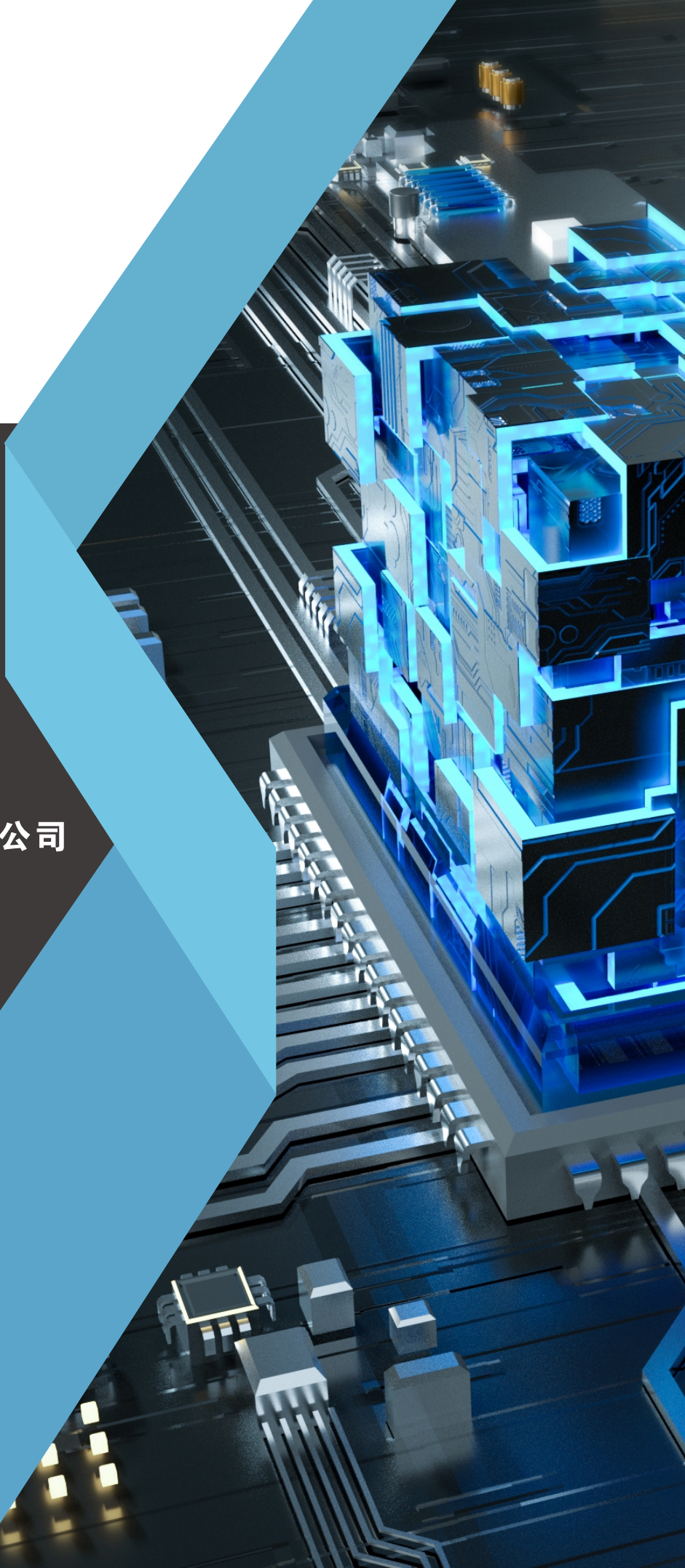


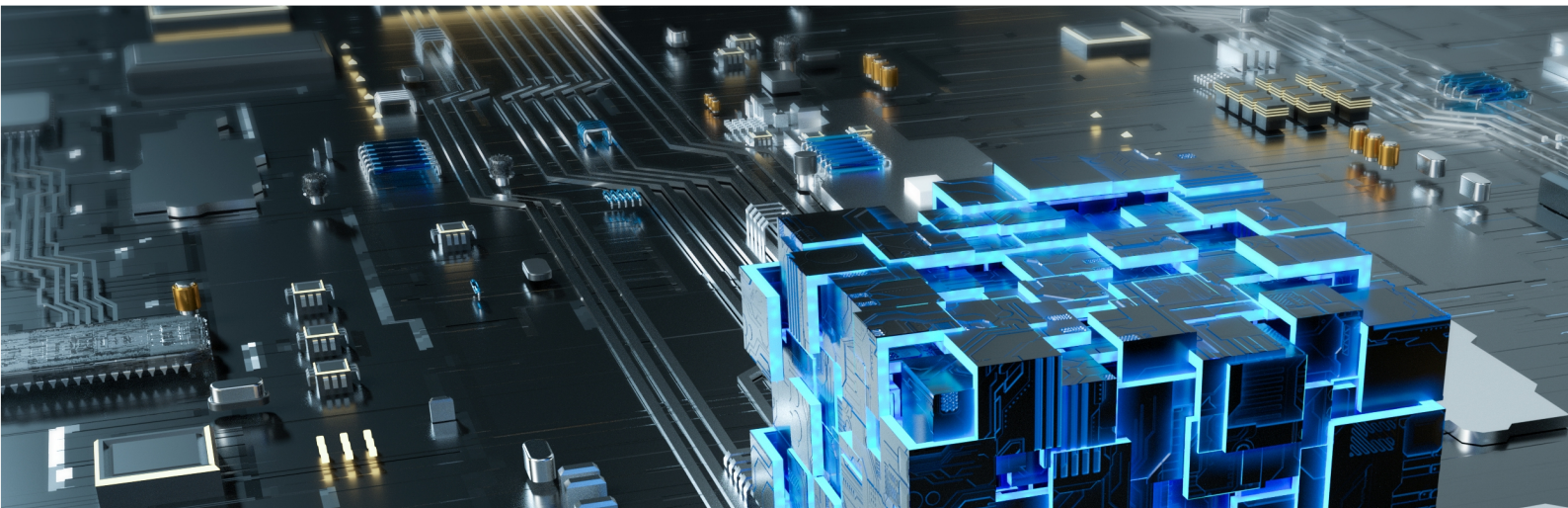


华虹攀芯
ZEALCORE

功率器件产品手册

上海华虹攀芯电子科技有限公司





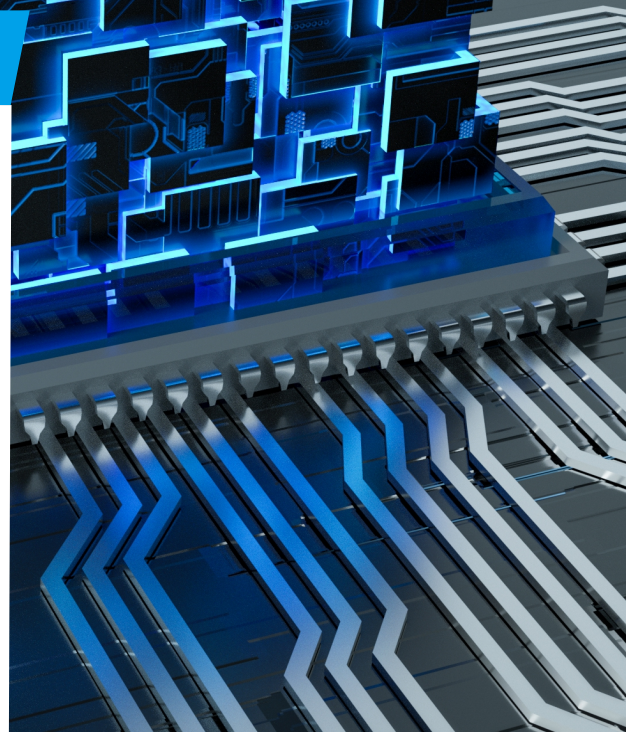
公司简介

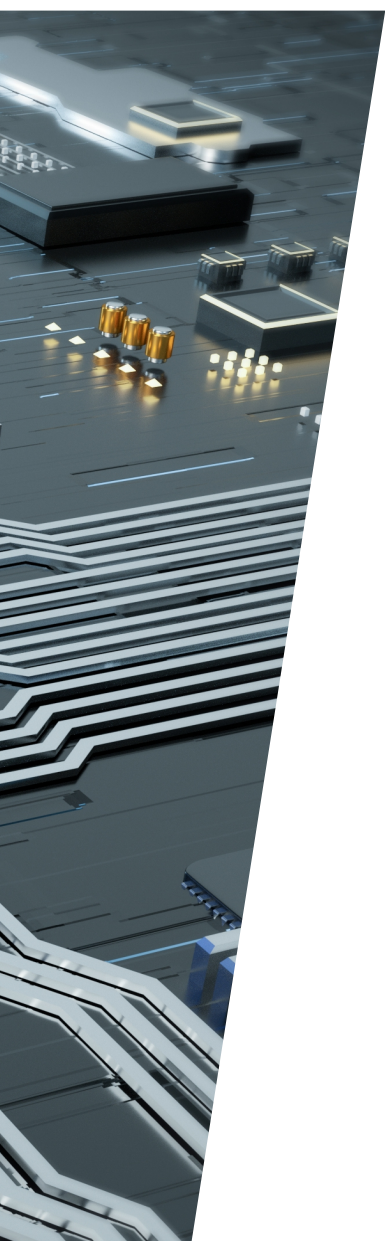
上海华虹挚芯电子科技有限公司系上海华虹(集团)有限公司下属的子公司。华虹集团本着整合和优化集团所属的制造资源优势以及树立“华虹”集成电路品牌的目的在于2000年12月30日在上海张江高科技园区成立了上海华虹挚芯电子科技有限公司。经过十多年的产品研制和市场探索，华虹挚芯已经逐步形成了具有自身特色的产品线，分别为：Super Junction MOS、SGT MOS、IGBT、LED驱动类IC、电源管理类IC、存储类IC产品。市场应用领域除了原有的传统家电和通讯外，积极开拓了绿色照明、智能家居等新兴应用领域，并得到了行业内众多知名品牌客户的认可。

