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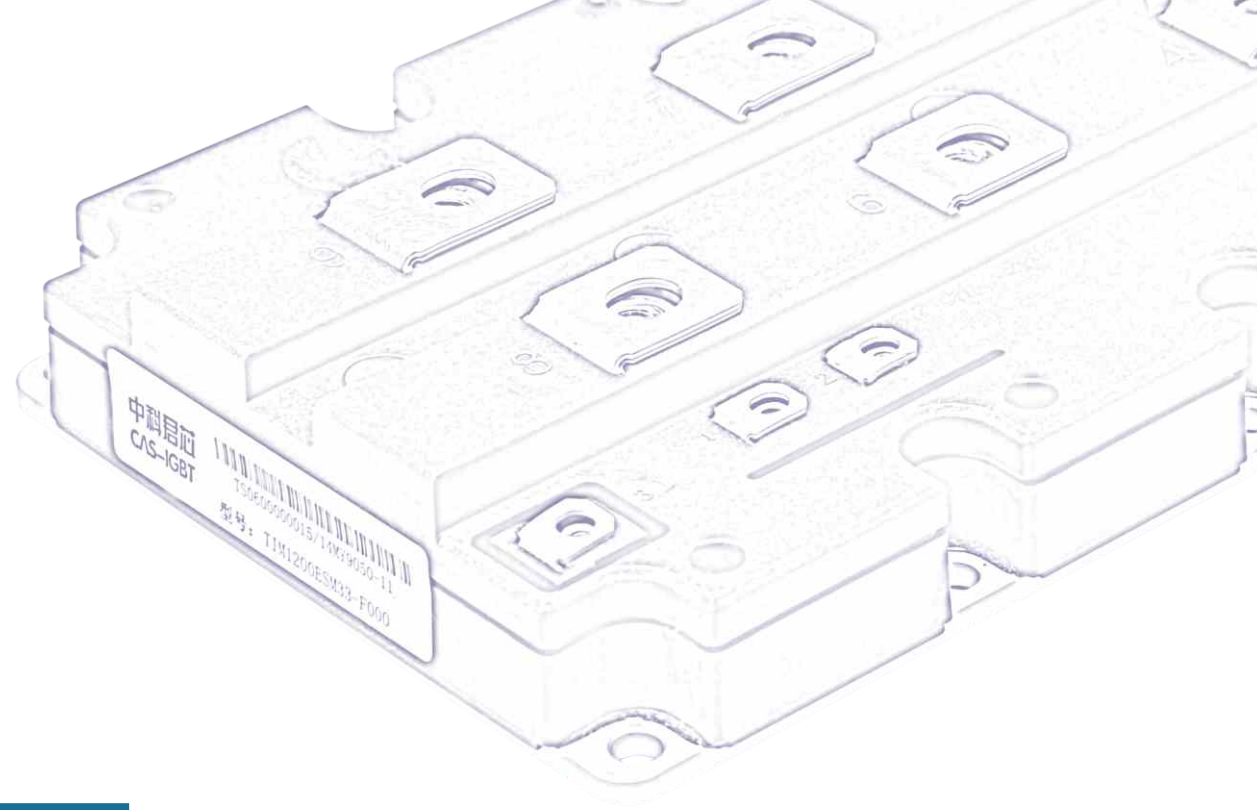
**国内领先、国际一流的IGBT
芯片及整体解决方案
专注于IGBT芯片开发**

**Domestic leading and world-class IGBT
chips technology and total solution**

Focus on the development of IGBT chips technology

<http://www.cas-junshine.com>

追求卓越科技/塑造金牌品质/提供精致服务



致力于IGBT中国芯 技术引领者

TO BE THE LEADER OF IGBT CHIPS TECHNOLOGY IN DOMESTIC MARKET

江苏中科君芯科技有限公司是专注于IGBT、FRD等新型电力电子芯片开发的高科技设计公司。公司由中国科学院微电子所和中国物联网研究发展中心两个研究团队和成都电子科技大学研究团队组成，聚集了国内领先的IGBT研发团队。最早始于上世纪80年代，至今已有近40年的积累，研发实力处于国内领先水平。

中科君芯自2011年底注册后，引进海外高端技术人才及专业的市场团队加盟。中科君芯专注于IGBT及配套FRD等芯片的开发，目前已经形成了极具市场竞争力的600V、1200V、1700V系列产品，同时也在3300V及以上超高压等级IGBT芯片上取得了重要突破。中科君芯是目前国内唯一全面掌握600V-6500V全电压、单芯片8A-400A全电流的IGBT芯片技术的企业，处于国内领先地位。

