海明微半导体
HIMINGWAY

海明微半导体产品介绍

Introduction to Himingway Semiconductor Products

安徽海明微半导体有限公司 Anhui Himingway Semiconductor Co., Ltd

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关于海明微

海明微半导体是一家专注于功率半导体器件研发与生产的高科技企业。公司核心团队由国际知名半导体企业资深专家组成，拥有 20 余年行业经验，涵盖晶圆设计、材料选型、制造工艺及封测等全流程。凭借深厚技术积累，成功研发出多款高性能功率器件，产品性能对标国际一流，具备高效率、低损耗、优异一致性等特点，广泛应用于新能源汽车、光伏、储能、充电桩、工业自动化、消费电子等领域。公司秉持质量至上理念，建立完善质量管理体系，从原材料采购到成品出厂，严格把控每一个环节，确保产品在复杂工况下稳定运行。未来，海明微半导体将持续创新，拓展产品线，优化服务，推动行业发展。

About Himingway

Himingway is a high-tech enterprise specializing in the research, development, and production of power semiconductor devices. The company's core team consists of seasoned experts from internationally renowned semiconductor firms, boasting over two decades of industry experience spanning wafer design, material selection, manufacturing processes, and packaging and testing. With profound technical expertise, the company has successfully developed multiple high-performance power devices, whose performance benchmarks international standards and features characteristics such as high efficiency, low loss, and exceptional consistency. These products are widely applied in fields including new energy vehicles, photovoltaics, energy storage, charging stations, industrial automation, and consumer electronics. Upholding a quality-first philosophy, the company has established a comprehensive quality management system, rigorously controlling every stage from raw material procurement to finished product delivery to ensure stable operation under complex working conditions. Looking ahead,Himingway will continue to innovate, expand its product portfolio, optimize services, and drive industry advancement.

安徽海明微半导体有限公司 Anhui Himingway Semiconductor Co., Ltd

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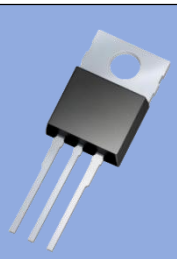
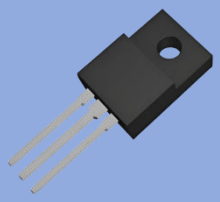
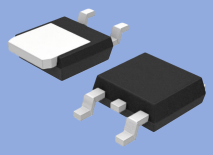
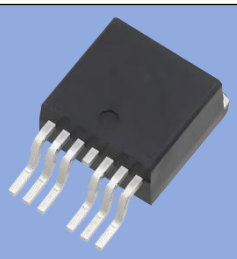
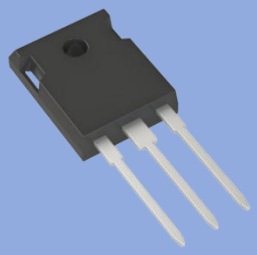
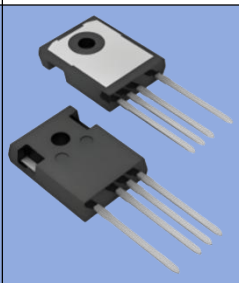
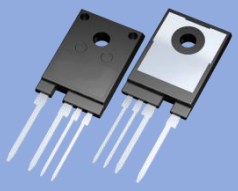
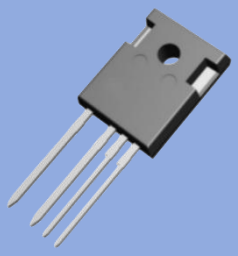
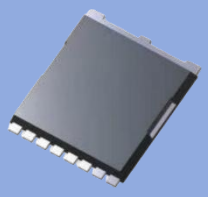
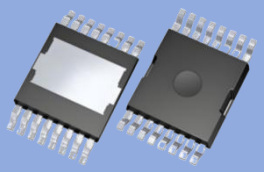
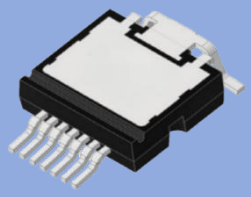
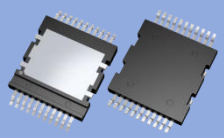
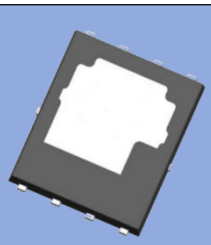
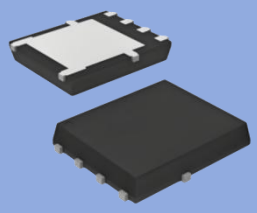
SiC MOS 对照参数选型表
SiC MOS Comparison Parameter Selection Table

漏源电压 V_{DSS} (V)	导通电阻 (mΩ) RDS(on)				
		TO-220-3L	TO-220F-3L	TO-252-2L	TO-263-7L
650	16				HC016N065F6R
	20				HC020N065F6R
	26				HC026N065F6R
	34				HC034N065F6R
	44				HC044N065F6R
700	190	HC190N070B2E	HC190N070J2E	HC190N070A5E	
	260	HC260N070B2E	HC260N070J2E	HC260N070A5E	
1200	16				HC016N120F6R
	24				HC024N120F6R
	120				HC120N120F6R
漏源电压 V_{DSS} (V)	导通电阻 (mΩ) RDS(on)				
		TO-247-3L	TO-247-4L	TO-247-4L(HC)	TO-247S-4L
650	16		HC016N065R4R	HC016N065R4R	
	20		HC020N065R4R	HC020N065R4R	
	26	HC026N065B4R	HC026N065R4R	HC026N065R4R	
	34	HC034N065B4R	HC034N065R4R	HC034N065R4R	
	44		HC044N065R4R	HC044N065R4R	
1200	16		HC016N120R4R	HC016N120R4R	
	24		HC024N120R4R	HC024N120R4R	
	32		HC032N120C4T		HC032N120G4T
	120	HC120N120B4R	HC120N120R4R	HC120N120R4R	

SiC MOS 对照参数选型表
SiC MOS Comparison Parameter Selection Table

漏源电压 V_{DSS} (V)	导通电阻 (mΩ) RDS(on)				
		TOLL	TOLT	TSCPAK	Q-DPAK
650	16		HC016N065D7R	HC016N065B8R	
	20		HC020N065D7R		
	26		HC026N065D7R		
	34	HC034N065C7R	HC034N065D7R		
	44	HC044N065C7R			
1200	16			HC016N120B8R	HC016N120E7R
	24			HC024N120B8R	HC024N120E7R
	32			HC032N120B8T	HC032N120E7T
	120			HC120N120B8R	

