

# SKiM 400GD126DM



SKiM<sup>®</sup> 4

## IGBT Modules

### SKiM 400GD126DM

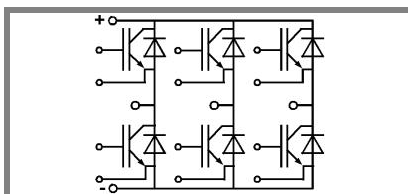
Target Data

#### Features

- Trench gate IGBT with field stop layer
- Low inductance case
- Fast & soft inverse CAL diodes
- Isolated by AlN 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

- Switched mode power supplies
- Three phase inverters for AC motor speed control
- Switching (not for linear use)

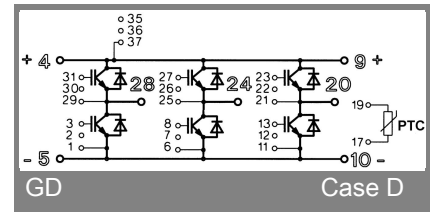
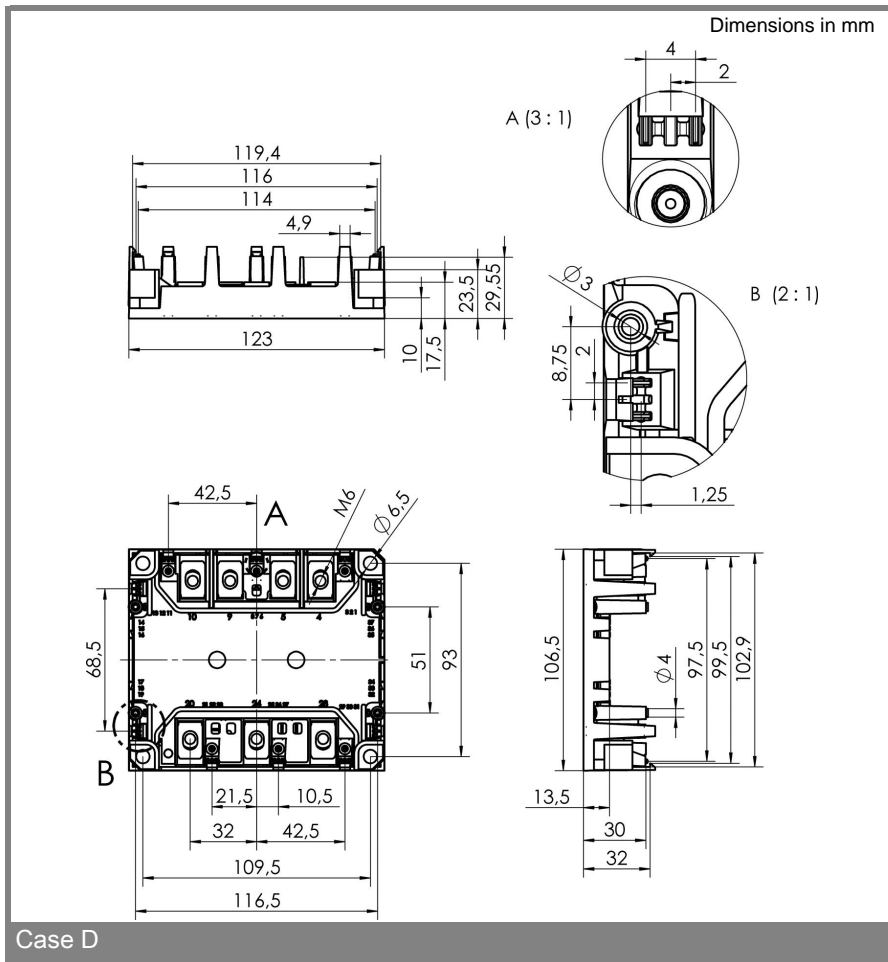


