

# SKiM 450GD126DL



SKiM<sup>®</sup> 5

## IGBT Modules

### SKiM 450GD126DL

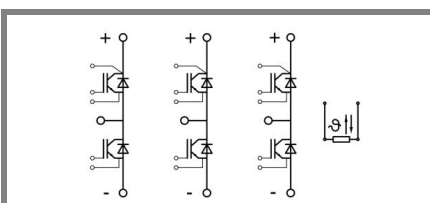
Target Data

#### Features

- Trench gate IGBT with field stop layer
- Low inductance case
- Fast & soft inverse CAL diodes
- Isolated by Al<sub>2</sub>O<sub>3</sub> DCB (Direct Copper Bonded) ceramic plate
- Pressure contact technology for thermal contacts
- Spring contact system to attach driver PCB to the control terminals
- Integrated temperature sensor

#### Typical Applications\*

- Uninterruptable power supplies (UPS)
- Three phase inverters for AC motor speed control

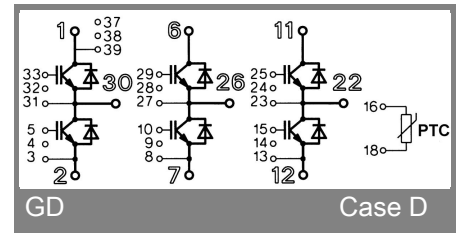
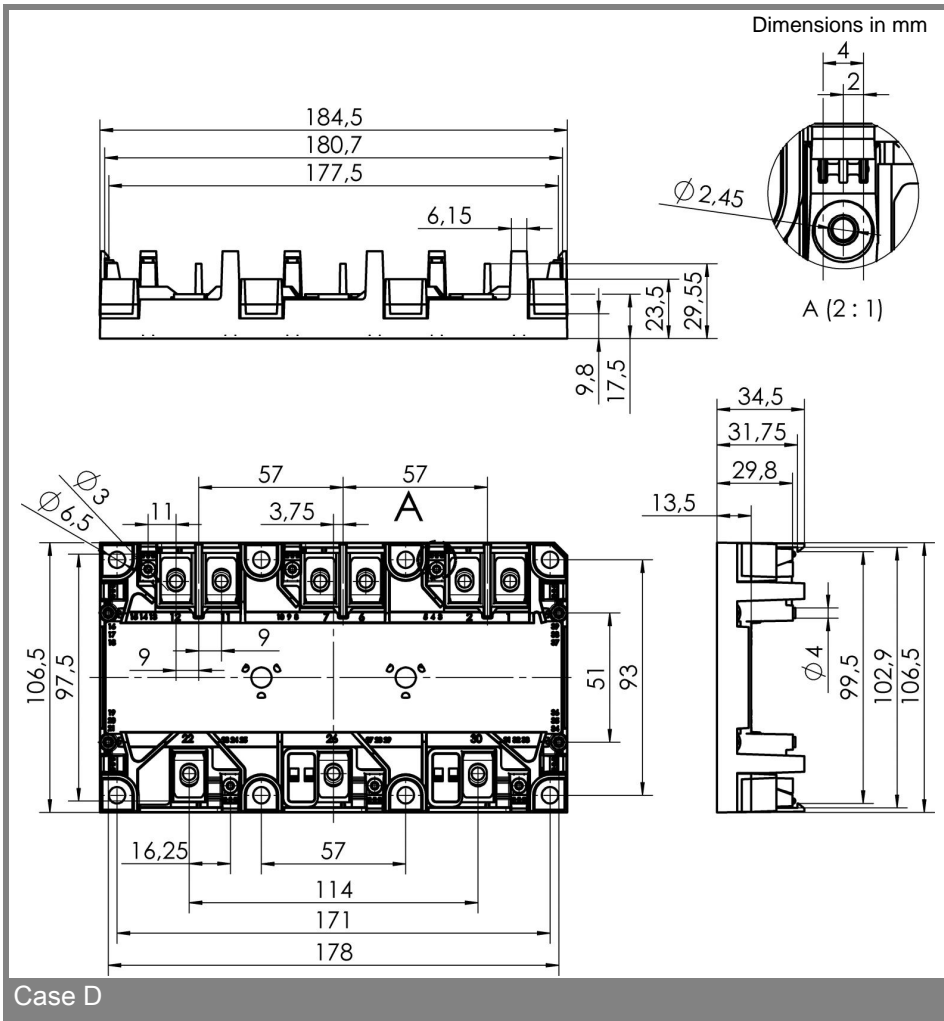