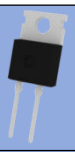
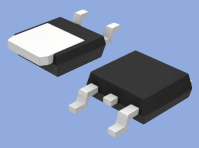
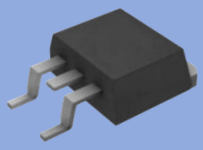
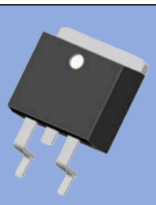
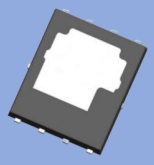
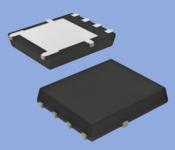
漏源电压 V_{DSS} (V)	导通电阻 (mΩ) RDS(on)		
		PDFN 5060	DFN 8080
700	190	HC190N070P1E	HC190N070S1E
	260	HC260N070P1E	HC260N070S1E

SiC MOS 详细参数选型表
Detailed Parameter Selection Table for SiC MOS

序号	产品型号	封装形式	漏源电压(V)	导通电阻(mΩ)		栅极阈值电压(V)	漏极电流(A)		栅极电荷(nC)
No.	Type	Package	V_{DS}max (V)	$R_{DS(on)}$ (mΩ) @15V	$R_{DS(on)}$ (mΩ) @18V	$V_{GS(th)}$ (V)	I_D (A) V_{GS} = 18 V; Tmb = 25° C	I_D (A) V_{GS} = 18 V; Tmb = 100° C	Qg (nC)
1	HC190N070P1E	PDFN 5060	700	240	190	2.2-3.8	19	11	17.6
2	HC190N070S1E	DFN 8080	700	240	190	2.2-3.8	19	11	17.6
3	HC190N070A5E	TO-252-2L	700	240	190	2.2-3.8	19	11	17.6
4	HC190N070B2E	TO-220-3L	700	240	190	2.2-3.8	20	11	17.6
5	HC190N070J2E	TO-220F-3L	700	240	190	2.2-3.8	11	6	17.6
6	HC260N070P1E	PDFN 5060	700	320	240	2.2-3.8	19	11	17.6
7	HC260N070S1E	DFN 8080	700	320	240	2.2-3.8	12	7	17.6
8	HC260N070A5E	TO-252-2L	700	320	240	2.2-3.8	12	7	17.6
9	HC260N070B2E	TO-220-3L	700	320	240	2.2-3.8	11	8	11.6
10	HC260N070J2E	TO-220F-3L	700	320	240	2.2-3.8	9	6.4	11.6
11	HC044N065R4R	TO-247-4L(HC)	650	55	44	1.9-3.5	64	45	59
12	HC044N065F6R	TO-263-7L	650	55	44	1.9-3.5	64	45	59
13	HC044N065C7R	TOLL	650	55	44	1.9-3.5	64	45	59
14	HC034N065B4R	TO-247-3L	650	43	34	1.9-3.5	81	58	73
15	HC034N065R4R	TO-247-4L(HC)	650	43	34	1.9-3.5	77	54	73
16	HC034N065F6R	TO-263-7L	650	43	34	1.9-3.5	81	58	73
17	HC034N065C7R	TOLL	650	43	34	1.9-3.5	81	58	73
18	HC034N065D7R	TOLT	650	43	34	1.9-3.5	81	58	73
19	HC026N065B4R	TO-247-3L	650	33	26	1.9-3.5	103	73	87
20	HC026N065R4R	TO-247-4L(HC)	650	33	26	1.9-3.5	103	73	87
21	HC026N065F6R	TO-263-7L	650	33	26	1.9-3.5	98	69	87
22	HC026N065D7R	TOLT	650	33	26	1.9-3.5	98	69	87
23	HC020N065R4R	TO-247-4L(HC)	650	25	20	1.9-3.5	132	93	123
24	HC020N065F6R	TO-263-7L	650	25	20	1.9-3.5	132	93	123
25	HC020N065D7R	TOLT	650	25	20	1.9-3.5	132	93	123
26	HC016N065R4R	TO-247-4L(HC)	650	20	16	1.9-3.5	154	109	191
27	HC016N065F6R	TO-263-7L	650	20	16	1.9-3.5	154	109	191
28	HC016N065D7R	TOLT	650	20	16	1.9-3.5	154	109	191
29	HC016N065B8R	TSCPAK	650	20	16	1.9-3.5	154	109	191
30	HC016N120B8R	TSCPAK	1200	20	16	1.9-3.5	134	95	215
31	HC016N120E7R	Q-DPAK	1200	20	16	1.9-3.5	154.4	109.2	215
32	HC016N120R4R	TO-247-4L(HC)	1200	20	16	1.9-3.5	158.6	112.2	215
33	HC016N120F6R	TO-263-7L	1200	20	16	1.9-3.5	154.4	109.2	215
34	HC024N120B8R	TSCPAK	1200	30	24	1.9-3.5	97	68	151
35	HC024N120E7R	Q-DPAK	1200	30	24	1.9-3.5	104.2	73.7	151

序号	产品型号	封装形式	漏源电压(V)	导通电阻(mΩ)		栅极阈值电压(V)	漏极电流(A)		栅极电荷(nC)
No.	Type	Package	V_{DS}max(V)	$R_{DS(on)}$(mΩ)@15V	$R_{DS(on)}$(mΩ)@18V	$V_{GS(th)}$(V)	I_D(A) V_{GS} = 18 V; Tmb = 25° C	I_D(A) V_{GS} = 18 V; Tmb = 100° C	Qg(nC)
36	HC024N120R4R	TO-247-4L(HC)	1200	30	24	1.9-3.5	106.4	75.2	151
37	HC024N120F6R	TO-263-7L	1200	30	24	1.9-3.5	104.2	73.7	151
38	HC032N120C4T	TO-247-4L	1200	40	32	1.8-3.8	91	65	88
39	HC032N120G4T	TO-247S-4L	1200	40	32	1.8-3.8	91	65	88
40	HC032N120E7T	Q-DPAK	1200	40	32	1.8-3.8	91	65	88
41	HC032N120B8T	TSCPAK	1200	40	32	1.8-3.8	91	65	88
42	HC120N120B8R	TSCPAK	1200	150	120	1.9-3.5	24.6	17.4	40
43	HC120N120R4R	TO-247-4L(HC)	1200	150	120	1.9-3.5	28.7	20.3	40
44	HC120N120B4R	TO-247-3L	1200	150	120	1.9-3.5	23.4	16.4	40
45	HC120N120F6R	TO-263-7L	1200	150	120	1.9-3.5	28.7	20.3	40