中科君芯一直致力于IGBT技术的自主创新和引领，为客户提供极具优良品质的产品、技术服务以及整体解决方案。公司分别于2014年和2016年获得国际、国内知名专业投资机构的青睐，完成A轮和B轮的融资，进入快速发展以及上下游资源整合阶段。

中科君芯作为国产自主品牌IGBT芯片技术企业，以提升我国IGBT领域的研发制造、应用水平，促进我国自主IGBT器件及装置的发展和产业化为使命，结合行业资源，将产业做大做强。

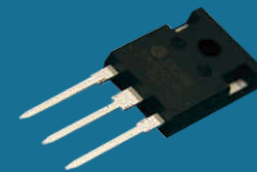
Jiangsu CAS-IGBT Technology Co., Ltd is a high technology company who is focusing on the development of IGBT, FRD chips technology. The R&D team is from Chinese Academy of Sciences, has more than 30 year' s history. Junshine was established in 2011, absorbed foreign R&D talents and management team. CAS-IGBT product range include FRD chips,discreat,IGBT chips, discrete, module, voltage from 650V-6500V 、 current from 8A-400A with different current range to meet different customer requirement.

2016, Junshine successfully completed the B round of funding, enter the stage of rapid development ,Junshine will do the best to be the leader of IGBT chips, discrete, module technology, and provide customer with best service.

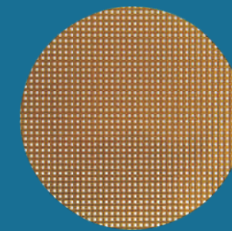
PRODUCTS 君芯产品

凭借着雄厚的技术研发实力和先进的工艺、设备，中科君芯力求为合作伙伴提供国际一流的IGBT产品和配套服务，是目前国内真正实现国产IGBT芯片自主研发和规模化量产的企业。依托公司科研团队强大的研发能力，将进一步丰富与完善产品系列，满足不同应用领域客户的需求。

Based on long time technology researching, Junshine is the first Chinese brand who independently research and develop IGBT chips, and successfully produce IGBT chips and its end product (discrete IGBT and module) and sold to the market. Junshine team is doing the biggest effort to enrich IGBT product range and perfect IGBT products to meet the needs of different customers.



IGBT单管
IGBT Discretes



IGBT晶圆
IGBT Wafer



L1小功率模块
Low power module L1



L2小功率模块
Low power module L2



L4小功率模块
Low power module L4



L5小功率模块
Low power module L5



L6小功率模块
Low power module L6



M1中功率模块
Medium power module M1



M2中功率模块
Medium power module M2



M3中功率模块
Medium power module M3



A2汽车级模块
Automotive IGBT Module A2



H2大功率模块
High power module H2



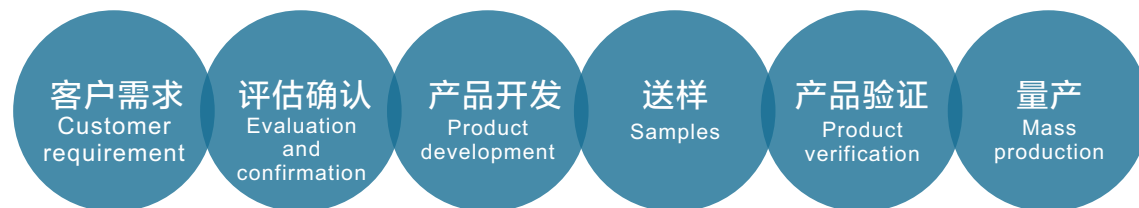
H3大功率模块
High power module H3

Customization 客户定制



一流的自主研发实力，中科君芯可为合作伙伴提供定制化产品服务，
满足客户的个性化需求。

With strong R & D resource, Junshine provides customer
with customized product and service.



