

SKiM 450GD126DL



SKiM® 5

IGBT Modules

SKiM 450GD126DL

Target Data

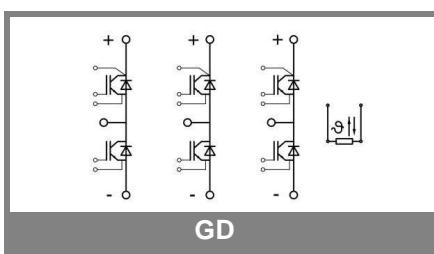
Features

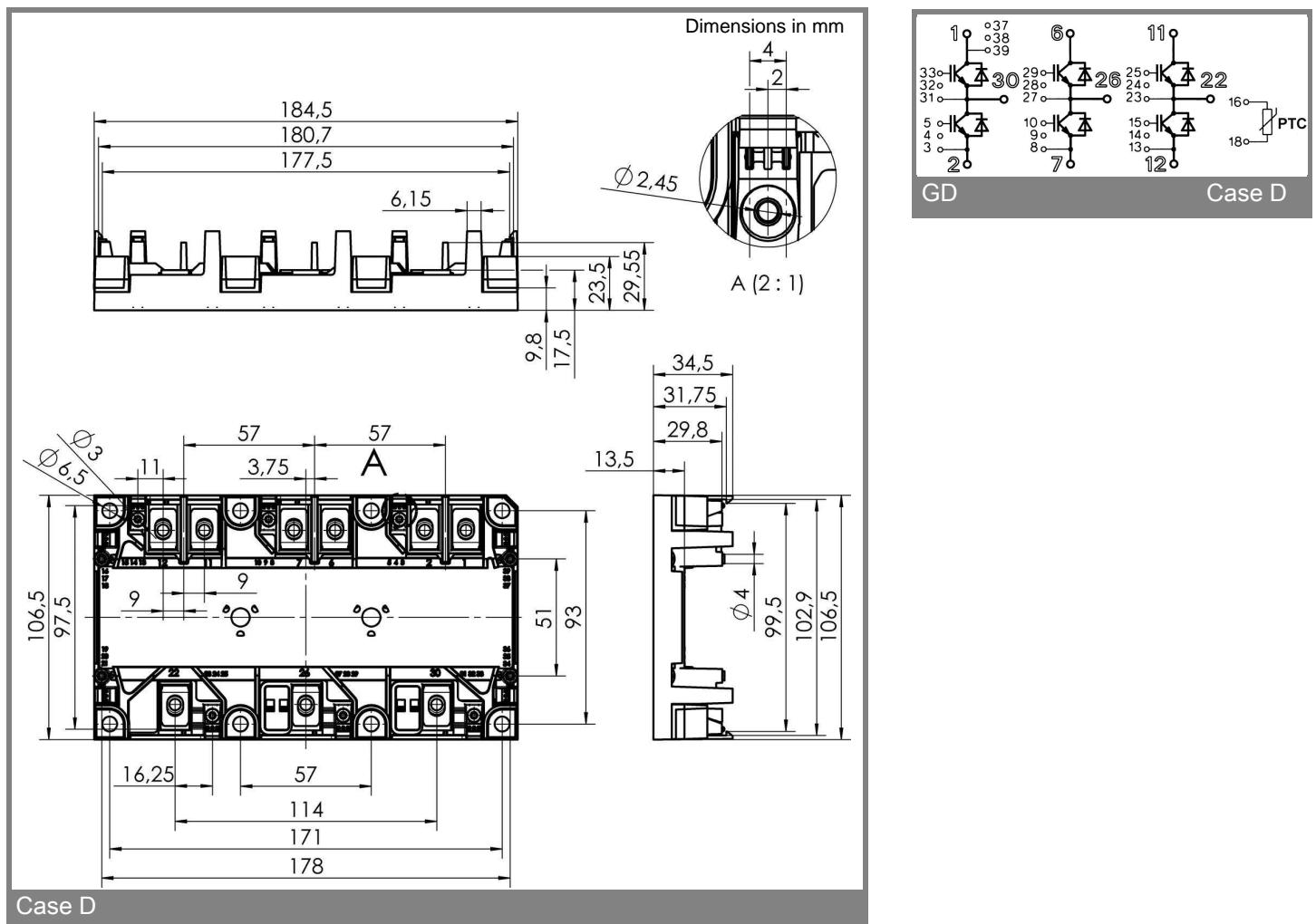
- Trench gate IGBT with field stop layer
- Low inductance case
- Fast & soft inverse CAL diodes
- Isolated by Al₂O₃ DCB (Direct Copper Bonded) ceramic plate
- Pressure contact technology for thermal contacts
- Spring contact system to attach driver PCB to the control terminals
- Integrated temperature 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	$T_s = 25 \text{ (70)}^\circ\text{C}$	390 (300)		A
I_{CRM}	$t_p = 1 \text{ ms}$	780		A
V_{GES}		± 20		V
$T_j (T_{stg})$		$-40 \dots +150 \text{ (125)}^\circ\text{C}$		°C
T_{cop}	max. case operating temperature	125		°C
V_{isol}	AC, 1 min.	2500		V
Inverse diode				
I_F	$T_s = 25 \text{ (70)}^\circ\text{C}$	345 (260)		A
I_{FRM}	$t_p = 1 \text{ ms}$	780		A
I_{FSM}	$t_p = 10 \text{ ms}; \sin.; T_j = 150^\circ\text{C}$	3300		A
Characteristics		$T_c = 25^\circ\text{C}$, unless otherwise specified		
Symbol	Conditions	min.	typ.	max.
IGBT				
$V_{GE(th)}$	$V_{GE} = V_{CE}; I_C = 18 \text{ mA}$	4,95	5,8	6,55
I_{CES}	$V_{GE} = 0; V_{CE} = V_{CES}; T_j = 25^\circ\text{C}$			0,6 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) mΩ
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)	mΩ
$t_{d(on)}$	$V_{CC} = 600 \text{ V}$	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				
$V_F = V_{EC}$	$I_{Fnom} = 300 \text{ A}; V_{GE} = 0 \text{ V}; T_j = 25 \text{ (125)}^\circ\text{C}$	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)	mΩ
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}	$T = 25 \text{ (100)}^\circ\text{C}$		1 (1,67)	kΩ
tolerance	$T = 25 \text{ (100)}^\circ\text{C}$		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.

* The specifications of our components may not be considered as an assurance of component characteristics. Components have to be tested for the respective application. Adjustments may be necessary. The use of SEMIKRON products in life support appliances and systems is subject to prior specification and written approval by SEMIKRON. We therefore strongly recommend prior consultation of our personal.