SiC SBD 对照参数选型表
SiC SBD Comparison Parameter Selection Table

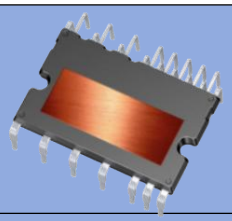
阻断电压 VRRM(V)	正向电流 IF(A)					
		TO-220-2L	TO-220I-2L	TO-220F-2L	TO-247-2L	TO-247-3L
650	4	HD004N065F1X		HD004N065F3X		
	6	HD006N065F1X		HD006N065F3X		
	8	HD008N065A2X		HD008N065H2X		
	10	HD010N065F1X	HD010N065J7X		HD010N065A4X	
	15	HD015N065F1X				
	16					HD016N065B4X
	20	HD020N065F1X			HD020N065F9X	HD020N065F4X
1200	2	HD002N120A2X				
	5	HD005N120A2J				
	10	HD010N120A2X			HD010N120A4X	HD010N120B4X
	20	HD020N120A2X			HD020N120F9X HD020N120A4E	HD020N120F4X
	30				HD030N120F9X HD030N120A4E	
	40				HD040N120A4E HD040N120A4X	HD040N120F4X
1400	40				HD040N140A4R	
	80				HD080N140A4R	
阻断电压 VRRM(V)	正向电流 IF(A)					
		TO-252-2L	TO-252-3L	TO-263-2L	DFN 5*6	DFN 8*8
650	4	HD004N065J6X			HD004N065D4X	
	6	HD006N065J6X			HD006N065D4X	HD006N065S1X
	8	HD008N065J6X			HD008N065D4X	HD008N065D7X
	10	HD010N065J6X		HD010N065J2X	HD010N065P1X	HD010N065S1X
	20		HD020N065B5X			
1200	2	HD002N120A5X				
	6	HD006N120A5X				
	10			HD010N120A6X		
	20			HD020N120A6X		

SiC SBD 详细参数选型表
Detailed parameter selection table for SiC SBD

序号	型号	封装	阻断电压(V)	正向电流(A)	正向压降(V)	反向漏电流(A)	总电容电荷(nC)	浪涌电流(A)
No.	Type	Package	V_{RRM}(V)	I_F(A)	V_F@25°C (V)	I_R@25°C (A)	Q_C(nC)	I_{FSM}(A)
1	HD004N065F1X	TO-220-2L	650	4	1.41	2	11	34
2	HD004N065J6X	TO-252-2L	650	4	1.41	2	11	34
3	HD004N065F3X	TO-220F-2L	650	4	1.41	2	11	34
4	HD004N065D4X	DFN 5*6	650	4	1.41	2	11	34
5	HD006N065F1X	TO-220-2L	650	6	1.38	2	22	48
6	HD006N065J6X	TO-252-2L	650	6	1.38	2	22	48
7	HD006N065F3X	TO-220F-2L	650	6	1.38	2	22	66
8	HD006N065D4X	DFN 5*6	650	6	1.38	2	22	48
9	HD006N065S1X	DFN 8*8	650	6	1.38	2	22	48
10	HD008N065A2X	TO-220-2L	650	8	1.38	3	28	68
11	HD008N065H2X	TO-220F-2L	650	8	1.38	2	28	64
12	HD008N065J6X	TO-252-2L	650	8	1.38	3	28	68
13	HD008N065D4X	DFN 5*6	650	8	1.38	3	28	55
14	HD008N065D7X	DFN 8*8	650	8	1.38	3	28	55
15	HD010N065A4X	TO-247-2L	650	10	1.28	3	40	100
16	HD010N065J7X	TO-220I-2L	650	10	1.28	3	40	80
17	HD010N065F1X	TO-220-2L	650	10	1.45	2	36	80
18	HD010N065J6X	TO-252-2L	650	10	1.4	2	36	80
19	HD010N065P1X	DFN 5*6	650	10	1.4	2	36	80
20	HD010N065J2X	TO-263-2L	650	10	1.4	2	36	80
21	HD010N065S1X	DFN 8*8	650	10	1.4	2	36	80
22	HD015N065F1X	TO-220-2L	650	15	1.42	3	47	110
23	HD016N065B4X	TO-247-3L	650	16	1.38	3	56	68
24	HD020N065F1X	TO-220-2L	650	20	1.4	5	75	160
25	HD020N065F9X	TO-247-2L	650	20	1.4	5	75	160
26	HD020N065F4X	TO-247-3L	650	20	1.4	2	72	80
27	HD020N065B5X	TO-252-3L	650	20	1.4	5	75	160
28	HD002N120A2X	TO-220-2L	1200	2	1.4	3	14	24
29	HD002N120A5X	TO-252-2L	1200	2	1.4	3	14	24
30	HD005N120A2J	TO-220-2L	1200	5	1.4	1	31	64
31	HD006N120A5X	TO-252-2L	1200	6	1.38	2	22	48
32	HD010N120B4X	TO-247-3L	1200	10	1.4	2	72	55
33	HD010N120A2X	TO-220-2L	1200	10	1.45	4	61	80
34	HD010N120A4X	TO-247-2L	1200	10	1.45	4	61	80
35	HD010N120A6X	TO-263-2L	1200	10	1.45	4	61	80
36	HD020N120F4X	TO-247-3L	1200	20	1.45	4	122	80
37	HD020N120A2X	TO-220-2L	1200	20	1.45	15	126	160
38	HD020N120F9X	TO-247-2L	1200	20	1.45	15	126	160

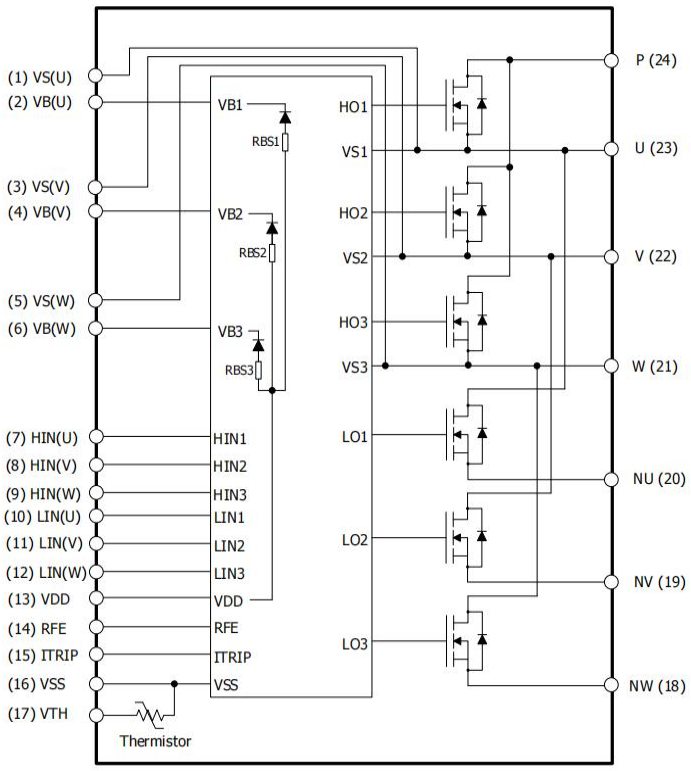
序号	型号	封装	阻断电压(V)	正向电流(A)	正向压降(V)	反向漏电流(A)	总电容电荷(nC)	浪涌电流(A)
No.	Type	Package	V_{RRM}(V)	I_F(A)	V_F@25°C(V)	I_R@25°C(A)	Q_C(nC)	I_{FSM}(A)
39	HD020N120A6X	TO-263-2L	1200	20	1.45	15	126	160
40	HD020N120A4E	TO-247-2L	1200	20	1.4	100	121	135
41	HD030N120A4E	TO-247-2L	1200	30	1.4	100	180	180
42	HD040N120A4E	TO-247-2L	1200	40	1.4	100	241	225
43	HD040N120F4X	TO-247-3L	1200	40	1.45	15	252	160
44	HD030N120F9X	TO-247-2L	1200	30	1.48	15	208	255
45	HD040N120A4X	TO-247-2L	1200	40	1.49	30	274	330
46	HD040N140A4R	TO-247-2L	1400	40	1.49	40	99	360
47	HD080N140A4R	TO-247-2L	1400	80	1.49	80	218	600