Name Information IGBT命名规则

单管和芯片

IGBT and Diode

Kw: 中科君芯

Device:

G : IGBT only
D : Diode only
B : IGBT and Diode

Package Type:

C for chip only
P for TO220
A for TO220-3-3L
W for TO247
T for TO3P
L for TO264

KWBW25N120S1

1...n:
For application
1: IH
2: welding
3: converter

Feature:
S for standard
F for fast
U for ultra-fast

Voltage:
Breakdown voltage divided by 10

Technology:
N for N channel

Current:
Continuous collector current(@Tc=100°C)

模块

Module

Kw: 中科君芯

Package:

M for L1	R for M1
N for L2	K for M2
O for L3	D for M3
P for L4	H for H1
F for L5	I for H2
G for L6	J for H3
A1 for A1	L for H4
A2 for A2	Q for H5
A3 for A3	C for customize package

KWMFF100R12S1

1...n:
For application
1: IH
2: welding
3: converter

Feature:
S for standard
F for fast
U for ultra-fast

Voltage:
collector-emitter-voltage in 10² V

Technology:
R for reverse conducting

Current:
Continuous collector current(@Tc=100°C)

Circuit configuration:

FZ for single switch with one IGBT and FRD
FF for half bridge (two IGBTs and FRDs)
FH for 4-pack
FS for 3 phase full bridge (6-pack)
FD/DF for chopper module
(FD: diode on emitter side;
DF: diode on collector side)
FP for power integrated module

IGBT Chip IGBT芯片

中科君芯600V~1700V IGBT产品涵盖10A~400A电流等级。产品采用先进的沟槽栅场截止型IGBT技术，具有低损耗、高频率、高结温、宽安全工作区的优点，适用于感应加热、逆变焊机、通用变频、电机驱动等领域。针对中高功率应用，采用双载流子存储技术的第三代产品（CAS-IGBT3），开关曲线平滑，易于并联使用。针对中低功率应用，采用精细化沟槽技术的第四代产品（CAS-IGBT4），驱动损耗低，功率密度高。

The IGBT chips of CAS-IGBT are available at 600V, 1200V and 1700V, ranging from 10 to 400A. Adopting advanced TRENCH+FS technology, IGBTs perform the advantages of low losses, high switching frequency, high junction temperature and wide SOA. IGBTs are suitable for applications such as induction heating, welding, general purpose inverters, motor drive, etc. With soft switching and easy paralleling characteristics, the third generation CAS-IGBT3 adopting DCS technology targets at medium and high power applications. With low drive losses and high power density characteristics, the fourth generation CAS-IGBT4 adopting MPT technology targets at medium and low power applications.

► 特征 Features

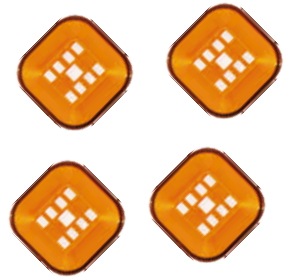
采用最新沟槽场截止型IGBT芯片
低导通损耗和低开关损耗
高可靠性和热稳定性 (Tj>150°C)
低栅电荷设计
宽安全工作区

New Trench Field Stop IGBT technology
Low VCE(sat) and Low switching loss
High reliability and High temperature stable behavior (Tj>150°C)
Low Qg
Wide SOA

Application 应用领域

感应加热、逆变焊机、变频、UPS、新能源、机车牵引、智能电网

IH, welding, GPI, UPS, new energy, traction, smart grid , Etc.



IGBT芯片

产品名称	额定电压	额定电流	阈值电压	导通压降	下降时间	技术
	(V)	(A)	(V)	(V)	(ns)	
KWGC15N120S1E1	1200	15	5.9	2.10	115	CAS-IGBT1
KWGC25N120S2E1	1200	25	5.9	2.20	90	CAS-IGBT1
KWGC40N120S1E1	1200	40	5.9	2.20	75	CAS-IGBT1
KWGC10N120NS3	1200	10	5.9	2.00	140	CAS-IGBT2
KWGC15N120NS3	1200	15	5.9	2.00	70	CAS-IGBT2
KWGC25N120NS3	1200	25	5.9	2.00	100	CAS-IGBT2
KWGC40N120NS3	1200	40	5.9	2.00	60	CAS-IGBT2
KWGC50N120NS3	1200	50	5.9	2.10	80	CAS-IGBT2
KWGC75N120NS3	1200	75	5.9	2.10	60	CAS-IGBT2
KWGC100N120NS3	1200	100	5.9	2.15	90	CAS-IGBT2
KWGC150N120NS3	1200	150	5.9	1.90	100	CAS-IGBT2
KWGC100N170	1700	100	6.0	2.10	90	CAS-IGBT2
KWGC15N60F	600	15	5.3	1.65	40	CAS-IGBT2
KWGC200N120S	1200	200	6.0	1.60	140	CAS-IGBT3
KWGC400N120A1	1200	400	6.0	2.30	160	CAS-IGBT3
KWGC400N120A2	1200	400	6.0	2.35	160	CAS-IGBT3
KWGC400N65A1	650	400	6.5	1.45	140	CAS-IGBT3
KWGC400N65A2	650	400	6.5	1.50	140	CAS-IGBT3
KWGC400N80A2	800	400	6.0	1.70	145	CAS-IGBT3
KWGC40N60H*	600	40	5.8	1.80	30	CAS-IGBT4
KWGC60N60H*	600	60	5.8	1.82	40	CAS-IGBT4