公司通过了ISO9001质量体系认证，我们的质量方针是“精益求精，用户满意，追求卓越，争创一流”，结合华虹自身优势，本着为客户服务的宗旨，从严把控芯片设计、制造、封装、测试等每个环节，为客户提供稳定可靠，高性价比的集成电路产品。

2013年公司被工信部认定为“集成电路设计企业”

2017年公司被科技部认定为“国家高新技术企业”

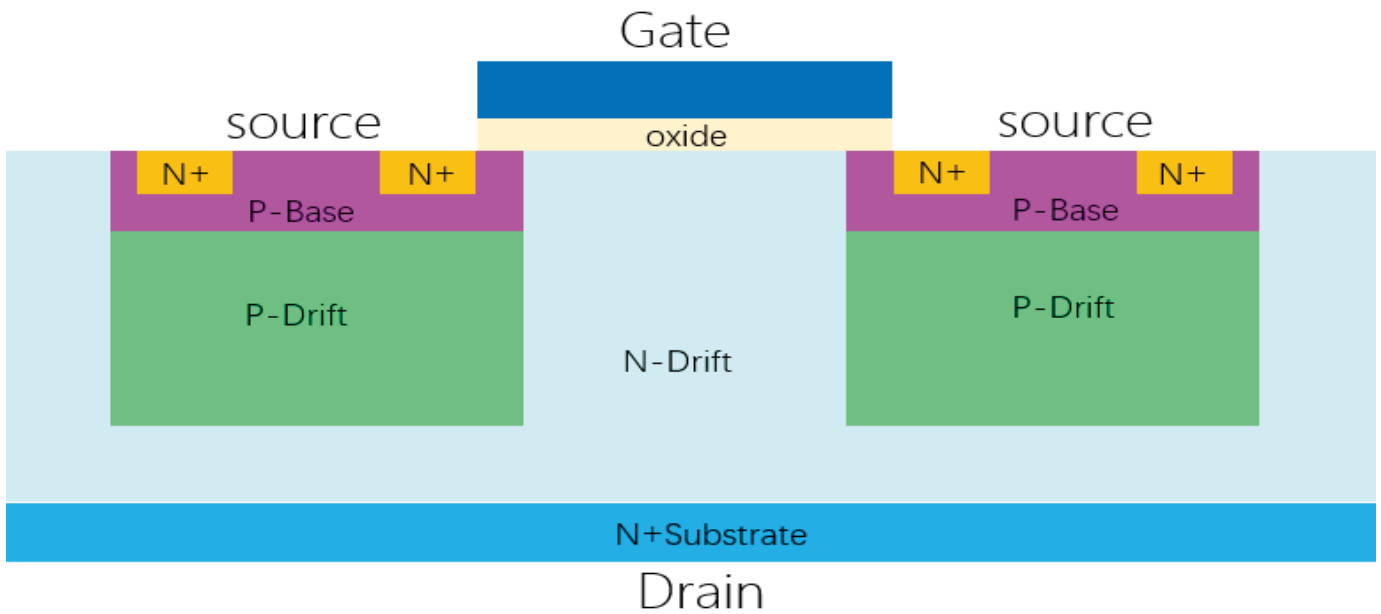




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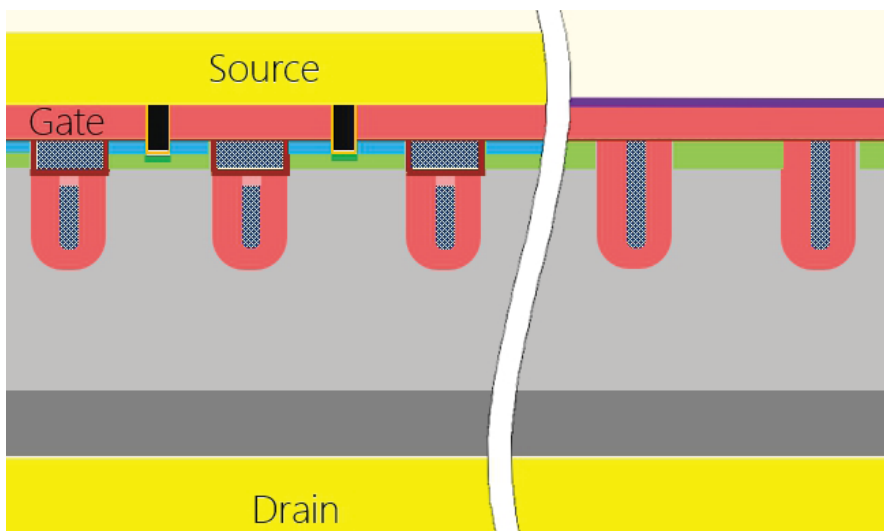
1、SJ MOS	3
2、SGT MOS	4
3、IGBT	6
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Super Junction MOSFET



