



Application Solution
银茂微功率器件应用解决方案



关于我们

ABOUT US

南京银茂微电子制造有限公司(以下简称“南京银茂微电子”)于2007年11月在中国江苏省南京市正式注册成立。南京银茂微电子专注于IGBT模块、MOSFET模块、SiC和GaN器件的研发和制造。产品广泛应用于工业变频、电源、新能源(太阳能、电动汽车)等领域。南京银茂微电子可以进行先进的功率芯片设计,并向客户提供一系列具有价格优势的功率模块和分立器件。产品电压等级范围涵盖600V至3.3KV。南京银茂微电子已于2009年获得ISO9001, ISO14001等质量管理体系认证,并于2016年获得IATF16949汽车级管理体系证书。目前公司的大部分产品已通过UL测试认证,并符合RoHS和REACH的相关认证要求。随着节能环保和绿色能源的市场需求不断增加,南京银茂微电子致力于开发和生产更多高效、可靠的功率器件,为我们的客户创造更多的价值。

NJSM was founded in 2007 and is a subsidiary of SPARC Group. NJSM focuses on designing and manufacturing power IGBT and MOSFET module products for industrial, automotive and other applications. With direct link to the 8-inch fab within SPARC Group, NJSM can offer advanced power chip design, wafer manufacturing, and a rich portfolio of cost competitive power module and discrete products, with device voltage ranging from 600V up to 3.3kV. The company has been ISO9001 as well as ISO14001 certified since 2009. Most of the power module products are UL certified, and comply with RoHS and REACH requirements. The company has obtained IATF16949 certification since 2016. With ever evolving market demands on energy savings and green energy, NJSM is committed to develop and produce more efficient and reliable power devices, ranging from MOSFET, IGBT, SiC to high voltage GaN devices and to deliver values to our customers.



服务宗旨

本着“创新”+“革新”精神,
为我们的客户打造高品质的核心器件!



应用领域

工业变频、新能源、电源装备、
混合动力汽车、公共交通等。



奋斗目标

做世界功率器件市场知名
的民族品牌!

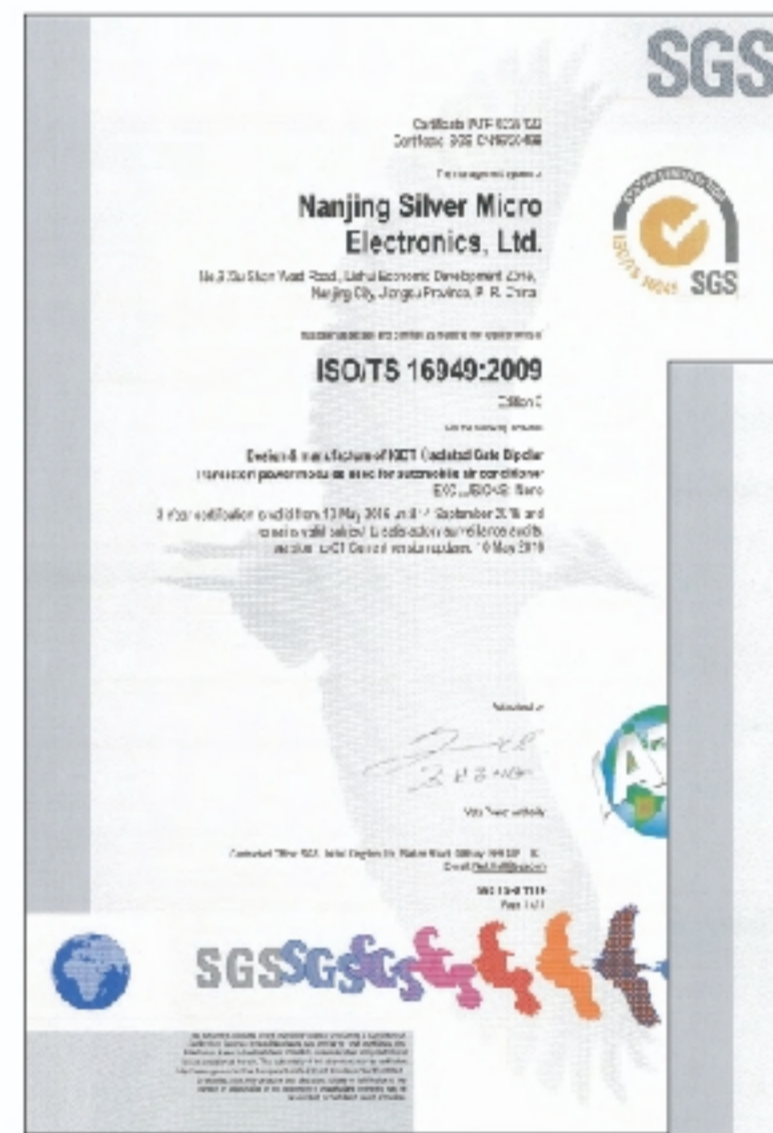


南京银茂微电子制造有限公司
NANJING SILVERMICRO ELECTRONICS, LTD.



资质专利

PATENTS



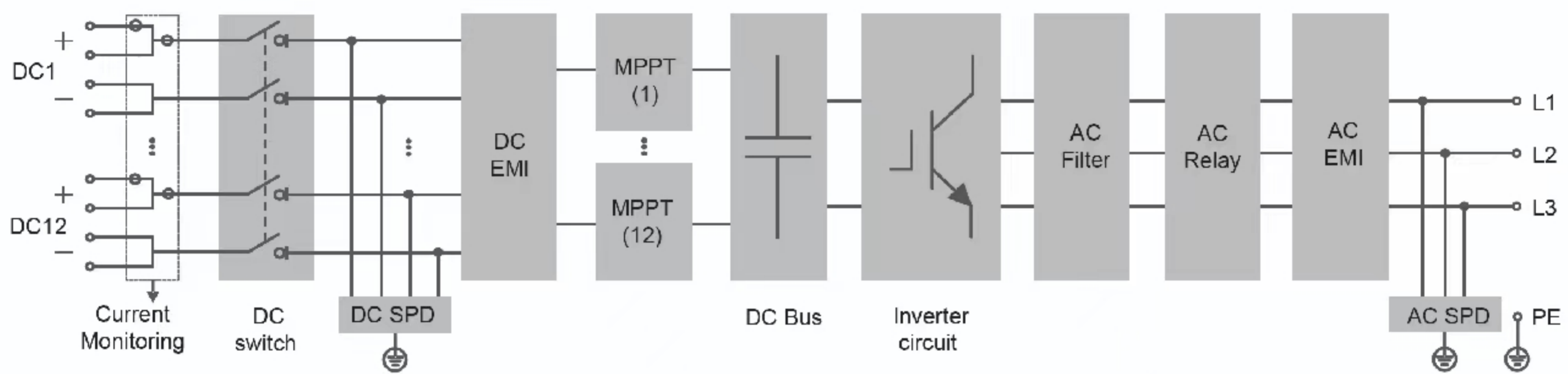


光伏

PHOTOVOLTAICS

光伏逆变器按照应用场景分为：户用逆变器，工商业逆变器，地面电站逆变器。功率半导体器件作为光伏逆变器的核心器件，在其中承担着电能转换的功能。户用逆变器母线电压一般为500V以下，主要以单管方案为主；组串式逆变器母线电压为1100V，以三电平PIM模块为主；地面电站逆变器母线电压为1500V，以半桥的大电流模块为主，三个半桥模块拼接成I型三电平的一个桥臂。

PV inverter is categorized into residential inverter, industrial & commercial inverter, utility inverter based on application scenario. As the core component of PV inverter, power semiconductor undertakes the function of power conversion. Bus voltage of residential inverter is usually under 500V, mainly with a discrete solution; bus voltage of string inverter is 1100V, mainly with 3-level PIM modules; bus voltage of utility inverter is 1500V. Its main solution is with a half-bridge high-current module, 3 half-bridge modules to build one INPC bridge.



光伏逆变器电路 / PV inverter circuit

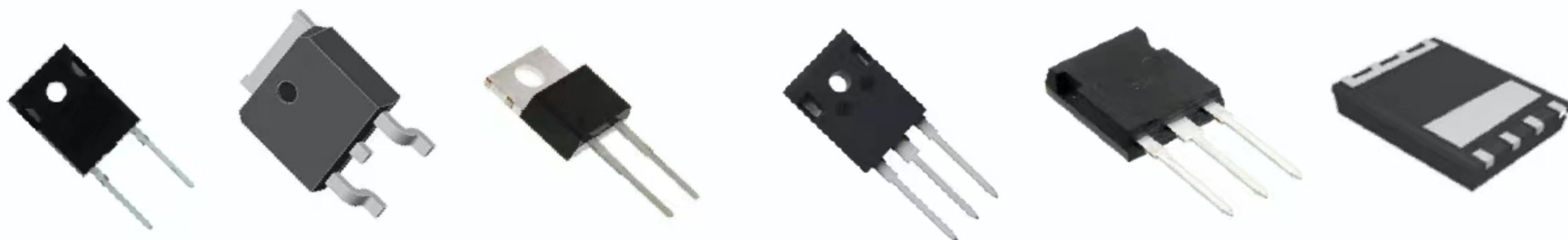
户用光伏方案 Residential Solar Inverter Solution

户用光伏功率范围3~20kW,以单管方案为主，部分仍沿用模块方案。为提高效率，SiC二极管在系统中也有广泛应用。银茂微电子可提供650V和1200V SiC二极管产品，电流覆盖4~50A。以及搭载SiC二极管的650V和1200V混合IGBT。还可以提供1200V 75A&40A TO247单管。

Residential solar inverter is with power rate 3-20kW normally with a discrete solution, while a few of them use module solution. To improve the efficiency of energy conversion, SiC diode is widely used in the system.

NJSM could offer 650V & 1200V SiC diode with current rate 4~50A, and hybrid IGBT with 650V & 1200V SiC diode, as well as 1200V 40A & 1200V 75A TO247 discrete.