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FRD Chip FRD芯片

中科君芯600V~1200V FRD产品涵盖8A~400A电流等级。产品采用先进的场截止型MPS和寿命控制技术，具有低损耗、强鲁棒性、反向恢复软度好的优点，适用于感应加热、逆变焊机、通用变频、电机驱动等领域。

The FRD chips of CAS-IGBT are available at 600V and 1200V, ranging from 8A to 400A. Adopting advanced MPS+FS and life control technology, FRDs perform the advantage of lower losses, stronger robustness and optimal reverse recovery softness. FRDs are suitable for applications such as induction heating, welding, general purpose inverters, motor drive, etc.

特征 Features

- 低反向恢复损耗
- 反向恢复软度好、速度快
- 极佳的参数一致性
- 强鲁棒性
- 温度系数小
- Low reverse recovery charge
- Fast,soft switching
- Excellent parameter consistency
- Strong robustness
- Small temperature coefficient

FRD芯片

产品名称	额定电压	额定电流	导通压降	关断时间
	(V)	(A)	(V)	(ns)
KWDC8N120FM1	1200	8	1.90	65
KWDC15N120FM1	1200	15	1.90	115
KWDC25N120FM1	1200	25	1.90	130
KWDC40N120FM1	1200	40	1.90	185
KWDC50N120FM1	1200	50	1.90	195
KWDC75N120FM1	1200	75	1.90	230
KWDC100N120FM1	1200	100	1.90	265
KWDC150N120FM1	1200	150	1.90	290
KWDC200N120FM1*	1200	200	1.90	325
KWDC300N120FM2	1200	300	1.75	350
KWDC400N120FM2	1200	400	1.80	380
KWDC15N65FM3	650	15	1.75	80
KWDC40065FM3	650	400	1.80	175
KWDC40080FM3	800	400	1.85	190

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Induction Heating 感应加热

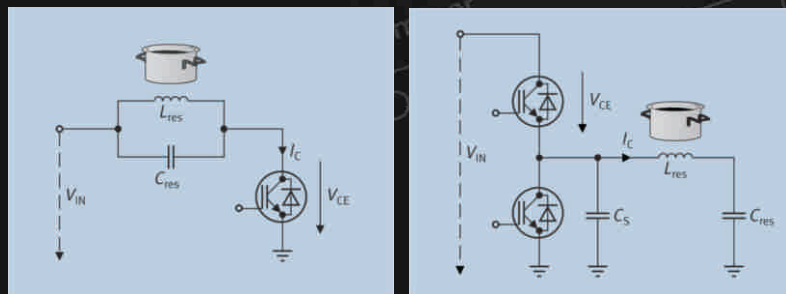
Trench +Field Stop
IGBT Technology
For Induction Heating

电磁炉依靠锅底直接感应磁场产生涡流发热，具有能量转换效率高、加热速度快、安全及无温室效应等优点，在厨房、酒店、食堂等场合应用广泛。

公司采用最新一代的Trench +Field Stop IGBT技术，能为感应加热领域提供最低的损耗和最高的能效。

Induction cooker directly depends on the magnetic field eddy current heating, has the advantage of high energy conversion efficiency, accelerate the heating speed, safety and no pollution, widely be used in hotels, dining rooms and kitchens.

The newest generation of Junshine Trench+Field Stop IGBT technology, can provide the lowest loss and the highest efficiency for induction heating applications.



常用电磁炉拓扑结构
Typical topology of IH cooker

特性 Feature

- 采用最新沟槽场截止型IGBT芯片
- 先进的200mm晶圆加工工艺，良好的参数一致性
- 低导通损耗和低开关损耗
- 导通压降正温度系数
- 击穿电压裕量大，高鲁棒性
- 高可靠性和热稳定性 ($T_j > 150^\circ\text{C}$)
- 内置续流二极管芯片



- Trench Field-Stop IGBT technology
- Advanced 200mm wafer processing technology and very tight parameter distribution
- Low VCE(sat) and Low switching loss
- Positive temperature coefficient in VCE(sat)
- Higher breakthrough voltage and High ruggedness
- High reliability and High temperature stable behavior ($T_j > 150^\circ\text{C}$)
- Anti-parallel with Freewheel diode

