

TARGET DATASHEET

SISD1600XP230i26

XP-Type phase leg IGBT module



$V_{CE} = 2300 \text{ V}$

$I_C = 2 \times 1600 \text{ A}$

- i26 ultra-low loss micropattern Trench IGBT chip-set
- Baseplate isolation with low R_{th} Si_3N_4 ceramic
- Cu baseplate for low thermal resistance
- Industry standard package with reduced internal impedance

Maximum ratings¹

PARAMETER	SYMBOL	CONDITIONS	MIN	MAX	UNIT
Collector-emitter voltage	V_{CES}	$V_{GE} = 0 \text{ V}$, $T_{vj} = 25 \text{ °C}$		2300	V
DC collector current	I_C	$T_C = 105 \text{ °C}$, $T_{vj} = 175 \text{ °C}$		1600	A
Peak collector current	I_{CM}	$t_p = 1 \text{ ms}$		3200	A
Gate-emitter voltage	V_{GES}		-20	20	V
DC forward current	I_F			1600	A
Peak forward current	I_{FRM}	$t_p = 1 \text{ ms}$		3200	A
Surge current	I_{FSM} I^2t	$V_R = 0 \text{ V}$, $T_{vj} = 150 \text{ °C}$, $t_p = 10 \text{ ms}$, half-sinewave		TBD	A A^2s
Isolation voltage	V_{isol}	1 min, $f = 50 \text{ Hz}$		4000	V
Junction operating temperature	$T_{vj(op)}$		-40	175	°C
Case temperature	T_C		-40	125 ²	°C
Storage temperature	T_{stg}		-40	125	°C
Mounting torques ³	M_s	Base-heatsink, M6 screws	3	6	Nm
	M_{t1}	Main terminals, M8 screws	8	10	Nm
	M_{t2}	Signal terminals, M3 screws	0.9	1.1	Nm



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

² For UL1557 compliance T_{Cmax} must be limited to 125°C

³ For details, please refer to the mounting instructions.

**IGBT⁴**

PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNIT
Collector(-emitter) breakdown voltage	$V_{(BR)CES}$	$V_{GE} = 0\text{ V}$, $I_C = 1\text{ mA}$, $T_{vj} = 25^\circ\text{C}$	2300			V
Collector-emitter saturation voltage ⁵	V_{CESat}	$I_C = 1600\text{ A}$, $V_{GE} = 15\text{ V}$	$T_{vj} = 25^\circ\text{C}$	1.9	2.3	V
			$T_{vj} = 125^\circ\text{C}$	2.25		V
			$T_{vj} = 175^\circ\text{C}$	2.55		V
Collector cut-off current	I_{CES}	$V_{CE} = 2300\text{ V}$, $V_{GE} = 0\text{ V}$	$T_{vj} = 25^\circ\text{C}$	1		mA
			$T_{vj} = 125^\circ\text{C}$			mA
			$T_{vj} = 175^\circ\text{C}$	80		mA
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	$V_{GE(th)}$	$I_C = 60\text{ mA}$, $V_{CE} = V_{GE}$, $T_{vj} = 25^\circ\text{C}$	5.5	6.5	7.5	V
Gate charge	Q_G	$I_C = 1600\text{ A}$, $V_{CE} = 1500\text{ V}$, $V_{GE} = -15\text{ V} \dots 15\text{ V}$		TBD		μC
Input capacitance	C_{ies}	$V_{CE} = 25\text{ V}$, $V_{GE} = 0\text{ V}$, $f = 100\text{ kHz}$, $T_{vj} = 25^\circ\text{C}$		300		nF
Output capacitance	C_{oes}			TBD		nF
Reverse transfer capacitance	C_{res}			TBD		nF
Internal gate resistor	R_{Gint}	Per switch, $f = 1\text{ MHz}$, $V_{GE} = 0\text{ V}$, CE short		0.5		Ω
Turn-on delay time	$t_{d(on)}$	$V_{CC} = 1500\text{ V}$, $I_C = 1600\text{ A}$, $R_G = 0.5\text{ }\Omega$, $V_{GE} = \pm 15\text{ V}$, $L_S = 20\text{ nH}$, inductive load	$T_{vj} = 25^\circ\text{C}$			ns
			$T_{vj} = 125^\circ\text{C}$			ns
			$T_{vj} = 175^\circ\text{C}$			ns
Rise time	t_r		$T_{vj} = 25^\circ\text{C}$			ns
			$T_{vj} = 125^\circ\text{C}$			ns
			$T_{vj} = 175^\circ\text{C}$			ns
Turn-off delay time	$t_{d(off)}$	$V_{CC} = 1500\text{ V}$, $I_C = 1600\text{ A}$, $R_G = 12\text{ }\Omega$, $V_{GE} = \pm 15\text{ V}$, $L_S = 20\text{ nH}$, inductive load	$T_{vj} = 25^\circ\text{C}$			ns
			$T_{vj} = 125^\circ\text{C}$			ns
			$T_{vj} = 175^\circ\text{C}$			ns
Fall time 时间	t_f		$T_{vj} = 25^\circ\text{C}$			ns
			$T_{vj} = 125^\circ\text{C}$			ns
			$T_{vj} = 175^\circ\text{C}$			ns
Turn-on switching energy	E_{on}	$V_{CC} = 1500\text{ V}$, $I_C = 1600\text{ A}$, $R_G = 0.5\text{ }\Omega$, $V_{GE} = \pm 15\text{ V}$, $L_S = 20\text{ nH}$, inductive load	$T_{vj} = 25^\circ\text{C}$	720		mJ
			$T_{vj} = 125^\circ\text{C}$	870		mJ
			$T_{vj} = 175^\circ\text{C}$	1000		mJ
Turn-off switching energy	E_{off}	$V_{CC} = 1500\text{ V}$, $I_C = 1600\text{ A}$, $R_G = 12\text{ }\Omega$, $V_{GE} = \pm 15\text{ V}$, $L_S = 20\text{ nH}$, inductive load	$T_{vj} = 25^\circ\text{C}$	960		mJ
			$T_{vj} = 125^\circ\text{C}$	1150		mJ
			$T_{vj} = 175^\circ\text{C}$	1280		mJ
Short circuit current	I_{SC}	$t_{PCS} \leq 6\text{ }\mu\text{s}$, $V_{GE} = 15\text{ V}$, $T_{vj} = 175^\circ\text{C}$, $R_{G,on} = 0.5\text{ }\Omega$, $V_{CC} = 1500\text{ V}$, $V_{CEM\text{ Chip}} \leq 2300\text{ V}$		7000		A