封装方案 Package Solution



产品方案 Product Solution

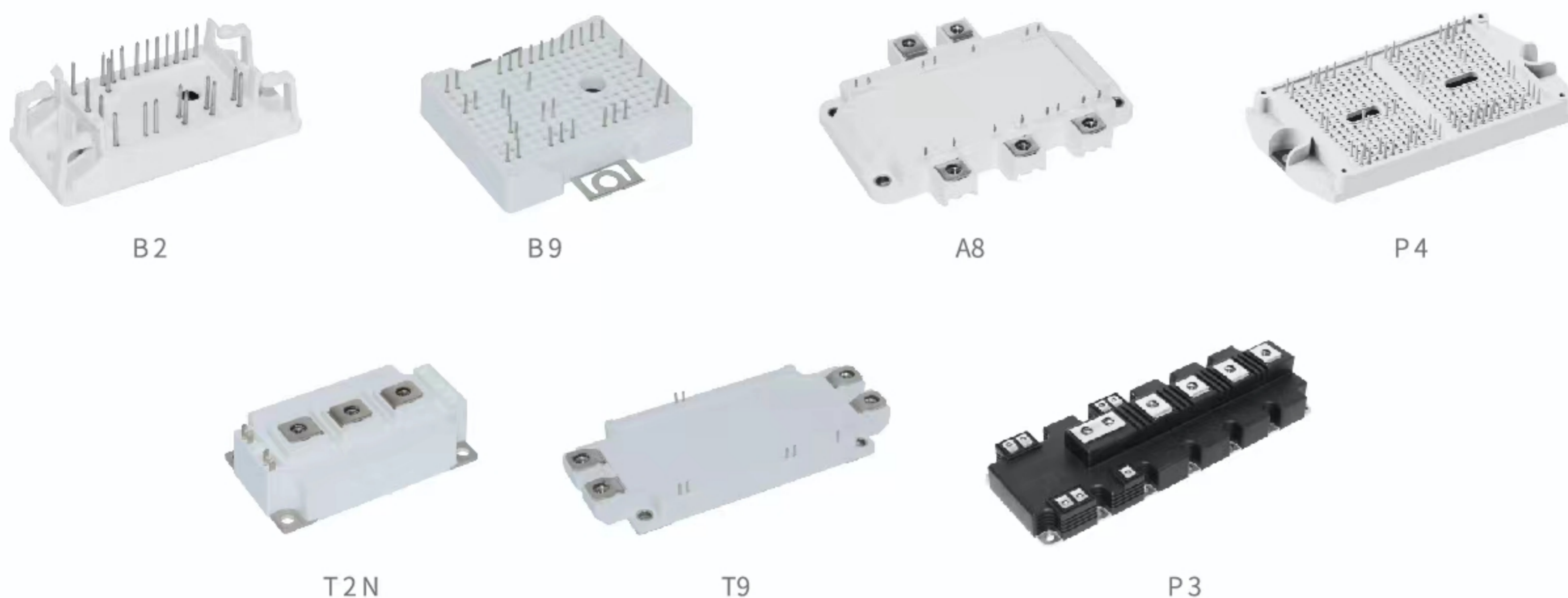
Product	Current	Package
SiC Diode	4~50A	TO220,TO247-2, TO252,PDFN8*8
Hybrid IGBT SMGWXXHXXXFC	40~75A	TO247
IGBT	40~75A	TO247,TO247+

工商业及电站光伏方案 Solution for Commercial & Industrial / Utility PV Inverter

工商业和电站光伏逆变器按照电压等级分为1100V和1500V两种。1100V系统多采用基于650V模块的INPC拓扑结构或者基于1200V模块的TNPC拓扑，1500V系统多采用基于1200V模块的INPC拓扑或者基于1700V模块的TNPC拓扑。可采用多模块并联的方式实现更大功率等级。银茂微电子封装品类齐全，可兼容业内全系列标准封装。

Commercial and industrial/utility PV inverter have two categories which are 1100V bus system and 1500V bus system. 1100V bus system mostly uses 650V module with INPC topology or 1200V module with TNPC topology; 1500V system uses 1200V module with INPC topology or 1700V module with TNPC topology. Multi-modules in parallel are widely used to achieve higher power range. NJSM has a very broad package portfolio, which can cover full series of standard packaging in industry.

封装方案 Package Solution



产品方案 Product Solution

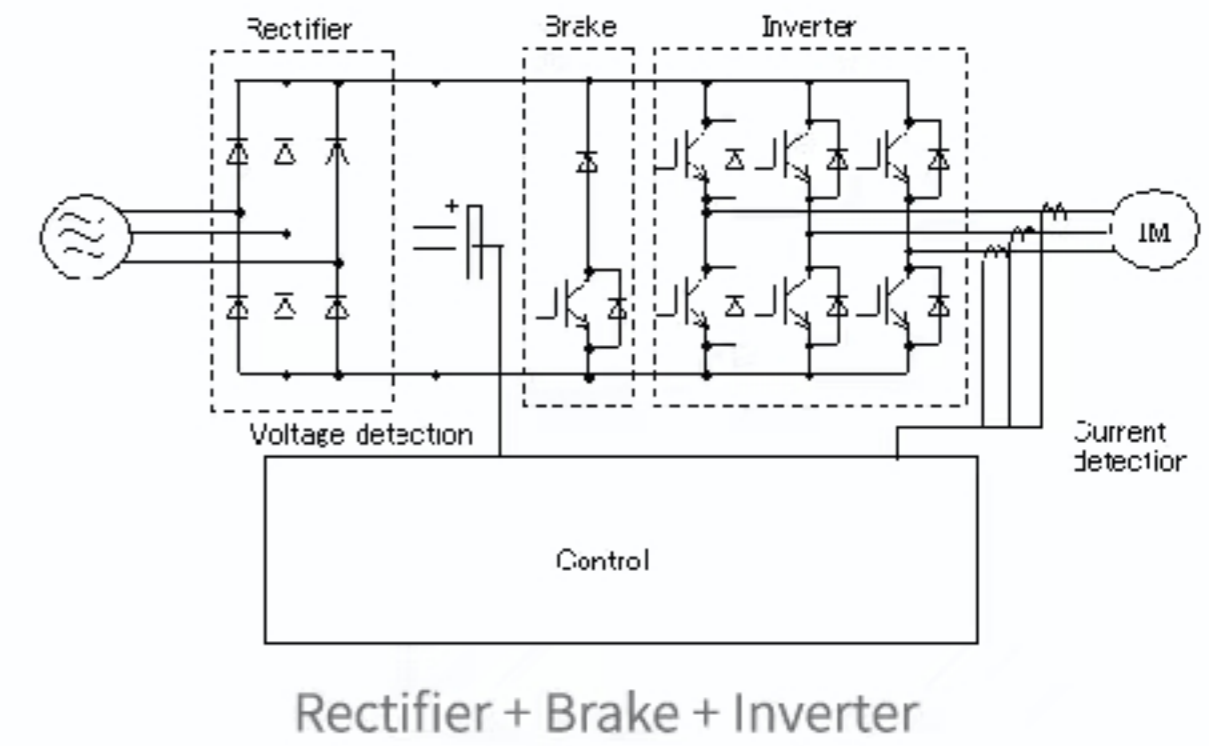
直流侧电压 System Bus Voltage	功率 Power Rate	产品 Product	拓扑结构 Topology	封装 Package
1100Vdc (Commerical & Industrial)	10~15kW	GT50TL60B2H	INPC	B2
	20~30kW	GT80TT120B2H	TNPC	B2
	30~40kW	GT100TL65B9H	INPC	B9
	40~50kW	GT150TL65B9H	INPC	B9
		GT150TL65T2SH	INPC	T2S
	60~80kW	GT200TL65T2SH	INPC	T2S
	90~110kW	GT300TL65T2SH	INPC	T2S
		GT300TT120A8H	TNPC	A8
	100~130kW	GT400TL65P4H	INPC	P4
		GT400HF120T2NH	Half bridge	T2N
1500Vdc (utility)	500kW	GT600HF120T2NH	Half bridge	T2N
	800kW	GT1200HF120P3H	Half bridge	P3
		GT450HF170T9H	Half bridge	T9
	1.2MW	GT450HF120T9H	Half bridge	T9
		GT450HF120T2NH	Half bridge	T2N
	1.6MW	GT600HF120T9H	Half bridge	T9
		GT600HF120T2NH	Half bridge	T2N
		GT600HF170T9H	Half bridge	T9



工业传动

MOTOR DRIVE

变频器是应用变频技术与微电子技术，通过改变电机工作频率方式来控制交流电动机的电力控制设备。变频器主要由整流（交流变直流）、滤波、逆变（直流变交流）、制动单元、驱动单元、检测单元微处理单元等组成。变频器靠内部IGBT的开断来调整输出电源的电压和频率，根据电机的实际需要来提供其所需要的电源电压，进而达到节能、调速的目的。针对于工业变频应用，银茂微具有全系列的产品解决方案。封装齐全，晶圆电压电流规格丰富，可以覆盖所有种类的变频器需求。



Motor drive is a power control equipment that uses frequency conversion technology and microelectronics technology to control AC motor. Motor drive is mainly composed of rectifier (AC to DC), filter, inverter (DC to AC), braking unit, driving unit, detection unit, micro-processing unit, etc. The converter adjusts the voltage and frequency of the output power supply by controlling IGBT, provides the required power supply voltage according to the actual needs of the motor to achieve the goal of energy saving and speed regulation. NJSM has comprehensive product solutions for motor drive application. Abundant Various packages, multiple chips open for selection, which can fit all kinds of motor driver requests.