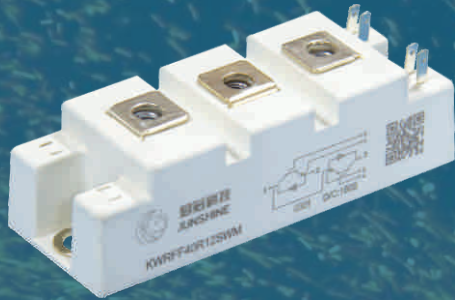
性能参数/Technical data

电路结构	产品名称	封装	额定电压	额定电流	Vce(sat)	Eoff
			(V)	(A)	(V)	(mJ)
IGBT单管						
	KWBW15N120S1E1	TO-247	1200	15	2.10	0.45
	KWBW25N120S1E1		1200	25	2.20	0.75
	KWBW25N130R		1300	25	2.15	1.03
	KWBW25N135S1E1*		1350	25	2.25	0.85
	KWBW30N160S1E1		1600	30	1.90	2.15
IGBT模块						
	KWRFF75R12SWM	M1	1200	75	2.00	4.6
	KWRFF100R12SWM		1200	100	2.00	6.2
	KWRFF150R12S		1200	150	1.90	14.9
	KWKFF150R12S	M2	1200	150	1.90	14.9
	KWKFF200R12SC		1200	200	2.10	17.3
	KWKFF300R12SA		1200	300	1.90	27.9

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Inverter Welder 逆变焊机

Trench +Field Stop
IGBT Technology
For Inverter welder



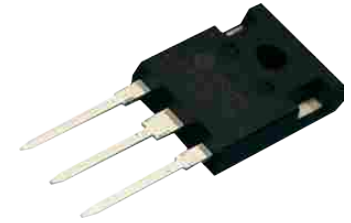
焊机主要用于建筑、机械制造、造船、管道、民用等广大领域；逆变焊机相对于传统焊机具有节能、高效、体积小、输出电参数稳定等优点，因此得到越来越广泛应用。

针对焊机领域不同的电路拓扑结构，中科君芯分别推出相对应 IGBT 产品。在封装结构上，单管 TO-247、TO-264、模块 34mm/62mm 封装和国外主流产品完全兼容。

Welding machine is widely used in construction, machinery manufacturing, shipbuilding, pipeline, civil and other fields; Compared with the traditional welding, inverter welding machine is more and more popular due to the advantages of energy saving, high efficiency, small volume, the performance of welding. As the key parts of inverter welding machine, IGBT component selection and using become more and more important to the welding customer engineer. Junshine Trench field stop IGBT could match your different technical requirement with different generation chips technology. Junshine provide customer with discrete TO247, module M1(34mm) and M2(62mm).

特性 Feature

采用最新沟槽场截止型 IGBT 芯片
先进的 200mm 晶圆加工工艺，良好的参数一致性
低开关损耗，特别适合高频应用场合
导通压降正温度系数，易于并联使用
高安全工作区，可适用于不同应用环境
高可靠性和热稳定性 ($T_j > 150^\circ\text{C}$)
内置二极管芯片反向恢复时间短



Trench Field-Stop IGBT technology
Advanced 200mm wafer processing technology and very tight parameter distribution
Low switching losses, Suited to high frequency applications
Positive temperature coefficient for paralleling
Wide SOA, satisfied for different application environment
High ruggedness & excellent thermal stability ($T_j > 150^\circ\text{C}$)
With short reverse recovery time FRD

性能参数/Technical data

电路结构	产品名称	封装	额定电压	额定电流	Vce(sat)	Eoff
			(V)	(A)	(V)	(mJ)
IGBT单管						
	KWBW25N120S2E1	TO-247	1200	25	2.20	0.82
	KWBW40N120S2E1		1200	40	2.20	1.40
	KWBW40N60S2E1		600	40	2.10	0.86
	KWBW60N60S2E1*		600	60	1.85	2.10
	KWBL40N120S2E1	TO-264	1200	40	2.30	1.40
	KWBL50N120S2E1		1200	50	2.50	1.95
KWBL75N120S2E1	1200	75	1.85	4.60		
IGBT模块						
	KWRFF40R12SWM	M1	1200	40	2.20	1.3
	KWRFF50R12SWM		1200	50	2.00	2.7
	KWRFF75R12SWM		1200	75	2.00	4.6
	KWRFF100R12SWM		1200	100	2.00	6.2
	KWRFF150R12S		1200	150	1.90	14.9
	KWKFF150R12S		1200	150	1.90	14.9
	KWKFF200R12SC	1200	200	2.10	17.3	
	KWKFF400R07SA	M2	650	400	1.60	29.0