SiC IPM 详细参数选型表与特点
Detailed parameter selection table and characteristics of SiC IPM

阻断电压 V_{DSS} (V)	导通电阻 (mΩ) RDS(on) (mΩ)@18V	持续电流 I_D (A)	 DIP 36x23D
1200	40	25	6HP25N120A9C
	32	30	6HP30N120A9C

潜在应用领域 Potential applications

- 风扇驱动器
  Fan drives
- 有源功率因数校正技术
  active power factor correction
- 高效电机驱动器
  high performance motor drives
- 车载空调系统
  Car air conditioning system

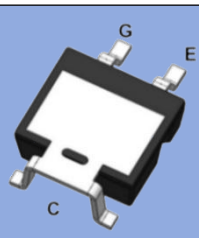


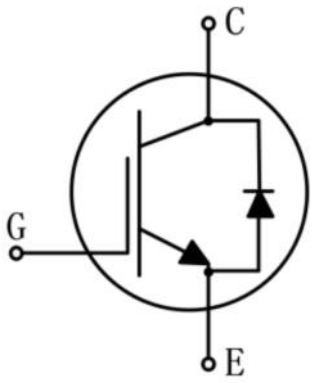
SiC IPM 内部原理图
Internal schematic diagram of SiC IPM

特点 Features

- ◆ 完全隔离的双内联模制模块，1200V 耐压等级引脚最少、尺寸最小的 SiC IPM
  Fully isolated Dual In-Line molded module, SiCIPM with the least number of pins and smallest size for 1200V withstand voltage level
- ◆ 抗压 1200V SOI 栅极驱动技术，具有抗瞬态和负电压的稳定性
  Rugged 1200V SOI gate driver technology with stability against transient and negative voltage
- ◆ 允许负电位最高为-11V，用于 VBS=15V 时的信号传输
  Allowable negative VS potential up to -11 V for signal transmission at VBS = 15 V
- ◆ 带有集成自举电路
  Integrated bootstrap functionality
- ◆ 过流关断保护
  Over current shutdown
- ◆ 内置 NTC 热敏电阻温度监测
  Built-in NTC thermistor for temperature monitor
- ◆ 全通道欠压锁定
  Under-voltage lockout at all channels
- ◆ 所有相电流监测可访问低侧源极引脚（开放式源极）
  Low side source pins accessible for all phase current monitoring (open source)
- ◆ 交叉导通防护
  Cross-conduction prevention
- ◆ 6 个开关在保护期间自动关闭
  All of 6 switches turn off during protection
- ◆ 可编程故障清除计时和启用输入
  Programmable fault clear timing and enable input
- ◆ 无铅端子镀层；符合 RoHS 标准
  Lead-free terminal plating; RoHS compliant

顶部散热 IGBT 单管详细参数选型表
Top heat dissipation IGBT single tube detailed parameter selection table

集射极电压 VCE(V)	正向 IF(A)	 TSC263-4L
650	6	HE06R065H6DEHW
	10	HE10R065H6DHW HE10R065H6DEHW
	15	HE15R065H6DHW
	20	HE20R065H6DFS HE20R065H6DHW
	30	HE30R065H6DHW HE30R065H6CFS
	40	HE40R065H6DFS HE40R065H6CFS HE40R065H6DHU
1200	15	HE15R120H6DHW
	25	HE25R120H6DHU



顶部散热 IGBT 内部原理图
Internal schematic diagram of top heat dissipation IGBT

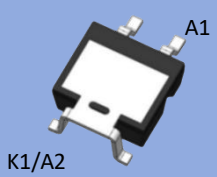
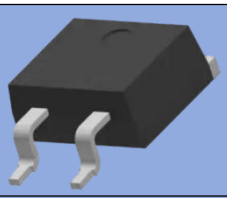
特点 Features

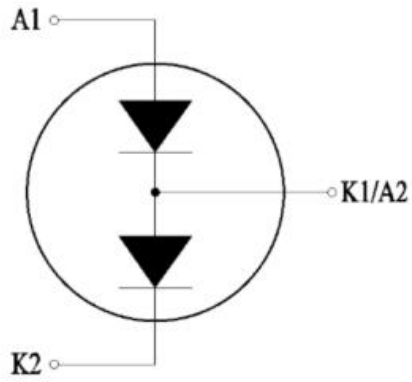
- 顶部散热技术
  Top side cooling technology
- 沟槽场截止技术
  Trench FS technology
- 10 微秒短路能力
  10μs short circuit capability
- 低栅极电荷
  Low gate charge
- 内置反并联快恢复二极管
  With anti-parallel fast recovery diode
- 无卤，符合 RoHS
  Halogen free, RoHScompliant

潜在应用领域 Potential applications

- 通用变频器
  General purpose inverters
- 电机驱动
  Motor drives
- 便携式储能系统
  Portable energy storage system

顶部散热整流管详细参数选型表
Detailed parameter selection table for top cooling rectifier tube

反向重复峰值电压 VRRM(V)	正向电流 I_F(A)	K2  TSC263-4L
1200	10	2H10120H6A
	15	2H15120H6A
	20	2H20120H6A
	30	2H30120H6A
1600	15	2H15160H6A
	25	2H25160H6A
	30	2H30160H6A
反向重复峰值电压 VRRM(V)	正向电流 I_F(A)	 TO263-2L （传统底部散热）
1000	20	2H20100A6A