⁴ Characteristic values according to IEC 60747-9⁵ Collector-emitter saturation voltage is given at chip-level



Diode⁶

PARAMETER	SYMBOL	CONDITIONS		MIN	TYP	MAX	UNIT
Forward voltage ⁷	V _F	I _F = 1600 A	T _{Vj} = 25 °C		2.55	2.3	V
			T _{Vj} = 125 °C		2.75		V
			T _{Vj} = 175 °C		2.8		V
Peak reverse recovery current	I _{RM}	V _R = 1500 V, I _F = 1600 A, di _F /dt = 12 kA/μs (175 °C), R _G =0.5 Ω, V _{GE} = ± 15 V, L _s = 20 nH, inductive load	T _{Vj} = 25 °C				A
			T _{Vj} = 125 °C				A
			T _{Vj} = 175 °C				A
Recovery charge	Q _{rr}		T _{Vj} = 25 °C				μC
			T _{Vj} = 125 °C				μC
			T _{Vj} = 175 °C				μC
Reverse recovery time	t _{rr}		T _{Vj} = 25 °C				ns
			T _{Vj} = 125 °C				ns
			T _{Vj} = 175 °C				ns
Reverse recovery energy	E _{rec}	T _{Vj} = 25 °C		250		mJ	
		T _{Vj} = 125 °C		500		mJ	
		T _{Vj} = 175 °C		650		mJ	

NTC Thermistor

PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNIT
Rated resistance	R_{25}	$T_c = 25 \text{ °C}$		5		k Ω
R100	R_{100}	$T_c = 100 \text{ °C}$	468		518	Ω
B-value B	$B_{25/50}$	$R_2 = R_{25} \exp [B_{25/50}(1/T_2 - 1/(298.15\text{K}))]$		3375		K
B-value B	$B_{25/100}$	$R_2 = R_{25} \exp [B_{25/100}(1/T_2 - 1/(298.15\text{K}))]$		3433		K