*研发中 For researching

Industry Converter 工业变频

针对变频应用市场，中科君芯已推出从600V到1700V，包括芯片、单管、模块的系列产品，并将进一步完善各功率段的系列化，以满足商用变频到工业变频不同领域不同客户的需求。

For motor drive application, Junshine has launched IGBT products from 600V to 1700V, including IGBT die, discrete IGBT and module IGBT, and more and more different power range product launched to meet different customer requirement.

特性 Features

采用最新载流子增强型沟槽场截止IGBT芯片
先进的200mm晶圆加工工艺，良好的参数一致性
低导通损耗和低开关损耗
低栅电荷设计
导通压降正温度系数
高短路耐量 (tsc>10us)
高可靠性和热稳定性 (Tj>150°C)
内置FRD芯片反向恢复软度高
模块内部集成NTC电阻

Carrier Enhanced Trench Field-Stop IGBT
Advanced 200mm wafer processing technology and very tight parameter distribution
Low VCE(sat) and Low switching loss
Low Qg
Positive temperature coefficient in Vce(sat)
High short circuit capability (>10us)
High ruggedness & excellent thermal stability (Tj>150°C)
Improved FWD softness
Integrated NTC Temperature Sensor



性能参数/Technical data

电路结构	产品名称	封装	额定电压	额定电流	Vce(sat)	Eoff
			(V)	(A)	(V)	(mJ)
IGBT单管						
	KWBA15N60F	TO-220F	600	15	1.65	0.32
	KWBW15N120S3E1	TO-247	1200	15	2.00	0.62
	KWBW25N120S3E1		1200	25	2.00	1.07
	KWBW40N120S3E1		1200	40	2.00	2.10
IGBT模块						
	KWFFP10R12NS3	L5	1200	10	2.00	0.50
	KWFFP15R12NS3	(W1T4)	1200	15	2.00	0.71
	KWFFP15R12NS3_B	L6	1200	15	2.00	0.71
	KWFFP25R12NS3_A		(W2T4)	1200	25	2.00
	KWGF40R12NS3	(W2T4)	1200	40	2.00	2.05
	KWMFP25R12NS3	L1	1200	25	2.00	1.22
	KWMFP40R12NS3	(KT3)	1200	40	2.00	2.05
	KWMFP25R12NS3_B	L1-1	1200	25	2.00	1.22
	KWMFP40R12NS3_B	(KT4)	1200	40	2.00	2.05
	KWNFP50R12S3	L2-1	1200	50	2.10	3.20
	KWNFP75R12NS3_B	(KT3)	1200	75	2.10	5.10
	KWNFP75R12NS3	L2	1200	75	2.10	5.10
	KWNFP100R12NS3	(Kt4)	1200	100	2.10	7.60
	KWPFS75R12NS3*	L4	1200	75	2.10	5.10
	KWPFS100R12NS3		1200	100	2.10	7.60
	KWPFS150R12S3		1200	150	1.90	14.9
	KWPFS200R12S3*		1200	200	2.10	17.3
	KWPFS100R17S3*		1700	100	2.00	20.9
	KWKFF150R12S		1200	150	1.90	14.9
	KWKFF200R12SC	M2	1200	200	2.10	17.3
	KWKFF300R12SA		1200	300	1.90	27.9
	KWKFF450R12SC		1200	450	2.10	54.5
	KWKFF400R07SA		650	400	1.60	29.0
	KWKFF200R17S		1700	200	2.00	52.7

*研发中For researching

New Energy 新能源

太阳能&风能&电动汽车
Wind&PV&EV

从产生新能源的风力发电、太阳能发电到消耗新能源的电动汽车，整条新能源生产链条中，IGBT器件在关键设备中均作为核心器件。中科君芯将致力于为行业提供国际水平的IGBT器件。

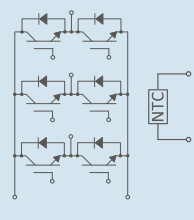
Junshine is investing big resource on the IGBT product researching for new energy application, more and more competitive product will be launched to customers.