GD

Absolute Maximum Ratings		$T_c = 25\text{ }^\circ\text{C}$ , unless otherwise specified	
Symbol	Conditions	Values	Units
<b>IGBT</b>			
$V_{CES}$		1200	V
$I_C$	$T_s = 25\text{ (70) }^\circ\text{C}$	390 (300)	A
$I_{CRM}$	$t_p = 1\text{ ms}$	780	A
$V_{GES}$		$\pm 20$	V
$T_j$ ( $T_{stg}$ )		- 40 ... + 150 (125)	$^\circ\text{C}$
$T_{cop}$	max. case operating temperature	125	$^\circ\text{C}$
$V_{isol}$	AC, 1 min.	2500	V
<b>Inverse diode</b>			
$I_F$	$T_s = 25\text{ (70) }^\circ\text{C}$	345 (260)	A
$I_{FRM}$	$t_p = 1\text{ ms}$	780	A
$I_{FSM}$	$t_p = 10\text{ ms}$ ; sin.; $T_j = 150\text{ }^\circ\text{C}$	3300	A

Characteristics		$T_c = 25\text{ }^\circ\text{C}$ , unless otherwise specified			
Symbol	Conditions	min.	typ.	max.	Units
<b>IGBT</b>					
$V_{GE(th)}$	$V_{GE} = V_{CE}$ ; $I_C = 18\text{ mA}$	4,95	5,8	6,55	V
$I_{CES}$	$V_{GE} = 0$ ; $V_{CE} = V_{CES}$ ; $T_j = 25\text{ }^\circ\text{C}$			5	mA
$V_{CEO}$	$T_j = 25\text{ (125) }^\circ\text{C}$		1 (0,9)	1,2 (1,1)	V
$r_{CE}$	$T_j = 25\text{ (125) }^\circ\text{C}$		1,6 (2,4)	2,1 (3)	m $\Omega$
$V_{CEsat}$	$I_{Cnom} = 450\text{ A}$ ; $V_{GE} = 15\text{ V}$ ; $T_j = 25\text{ (125) }^\circ\text{C}$ on chip level		1,7 (2)	2,15 (2,45)	V
$C_{ies}$	$V_{GE} = 0$ ; $V_{CE} = 25\text{ V}$ ; $f = 1\text{ MHz}$		35		nF
$C_{oes}$	$V_{GE} = 0$ ; $V_{CE} = 25\text{ V}$ ; $f = 1\text{ MHz}$		2,5		nF
$C_{res}$	$V_{GE} = 0$ ; $V_{CE} = 25\text{ V}$ ; $f = 1\text{ MHz}$		2,4		nF
$L_{CE}$				20	nH
$R_{CC'+EE'}$	resistance, terminal-chip $T_c = 25\text{ (125) }^\circ\text{C}$		0,9 (1,1)		m $\Omega$
$t_{d(on)}$	$V_{CC} = 600\text{ V}$		210		ns
$t_r$	$I_{Cnom} = 450\text{ A}$		35		ns
$t_{d(off)}$	$R_{Gon} = R_{Goff} = 1\text{ }^\circ\Omega$		680		ns
$t_f$	$T_j = 125\text{ }^\circ\text{C}$		90		ns
$E_{on} (E_{off})$	$V_{GE} \pm 15\text{ V}$		39 (54)		mJ
$E_{on} (E_{off})$	with SKHI 65; $T_j = 125\text{ }^\circ\text{C}$ $V_{CC} = 600\text{ V}$ ; $I_C = 450\text{ A}$				mJ
<b>Inverse diode</b>					
$V_F = V_{EC}$	$I_{Fnom} = 300\text{ A}$ ; $V_{GE} = 0\text{ V}$ ; $T_j = 25\text{ (125) }^\circ\text{C}$		2 (1,8)	2,55 (2,3)	V
$V_{TO}$	$T_j = 25\text{ (125) }^\circ\text{C}$		1,1	1,45 (1,25)	V
$r_T$	$T_j = 25\text{ (125) }^\circ\text{C}$		3	3,5 (3,5)	m $\Omega$
$I_{RRM}$	$I_F = 450\text{ A}$ ; $T_j = 125\text{ }^\circ\text{C}$		500		A
$Q_{rr}$	$V_{GE} = V\text{ di/dt} = 8200\text{ A}/\mu\text{s}$		62		$\mu\text{C}$
$E_{rr}$	$R_{Gon} = R_{Goff} = 1\text{ }^\circ\Omega$		30		mJ
<b>Thermal characteristics</b>					
$R_{th(j-s)}$	per IGBT			0,13	K/W
$R_{th(j-s)}$	per FWD			0,19	K/W
<b>Temperature Sensor</b>					
$R_{TS}$	$T = 25\text{ (100) }^\circ\text{C}$		1 (1,67)		k $\Omega$
tolerance	$T = 25\text{ (100) }^\circ\text{C}$		3 (2)		%
<b>Mechanical data</b>					
$M_1$	to heatsink (M5)	2		3	Nm
$M_2$	for terminals (M6)	4		5	Nm
w				460	g

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This is an electrostatic discharge sensitive device (ESDS), international standard IEC 60747-1, chapter IX.

## \*IMPORTANT INFORMATION AND WARNINGS

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