⁶ Characteristic values according to IEC 60747-2

⁷ Forward voltage is given at chip-level



Package properties ⁸

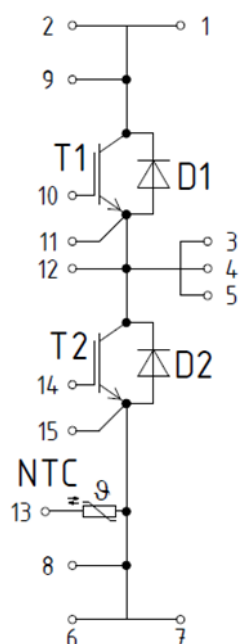
PARAMETER	SYMBOL	CONDITIONS		MIN	TYP	MAX	UNIT
IGBT thermal resistance junction to case IGBT	$R_{th(j-c)IGBT}$	Per switch				16.5	K/kW
Diode thermal resistance junction to case	$R_{th(j-c)Diode}$					27.2	K/kW
IGBT thermal resistance case to heatsink IGBT	$R_{th(c-s)IGBT}$	IGBT per switch			14.4		K/kW
Diode thermal resistance case to heatsink	$R_{th(c-s)Diode}$	diode per switch			17.2		K/kW
Comparative tracking index	CTI			600			
Module stray inductance	$L_{s\ CE}$	Per switch			11		nH
Resistance, terminal chip	$R_{CC'+EE'}$	Per IGBT	$T_{vj} = 25\ ^\circ C$		0.2		mΩ
			$T_{vj} = 125\ ^\circ C$		0.285		mΩ
			$T_{vj} = 175\ ^\circ C$		0.315		mΩ
	$R_{AA'+DD'}$	Per Diode	$T_{vj} = 25\ ^\circ C$		0.16		mΩ
			$T_{vj} = 125\ ^\circ C$		0.23		mΩ
			$T_{vj} = 175\ ^\circ C$		0.255		mΩ

Mechanical properties

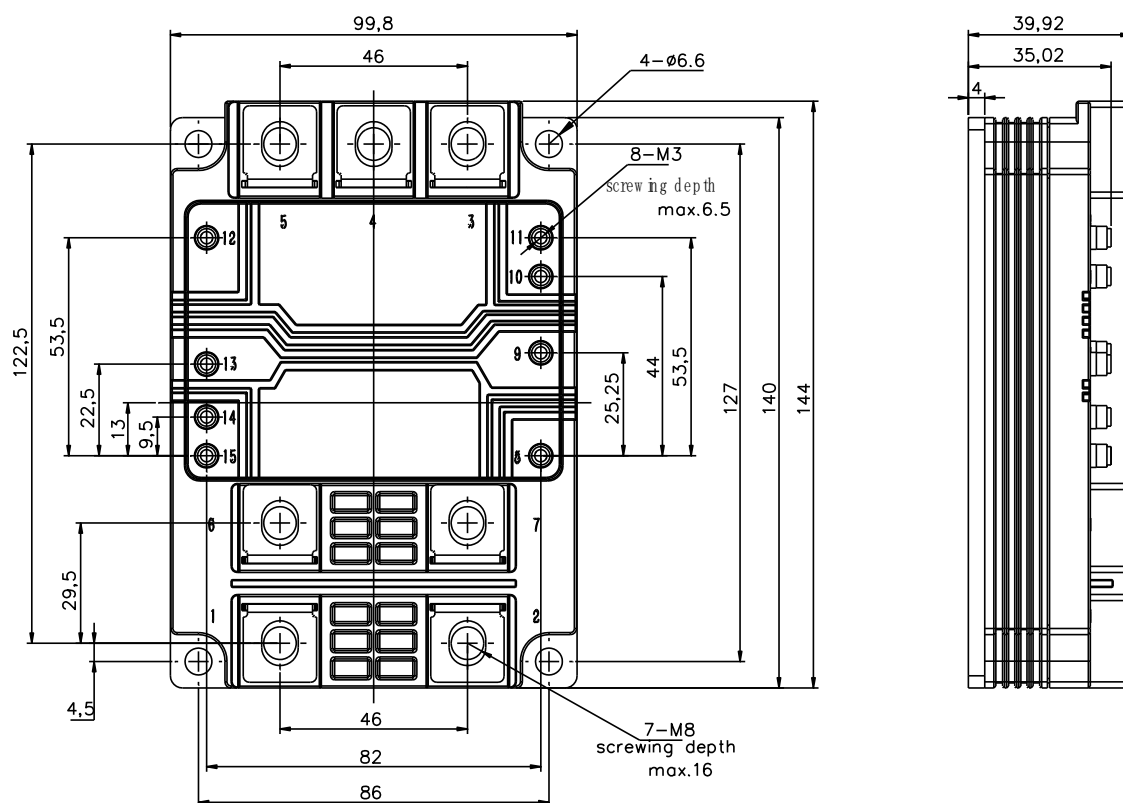
PARAMETER	SYMBOL	CONDITIONS		MIN	TYP	MAX	UNIT
Dimensions	L x W x H	Typical		140 x 100 x 40			mm ³
Clearance distance in air	d_a	According to IEC 60664-1 and EN 50124-1 标准 IEC 60664-1EN 50124-1	Terminal to base:	31			mm
			Terminal to terminal:	8			mm
Surface creepage distance	d_s	According to IEC 60664-1 and EN 50124-1 IEC 60664-1EN 50124-1	Terminal to base:	40			mm
			Terminal to terminal:	34			mm
Mass	m				1100		g

⁸ Package and mechanical properties according to IEC 60747-15

Electrical configuration



Outline drawing



This is an electrostatic sensitive device.
This product has been designed and qualified for Industrial Level.



Revision History

Release	Version	Description
2026-09-16	V1.0	Target Datasheet