Super Junction MOSFET其具有更快的开关速度、更低的导通损耗，极低的栅极电荷（ Q_g ），从而降低了器件的功率损耗，提高系统效率。华虹挚芯采用领先的单层外延工艺技术，并使用华虹工厂第三代超结技术。第三代超结MOSFET在第二代超结MOSFET产品的基础上大幅度提高了单位面积内的电流密度，同时改善了器件在系统中的EMI特性，产品特征导通电阻（ $R_{ds(on)} \cdot A$ ）降低27%，开关损耗降低13%，总能效提升1.5%

SGT-MOS



SGT-MOS产品采用了具有电荷平衡功能的屏蔽栅深沟（Shield Gate Deep Trench）技术，大幅提升了器件的开关特性和导通特性，同时降低了器件的特征导通电阻（ R_{sp} ）和栅极电荷（ Q_g ），华虹挚芯SGT产品覆盖30-200V 2A-180A功率等级，并拥有多种封装形式。采用华虹最新SGT工艺，优化产品性能，提升产品可靠性。

SGT MOS



SGT MOS主要应用领域 交流/直流电源的同步整流 直流电机驱动 逆变器 电池充电器和电池保护电路隔离的直流-直流转换器 36V-96V系统中的马达控制 不间断电源

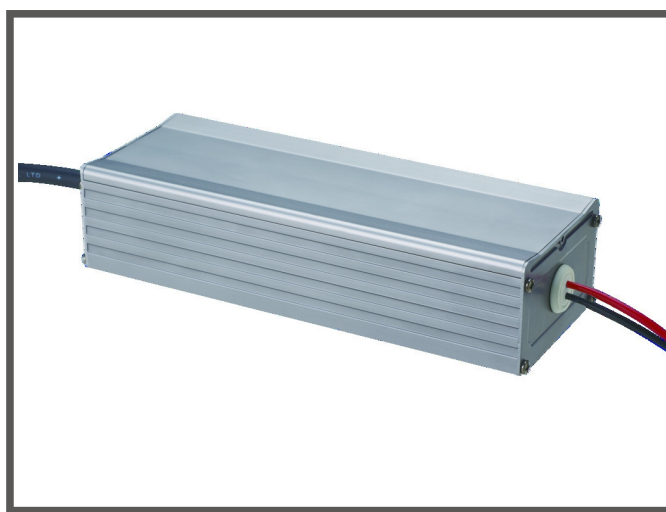


SGT主要型号：
耐压30V、40V、60V、80V、100V、120V、150V
电流2A—180A

Super Junction MOS



Super Junction MOS 主要应用领域 电脑打印机服务器电动工具等电源 工业道路照明 电视类 等消费类电子产品



Super Junction MOS 主要类型600V 22mR-950mR 650V 41mR-1.3R 700V 380mR-1.1R

SJMOS

P/N	Series	BVdss (V)	RDS(on)_MAX	Package	Status
HPC60R030B	B	600	30mΩ	TO-247	2021.Q3
HPC60R042B	B	600	42mΩ	TO-247	2021.4
HPC60R080B	B	600	80mΩ	TO-247	2021.5
HPC60R099B	B	600	99mΩ	TO-247,TO-220F,TO-220C	2021.Q3
HPC60R108B	B	600	108mΩ	TO247,TO220F,TO220C	MP
HPC60R140B	B	600	140mΩ	TO-247, TO-263-2, TO-220F, TO-220C	MP
HPC60R145B	B	600	145mΩ	PDFN8*8	MP
HPC60R180E	E	600	180mΩ	TO-247, TO-263-2, TO-220F, TO-220C	2021.Q2
HPC60R360	N	600	360mΩ	TO-252, TO-220C, TO-220F, PDFN5*6	MP
HPC60R360B	B	600	360mΩ	TO-263-2, TO-220F, TO-220C	MP
HPC60R680E	E	600	680mΩ	TO-251, TO-252, TO-220F, TO-262	MP
HPC60R950E	E	600	950mΩ	TO-252, TO-220F	MP
HPC65R022B	B	650	22mΩ	TO-247	2021.Q4
HPC65R030B	B	650	30mΩ	TO-247	2021.Q3
HPC65R048B	B	650	48mΩ	TO-247	2021.4
HPC65R080B	B	650	80mΩ	TO-247	2021.5
HPC65R100B	B	650	100mΩ	TO-220F	2021.4
HPC65R140B	B	650	140mΩ	TO-220F	2021.Q3
HPC65R180	N	650	180mΩ	TO-247, TO-263-2, TO-220F, TO-220C	MP
HPC65R180E	E	650	180mΩ	TO-247, TO-263-2, TO-220F, TO-220C	2021.Q2
HPC65R220D88	N	650	220mΩ	PDFN8*8	MP
HPC65R290E	E	650	290mΩ	TO-252, TO-220F	MP
HPC65R330EC	E	650	330mΩ	TO-251, TO-252, TO-220F, TO-262	MP
HPC65R360F	F	650	360mΩ	TO-252, TO-220C, TO-220F	2021.5