特性 Features

采用最新沟槽场截止型IGBT芯片
使用双载流子存储技术，高电流密度
先进的200mm晶圆加工工艺，良好的参数一致性
低导通损耗和低开关损耗
导通压降正温度系数
高短路耐量 ($t_{sc} > 8\mu s$)
高可靠性和热稳定性 ($T_j > 150^\circ C$)
内置FRD芯片反向恢复软度高
模块内部集成NTC电阻

Trench Field-Stop IGBT technology
Dual carrier storage technology, High Current Density
Advanced 200mm wafer processing technology and very tight parameter distribution
Low V_{CEsat} and Switching Losses
Positive temperature coefficient in $V_{CE(sat)}$
High short-circuit capacity ($t_{sc} > 8\mu s$)
High ruggedness, stable temperature behavior ($T_j > 150^\circ C$)
Integrated FRD with high Restoring softness
Integrated NTC temperature sensor

性能参数/Technical data

电路结构	产品名称	封装	额定电压	额定电流	$V_{ce(sat)}$	E_{off}
			(V)	(A)	(V)	(mJ)
IGBT模块						
	KWDF300R12S*	M3	1200	300	2.10	29.5
	KWDF450R12S		1200	450	1.95	47.0
	KWDF600R12S		1200	600	1.95	83.0
	KWDF600R7S*		650	600	1.55	27.5
	KWDF300R17S		1700	300	2.10	80.0
	KWA1FS200R07S*	A1	1200	200	1.20	21.0
	KWA1FS400R07S	A1	650	400	1.45	26.5
	KWA2FS800R07S	A2	650	800	1.60	29.0
	KWA2FS450R12S		1200	450	1.95	48.5
	KWA3FS800R08S*	A3	800	800	1.70	35.0

*研发中For researching

High V & High Power

超高压

针对电网电力传输，轨道交通等高压大功率应用，中科君芯已完成1700V-6500V IGBT芯片的研发，助力产业布局国产化。

For power transmission, traction application, Junshine launch 1700V-6500V high voltage high power IGBT product to meet customer new requirement.

► 特性 Features

采用最新场截止型IGBT芯片
低导通损耗
导通压降正温度系数，易于并联使用
高动态坚固性
低封装寄生电感
内置FRD芯片反向恢复软度高

Field-stop IGBT chip
Low Vce(sat)
Positive temperature coefficient for easy paralleling
High dynamic robustness
Low package parasitic inductance
Improved FWD softness

► 性能参数/Technical data

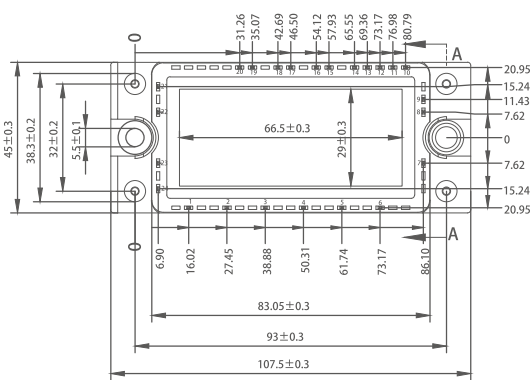
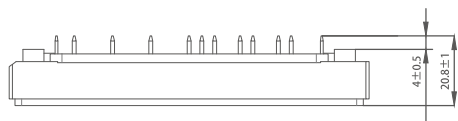
电路结构	产品名称	封装	额定电压	额定电流	Vce(sat)	Eoff
			(V)	(A)	(V)	(mJ)
IGBT单管						
	KWGC54N250S	Die	2500	54	2.85	21.0
	KWGC62N330S		3300	62	2.65	54.0
	KWGC40N450S		4500	40	2.70	59.0
	KWGC25N650S		6500	25	4.10	77.0
IGBT模块						
	KWJFZ1200R33S	H3	3300	1200	2.40	3750.0
	KWJFZ50R65S	H2	6500	50	4.30	150.0



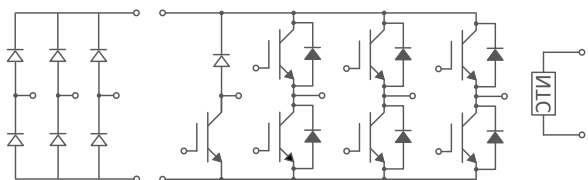
模块封装图 Outline of IGBT module

模块尺寸 (单位: mm)
Dimension of module (unit:mm)

