



SKiM® 5

IGBT Modules

SKiM 450GD126DL

Target Data

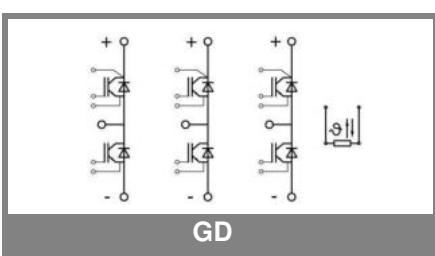
Features

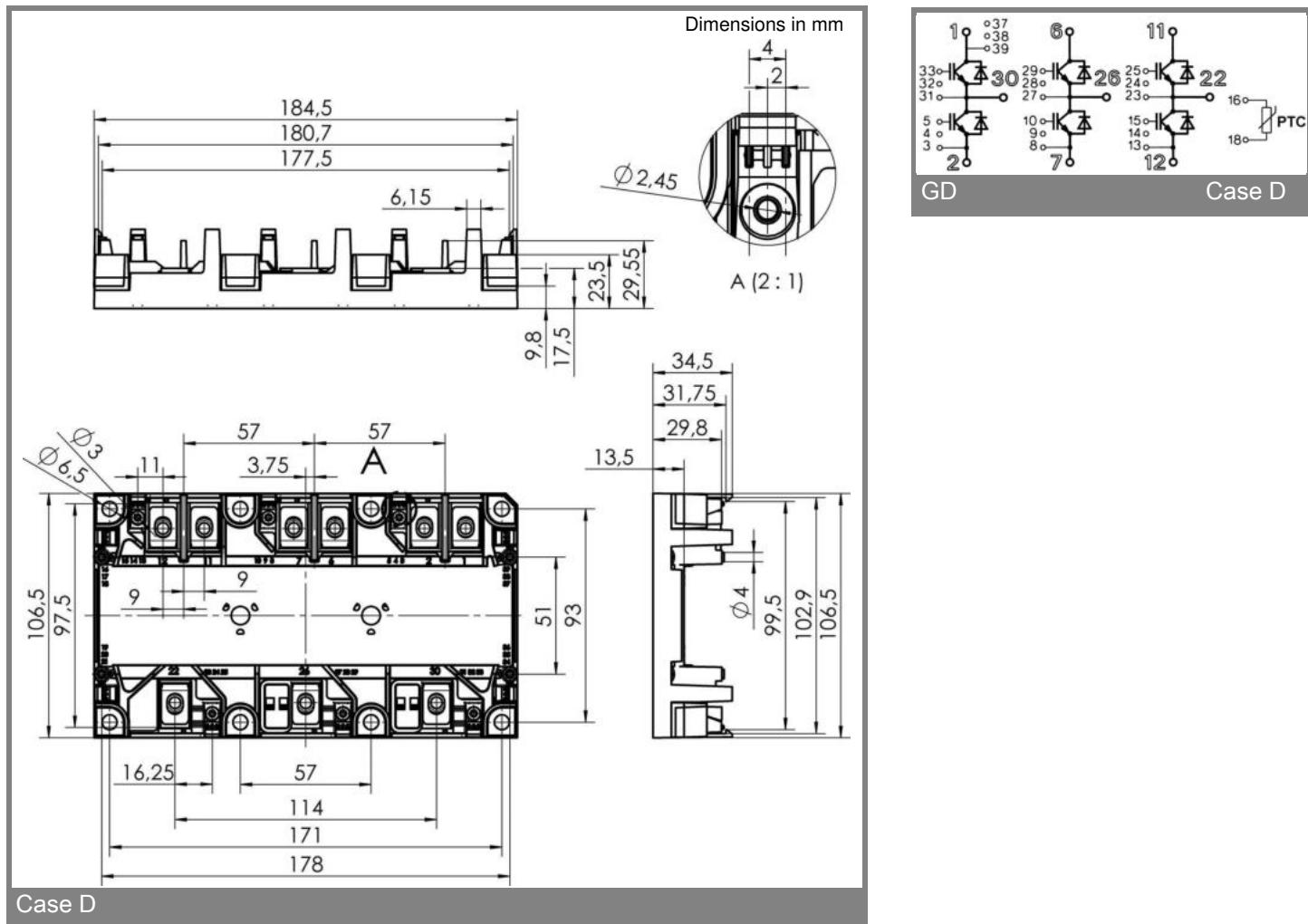
- Trench gate IGBT with field stop layer
- Low inductance case
- Fast & soft inverse CAL diodes
- Isolated by Al_2O_3 DCB (Direct Copper Bonded) ceramic plate
- Pressure contact technology for thermal contacts
- Spring contact system to attach driver PCB to the control terminals
- Integrated temperature sensor