芯片技术 Chip technology

◆ High Efficiency

- Low Vce(sat)
- Low Eon+Eoff
- Low voltage stress
- Above 10μs short Circuit bearing capacity
- Fast Switching
- Optimized trench structure
- Backside processing

高效率

- 低导通饱和压降
- 低开关损耗 Esw
- 低电压应力
- >10μs短路承受能力
- 开关速度快
- 优化沟槽结构
- 背面处理

◆ High Reliability 650V/1250V

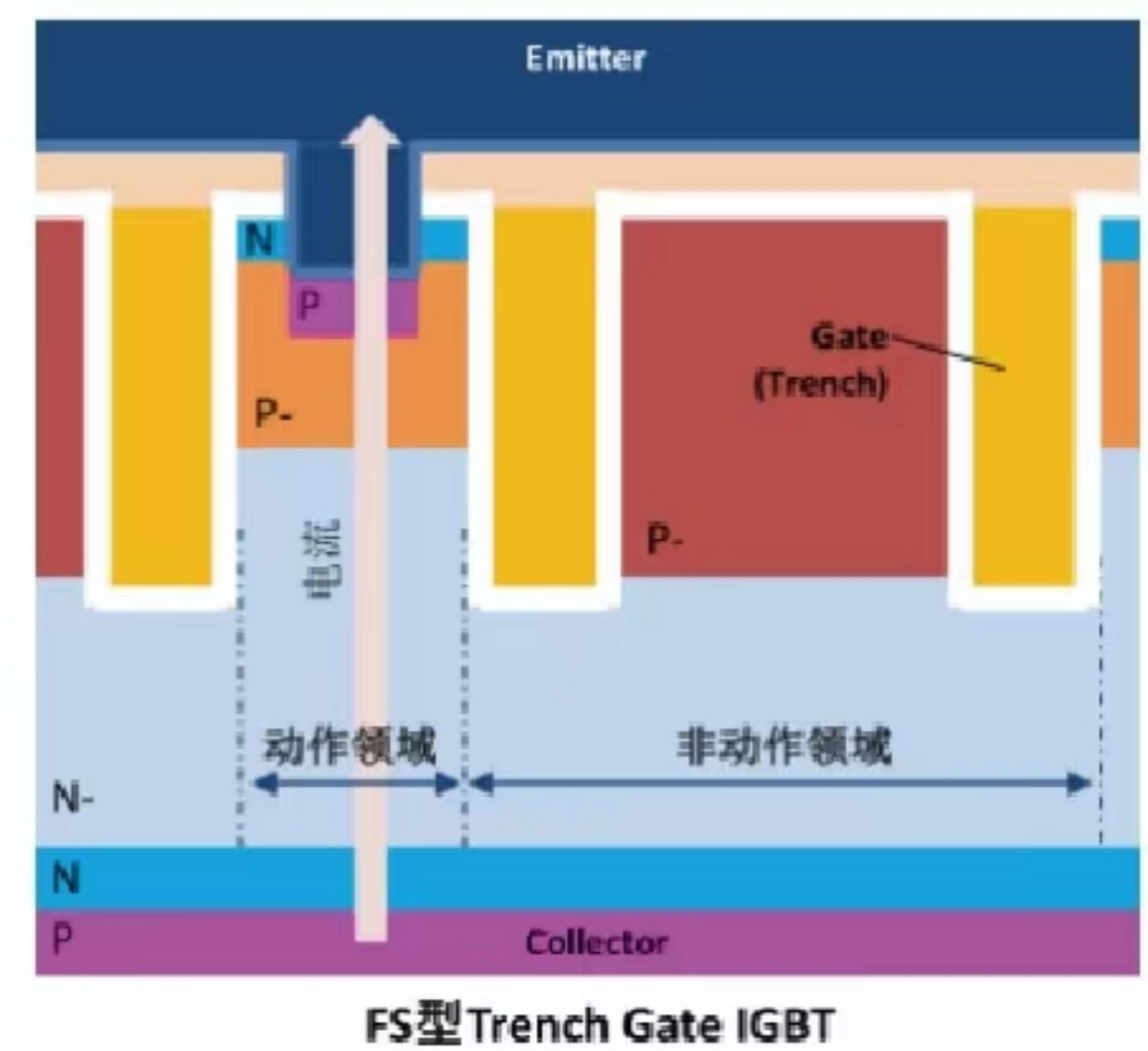
Dummy gates with lower E field

高可靠性

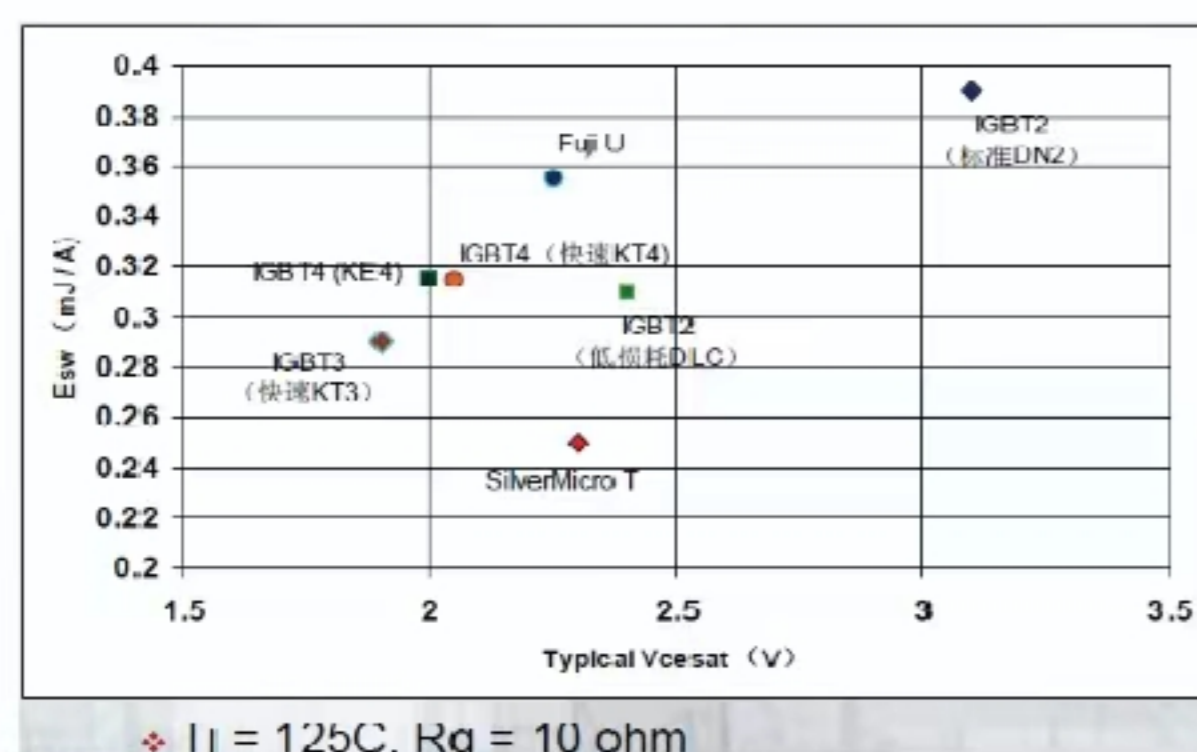
低E极场的Dummy结构

◆ Rugged Gate (VGES) ±30V

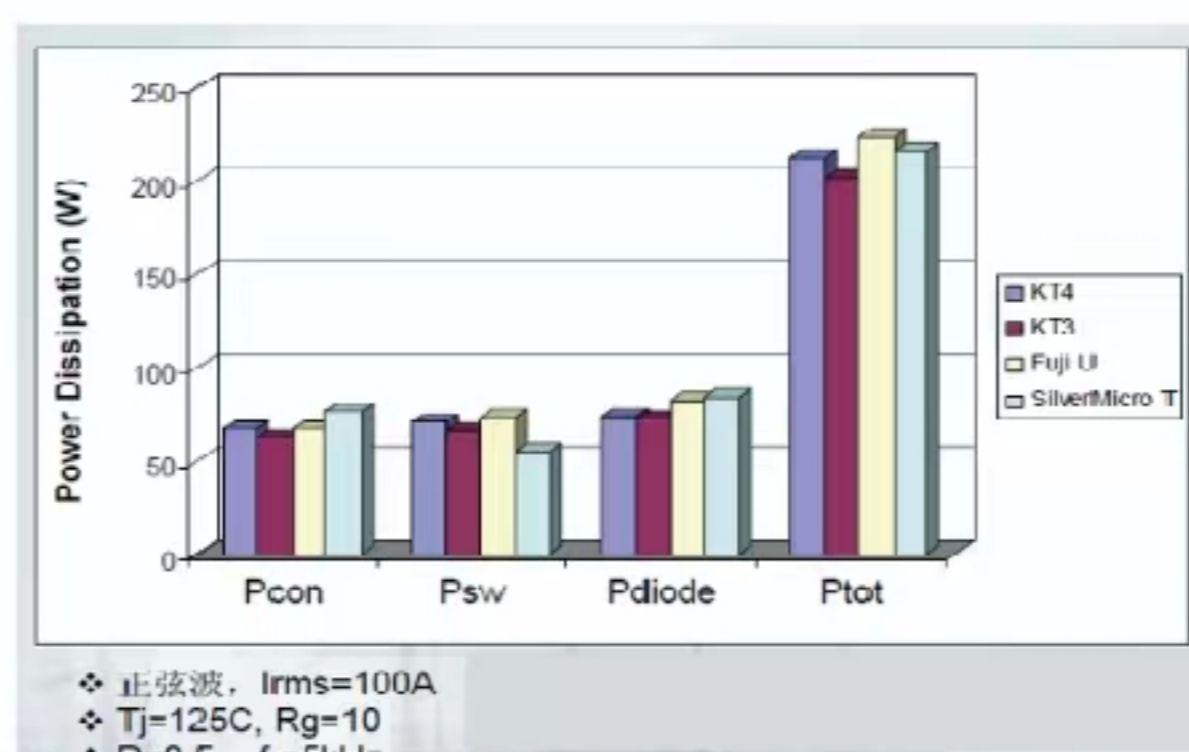
高强度门极



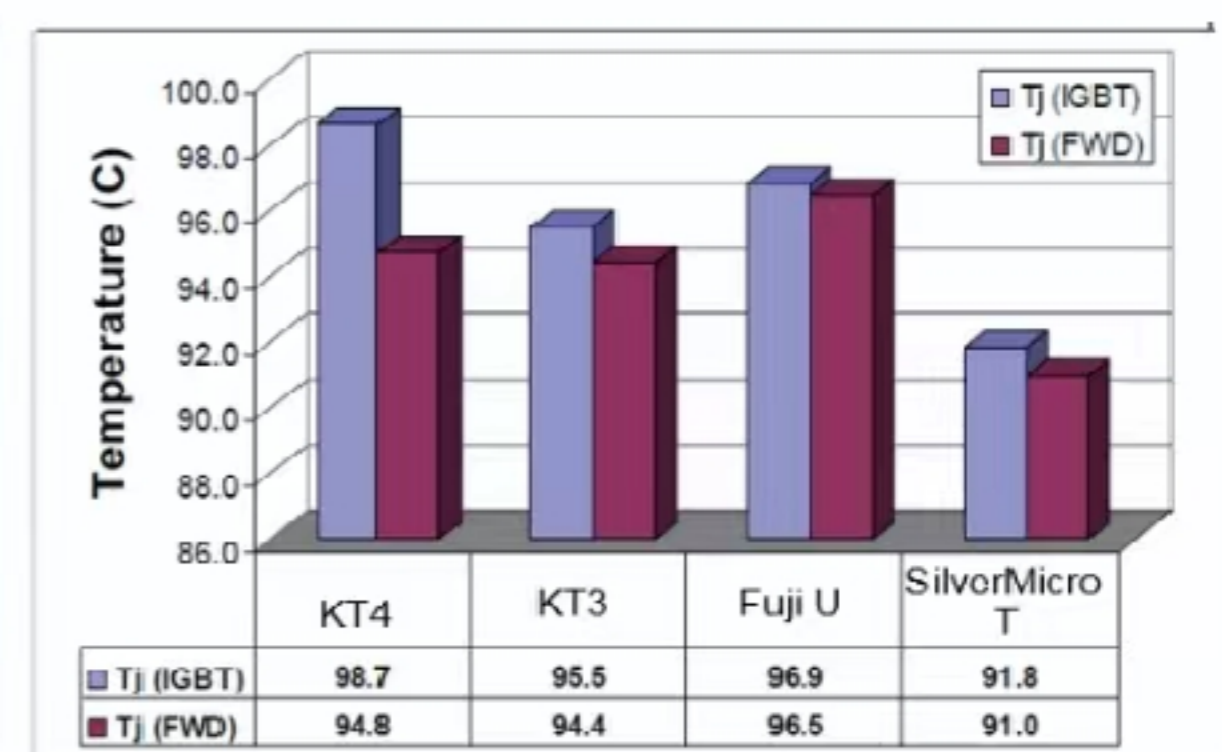
芯片技术比较 Chip Technology Comparison



低Vce(sat)、低开关损耗
Low Vce(sat) and Low switching loss

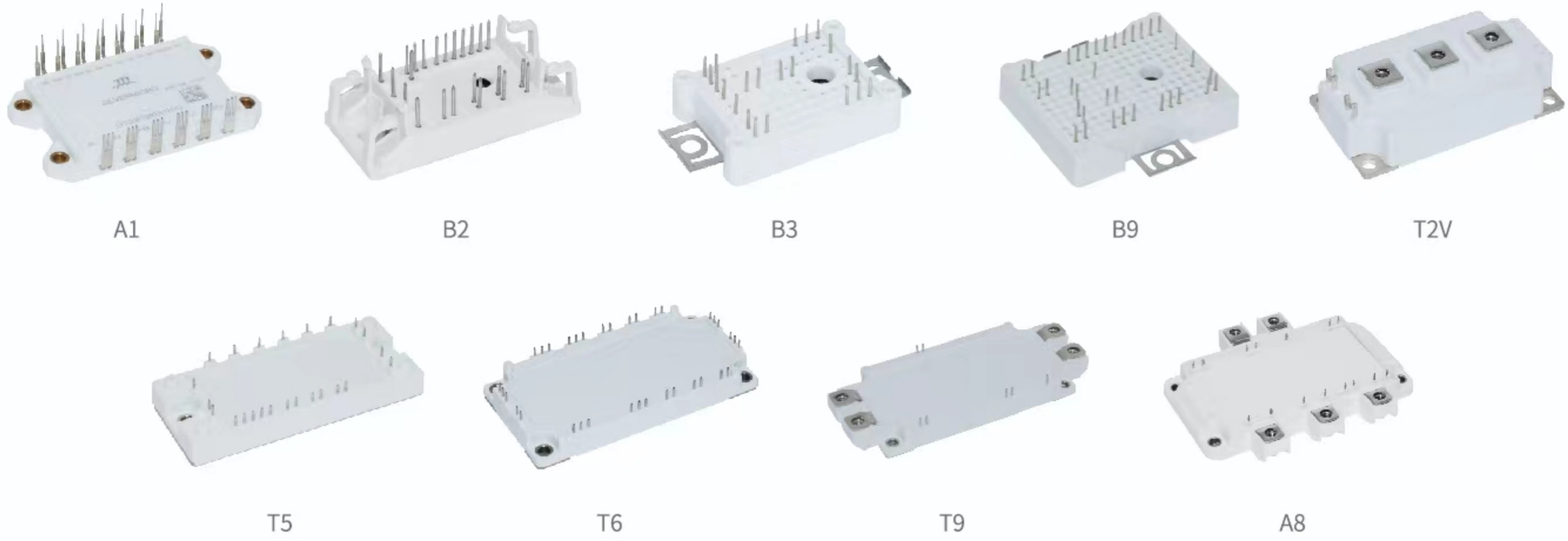


芯片总的损耗与KT4相近
Similar loss as KT4



银茂芯片升温最低
Lowest Rise Temperature of SME chip

封装介绍 Package



产品特性 Characteristics

- 标准封装 Standard package
- 多种芯片选择 Multiple chips for selection
- 低杂散电感 Low stray inductance
- 低热阻的铜基板设计 Copper substrates with low thermal resistance



低压变频器
Low Voltage Converter

高压变频器
High Voltage Converter

变频器模块方案 Module Solution for Motor Drive