整流管内部原理图

Internal schematic diagram of rectifier tube

特点 Features

- 顶部散热技术
  Top side cooling technology
- 光阻技术
  Photo Glass technology
- 低导通损耗缘于低正向压降
  Low conduction loss due to low VF
- 高浪涌电流承受能力
  High Surge Current Capability
- 无卤，符合 RoHS
  Halogen free, RoHS compliant

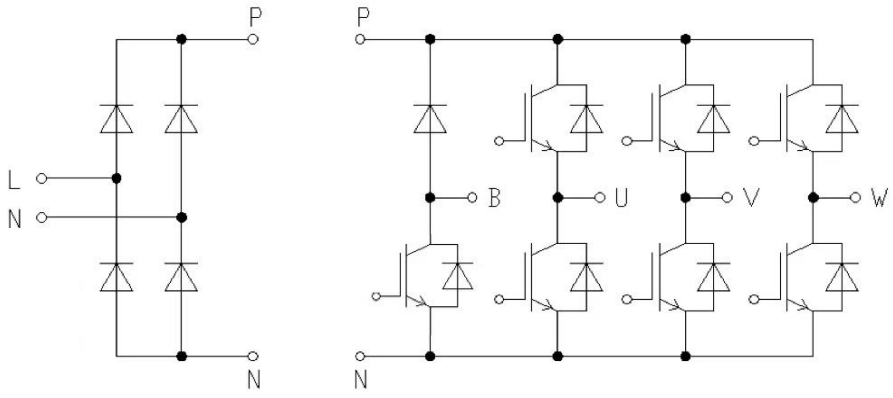
潜在应用领域 Potential applications

- 输入整流器
  Input rectifier
- 功率因素校正
  Power Factor Correction (PFC)

伺服驱动器顶部散热功率器件应用介绍
Introduction to the application of top heat dissipation power devices for servo drives

可运用型号 Applicable models	电性能值 Electrical performance value	封装 Package	典型应用场景 Typical application scenarios
HE06R065H6DEHW	650V/6A 集成 ESD	TSC263-4L	伺服驱动器、变频器、便携式储能、白电压缩机驱动、白电风机驱动 Servo drive, frequency converter, portable energy storage, white electric compressor drive, white electric fan drive
HE10R065H6DHW	650V/10A	TSC263-4L	
HE10R065H6DEHW	650V/10A 集成 ESD	TSC263-4L	
HE15R065H6DHW	650V/15A	TSC263-4L	
HE20R065H6DHW	650V/20A	TSC263-4L	
HE30R065H6DHW	650V/30A	TSC263-4L	
HE15R120H6DHW	1200V/15A	TSC263-4L	
HE25R120H6DHU	1200V/25A	TSC263-4L	
2H20100A6A	1000V/20A	TO-263-2L	
2H10120H6A	1200V/10A	TSC263-4L	
2H15120H6A	1200V/15A	TSC263-4L	
2H20120H6A	1200V/20A	TSC263-4L	
2H30120H6A	1200V/30A	TSC263-4L	
2H15160H6A	1600V/15A	TSC263-4L	
2H25160H6A	1600V/25A	TSC263-4L	
2H30160H6A	1600V/30A	TSC263-4L	

伺服驱动器实物图
PhySiCal picture of servo drive



220VAC 伺服电机驱动器应用框图
Application diagram of 220VAC servo motor driver

SiC MOS 产品运用领域及型号推荐
Recommended application areas and models of SiC MOS products

逆变焊机 Inverter welding machine

高频操作可以减小焊机电源系统中电容、电感或变压器的体积，从而降低电源成本，实现电源的小型化和美观化。高频应用能提高逆变焊机的焊接质量，减小逆变焊机的体积和重量，从而降低逆变焊机的结构成本和运输成本。

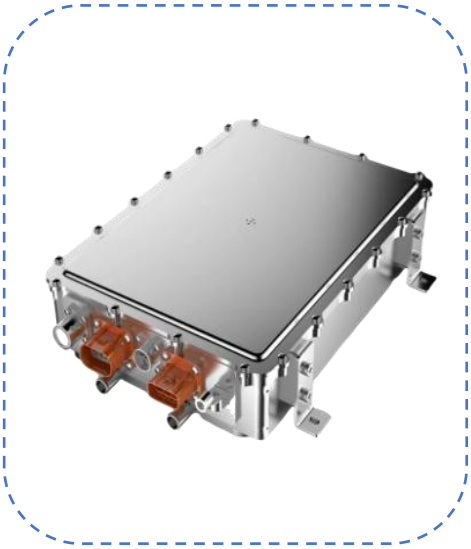
High-frequency operation can reduce the volume of capacitors, inductors or transformers in the power supply system of the welding machine, thereby lowering the power supply cost and achieving the miniaturization and aesthetics of the power supply. High-frequency applications can enhance the welding quality of inverter welders, reduce their volume and weight, and thereby lower the structural and transportation costs of inverter welders.

海明微推荐型号	电性能值	封装	替换 IGBT 单管规格
Recommended model	Electrical performance value	Package	Replace the IGBT single-tube specification
HC026N065R4R	26mΩ/650V，73A 100°	TO247-4L(HC)	75A/650V
HC034N065R4R	34mΩ/650V，54A 100°	TO247-4L(HC)	50A/650V
HC044N065R4R	44mΩ/650V，45A 100°	TO247-4L(HC)	40A/650V
HC032N120C4T	32mΩ/1200V，65A 100°	TO-247S-4L	40A/60A/1200V
HC032N120G4T	32mΩ/1200V，65A 100°	TO-247-4L	40A/60A/1200V

SiC MOS 产品运用领域及型号推荐
Recommended application areas and models of SiC MOS products

电动汽车双向

OBC Bidirectional OBC for electric vehicles



系统优势：提高功率密度，便于系统集成；减小无源器件体积；简化电路和控制，可用简单两电平 AFE 替代复杂的三电平拓扑。

System advantages: Enhance power density and facilitate system integration; Reduce the volume of passive components; To simplify the circuit and control, a simple two-level AFE can be used to replace the complex three-level topology.