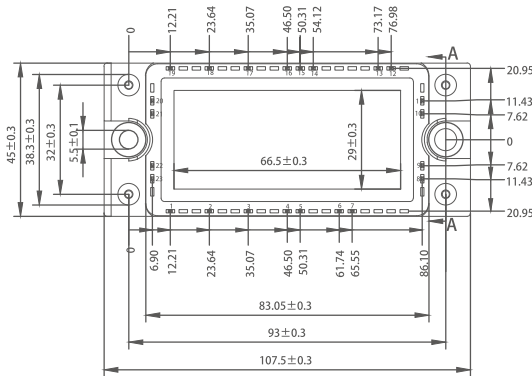
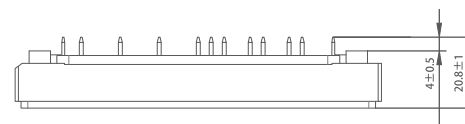
L1



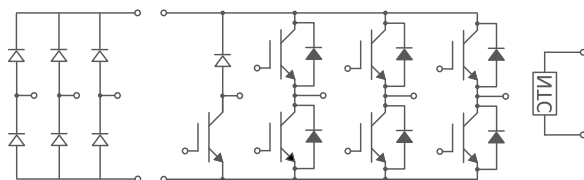
电路示意图
Dircuit diagram



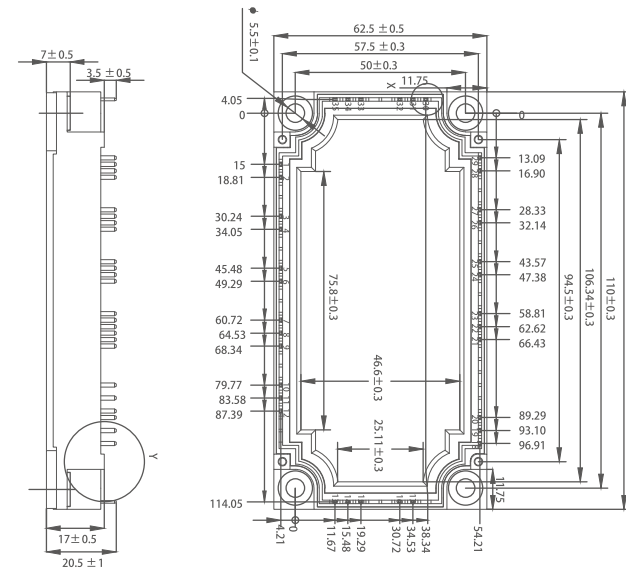
L1-1



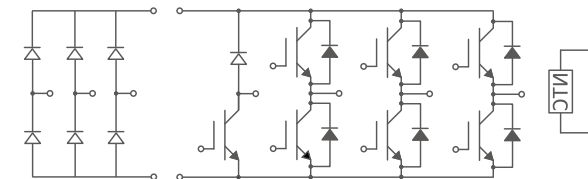
电路示意图
Dircuit diagram



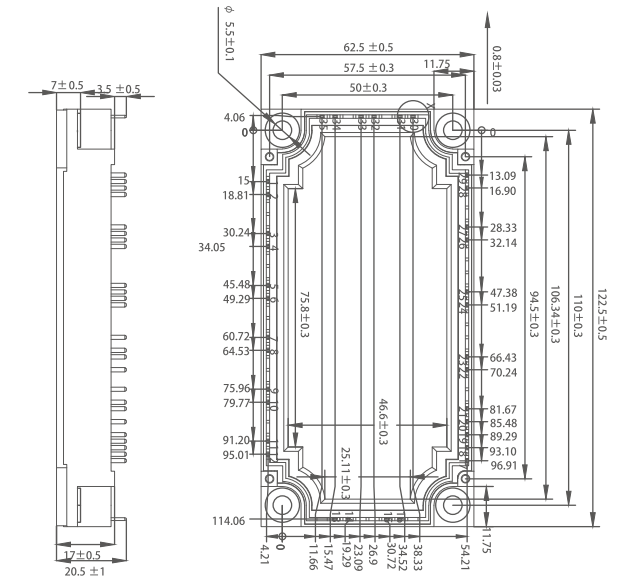
L2



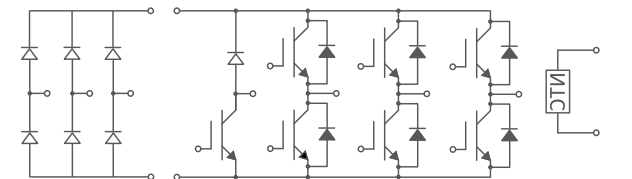
电路示意图
Dircuit diagram



L2-1



电路示意图
Dircuit diagram



L4

电路示意图
Dircuit diagram