功率 Power	模块型号 Module	功率 Power	模块型号 Module	功率 Power	模块型号 Module
1.5kW	GT10PI120B2FH GT10PI120B3H GT10FB120A1H	9kW-11kW	GT50PI120T5H GT50PI120T5H-T4 GT50FF120A1H	37kW	GT200FF120T6H
2.2kW	GT15PI120B2FH GT15PI120B3H GT15FB120A1H GT15PI120T5H	15kW	GT75PI120T6H GT75PI120T6H-T4 GT75FF120T6H	45kW	GT200FF120T6H
3.7kW	GT25PI120B9H GT25PI120T5H GT25PI120T5H-T4 GT25FB120A1H	18.5kW	GT75PI120T6H GT75PI120T6H-T4 GT75FF120T6H	55kW-75kW	GT150HF120T2VH GT200HF120T2VH
5.5kW	GT35PI120B9H GT35PI120T5H GT35PI120T5H-T4 GT35FF120B9H GT35FB120A1H	22kW	GT100PI120T6H GT100PI120T6H-T4 GT100FF120T6H	90kW	GT300HF120T2VH GT300HF120T9H
7.5kW	GT40PI120T5H GT40PI120T5H-T4	30kW	GT150FF120T6H GT150PI120T6H-T4	>110kW	GT400HF120T2VH GT450HF120T9H GT600HF120T9H



电源

POWER SUPPLY

电源是位于市电（单相或三相）与负载之间，向负载提供所需电能的供电设备。电源分为普通电源和特种电源两类。

- 1、普通电源可分为：电镀电源、开关电源、逆变电源、稳压电源、变频电源、UPS电源等
- 2、特种电源可分为：高压电源、医疗电源、军用电源、激光电源等。

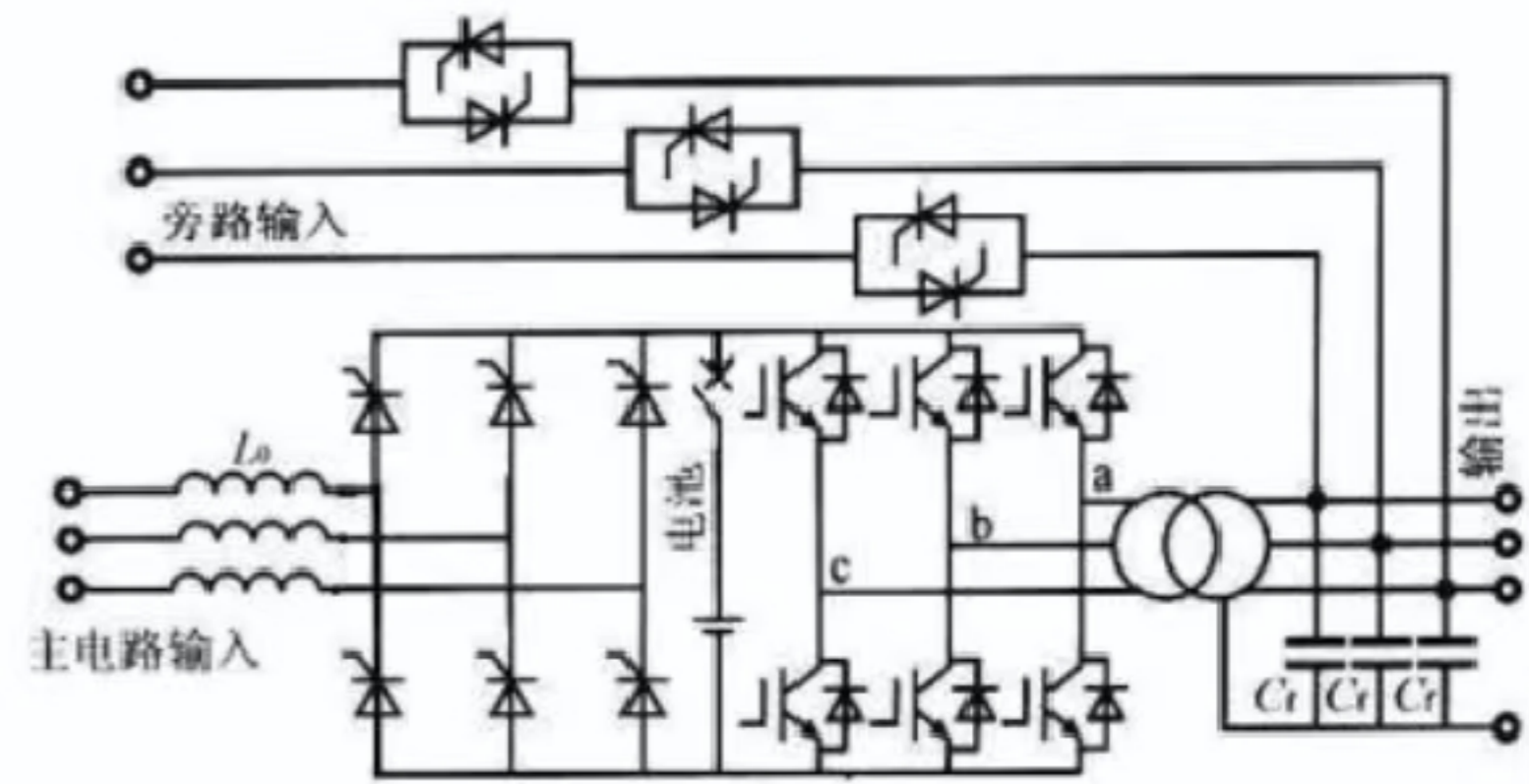
Power supply is the device that is used between grid (single-phase or three-phase) and load to provide required energy to the load. It consists of general power supply and special power supply.