SJ MOS

P/N	Series	BVdss (V)	RDS(on)_MAX	Package	Status
HPC65R390	N	650	390mΩ	TO-252, TO-220C, TO-220F	2021.Q3
HPC65R390E	E	650	390mΩ	TO-252, TO-220F	MP
HPC65R600EC	E	650	600mΩ	TO-252, TO-220F	MP
HPC65R800E	E	650	800mΩ	TO-252, TO-220F	MP
HPC65R900E	E	650	900mΩ	TO-251, TO-252, TO-220F, TO-262	MP
HPC65R1K3E	E	650	1300mΩ	TO-252, TO-220F	2021.Q2
HPC70R190E	E	700	190mΩ	TO-252, TO-220F, TO-263-2	2021.Q4
HPC70R360F	F	700	360mΩ	TO-252, TO-220C, TO-220F	MP
HPC70R390F	F	700	390mΩ	TO-252, TO-220C, TO-220F	MP
HPC70R390E	E	700	390mΩ	TO-252, TO-220C, TO-220F	2021.5
HPC70R600E	E	700	600mΩ	TO-252, TO-220C, TO-220F	2021.Q3
HPC70R900E	E	700	900mΩ	TO-252, TO-220C, TO-220F	2021.Q3
HPC80R290	N	800	290mΩ	TO-247, TO-220C, TO-220F, TO-263-2	2021.Q4
HPC80R420	N	800	420mΩ	TO-247, TO-220C, TO-220F	2021.Q4
HPC80R900	N	800	900mΩ	TO-247, TO-220C, TO-220F	2021.Q4
HPC80R1K2	N	800	1200mΩ	TO-247, TO-220C, TO-220F	2021.Q4

SGT MOS

P/N	Polarity	BVdss(V)	V _{GS} (V)	V _{TH} (V)	R _{DS(on)_MAX} (mΩ)		Package	Status
				Typ	@VGS=10V	@VGS=4.5V		
HPT03N013LD56TR	N	30	± 20	1.8	1.3	1.7	PDFN5*6	2021.Q4
HPT03N017LD56TR	N	30	± 20	2	1.7	2.4	PDFN5*6	2021.Q4
HPT03N031LD33TR	N	30	± 20	2	3.1	4.5	PDFN3.3*3.3	MP
HPT04N010LT1D56TR	N	40	± 20	1.8	1	1.3	PDFN5*6	2021.Q4

SGT MOS

P/N	Polarity	BVdss(V)	V _{GS} (V)	V _{TH} (V)	R _{DS(on)_MAX} (mΩ)		Package	Status
				Typ	@VGS=10V	@VGS=4.5V		
HPT04N013LT1D56TR	N	40	± 20	2	1.2	1.8	PDFN5*6	2021.Q4
HPT04N025HT1D56TR	N	40	± 20	3	2.5	/	PDFN5*6	2021.5
HPT04N037LD56TR	N	40	± 20	1.8	3.7	8	PDFN5*6	MP
HPT04N077LT1DTR	N	40	± 20	2	0.77		TO-252	2021.Q3
HPT06N014HT1D56TR	N	60	± 20	3	1.4		PDFN5*6	2021.Q4
HPT06N027HT1D56TR	N	60	± 20	3	2.7		PDFN5*6	2021.Q4
HPT06N033HT1D56TR	N	60	± 20	3	3.3		PDFN5*6	2021.Q4
HPT08N025HS2TR	N	80	± 20	3	2.5	3	TO-263-2	MP
HPT08N042HT1TC	N	80	± 20	3.2	4.2		TO-220C	MP
HPT08N042HT1S2TR	N	80	± 20	3.2	4.2		TO-263-2	MP
HPT08N058HT1TC	N	80	± 20	3.5	5.8	8	TO-220C	2021.Q4
HPT10N030HT1S2TR	N	100	± 20	3	3		TO-263-2	2021.Q3
HPT10N037HT1S2TR	N	100	± 20	3	3.7		TO-263-2	2021.Q4
HPT10N042HLWD56TR	N	100	± 20	3	4.2		PDFN5*6	MP
HPT10N043HD56TR	N	100	± 20	3	4.3		PDFN5*6	MP
HPT10N043HLWTC	N	100	± 20	3	4.3		TO-220AB	MP
HPT10N043HLWS2TR	N	100	± 20	3	4.1		TO-263-2	MP
HPT10N047LD56TR	N	100	± 20	1.65	4.7	5.2	PDFN5*6	MP
HPT10N070HT1D56TR	N	100	± 20	3	7		PDFN5*6	2021.Q3
HPT12N070HT1TC	N	120	± 20	3	7		TO-220AB	2021.5
HPT15N050HT1TC	N	150	± 30	3.5	5		TO-220C	2021.Q3
HPT15N059HT1T	N	150	± 30	3.5	5.9		TO-247	2021.6
HPT15N062HT1T	N	150	± 20	3	6.2		TO-247	2021.6

