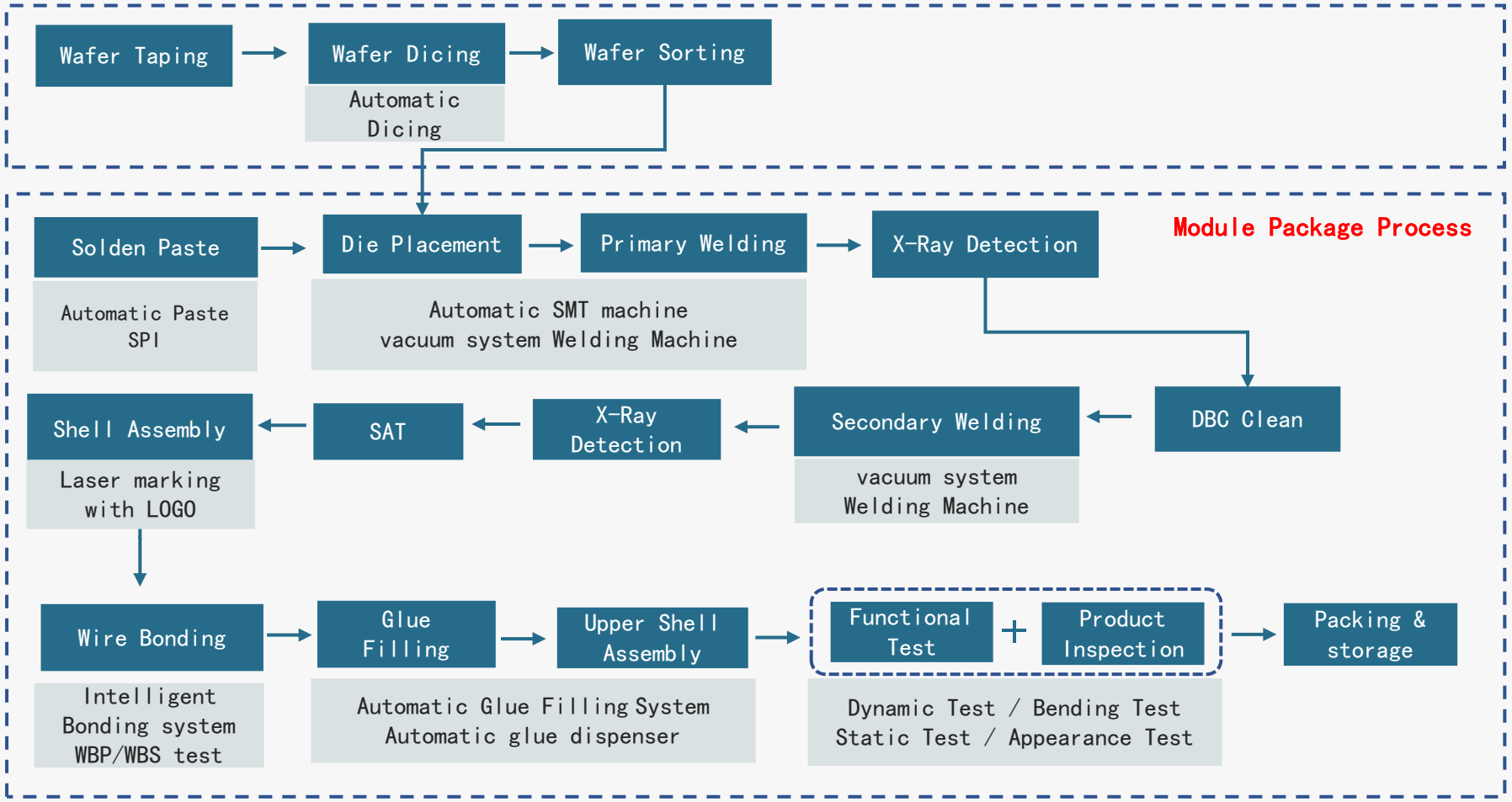
- Perfect production process, and the unique process system instills PL management concept into every link such as module design, manufacturing, quality management and after-sales service.
- Flexible production line with high automatic ability can quickly realize high-quality batch series production of customized products.
- The quality control and detection rate of all key features is 100%, the automation of key processes is 100%, and the traceability of process parameters and product quality is 100%.



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Advanced Lab. Center

- On-line Production Inspection
- 17 Reliability Tests
- Failure Analysis
- Application Test

- 4 functional test areas: 17 reliability tests, failure analysis and other laboratory-scale product analysis and detection tests can be independently carried out.
- With perfect test specifications, the Company has a strong quality monitoring system, system verification ability and an experienced professional experimental team.
- The production quality control ability is first-class, which helps the production of high-reliability modules, and the yield of series products has reached 98%.
- Customer-oriented application testing can respond to the testing and detection requirements of customized products in time and help the serial development of customized products.