- 1, General power supply: Electroplating power supply, switching model power supply, inverter power supply, regulated power supply, variable frequency power supply, UPS, etc
- 2, Special power supply: high voltage power supply, medical power supply, military power supply and laser power devices, etc

特种电源即特殊种类的电源。所谓特殊主要是由于衡量电源的技术指标要求不同于常用的电源，其主要是输出电压特别高，输出电流特别大，或者对稳定度、动态响应及纹波要求特别高，或者要求电源输出的电压或电流是脉冲或其它一些要求。

不间断电源（UPS）是防止银行计算机系统、医院医疗设施等在停电和瞬间停电时系统停机的电源。一般UPS系统由电池和使用IGBT的逆变器组成。要求电源具有高可靠性和高效率。

Special power supply that is a special kind of power supply. The so-called special is because the technical requirements are different from the common power supply. The main differences are with particularly high output voltage, large output current, or high requirements on stability, dynamic response and ripple, or the output voltage or current of the power supply is pulse or others. The UPS is used to prevent the computer systems of banks and medical facilities from shutting down in case of power failure or instant power failure. It consists of a battery and inverter with IGBT inside. High reliability and high efficiency are needed for power supply.



模块封装介绍 Package



A5



T1V



T2N



T9

产品特性 Characteristics

标准封装 / Standard package

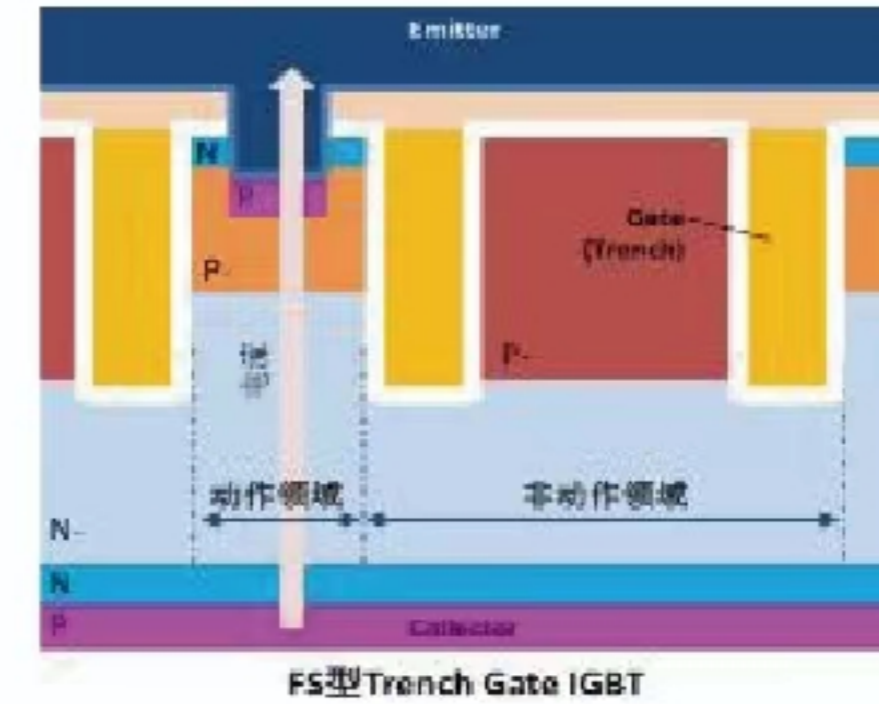
多种芯片选择 / Multiple chips for alternative

低杂散电感 / Low stray inductance

低热阻的铜基板设计 / Copper substrate with low thermal resistance

芯片技术 Chip technology

- ◆ High Efficiency
 - Low Vce(sat)
 - Low Eon+Eoff
 - Low voltage stress
 - Above 10μs short Circuit bearing capacity
 - Fast Switching
 - Optimized trench structure
 - Backside processing
 - ◆ High Reliability 650V/1250V
 - Dummy gates with lower E field
 - ◆ Rugged Gate (VGES) ±30V
- 高效率
 - 低导通饱和压降
 - 低开关损耗 Esw
 - 低电压应力
 - >10μs短路承受能力
 - 开关速度快
 - 优化沟槽结构
 - 背面处理
 - 高可靠性
 - 低E极场的Dummy结构
 - 高强度门极

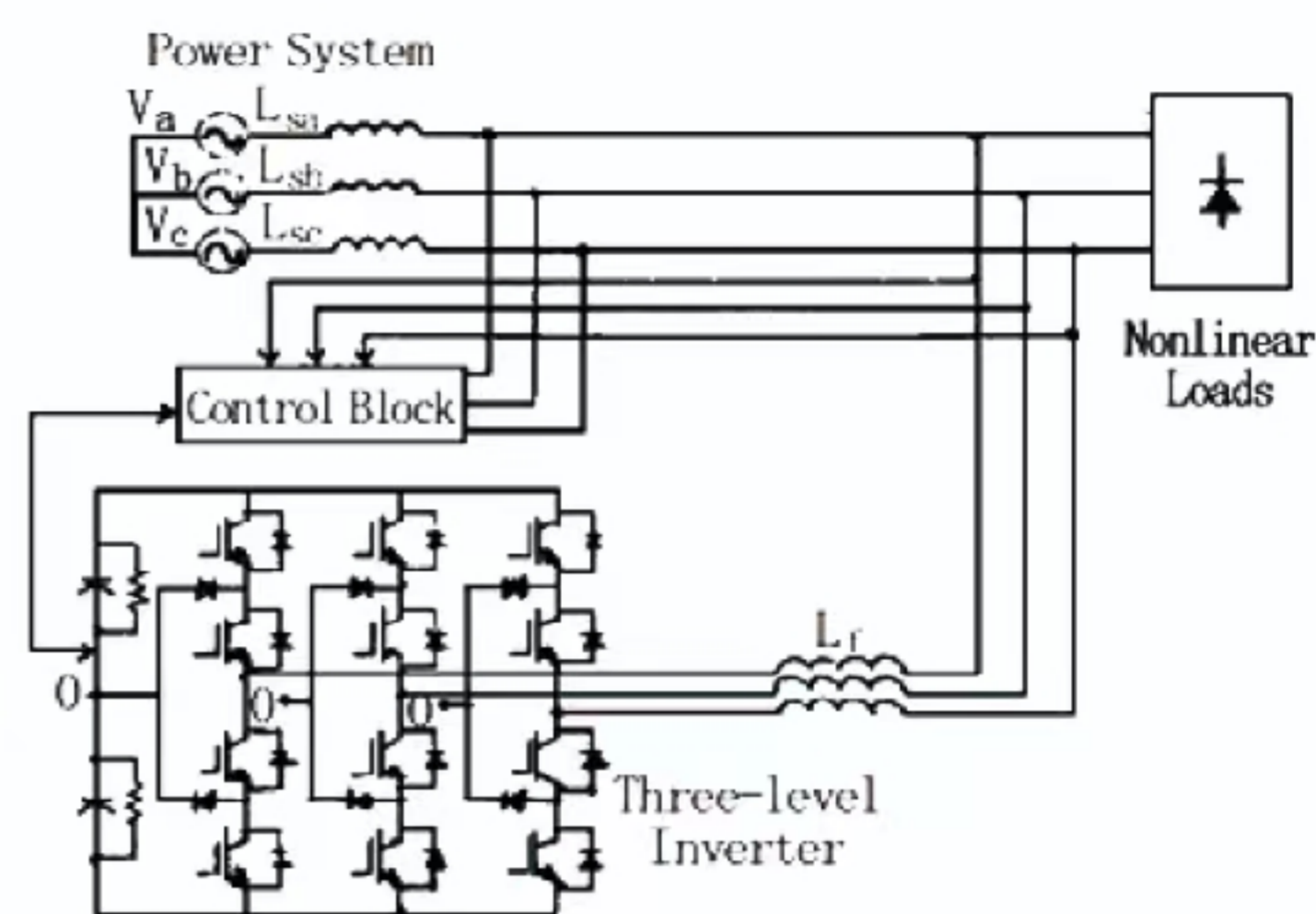


IGBT模块 IGBT module

型号 Module	封装 Package	电压 Voltage	电流 Current	型号 Module	封装 Package	电压 Voltage	电流 Current
GT(K)200HF65A5H	A5	650	200	GT(F)300HF120T2VH	T2V	1200	300
GT(K)300HF65A5H	A5	650	300	GT(F)400HF120T2VH	T2V	1200	400
GT(K)400HF65A5H	A5	650	400	GT150HF170T2VH	T2V	1700	150
GT(F)100HF120A5H	A5	1200	100	GT200HF170T2VH	T2V	1700	200
GT(F)150HF120A5H	A5	1200	150	GT300HF170T2VH	T2V	1700	300
GT(F)200HF120A5H	A5	1200	200	GT450HF65T2NH	T2N	650	450
GT(F)300HF120A5H	A5	1200	300	GT600HF65T2NH	T2N	650	600
GT(K)75HF65T1VH	T1V	650	75	GT450HF120T2NH	T2N	1200	450
GT(K)100HF65T1VH	T1V	650	100	GT200HF170T2NH	T2N	1700	200
GT(K)150HF65T1VH	T1V	650	150	GT300HF170T2NH	T2N	1700	300
GT(K)200HF65T1VH	T1V	650	200	GT300HF65T9H	T9	650	300
GT(F)100HF120T1VH	T1V	1200	100	GT450HF65T9H	T9	650	450
GT(F)150HF120T1VH	T1V	1200	150	GT600HF65T9H	T9	650	600
GT100HF170T1VH	T1V	1700	100	GT225HF120T9H	T9	1200	225
GT(K)200HF65T2VH	T2V	650	200	GT300HF120T9H	T9	1200	300
GT(K)300HF65T2VH	T2V	650	300	GT450HF120T9H	T9	1200	450
GT(K)400HF65T2VH	T2V	650	400	GT600HF120T9H	T9	1200	600
GT(F)100HF120T2VH	T2V	1200	100	GT300HF170T9H	T9	1700	300
GT(F)150HF120T2VH	T2V	1200	150	GT450HF170T9H	T9	1700	450
GT(F)200HF120T2VH	T2V	1200	200	GT600HF170T9H	T9	1700	600