IGBT

P/N	VCE(S)V	IC(A)	VCE(SAT)_TYP(V)	tf_typ(ns)	Eoff_typ(mJ)	Series	Status
HPI50N120FSL	1200	50	2.0	280	3.2	Low Speed, Low Vce	MP
HPI100N120FSL	1200	100	1.8		7.5	Low Speed, Low Vce	MP
HPI200N65FSL	650	200				Low Speed, Low Vce	2021.Q3
HPI175N120FSL	1200	75				Low Speed, Low Vce	2021.Q4

Trench Mos

P/N	Package	V _{DSS} (V)	I _D (A)	V _{GS} (V)	V _{th}	R _{dson} (mΩ) @VGS10V	R _{dson} (mΩ) @VGS4.5V	R _{dson} (mΩ) @VGS2.5V	R _{dson} (mΩ) @VGS1.8V	N/P
					Typ	Typ	Typ	Typ	Typ	
HM2302BM	SOT-23	20	3	±10	0.75		40	55		N
HM2300AM	SOT-23	20	4.5	±10	0.65		19.5	25	33	N
HM2312AM	SOT-23	20	6	±10	0.65		13	20		N
HMN2018ASD*	SOP-8	20	10	±10	0.65		13	20		N
HM2312BM	SOT-23	20	6.8	±10	0.65		13	17	27	N
HMN2012A4	TO-252	20	30	±12	0.68		8	14		N
HMN2012AL	SOT23-3L	20	10	±12	0.68		8	14		N
HMN2002AD5	DFN5*6-8L	20	150	±12	0.7		1.3	1.5		N
HMN2002A8	TO-220-3L	20	200	±12	0.7		1.3	1.5		N
HMN2004A4	TO-252	20	100	±12	0.68		3	3.5		N
HMN2003A4	TO-252	20	120	±12	0.65		2.3	2.8		N
HMN2005A4	TO-252	20	90	±12	0.65		3.7	4.7		N
HMN2005AD3	DFN3.3*3.3-8L	20	35	±12	0.65		3.7	4.7		N
HMN2005AS	SOP-8	20	25	±12	0.65		3.7	4.7		N
HMN2007A4	TO-252	20	60	±12	0.65		5	6.2		N
HM3400AM	SOT23	30	5.6	±12	0.9	20	23	33		N

备注: *为Dual channel

Trench Mos

P/N	Package	V _{DSS} (V)	I _D (A)	V _{GS} (V)	V _{th}	R _{dson} (mΩ) @V _{GS} 10V	R _{dson} (mΩ) @V _{GS} 4.5V	R _{dson} (mΩ) @V _{GS} 2.5V	R _{dson} (mΩ) @V _{GS} 1.8V	N/P
					Typ	Typ	Typ	Typ	Typ	
HM3400AL	SOT23-3L	30	6	±12	0.9	20	23	33		N
HM3404AM	SOT23	30	5.6	±20	1.5	21	27			N
HM3404AL	SOT23-3L	30	6	±20	1.5	21	27			N
HMN3016ASD*	SOP-8	30	10	±20	1.5	12	16			N
HMN3016AD3D*	DFN3.3*3.3-8L	30	10	±20	1.5	12	16			N
HMN3016AD3	DFN3.3*3.3-8L	30	25	±20	1.5	12	16			N
HMN3016A4	TO-252	30	25	±20	1.5	12	16			N
HMN3004A4	TO-252	30	120	±20	1.5	3	4			N
HMN3004AD5	DFN5*6-8L	30	60	±20	1.5	3	4			N
HMN3006AS	SOP-8	30	18	±20	1.5	4.8	7.5			N
HMN3006A4	TO-252	30	80	±20	1.5	4.8	7.5			N
HMN3006AD3	DFN3.3*3.3-8L	30	30	±20	1.5	4.8	7.5			N
HMN3006AD5	DFN5*6-8L	30	45	±20	1.5	4.8	7.5			N
HMN3005A4	TO-252	30	100	±20	1.5	3.8	6.5			N
HMN3005AD3	DFN3.3*3.3-8L	30	50	±20	1.5	3.8	6.5			N
HMN3002AD5	DFN5*6-8L	30	150	±20	1.6	1.4	2.4			NN
HMN3002A8	TO-220AB	30	210	±20	1.6	1.4	2.4			N
HMN3002H8	TO-220AB	30	210	±20	1.6	2.4	3.2			N
HM4406BS	SOP8	30	12	±20	1.5	7.5	9			N
HMN3012B4	TO-252	30	50	±20	1.5	7	10			N
HMN3012BD3	DFN3.3*3.3-8L	30	20	±20	1.5	7.5	10			N
HMN3012BD3D*	DFN3.3*3.3-8L	30	20	±20	1.5	7.5	10			N
HMN4045AM	SOT23	40	5	±20	1.5	35	45			N
HMN4028A4	TO-252	40	25	±20	1.2	21	24			N