海明微推荐型号	电性能值	封装	典型应用场景
Recommended model	Electrical performance value	Package	Typical application scenarios
HC016N065R4R	16mΩ/650V	TO247-4L(HC) TSCPAK	LLC DC/DC 电池侧（400V）
HC026N065R4R	26mΩ/650V	TO247-4L(HC) TOLT	LLC DC/DC 电池侧（400V）
HC044N065R4R	44mΩ/650V	TO247-4L(HC) TOLL	LLC DC/DC 电池侧（400V）
HC016N120R4R	16mΩ/1200V	TO247-4L(HC) TSCPAK, Q-DPAK	两电平 AFE（三相）
HC032N120G4T	32mΩ/1200V	TO247S-4L TSCPAK, Q-DPAK	两电平 AFE（三相）

SiC MOS 产品运用领域及型号推荐
Recommended application areas and models of SiC MOS products

PD 电源/适配器电源/TV 电源

PD Power Supply/Adapter/TV Power Supply

SiC 器件的应用优势：低导通电阻、高频特性与优良的高温表现，整机在多电压输出、长时间运行工况下依旧能够维持较高转换效率与较低温升，同时保证较小的体积。

Advantages of silicon carbide system: Low on-resistance, excellent high-frequency characteristics, 11and superior high-temperature performance enable the system to maintain high conversion efficiency and low temperature rise under multi-voltage output and prolonged

海明微推荐型号	电性能值	封装	典型应用场景
Recommended model	Electrical performance value	Package	Typical application scenarios
HD004N065	4A/6A/8A/10A/650V	DFN5x6 TO-220-2L、 TO-252-2L	PD 电源/适配器电源/TV 电源 PD Power Supply/Adapter/TV Power Supply
HD002N120	2A/5A/1200V	DFN5x6 TO-220-2L、 TO-252-2L	PD 电源/适配器电源/TV 电源 PD Power Supply/Adapter/TV Power Supply
HC160N065A5E	160mR/650V	TO252-2L, DFN8x8/5x6 TO220-3L	PD 电源/适配器电源/TV 电源 PD Power Supply/Adapter/TV Power Supply
HC190N070A5E	190mR/700V	TO252-2L, DFN8x8/5x6 TO220-3L	PD 电源/适配器电源/TV 电源 PD Power Supply/Adapter/TV Power Supply
HC260N070A5E	240mR/700V	TO252-2L, DFN8x8/5x6 TO220-3L	PD 电源/适配器电源/TV 电源 PD Power Supply/Adapter/TV Power Supply
HC380N070A5E	380mR/700V	TO252-2L, DFN8x8/5x6 TO220-3L	PD 电源/适配器电源/TV 电源 PD Power Supply/Adapter/TV Power Supply
HC450N070A5E	450mR/700V	TO252-2L, DFN8x8/5x6 TO220-3L	PD 电源/适配器电源/TV 电源 PD Power Supply/Adapter/TV Power Supply

SiC 产品运用领域及型号推荐
Recommended application areas and models of SiC products

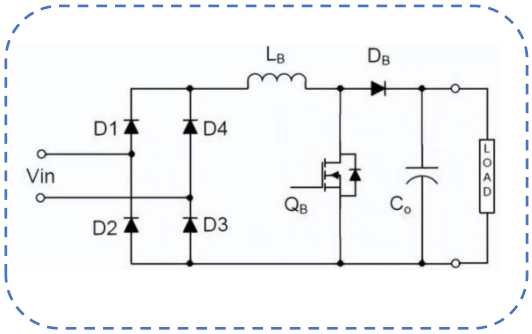
LED 电源 Led power supply

碳化硅系统优势：大功率 LED 电源方案，提高系统开关频率，保证电源效率，较 Si 功率器件体积重量可降低 30-40%，降低运输安装成本，更适应高空安装。高效率也降低植物照明用电成本。

Advantages of Silicon Carbide System: A high-power LED power solution that increases the system's switching frequency, ensures power efficiency, reduces the volume and weight of Si power devices by 30-40%, lowers transportation and installation costs, and is more suitable for high-altitude installation. High efficiency also reduces the cost of electricity for plant lighting.

海明微推荐型号 Recommended model	电性能值 Electrical performance value	封装 Package	典型应用场景 Typical application scenarios
HD004N065	4A/6A/8A/10A/650V	TO-220-2L、TO-252-2L	植物灯、舞台灯、路灯电源 Power supply for plant lights, stage lights, and street lights
HD002N120	2A/5A/1200V	TO-220-2L、TO-252-2L	植物灯、舞台灯、路灯电源 Power supply for plant lights, stage lights, and street lights
HC160N065A5E	160mR/650V	TO252-2L, DFN8x8/5x6 TO220-3L	植物灯、舞台灯、路灯电源 Power supply for plant lights, stage lights, and street lights
HC190N070A5E	190mR/700V	TO252-2L, TO220-3L	植物灯、舞台灯、路灯电源 Power supply for plant lights, stage lights, and street lights
HC260N070A5E	240mR/700V	TO252-2L, TO220-3L	植物灯、舞台灯、路灯电源 Power supply for plant lights, stage lights, and street lights
HC380N070A5E	380mR/700V	TO252-2L, TO220-3L	植物灯、舞台灯、路灯电源 Power supply for plant lights, stage lights, and street lights
HC450N070A5E	450mR/700V	TO252-2L, TO220-3L	植物灯、舞台灯、路灯电源 Power supply for plant lights, stage lights, and street lights

SiC 产品运用领域及型号推荐
Recommended application areas and models of SiC products



电源有桥 PFC Power supply with bridge PFC

碳化硅系统优势：提升效率；提高功率密度；减小无源器件体积和降低系统成本。

Advantages of silicon carbide system: improving efficiency; Improve power density; Reduce the volume of passive components and lower system costs.

海明微推荐型号 Recommended model	电性能值 Electrical performance value	封装 Package	典型应用场景 Typical application scenarios
HC044N065F6R	44mR/650V	TO263-7L, TOLL	LED 电源 led power supply/矿机电源 Mining machine power supply
HC160N065A5E	160mR/650V	TO252-2L, DFN8x8 TO220-3L	LED 电源 led power supply/矿机电源 Mining machine power supply
HC190N070A5E	190mR/700V	TO252-2L, TO220-3L	LED 电源 led power supply/矿机电源 Mining machine power supply
HC260N070A5E	240mR/700V	TO252-2L, TO220-3L	PD 电源/适配器电源/TV 电源 PD Power Supply/Adapter/TV Power Supply
HC380N070A5E	380mR/700V	TO252-2L, TO220-3L	PD 电源/适配器电源/TV 电源 PD Power Supply/Adapter/TV Power Supply

顶部散热产品运用领域及型号推荐
Recommended application areas and models for top cooling products

将空调整流、PFC、风机驱动、压缩机驱动全部采用 TSC263-4L 顶部散热 IGBT 单管及整流管，可实现封装统一、生产自动化、散热高效、成本降低、功率密度提升，是大批量空调电控的最优结构之一。

系统优势：

封装统一 → 采购成本下降

SMT 自动化 → 制造成本下降

散热结构统一 → 结构件成本下降

单管比 IPM 便宜 → 功率器件成本下降

设计复用 → 研发成本下降

整体可实现：

电控成本降低 10%－25%（视功率段而定）

The air conditioner's rectification, PFC, fan drive, and compressor drive all utilize the TSC263-4L top-cooled IGBT single tube and rectifier tube, enabling unified packaging, automated production, efficient heat dissipation, reduced costs, and improved power density, making it one of the optimal structures for mass-produced air conditioner electronic controls.