有源电力滤波器 (APF) 是一种动态抑制谐波、补偿无功的电力电子装置。可以通过采样负载电流并进行各次谐波和无功的分离, 控制并主动输出电流的大小、频率和相位, 并且快速响应, 抵消负载中相应电流, 实现了动态跟踪补偿, 而且可以既补谐波又补无功和不平衡。

Active power filter (APF) is a kind of power electronic device of dynamical harmonic suppression and reactive power compensation. Through sampling loading current and separating each harmonic and reactive power, it could control and actively adjust output current size, frequency and phase, and then perform fast response, to offset the corresponding current in the load, and to achieve dynamic tracking compensation. It can both fill the harmonic and reactive power and imbalance.



静止无功发生器 (SVG) 是与电网并联调节输出电压的相位和幅值, 使电路吸收或输出满足要求的无功功率, 达到动态无功补偿的目的。SVG是目前无功功率控制领域内的最佳方案。相对于传统的调相机、电容器电抗器、以晶闸管控制电抗器TCR为主要代表的传统SVC等方式, SVG有着无可比拟的优势。

Static var generator (SVG): it is in parallel with the power grid to adjust the phase and amplitude of output voltage, which makes the circuit absorb or output the required reactive power and to realize the purpose of dynamic reactive power compensation. SVG is the best solution in the field of reactive power control. It has incomparable advantages compared with traditional SVC mainly represented by traditional phase modulator, capacitor reactor and thyristor-controlled reactor (TCR), etc.

模块封装介绍 Package



B9



A8



T9



T2V



P3



T3



T4

产品特性 Characteristics

- 标准封装 Standard Package
- 低杂散电感 Low stray inductance
- 低热阻的铜基板设计 Copper substrate with low thermal resistance

150A APF/100kVA SVG以下模块方案

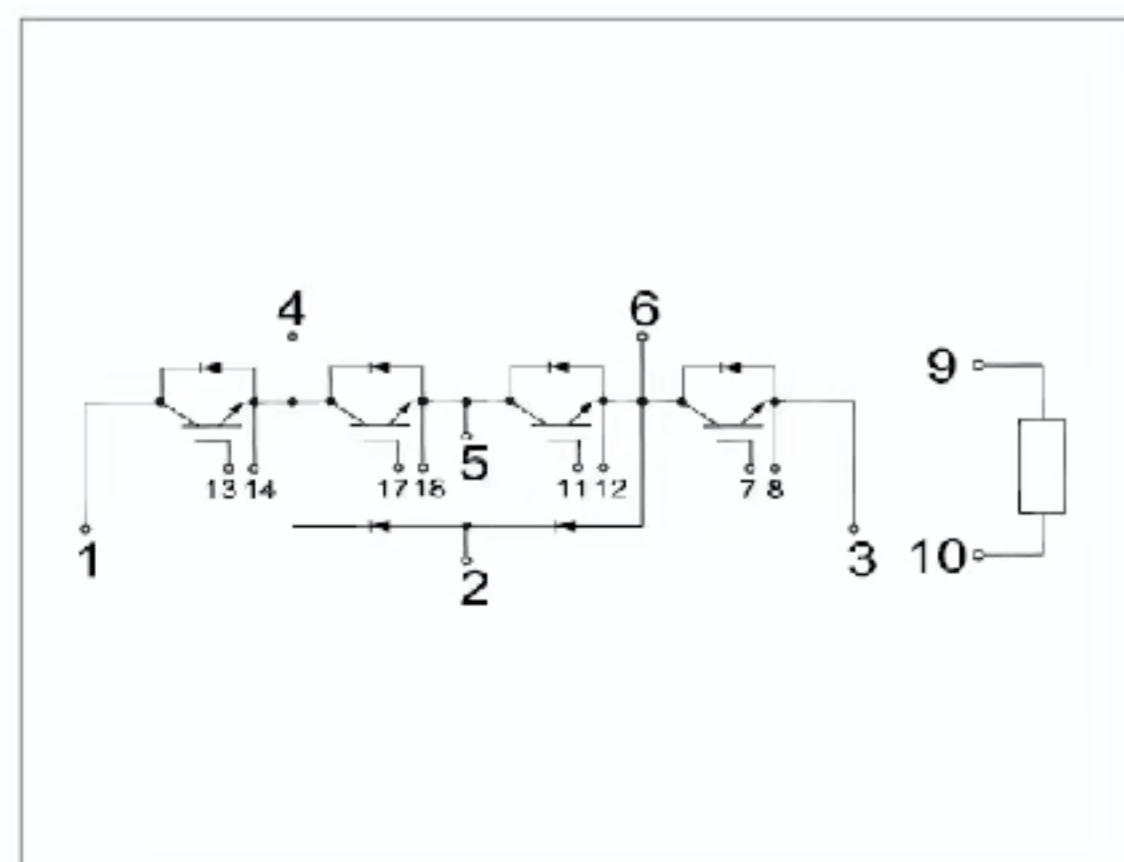
Module Solution for below 150A APF/100kVA SVG

APF	模块型号 Part Number	拓扑结构 Topology
50A APF	GT100TL65B9H	I type
75A APF	GT150TL65B9H	I type
100A APF	GT100TL65B9H	I type two in parallel
150A APF	GT150TL65B9H	I type two in parallel

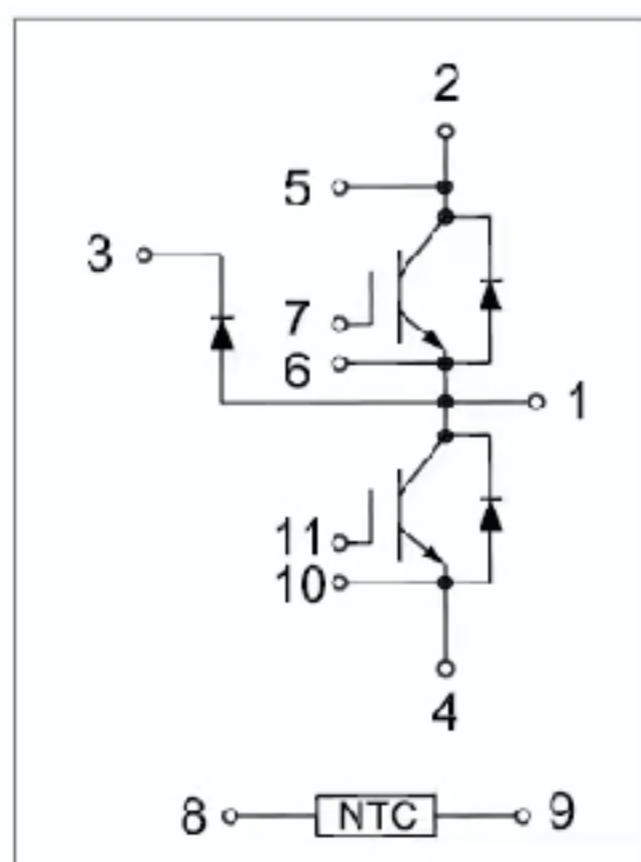
100A APF/60kVA SVG以上模块方案

Module Solution for above 100A APF/60kVA SVG

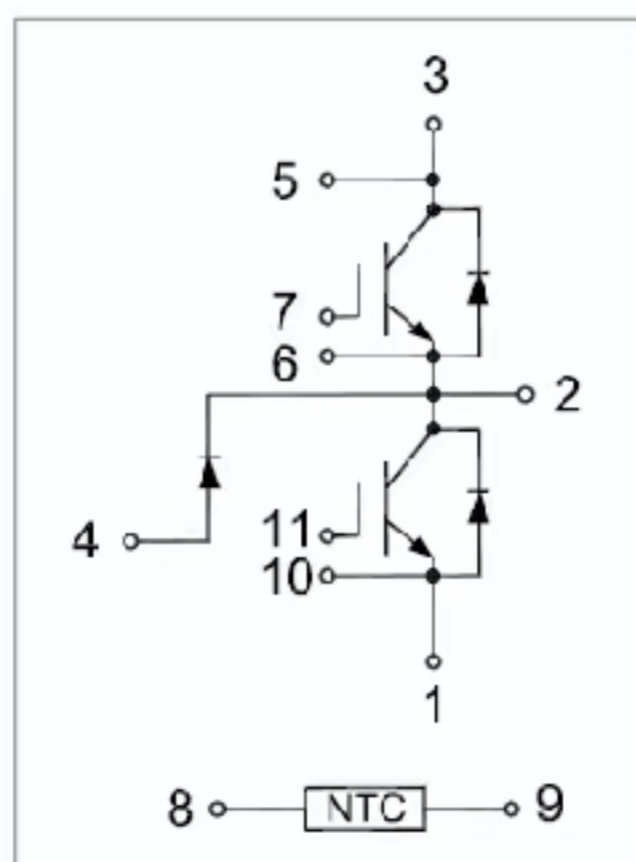
模块型号 Part Number	电压 Voltage	电流 Current	拓扑结构 Topology
GT200TL65A8H	650V	200A	I type
GT200TT65A8H			T type
GT300TL65A8H	650V	300A	I type
GT300TT65A8H			T type
GT400TL65A8H	650V	400A	I type
GT400TT65A8H			T type
GT150TL120A8H	1200V	150A	I type
GT150TT120A8H			T type
GT200TL120A8H	1200V	200A	I type
GT200TT120A8H			T type
GT300TL120A8H	1200V	300A	I type
GT300TT120A8H			T type
GT200MAR120T9H	1200V	200A	MAR
GT300MAR120T9H	1200V	300A	MAR
GT200MCR120T9H	1200V	200A	MCR
GT300MCR120T9H	1200V	300A	MCR
GT300HF170T2VH	1700V	300A	Half-Bridge
GT400HF170T2VH		400A	Half-Bridge
GT225HF170T9H	1700V	225A	Half-Bridge
GT300HF170T9H		300A	Half-Bridge
GT450HF170T9H		450A	Half-Bridge
GT600HF170T9H		600A	Half-Bridge
GT1000HF170P3H	1700V	1000A	Half-Bridge
GT1400HF170P3H		1400A	Half-Bridge
GT600HF170T3H	1700V	600A	Half-Bridge
GT900HF170T3H		900A	Half-Bridge
GT1200HF170T3H		1200A	Half-Bridge
GT3600SD170T4H		3600A	Half-Bridge