备注: *为Dual channel

Trench Mos

P/N	Package	V _{DSS} (V)	I _D (A)	V _{GS} (V)	V _{th}	R _{dson} (mΩ) @V _{GS} 10V	R _{dson} (mΩ) @V _{GS} 4.5V	R _{dson} (mΩ) @V _{GS} 2.5V	R _{dson} (mΩ) @V _{GS} 1.8V	N/P
					Typ	Typ	Typ	Typ	Typ	
HMN4013HD3	DFN3.3*3.3-8L	40	20	±20	1.8	12	16	33		N
HM40N04A4	TO-252	40	40	±20	1.5	10.6				N
HMN4013A4	TO-252	40	40	±20	1.5	10.6	15			N
HMN4013AQ	SOT-89	40	11	±20	1.5	11	15			N
HMN4013AS	SOP8	40	10	±20	1.5	11	15			N
HMN4013ASD*	SOP8	40	8	±20	1.5	13	17			N
HMN4013AD3	DFN3.3*3.3-8L	40	20	±20		11	15			N
HMN4013AD5	DFN5*6-8L	40	28	±20	1.5	11	15			N
HMN4008A4	TO-252	40	60	±20	1.5	5.5	8.5			N
HMN4008AD5	DFN5*6-8L	40	50	±20	1.5	6	8.5			N
HMN4009A4	TO-252	40	60	±20	1.5	7	10			N
HMN4009AD3	DFN3.3*3.3-8L	40	45	±20	1.5	8	11			N
HMN4009AS	SOP-8	40	12	±20	1.5	8	11			N
HMN4011H4	TO-252	40	50	±20	1.8	9.5	14			N
HMN4011A4	TO-252	40	50	±20	1.2	8.5	11			N
HMN4011AD3	DFN3.3*3.3-8L	40	23	±20	1.2	9.3	11.5			N
HMN4504A8	TO-220	45	130	±20	1.8	3	5			N
HMN4504H8	TO-220	45	130	±20	2.8	3				N
HM7002BM	SOT-23	60	0.3	±20	1.5	2000	2500			N
HM2301AT*	SOT-23-6L	-20	-3.7	±10	-0.62		49	59	79	P
HM2305AM	SOT23	-20	-4.1	±12	-0.65		30	45		P
HM2305AL	SOT23-3L	-20	-4.1	±12	-0.65		30	45		P
HMP2025AL	SOT23-3L	-20	-5	±12	-0.65		20	27		P
HMP2025ASD*	SOP-8	-20	-7	±12	-0.65		19	25		P

备注: *为Dual channel

Trench Mos

P/N	Package	V _{DSS} (V)	I _D (A)	V _{GS} (V)	V _{th}	R _{dson} (mΩ) @V _{GS} 10V	R _{dson} (mΩ) @V _{GS} 4.5V	R _{dson} (mΩ) @V _{GS} 2.5V	R _{dson} (mΩ) @V _{GS} 1.8V	N/P
					Typ	Typ	Typ	Typ	Typ	
HMP2025AD2	DFN2020 6L	-20	-10	±12	-0.65		19	25		P
HMP2025AD3	DFN3.3X3.3-8L	-20	-12	±12	-0.65		19	27		P
HMP2003AD5	DFN5X6-8L	-20	-75	±12	-0.62		2.1	2.6	3.5	P
HMP2006AS	SOP-8	-20	-35	±12	-0.65		4	5	8	P
HMP2006AD5	DFN5X6-8L	-20	-70	±12	-0.65		4	5	8	P
HMP2006A4	TO-252	-20	-70	±12	-0.65		4	5	8	P
HMP2009AD3	DFN3.3X3.3-8L	-20	-55	±12	-0.65		6.5	8.5	11.5	P
HMP2012AS	SOP-8	-20	-20	±12	-0.65		8	10	15	P
HMP2012AD3	DFN3.3X3.3-8L	-20	-20	±12	-0.65		8	10	15	P
HMP2012AD5	DFN5X6-8L	-20	-50	±12	-0.65		8	10	15	P
HMP2012A4	TO-252	-20	-50	±12	-0.65		8	10	15	P
HM3407AM	SOT-23	-30	-4.1	±20	-1.6	42	60			P
HM3407AL	SOT-23-3L	-30	-4.1	±20	-1.6	40	60			P
HM3401AM	SOT-23	-30	-4.4	±12	-0.9	40	48	75		P
HM3401AL	SOT-23-3L	-30	-4.4	±12	-0.9	40	48	75		P
HM4403AS	SOP8	-30	-5.1	±12	-0.9	40	48	70		P
HM4953ASD*	SOP-8	-30	-5.1	±20	-1.6	40	60			P
HM9435AS	SOP-8	-30	-5.1	±20	-1.6	40	60			P
HMP3035AL	SOT-23-3L	-30	-5.6	±20	-1.7	28	40			P
HMP3035AS	SOP-8	-30	-6.5	±20	-1.7	28	40			P
HMP3035AD3	DFN3.3X3.3-8L	-30	-10	±20	-1.7	28	40			P
HMP3020AD3	DFN3.3X3.3-8L	-30	-16	±20	-1.5	16	22			P
HM4435BS	SOP-8	-30	-8	±20	-1.5	16	21.5			P
HMP3025ASD*	SOP-8	-30	-7.8	±20	-1.5	18	24			P