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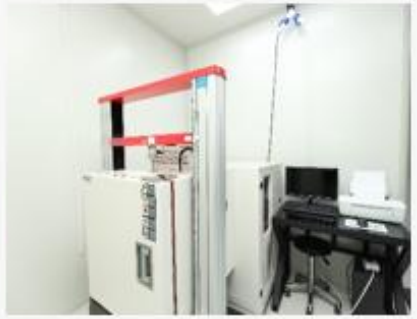
■ 17 Reliability Tests:

6 Mechanical Property / 6 Environmental Test / 5 Endurance Test






- **Mechanical Property**
  - Vibration Test
  - Shock Test
  - Terminal Strength
  - Mounting Strength
  - Solderability
  - Resistance To Solder Heat
- **Environmental Test**
  - High Temperature Storage (HTS)
  - Latent Heat Storage (LHS)
  - Temperature Humidity Storage (THS)
  - Temperature Cycling Test (TCT)
  - Temperature Shock Testing (TST)
  - Highly Accelerated Stress Test (HAST)
- **Endurance Test**
  - High Temperature Reverse Bias Test (HTRB)
  - High Temperature Gate Bias (HTGB)
  - High Humidity High Temperature Reverse Bias (H3TRB)
  - Power Cycling (PC min)
  - Power Cycling (PC sec)

Shang Hai HQ | Advanced Lab. Center - FAT

- Experienced professional experimental team, efficient failure analysis ability.
  Excellent sample preparation techniques, such as Cross Section Polisher + ion beam grinding, etc.
- Independent failure analysis laboratory, with all kinds of professional instruments and equipments, experimental standards and perfect system, throughout all aspects of the product life cycle. The surface and profile of the material, the interior of the material and the semi-finished product of the material can be fully analyzed in microzones or their component elements.
- System-level test platform, with full coverage test method, fine analysis of failure problems during the R&D, production and application process, can quickly and effectively find the failure specific location, failure causes and preventive measures to meet customers' requirements for high-quality and reliable products.

Failure Analysis

- SEM / EDX
- SAT
- 2D X-Ray
- PCBA (X-section)
- Cross Section Polisher (CP)
- Optical Microscope (OM)
- Red Dye Penetration Test
- Cratering Test

Shang Hai HQ | Advanced Lab. Center – 4 Functional Test Areas

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Production property

Welding cavity
Wire bonding monitoring
Finished product functional test, etc.

Dynamic Property

Switching characteristics,
Reverse recovery
Capacitance characteristics,
Gate charge
Short circuit test
Stray capacitance

Static Property

Static parameters,
Characteristic curves

Environment Reliability

Power cycling
HTRB
High temp. ensile test

HTGB
H3TRB
Vibration Test
Drop Test

TCT
TST
HTS & LHS
HAST

FA

3D
RA、RZ
OM

SEM
EDX
AFM
2D Xray

FIB
SAT
KEYSIGHT technologies

Vehicle-mounted systems

Automobile traction system
Vehicle-mounted charging system

Vehicle charging pile
Photovoltaic inverter system

Smart grid inverter system
Railway inverter system

Improve efficiency of R&D, ensure the high quality and stability products, provide first-class test service!

Zheng Jiang Manufacturing Base | Wenling Smart Factory

ZONCN

Wenling Smart Factory
about 20000m²

Clean-workshop
about 15000m²

Flexible production line with high automatic ability
Inspection instruments and test equipments