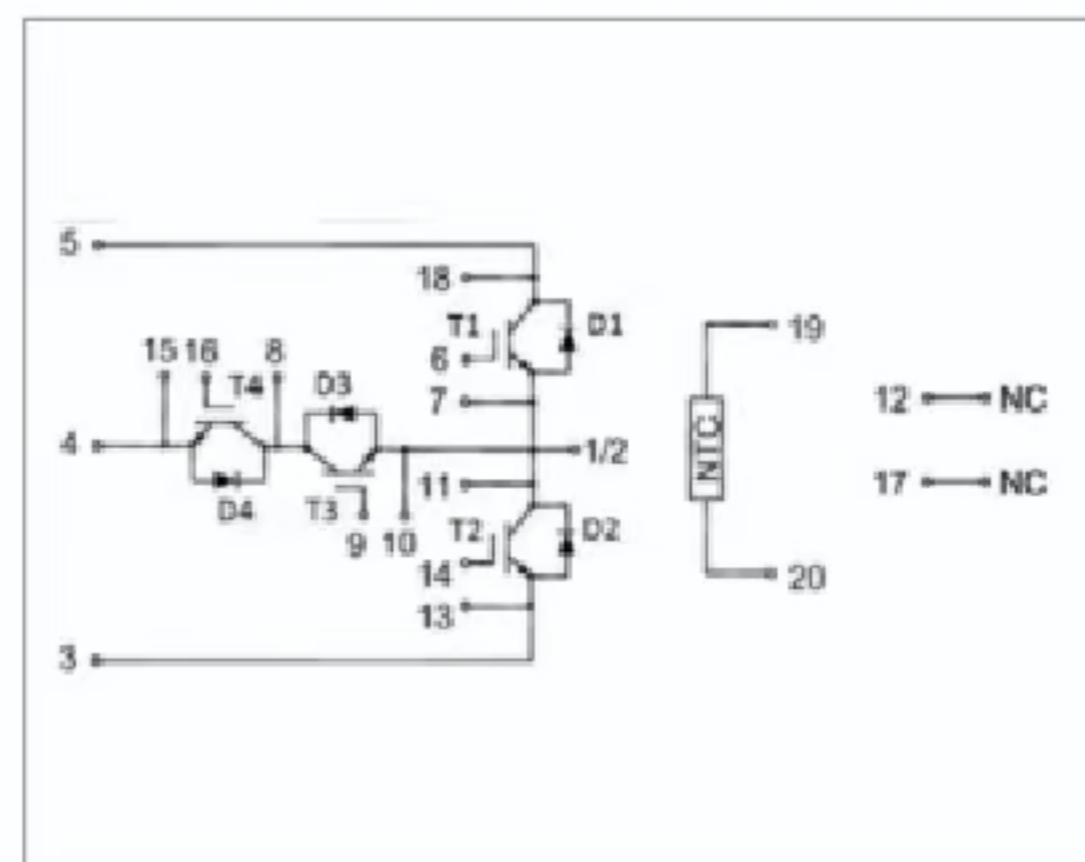
I-Type拓扑



MAR拓扑



MCR拓扑



T-Type 拓扑

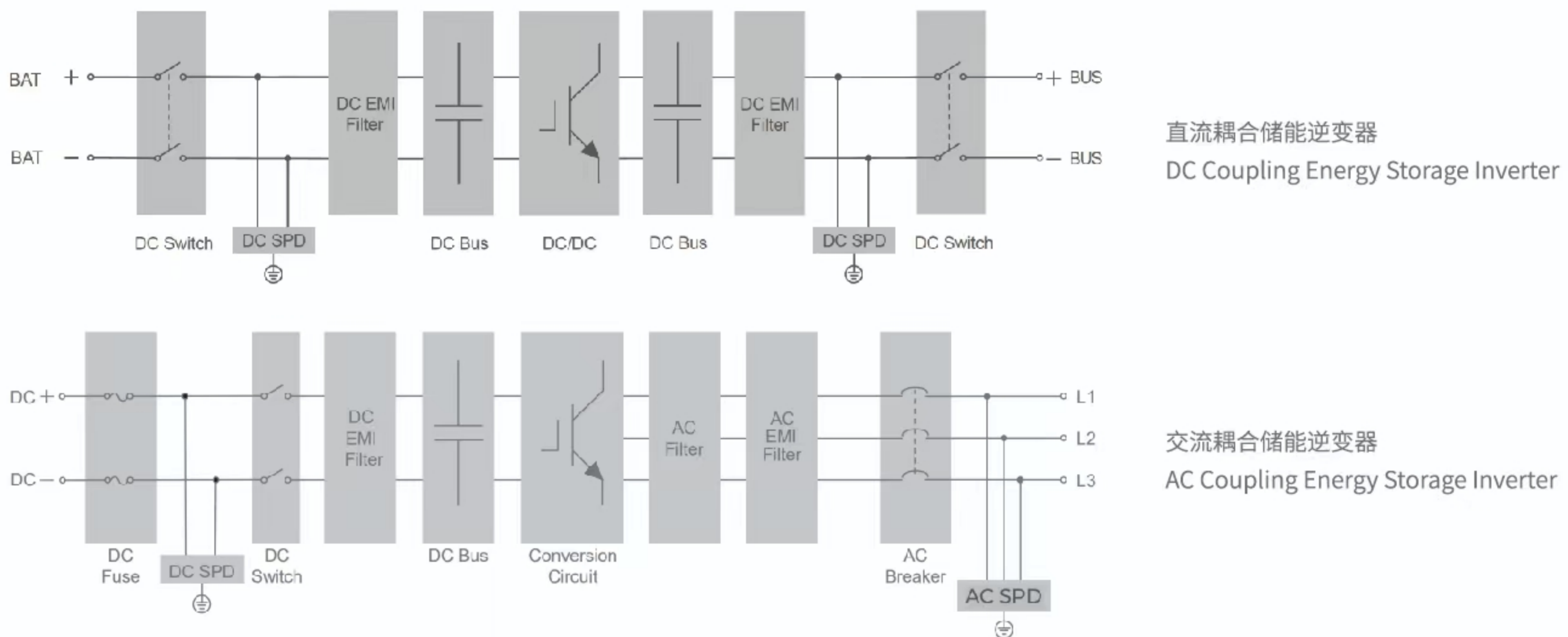


储能系统

ENERGY STORAGE SYSTEM (ESS)

储能逆变器按照耦合方式分为直流侧耦合和交流侧耦合两种。按照应用场景也分为：户用储能，工商业储能，电站储能。直流侧储能从母线取电，通过直流-直流变换器对电池进行充放电。交流侧耦合储能电路拓扑结构与光伏逆变器类似。不同的是储能需要双向充放电，因此变流器需要工作在四象限模式，这就对IGBT的反并联二极管的规格有了更高的要求。常见的储能系统电池电压等级为400V，1000V，1500V。小功率（<50kW）的储能逆变器以650V，1200V单管方案为主，大功率储能逆变器多采用三电平模块方案。

Energy storage inverter is categorized into DC-coupling and AC-coupling in the manner of coupling. It can be divided into residential energy storage, industrial & commercial energy storage, and utility energy storage according to application scenarios. DC-coupling energy storage system gets power from DC bus, and achieves battery charge/discharge by a DC-DC converter. Topology of AC-coupling ESS circuit is similar to PV converter. The difference is battery charge/discharge are always bidirectional, so the converter should operate under four-quadrant mode, which leads to higher requirements for anti-parallel diode of IGBT. The typical battery voltage for energy storage inverters is 400V, 1000V,1500V. For low power(<50kW) ESS solution, 650V & 1200V discrete are widely used, while high power rate energy storage inverters normally use module solution with 3-level topology.

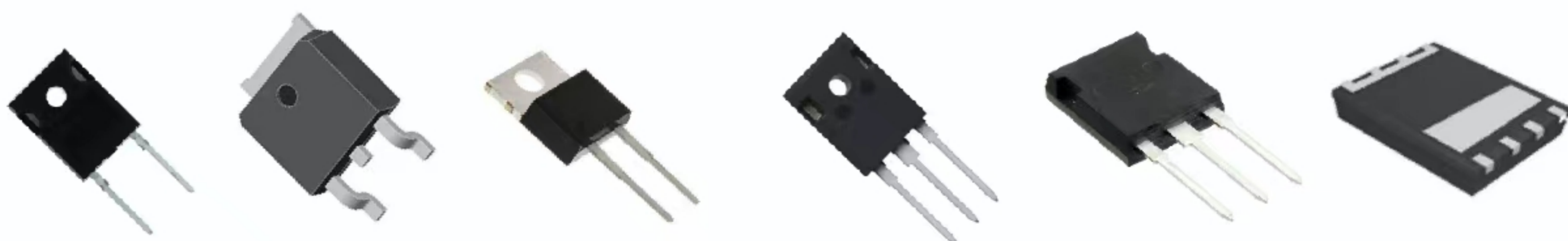


户用储能方案 Solution for Residential ESS

户用储能功率范围3~20kW，以单管方案为主，部分仍沿用模块方案。为提高效率，SiC二极管在系统中也有广泛应用。银茂微电子可提供650V和1200V SiC二极管产品，电流覆盖4~50A。以及搭载SiC二极管的650V和1200V混合IGBT。还可以提供1200V 40A&75A TO247单管。

For residential ESS with power range 3-20kW, most of them are with discrete solutions, while a few of them use module solution. To improve efficiency of energy conversion, SiC diode is widely used in the system. NJSM can provide 650V & 1200V SiC diode with current rate 4~50A, 650V & 1200V Hybrid IGBT with SiC diodes, as well as 1200V 40A & 75A TO247 discrete.