Typical Applications*

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

Absolute Maximum Ratings		$T_c = 25^\circ\text{C}$, unless otherwise specified		
Symbol	Conditions	Values		Units
IGBT				
V_{CES}		1200		V
I_c	$T_s = 25 (70)^\circ\text{C}$	390 (300)		A
I_{CRM}	$t_p = 1 \text{ ms}$	780		A
V_{GES}		± 20		V
$T_j (T_{stg})$		$-40 \dots +150 (125)^\circ\text{C}$		°C
T_{cop}	max. case operating temperature	125		°C
V_{isol}	AC, 1 min.	2500		V
Inverse diode				
I_F	$T_s = 25 (70)^\circ\text{C}$	345 (260)		A
I_{FRM}	$t_p = 1 \text{ ms}$	780		A
I_{FSM}	$t_p = 10 \text{ ms}; \text{sin.}; T_j = 150^\circ\text{C}$	3300		A
Characteristics		$T_c = 25^\circ\text{C}$, unless otherwise specified		
Symbol	Conditions	min.	typ.	max.
IGBT				
$V_{GE(\text{th})}$	$V_{GE} = V_{CE}; I_c = 18 \text{ mA}$	4,95	5,8	6,55
I_{CES}	$V_{GE} = 0; V_{CE} = V_{CES}; T_j = 25^\circ\text{C}$		5	mA
V_{CEO}	$T_j = 25 (125)^\circ\text{C}$		1 (0,9)	1,2 (1,1)
r_{CE}	$T_j = 25 (125)^\circ\text{C}$		1,6 (2,4)	$\text{m}\Omega$
V_{CEsat}	$I_{Cnom} = 450 \text{ A}; V_{GE} = 15 \text{ V}, T_j = 25 (125)^\circ\text{C}$ on chip level		1,7 (2)	2,15 (2,45)
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 $T_c = 25 (125)^\circ\text{C}$		0,9 (1,1)	$\text{m}\Omega$
$t_{d(on)}$	$V_{CC} = 600 \text{ V}$	210		ns
t_r	$I_{Cnom} = 450 \text{ A}$	35		ns
$t_{d(off)}$	$R_{Gon} = R_{Goff} = 1 \Omega$	680		ns
t_f	$T_j = 125^\circ\text{C}$	90		ns
$E_{on} (E_{off})$	$V_{GE} \pm 15 \text{ V}$	39 (54)		mJ
$E_{on} (E_{off})$	with SKHI 65; $T_j = 125^\circ\text{C}$			
	$V_{CC} = 600 \text{ V}; I_c = 450 \text{ A}$			mJ
Inverse diode				
$V_F = V_{EC}$	$I_{Fnom} = 300 \text{ A}; V_{GE} = 0 \text{ V}; T_j = 25 (125)^\circ\text{C}$	2 (1,8)	2,55 (2,3)	V
V_{TO}	$T_j = 25 (125)^\circ\text{C}$	1,1	1,45 (1,25)	V
r_T	$T_j = 25 (125)^\circ\text{C}$	3	3,5 (3,5)	$\text{m}\Omega$
I_{RRM}	$I_F = 450 \text{ A}; T_j = 125^\circ\text{C}$	500		A
Q_{fr}	$V_{GE} = V \text{ di/dt} = 8200 \text{ A}/\mu\text{s}$	62		μC
E_{rr}	$R_{Gon} = R_{Goff} = 1 \Omega$	30		mJ
Thermal characteristics				
$R_{th(j-s)}$	per IGBT		0,13	K/W
$R_{th(j-s)}$	per FWD		0,19	K/W
Temperature Sensor				
R_{TS}	$T = 25 (100)^\circ\text{C}$	1 (1,67)		$\text{k}\Omega$
tolerance	$T = 25 (100)^\circ\text{C}$	3 (2)		%
Mechanical data				
M_1	to heatsink (M5)	2	3	Nm
M_2	for terminals (M6)	4	5	Nm
w			460	g





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

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