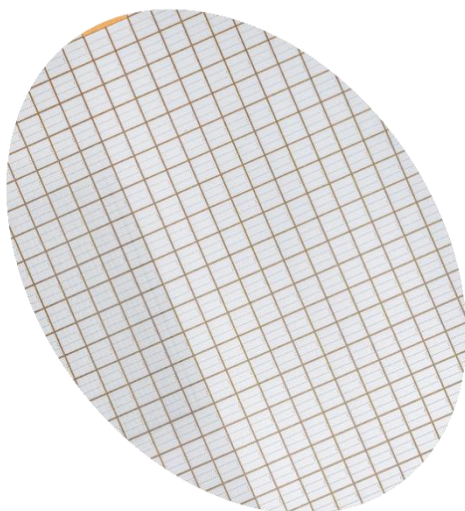


PRELIMINARY DATASHEET

SIS0200C120i25

i25 LCT IGBT, 11.0 mm x 9.7 mm



$V_{CE} = 1200\text{ V}$

$I_C = 200\text{ A}$

- i25 ultra-low-loss micro pattern Trench IGBT
- Soft switching for a broad application range due to best turn-off controllability
- positive temperature coefficient
- easy paralleling

Maximum ratings¹

PARAMETER	SYMBOL	CONDITIONS	MIN	MAX	UNIT
Collector-emitter voltage	V_{CES}	$V_{GE} = 0\text{ V}$, $T_{vj} \geq 25\text{ °C}$		1200	V
DC collector current	I_C			200	A
Peak collector current	I_{CM}	t_p limited by $T_{vj\text{ max}}$ $T_{vj\text{ max}}$		400	A
Gate-emitter voltage	V_{GES}		-20	20	V
Junction temperature	T_{vj}		-40	175	°C
Junction operating temperature	$T_{vj(op)}$		-40	175	°C
Short circuit ²	t_{sc}	$V_{GE} = 15\text{ V}$, $V_{CC} = 800\text{ V}$, $T_{vj} = 175\text{ °C}$ ³		3	μs

¹ Maximum rated values indicate limits beyond which damage to the device may occur per IEC 60747

² Not subject to production test, capability depending on module design

³ Short circuit performance at high temperature requires suitable die assembly process