封装方案 Package



产品方案 Product Solution

Product	Current	Package
SiC Diode	4~50A	TO220,TO247-2, TO252,PDFN8*8
Hybrid IGBT SMGWXXHXXXFC	40~75A	TO247
IGBT	40~75A	TO247,TO247+

工商业和电站解决方案 Solution for industrial & commercial ESS/ utility ESS

工商业和电站解决方案功率从30kW~1MW，母线电压主要有1000V/1500V两种规格，模块方案比较多样化。1000V母线系统可以采用650V模块搭建INPC拓扑，也可以采用1200V模块搭建TNPC拓扑。1500V母线系统可以采用1200V模块搭建INPC或者采用1700V模块搭建TNPC。对于MW级储能，一般采用多模块并联的方案。

Solution for industrial & commercial ESS/ utility ESS is with power range of 30kW~1MW, and bus voltage with 1000V/1500V, so as diversified module solution. For 1000V bus system, both 650V module with INPC topology and 1200V modules with TNPC topology are fit for it. For 1500V bus system, 1200V module with INPC topology and 1700V module with TNPC topology are used. When power reach 1MW, multi-module paralleling solution is commonly used.



直流侧电压 System Bus Voltage	功率 Power Rate	产品 Product	拓扑结构 Topology	封装 Package
1100Vdc	30~40kW	GT100TT120B9H	TNPC	B9
	40~50kW	GT150TT120B9H	TNPC	B9
	50~60kW	GT150TT120A8H	TNPC	A8
	60~80kW	GT200TT120A8H	TNPC	A8
	90~110kW	GT300TT120A8H	TNPC	A8
	120kW~360kW	GT300HF120T2NH	Half Bridge	T2N
		GT300HF120T9H	Half Bridge	T9
	180kW~540kW	GT450HF120T2NH	Half Bridge	T2N
GT450HF120T9H		Half Bridge	T9	
250kW~630kW	GT600HF120T2NH	Half Bridge	T2N	
	GT600HF120T9H	Half Bridge	T9	
1500Vdc	30~40kW	GT100TL120B9H	INPC	B9
	40~50kW	GT150TL120B9H	INPC	B9
	50~60kW	GT150TL120A8H	INPC	A8
	60~80kW	GT200TL120A8H	INPC	A8
	90~110kW	GT300TL120A8H	INPC	A8
		GT300TL120T9H	INPC	T9
	200kW	GT225TL120P4H	INPC	P4
	200kW~800kW	GT300HF120T2NH	Half Bridge	T2N
		GT300HF120T9H	Half Bridge	T9
	300kW~1.2MW	GT450HF120T2NH	Half Bridge	T2N
		GT450HF120T9H	Half Bridge	T9
		GT450HF170T9H	Half Bridge	T2N
	400kW~1.6MW	GT600HF120T2NH	Half Bridge	T2N
		GT600HF120T9H	Half Bridge	T9
GT600HF170T2NH		Half Bridge	T2N	
630kW~1.25MW	GT1000HF170P3H	Half Bridge	P3	
800kW~1.6MW	GT1200HF120P3H	Half Bridge	P3	



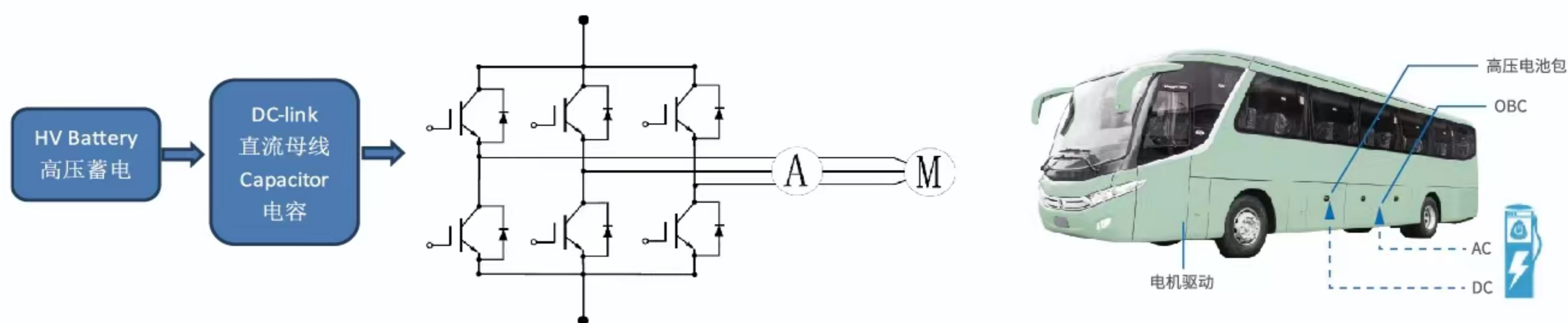
EV/HEV

电动车控制器是用来控制电动车的启动、运行、加速、停止的核心控制器件。而功率器件又是电动车控制器的核心部件。电动车对功率器件的体积，重量，可靠性，效率都有着非常高的要求。

EV (Electrical Vehicle) controller is the core component used to control start, operation, acceleration and stop of EV. And power device is the core component of EV controller. So EV has very high requirements on size, weight, reliability and efficiency of power devices.

南京银茂微的汽车模块提供性价比高、节能的电动汽车牵引变频器解决方案。

NJSM' s automotive modules are helpful on the cost-effective and energy-efficient EV traction inverter solutions.



产品特性 Characteristics

符合汽车检验标准 (IATF16949)

Automotive qualified (IATF 16949)








直接水冷方案

Direct water cooling solution

符合电气、电子设备中限制使用某些有害物质标准

RoHS

模块封装及规格 Module Package and Specification

<p>100V-200V 500A-1000A MOSFET Half bridge</p>	<p>650V-1200V 30A-75A IGBT IGBT+SiC</p>	<p>650V-1200V 300A-400A IGBT Six pack</p>	<p>650V-1200V 300A-800A IGBT Half bridge</p>	<p>650V-1200V 400A-800A IGBT Six pack</p>
 <p>T2L</p>  <p>B1</p>	 <p>B9P</p>  <p>B3P</p>	 <p>A8</p>  <p>C8</p>	 <p>T9</p>	 <p>B8</p>

IGBT模块 IGBT module

Part Number	VCES	VCE(on)	IC/IF	VF	Eon	Eoff	Rtjc	Package
		@Tj=25°C	@100°C	@Tj=25°C	@Tj=125°C	@Tj=125°C		
GT50FF65B3S	650V	1.85V	50A	1.50V	0.95mJ	0.60mJ	0.53°C/W	B3
GT75FF65B9S	650V	1.85V	75A	1.60V	1.50mJ	0.95mJ	0.38°C/W	B9
MSC40HH120B9S (SiC, H-bridge)	1200V	1.70V	40A	1.55V	0.76mJ	0.31mJ	0.33°C/W	B9

Part Number	VCES	VCE(on)	IC/IF	VF	Eon	Eoff	Rtjc	Package
		@Tj=25°C	@100°C	@Tj=25°C	@Tj=125°C	@Tj=125°C		
GT300FF65A8S	650V	1.55V	300A	1.60V	3.28mJ	8.66mJ	0.11°C/W	A8
GT400FF65A8S	650V	1.50V	400A	1.60V	2.8mJ	12.9mJ	0.09°C/W	A8
GT300FF120A8S	1200V	2.00V	300A	1.60V	23mJ	38.3mJ	0.06°C/W	A8

Part Number	VCES	VCE(on)	IC/IF	VF	Eon	Eoff	Rtjc	Package
		@Tj=25°C	@100°C	@Tj=25°C	@Tj=125°C	@Tj=125°C		
GT450FF65T9S	650V	1.55V	450A	1.70V	5.01mJ	28.14mJ	0.070°C/W	T9
GT600HF65T9S	650V	1.50V	600A	1.70V	9.1mJ	39.8mJ	0.061°C/W	T9
GT600HF120T9S	1200V	1.70V	600A	1.70V	50mJ	76mJ	0.045°C/W	T9
GT800HF120T9S	1200V	1.8V	800A	1.9V	65mJ	98mJ	0.040°C/W	T9

Part Number	VCES	VCE(on)	IC/IF	VF	Eon	Eoff	Rtjc	Package
		@Tj=25°C	@100°C	@Tj=25°C	@Tj=125°C	@Tj=125°C		
GT600FF65B8S	650V	1.45V	400A	1.45V	7.7mJ	25.3mJ	0.100°C/W	B8
GT800FF65B8S	650V	1.50V	550A	1.55V	16.6mJ	27.5mJ	0.099°C/W	B8
GT400FF120B8S	1200V	1.60V	300A	1.7V	12.5mJ	29.8mJ	0.090°C/W	B8
GT600FF120B8S	1200V	1.50V	600A	1.7V	40mJ	76mJ	0.084°C/W	B8

Part Number	VCES	VCE(on)	IC/IF	VF	Eon	Eoff	Rtjc	Package
		@Tj=25°C	@100°C	@Tj=25°C	@Tj=125°C	@Tj=125°C		
GT450FF65C8S	650V	1.45V	350	1.50V	6mJ	17mJ	0.128°C/W	C8
GT600FF65C8S	650V	1.35V	450	1.30V	12mJ	43mJ	0.105°C/W	C8
GT450FF75C8S	750V	1.45V	350	1.50V	6mJ	17mJ	0.128°C/W	C8
GT600FF75C8S	750V	1.35V	450	1.30V	12mJ	43mJ	0.105°C/W	C8

碳化硅模块 SiC modules

车辆类型 Vehicle Type	额定电压 Rated Voltage	额定电流 Rated Current	模块编号 Part Number
Passenger Vehicle 客运车	1200V	540A	MSC540FF120C8S
Passenger Vehicle 客运车	1200V	720A	MSC720FF120C8S

We Reach Further



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