System Advantages: System-Level Cost Advantages

Encapsulation unification → reduction in procurement costs

SMT automation → reduced manufacturing costs

Unified heat dissipation structure → Reduced structural component costs

Single tube is cheaper than IPM → Power device cost reduction

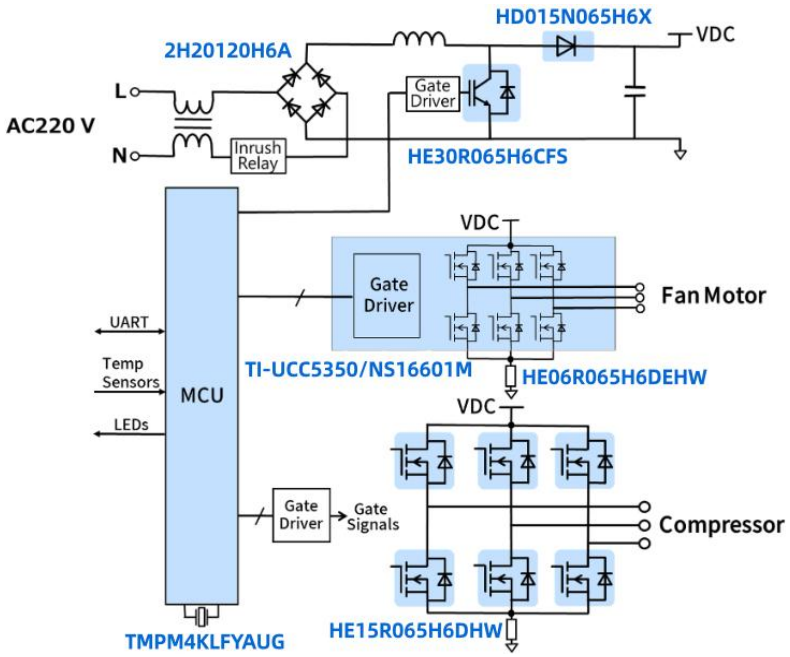
Design reuse → reduced R&D costs

Overall achievable:

Electrical control costs are reduced by 10%－25% (depending on the power range)

1.5 匹空调方案：220V AC 单相整流+1.5kW PFC+1.3kW 压缩机+200W 风扇驱动

1.5 horsepower air conditioning solution: 220V AC single-phase rectification+1.5kW PFC+1.3kW compressor+200W fan drive

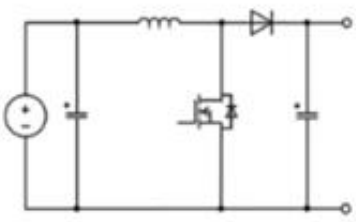


海明微推荐型号	电性能值	封装	典型应用场景
Applicable models	Electrical performance value	Package	Typical application scenarios
HE30R065H6CFS	650V/30A	TSC263-4L	1.5 匹,PFC 开关管
HD015N065F1X	650V/15A,20A	TO-220-2L, TSC263-4L	1.5 匹,PFC 续流管
2H20120H6A	1200V/20A；30A	TSC263-4L	1.5 匹,整流管
HE15R065H6DHW	650V/15A	TSC263-4L	1.5 匹,三相逆变器
HE30R065H6CFS	650V/30A	TSC263-4L	2 匹,PFC 开关管
HD020N065F1X	650V/20A	TO-220-2L, TSC263-4L	2 匹,PFC 续流管
2H20120H6A	1200V/20A；30A	TSC263-4L	2 匹,整流管
HE20R065H6DHW	650V/20A	TSC263-4L	2 匹,三相逆变器
HE40R065H6CFW	650V/40A，50A	TSC263-4L	3 匹,PFC 开关管
HD030N065F4X	650V/30A	TO-247-3L, TSC263-4L	3 匹,PFC 续流管
2H30120H6A	1200V/30A	TSC263-4L	3 匹,整流管
HE30R065H6DHW	650V/30A	TSC263-4L	3 匹,三相逆变器
HE06R065H6DEHW	650V/6A	TSC263-4L	集成 ESD，风扇驱动
HE10R065H6DEHW	650V/10A	TSC263-4L	集成 ESD，风扇驱动

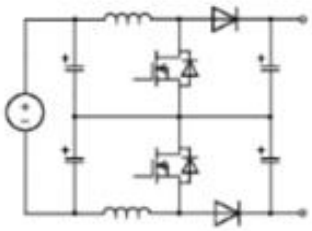
行业应用介绍——光伏/储能功率部分拓扑
Industry Application Introduction - Topology of Photovoltaic/Energy Storage Power Part

海明微推荐型号	电性能值	封装	典型应用场景
Recommended model	Electrical performance value	Package	Typical application scenarios
HD020N120F9X	20A/1200V	TO-247-2L	BOOST 升压
HC120N120R4R	150mΩ/1200V	TO247-4L(HC)	8KW 逆变器

DC/DC（Boost）

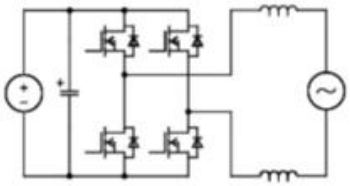


Single Boost

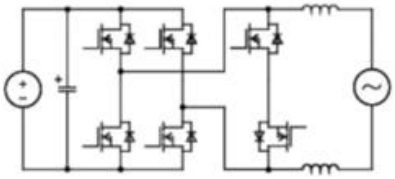


Dual Boost

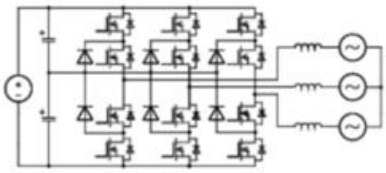
DC/AC



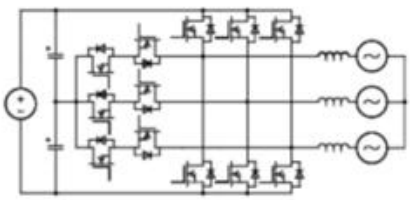
Full bridge inverter
(1-phase)



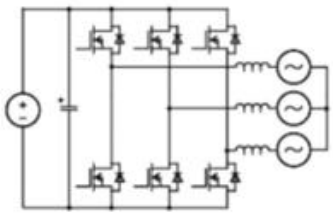
HERIC inverter
(1-phase)



3-Level NPC TYPE-I
(3-phase)