IGBT⁴

PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNIT
Collector(-emitter) breakdown voltage	$V_{(BR)CES}$	$V_{GE} = 0 \text{ V}$, $I_C = 0.13 \text{ mA}$, $T_{vj} = 25 \text{ °C}$	1200			V
Collector-emitter saturation voltage ⁵	V_{CESat}	$I_C = 200 \text{ A}$, $V_{GE} = 15 \text{ V}$	$T_{vj} = 25 \text{ °C}$	1.60		V
			$T_{vj} = 125 \text{ °C}$	1.85		V
			$T_{vj} = 175 \text{ °C}$	1.95		V
Collector cut-off current	I_{CES}	$V_{CE} = 1200 \text{ V}$, $V_{GE} = 0 \text{ V}$	$T_{vj} = 25 \text{ °C}$		1	μA
Gate leakage current	I_{GES}	$V_{CE} = 0 \text{ V}$, $V_{GE} = \pm 20 \text{ V}$	-0.5		0.5	μA
Gate-emitter threshold voltage	$V_{GE(th)}$	$I_C = 7 \text{ mA}$, $V_{CE} = V_{GE}$, $T_{vj} = 25 \text{ °C}$		5.8		V
Gate charge	Q_G	$I_C = 200 \text{ A}$, $V_{CE} = 600 \text{ V}$, $V_{GE} = -15 \text{ V} \dots 15 \text{ V}$		tbd		μC
Input capacitance	C_{ies}	$V_{CE} = 25 \text{ V}$, $V_{GE} = 0 \text{ V}$, $f = 1 \text{ MHz}$, $T_{vj} = 25 \text{ °C}$		tbd		nF
Output capacitance	C_{oes}			tbd		nF
Reverse transfer capacitance	C_{res}			tbd		nF
Internal gate resistor	R_{Gint}	Per switch		tbd		Ω
Turn-on delay time	$t_{d(on)}$	$V_{CC} = 600 \text{ V}$, $I_C = 200 \text{ A}$, $R_G = 4.0 \text{ }\Omega$, $V_{GE} = \pm 15 \text{ V}$	$T_{vj} = 25 \text{ °C}$	203		ns
			$T_{vj} = 125 \text{ °C}$	224		ns
			$T_{vj} = 175 \text{ °C}$	233		ns
Rise time	t_r		$T_{vj} = 25 \text{ °C}$	76		ns
			$T_{vj} = 125 \text{ °C}$	81		ns
			$T_{vj} = 175 \text{ °C}$	85		ns
Turn-off delay time	$t_{d(off)}$	$V_{CC} = 600 \text{ V}$, $I_C = 200 \text{ A}$, $R_G = 2.0 \text{ }\Omega$, $V_{GE} = \pm 15 \text{ V}$	$T_{vj} = 25 \text{ °C}$	172		ns
			$T_{vj} = 125 \text{ °C}$	240		ns
			$T_{vj} = 175 \text{ °C}$	260		ns
Fall time	t_f		$T_{vj} = 25 \text{ °C}$	318		ns
			$T_{vj} = 125 \text{ °C}$	367		ns
			$T_{vj} = 175 \text{ °C}$	410		ns
Turn-on switching energy	E_{on}	$V_{CC} = 600 \text{ V}$, $I_C = 200 \text{ A}$, $R_G = 4.0 \text{ }\Omega$, $V_{GE} = \pm 15 \text{ V}$ Diode: SID0150C120d23	$T_{vj} = 25 \text{ °C}$	12.5		mJ
			$T_{vj} = 125 \text{ °C}$	16.6		mJ
			$T_{vj} = 175 \text{ °C}$	18.8		mJ
Turn-off switching energy	E_{off}	$V_{CC} = 600 \text{ V}$, $I_C = 200 \text{ A}$, $R_G = 2.0 \text{ }\Omega$, $V_{GE} = \pm 15 \text{ V}$	$T_{vj} = 25 \text{ °C}$	18.8		mJ
			$T_{vj} = 125 \text{ °C}$	23.7		mJ
			$T_{vj} = 175 \text{ °C}$	26.0		mJ
Short circuit current	I_{SC}	$t_{PCS} \leq 3 \text{ }\mu\text{s}$, $V_{GE} = 15 \text{ V}$, $T_{vj} = 175 \text{ °C}$, $V_{CC} = 800 \text{ V}$, $V_{CEM \text{ Chip}} \leq 1200 \text{ V}$		1436		A

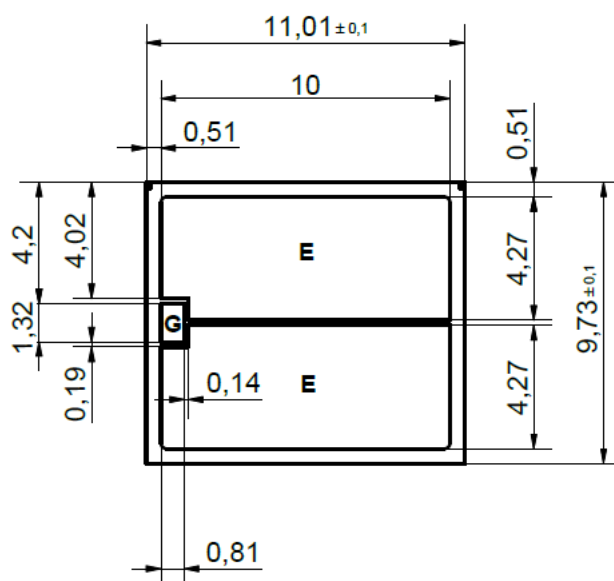
⁴ Characteristic values according to IEC 60747-9



Mechanical properties⁶

PARAMETER		UNIT
Die size	$(11.01 \pm 0.01) \times (9.73 \pm 0.01)$	mm ²
Gate pad size	1.3 x 0.8	mm ²
Thickness	125± 5	µm
Wafer diameter	300	mm
Maximum chips per wafer	570	pcs
Frontside passivation	Polyimide	
Frontside metal (pads)	Al Cu, 5000nm	
Backside metal	Al Ni Ag System, 1100nm	

Chip drawing



This is an electrostatic sensitive device.

Ordering Information

OPTION		ARTICLE NUMBER
Packaging Method	Sawn on tape (_O10)	SIS0200C120i25_ O10
	Wafer unsawn (_O20)	SIS0200C120i25_ O20
	Waffle pack (_O30)	SIS0200C120i25_ O30