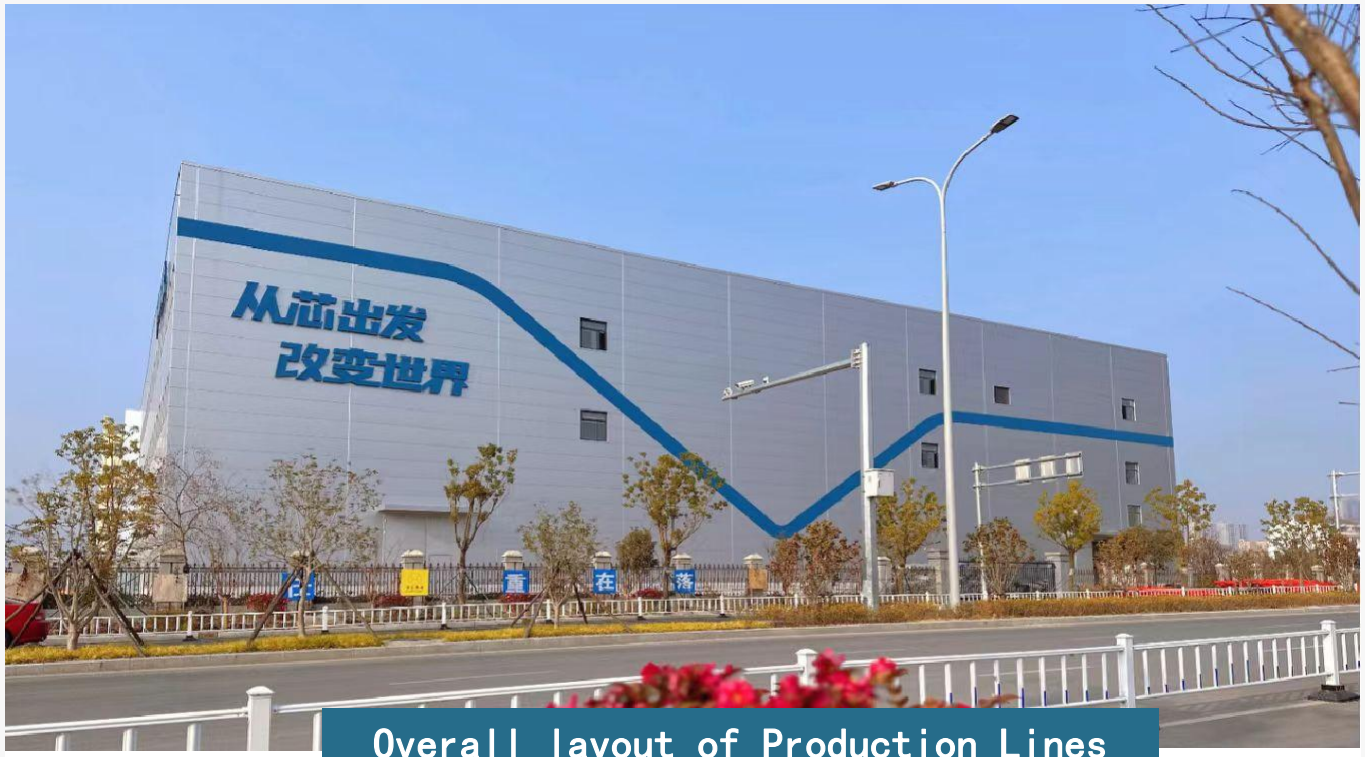
Manufacture various types of IGBT power modules for industrial grade & automotive-grade

Perfect production process
LP Managemen Concept

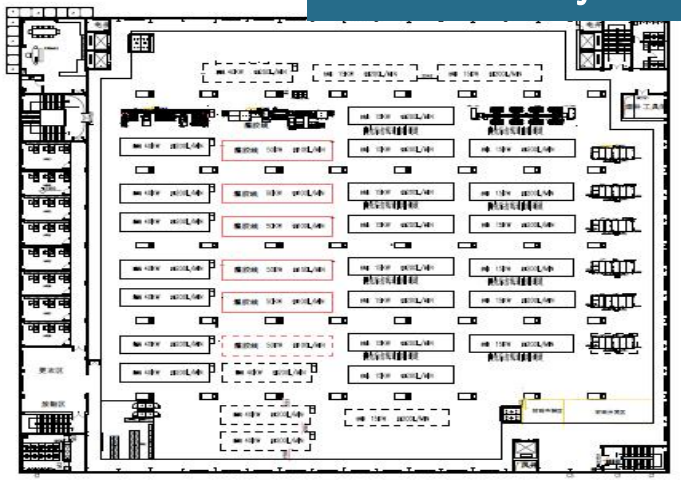
10 production lines are planned (Phase IV projects) :

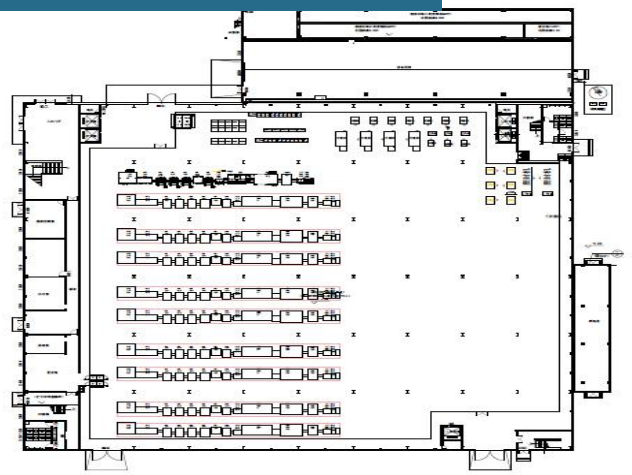
7 production lines for industrial modules

3 production lines for new energy vehicle modules



Overall layout of Production Lines





Culture Concept

Create "Core" future together!

Power Core

prospering the country

Efficiency core

win-win benefits

Innovative core

technically leading

Mission core

advancing together

Thank you !

Shanghai Zhongchen Electronic Technology Co, Ltd.

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