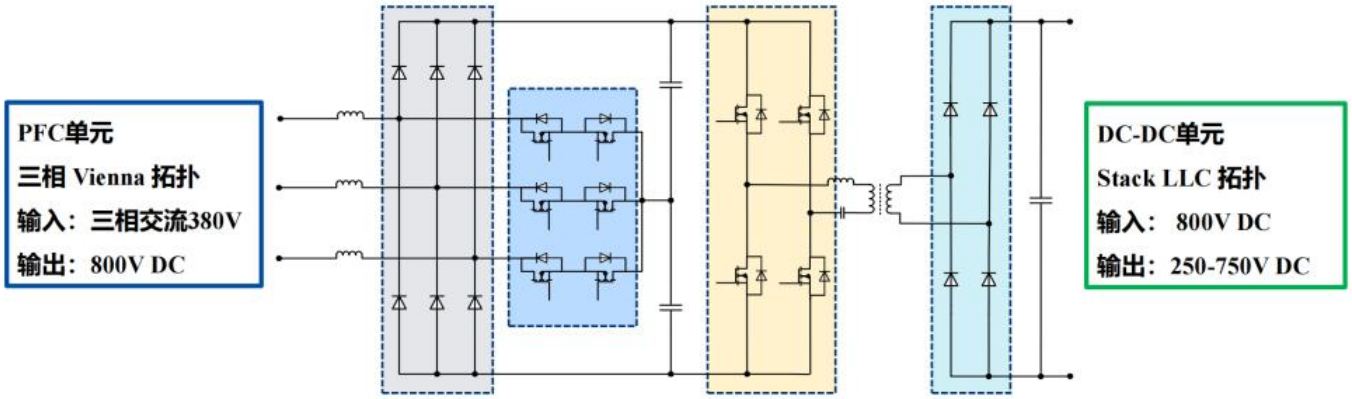
3-Level NPC TYPE-T
(3-phase)



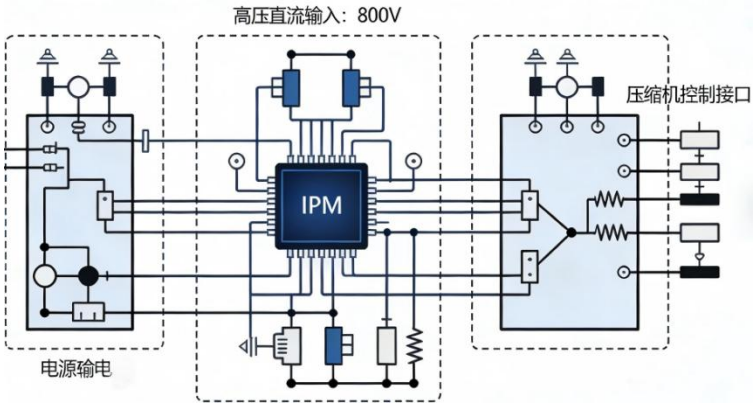
2-Level full bridge
(3-phase)

行业应用介绍——直流充电桩
Industry Application Introduction - DC Charging Pile

海明微推荐型号	电性能值	封装	典型应用场景
Recommended model	Electrical performance value	Package	Typical application scenarios
HD020N120F9X	20A/1200V	TO-247-2L	15KW 充电模块电源
HD030N120F9X	30A/1200V	TO-247-2L	20KW 充电模块电源
HC024N120E7R	24mΩ/1200V	TO-247-4L、Q-DPAK、TSCPAK	20-40KW 充电模块
HC024N120E7R	24mΩ/1200V	TO-247-4L、Q-DPAK、TSCPAK	20-40KW 充电模块



行业应用介绍——EV 800V 平台车载空调
Industry Application Introduction - EV 800V Platform Car Air Conditioning



碳化硅 IPM-6HPXXN120A9C 是 800V 电动汽车空调压缩机的理想选择，其 1200V SiC 耐压、20A/30A 输出与高集成度适配高压高频工况，能为整车带来续航提升、冷却简化、EMI 优化等核心价值.

续航提升 3%－5%：SiC MOSFET 开关损耗比硅 IPM 低 50%－70%，RDS（on）典型 32mΩ，高温特性稳定，降低电耗与冷却负担，间接减少续航衰减。

冷却系统简化：SiC 高温性能优（结温 175℃），模块外壳温度可从硅 IGBT 的 110℃ 降至 65℃，可简化液冷 / 风冷设计，减轻整车热管理重量与成本。

EMI 与 NVH 优化：20－40kHz 高频工作消除可闻噪声，低寄生电感与 SOI 驱动抑制振荡，降低 EMI 整改成本，提升乘坐舒适性。

开发与装配效率提升：集成 6 路 SOI 驱动、SiC MOSFET 与保护逻辑，PCB 面积减小 30%+，缩短开发周期；DIP36×23D 封装紧凑，适配机舱狭小空间。

可靠性与安全性增强：内置过流 / 过压 / 欠压 / 过热 / 防直通保护，NTC 实时测温，故障时快速关断并上报 CAN，降低高压失效风险

适配超低温热泵工况：死区时间短、开关频率高，支持 400－12000rpm 宽转速范围，提升冬季制热效率，减少 PTC 依赖，进一步优化续航。

高压安全裕量充足：1200V 单管耐压，无需器件串联，避免串联损耗与控制复杂，适配 800V 母线瞬态波动。

SiC IPM-6HPXXN120A9C: Ideal for 800V EV AC Compressors

This 1200V-rated SiC Intelligent Power Module (IPM), with 20A/30A output and high integration, is optimized for high-voltage, high-frequency EV AC compressors, offering key advantages:

Range Increase (3-5%): SiC MOSFETs have 50-70% lower switching loss vs. Si IGBTs, low RDS(on) (32mΩ typ.), and stable high-temp performance, reducing power consumption and cooling needs.

Simplified Cooling: Superior high-temp tolerance (Tj=175° C) allows lower case temps (~65° C vs. Si ~110° C), enabling simpler/cheaper thermal management.

EMI/NVH Optimization: High-frequency operation (20-40kHz) eliminates audible noise; low parasitic inductance and SOI driver suppress oscillation, lowering EMI costs and improving comfort.

Compact & Efficient: Integrated SOI driver, SiC MOSFETs, and protection reduce PCB size (>30%) and development time. DIP36×23D package fits tight spaces.

Robust Protection: Built-in safeguards (overcurrent, overvoltage, undervoltage, overtemperature, shoot-through) with NTC monitoring and CAN reporting enhance safety.

Wide Operating Range: Supports 400-12,000 rpm and ultra-low temps, improving heat pump efficiency, reducing PTC reliance, and further boosting range.

海明微半导体
HIMINGWAY

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