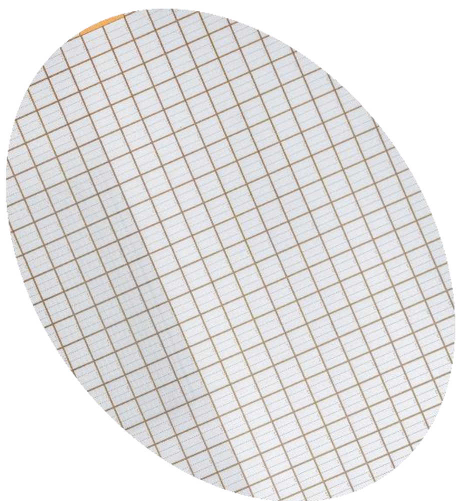
DATASHEET 规格书

SIS0150C120i20

I20 fine pattern IGBT, 10.5mm x 10.5mm

精细沟槽栅 i20 IGBT 芯片，10.5mm x 10.5mm



Symbolic picture

V_{CE} = 1200 V

I_C = 150 A

- *i20* ultra-low loss fine pattern Trench IGBT chipset
  i20 超低损耗精细沟槽栅型 IGBT 芯片组
- positive temperature coefficient
  正温度系数
- easy paralleling
  易并联

Maximum ratings[1] 最大额定值

PARAMETER 参数	SYMBOL 符号	CONDITIONS 工作条件	MIN 最小值	MAX 最大值	UNIT 单位
Collector-emitter voltage 集电极-发射极电压	V_{CES}	V_{GE} = 0 V, T_{vj} >/= 25 °C		1200	V
DC collector current 集电极直流**电流**	I_C			150	A
Peak collector current 集电极峰值电流	I_{CM}	t_p limited by $T_{vj\,max}$ 脉冲宽度依据 $T_{vj\,max}$ 设定		300	A
Gate-emitter voltage 栅极-发射极驱动电压	V_{GES}		-20	20	V
Junction temperature 结温	T_{vj}		-40	175	°C
Junction operating temperature **运行结温**	$T_{vj(op)}$		-40	175	°C
Short circuit[2] 短路	t_{sc}	V_{GE} = 15V, V_{CC} = 800V, T_{vj} = 175°C[3]		10	µs

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[1] Maximum rated values indicate limits beyond which damage to the device may occur per IEC 60747
[1] 根据标准 IEC 60747 要求，最大额定值表示超过该限值可能会对器件造成损坏
[2] Not subject to production test, capability depending on module design
[2] 不从属于生产测试，性能取决于模块设计
[3] Short circuit performance at high temperature requires suitable die assembly process
[3] 高温下的短路性能测试,需要合适的芯片封装工艺。

IGBT[4]