备注：*为Dual channel

Trench Mos

P/N	Package	V _{DSS} (V)	I _D (A)	V _{GS} (V)	V _{th}	R _{dson} (mΩ) @V _{GS} 10V	R _{dson} (mΩ) @V _{GS} 4.5V	R _{dson} (mΩ) @V _{GS} 2.5V	R _{dson} (mΩ) @V _{GS} 1.8V	N/P
					Typ	Typ	Typ	Typ	Typ	
HM4407AS	SOP-8	-30	-12	±25	-1.5	11.5	20			P
HMP3015A4	TO-252	-30	-35	±20	-1.5	11	19			P
HMP3015AD3	DFN3.3X3.3-8L	-30	-20	±20	-1.5	11	19			P
HMP3015AD5	DFN5X6-8L	-30	-35	±20	-1.5	11	19			P
HMP3012AS	SOP-8	-30	-15	±20	-1.5	9.5	13			P
HMP3012AD3	DFN3.3X3.3-8L	-30	-24	±20	-1.5	9.5	13			P
HMP3012A4	TO-252	-30	-45	±20	-1.5	9.5	13			P
HMP3006AS	SOP-8	-30	-20	±20	-1.5	4.8	7			P
HMP3009AD5	DFN5X6-8L	-30	-50	±20	-1.5	6	10			P
HMP3009AS	SOP-8	-30	-25	±20	-1.5	6.5	10			P
HMP3009A4	TO-252	-30	-60	±20	-1.5	6	10			P
HMP3005AD5	DFN5X6-8L	-30	-80	±20	-1.7	3	4.5			P
HMP4080AL	SOT23-3L	-40	-3.3	±20	-1.65	70	95			P
HMP4080AS	SOP8	-40	-5.3	±20	-1.65	65	90			P
HMP4050AS	SOP8	-40	-6	±20	-1.6	42	48			P
HMP4030A4	TO-252	-40	-16	±20	-1.65	25	30			P
HMP4028ASD*	SOP8	-40	-7.5	±20	-1.65	20	26			P
HMP4028AS	SOP8	-40	-7.5	±20	-1.65	20	26			P
HMP4028A4	TO-252	-40	-25	±20	-1.65	20	26			P
HMP4028AD3	DFN3.3*3.3-8L	-40	-18	±20	-1.65	20	26			P
HMP4028AD5	DFN5*6-8L	-40	-25	±20	-1.65	20	26			P
HMP4015AS	SOP8	-40	-14	±20	-1.65	12	15			P
HMP4015A4	TO-252	-40	-45	±20	-1.65	12—» 10	15—» 13			P
HMP4015A5	TO-263	-40	-45	±20	-1.65	12	15			P

备注：*为Dual channel

Trench Mos

P/N	Package	V _{DSS} (V)	I _D (A)	V _{GS} (V)	V _{th}	R _{dson} (mΩ) @V _{GS} 10V	R _{dson} (mΩ) @V _{GS} 4.5V	R _{dson} (mΩ) @V _{GS} 2.5V	R _{dson} (mΩ) @V _{GS} 1.8V	N/P
					Typ	Typ	Typ	Typ	Typ	
HMP4015AD5	DFN5*6-8L	-40	-45	±20	-1.65	12	15			P
HMP4020AD3	DFN3.3*3.3-8L	-40	-23	±20	-1.6	14	20			P
HMP4020A4	TO-252	-40	-35	±20	-1.6	14	20			P
HMP4010A4	TO-252	-40	-70	±20	-1.6	7.5	10			P
HMP4006AD5	DFN5*6-8L	-40	-90	±20	-1.65	5	6			P

备注：*为Dual channel



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