PARAMETER 参数	SYMBOL 符号	CONDITIONS 条件		MIN 最小	TYP 典型	MAX 最大	UNIT 单位
Collector(-emitter) breakdown voltage 集电极-发射极击穿电压	$V_{(BR)CES}$	V_{GE} = 0 V, I_C = 0.25mA, T_{vj} = 25°C		1200			V
Collector-emitter saturation voltage [5] 集电极-发射极饱和电压	V_{CEsat}	I_c = 150 A, V_{GE} = 15 V	T_{vj} = 25 °C		1.7		V
			T_{vj} = 125 °C		2.05		V
			T_{vj} = 175 °C		2.2		V
Collector cut-off current 集电极截止电流	I_{CES}	V_{CE} = 1200 V, V_{GE} = 0 V	T_{vj} = 25 °C			1.0	µA
Gate leakage current 栅极漏电流	I_{GES}	V_{CE} = 0 V, V_{GE} = ±20 V		-0.5		0.5	µA
Gate-emitter threshold voltage 栅极-发射极阈值电压	$V_{GE(th)}$	I_C = 7.5 mA, V_{CE} = V_{GE}, T_{vj} = 25°C		5	5.8	7.5	V
Gate charge 栅极电荷	Q_G	I_C = 200 A, V_{CE} = 600 V, V_{GE} = -15 V .. 15 V			0.98		µC
Input capacitance 输入电容	C_{ies}	V_{CE} = 25 V, V_{GE} = 0 V, f = 100 kHz, T_{vj} = 25 °C			8.67		nF
Output capacitance 输出电容	C_{oes}				0.471		nF
Reverse tansfer capacitance 反向传输电容	C_{res}				0.376		nF
Internal gate resistor 栅极内阻	R_{Gint}	Per switch 每个芯片			5.4		Ω
Turn-on delay time 开通延迟	$t_{d(on)}$	V_{CC} = 600 V, I_C = 150 A, R_G = 2.5 Ω, V_{GE} = ± 15 V	T_{vj} = 25 °C		127		ns
			T_{vj} = 125 °C		143		ns
			T_{vj} = 175 °C		150		ns
Rise time 上升时间	t_r		T_{vj} = 25 °C		41		ns
			T_{vj} = 125 °C		45		ns
			T_{vj} = 175 °C		47		ns
Turn-off delay time 关断延迟	$t_{d(off)}$	V_{CC} = 600 V, I_C = 150 A, R_G = 7.5 Ω, V_{GE} = ± 15 V	T_{vj} = 25 °C		400		ns
			T_{vj} = 125 °C		475		ns
			T_{vj} = 175 °C		524		ns
Fall time 下降时间	t_f		T_{vj} = 25 °C		348		ns
			T_{vj} = 125 °C		459		ns
			T_{vj} = 175 °C		500		ns
Turn-on switching energy 开通损耗	E_{on}	V_{CC} = 600 V, I_C = 150 A, R_G = 2.5 Ω, V_{GE} = ± 15 V	T_{vj} = 25 °C		12.5		mJ
			T_{vj} = 125 °C		18.5		mJ
			T_{vj} = 175 °C		23		mJ
Turn-off switching energy 关断损耗	E_{off}	V_{CC} = 600 V, I_C = 150 A, R_G = 7.5 Ω, V_{GE} = ± 15 V	T_{vj} = 25 °C		15		mJ
			T_{vj} = 125 °C		21		mJ
			T_{vj} = 175 °C		24		mJ
Short circuit current 短路电流	I_{SC}	t_{pcs} ≤ 10 µs, V_{GE} = 15 V, T_{vj} = 175 °C, V_{CC} = 800 V, $_{\text{VCEM Chip}}$ ≤ 1200 V			369		A

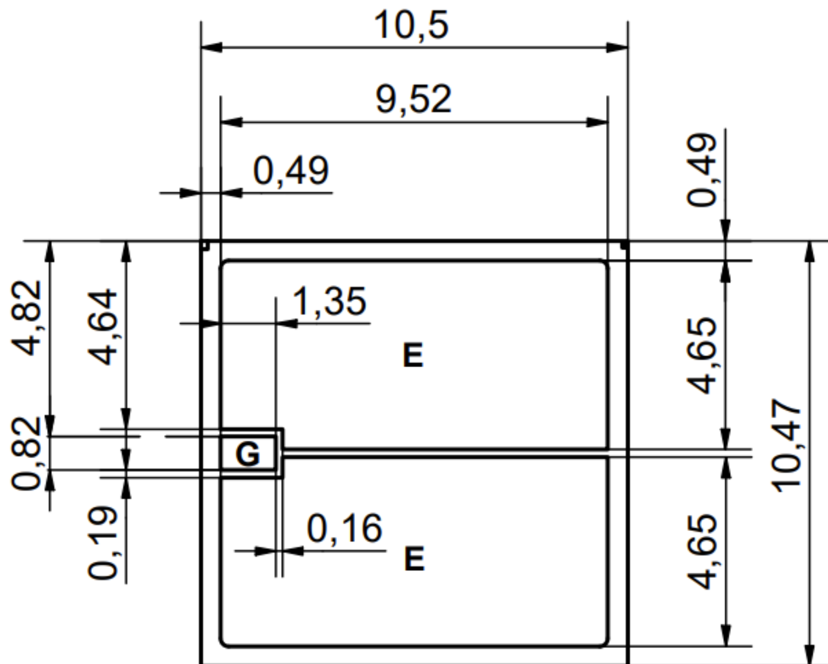
[4] Characteristic values according to IEC 60747-9
[4] IGBT 特征数值均参考标准 IEC 60747-9

SwissSEM

Mechanical properties[6] 机械特性

PARAMETER 参数		UNIT 单位
Die size 芯片面积	10.5x10.5	mm^2
Gate pad size 栅极焊盘尺寸	1.3 x 0.8	mm^2
Thickness 厚度	135	µm
Wafer diameter 晶圆直径	300	mm
Maximum chips per wafer 每片晶圆的最大芯片数	547	pcs
Frontside passivation 正面钝化层	Polyimide	
Frontside metal (pads) 正面金属（衬垫）	Al Cu, 5000nm	
Backside metal 背面金属	Al Ni Ag System, 1100nm	

Chip drawing 芯片图



This is an electrostatic sensitive device.
此为静电敏感器件。