GD

Absolute Maximum Ratings		$T_c = 25^\circ\text{C}$ , unless otherwise specified	
Symbol	Conditions	Values	Units
<b>IGBT</b>			
$V_{CES}$		1200	V
$I_C$	$T_s = 25 (70)^\circ\text{C}$	330 (255)	A
$I_{CRM}$	$t_p = 1 \text{ ms}$	600	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>			
$I_F$	$T_s = 25 (70)^\circ\text{C}$	300 (230)	A
$I_{FRM}$	$t_p = 1 \text{ ms}$	600	A
$I_{FSM}$	$t_p = 10 \text{ ms}$ ; sin.; $T_j = 150^\circ\text{C}$	2200	A

Characteristics		$T_c = 25^\circ\text{C}$ , unless otherwise specified			
Symbol	Conditions	min.	typ.	max.	Units
<b>IGBT</b>					
$V_{GE(th)}$	$V_{GE} = V_{CE}$ ; $I_C = 12 \text{ mA}$	4,95	5,8	6,55	V
$I_{CES}$	$V_{GE} = 0$ ; $V_{CE} = V_{CES}$ ; $T_j = 25^\circ\text{C}$			0,6	mA
$V_{CEO}$	$T_j = 25 (125)^\circ\text{C}$		1 (0,9)	1,2 (1,1)	V
$r_{CE}$	$T_j = 25 (125)^\circ\text{C}$		2,3 (3,7)	3 (4,5)	$\text{m}\Omega$
$V_{CEsat}$	$I_{Cnom} = 300 \text{ A}$ ; $V_{GE} = 15 \text{ V}$ ; $T_j = 25 (125)^\circ\text{C}$ on chip level		1,7 (2)	2,15 (2,45)	V
$C_{ies}$	$V_{GE} = 0$ ; $V_{CE} = 25 \text{ V}$ ; $f = 1 \text{ MHz}$		23		nF
$C_{oes}$	$V_{GE} = 0$ ; $V_{CE} = 25 \text{ V}$ ; $f = 1 \text{ MHz}$		1,6		nF
$C_{res}$	$V_{GE} = 0$ ; $V_{CE} = 25 \text{ V}$ ; $f = 1 \text{ MHz}$		1,6		nF
$L_{CE}$				15	nH
$R_{CC'+EE'}$	resistance, terminal-chip $T_c = 25 (125)^\circ\text{C}$		1,35 (1,75)		$\text{m}\Omega$
$t_{d(on)}$	$V_{CC} = 600 \text{ V}$				ns
$t_r$	$I_{Cnom} = 300 \text{ A}$				ns
$t_{d(off)}$	$R_{Gon} = R_{Goff} = \Omega$				ns
$t_f$	$T_j = 125^\circ\text{C}$				ns
$E_{on} (E_{off})$	$V_{GE} \pm 15 \text{ V}$		29 (46)		mJ
$E_{on} (E_{off})$	with SKHI 64; $T_j = 125^\circ\text{C}$ $V_{CC} = 600 \text{ V}$ ; $I_C = 300 \text{ A}$				mJ
<b>Inverse diode</b>					
$V_F = V_{EC}$	$I_{Fnom} = 200 \text{ A}$ ; $V_{GE} = 0 \text{ V}$ ; $T_j = 25 (125)^\circ\text{C}$		2 (1,8)	2,55 (2,3)	V
$V_{TO}$	$T_j = 25 (125)^\circ\text{C}$		1,1	1,45 (1,25)	V
$r_T$	$T_j = 25 (125)^\circ\text{C}$		4,5	5,3 (5,3)	$\text{m}\Omega$
$I_{RRM}$	$I_F = 300 \text{ A}$ ; $T_j = 125^\circ\text{C}$				A
$Q_{rr}$	$V_{GE} = V \text{ di/dt} = \text{A}/\mu\text{s}$				$\mu\text{C}$
$E_{rr}$	$R_{Gon} = R_{Goff} =$				mJ
<b>Thermal characteristics</b>					
$R_{th(j-s)}$	per IGBT			0,134	K/W
$R_{th(j-s)}$	per FWD			0,19	K/W
<b>Temperature Sensor</b>					
$R_{TS}$	$T = 25 (100)^\circ\text{C}$		1 (1,67)		k $\Omega$
tolerance	$T = 25 (100)^\circ\text{C}$		3 (2)		%
<b>Mechanical data</b>					
$M_1$	to heatsink (M5)	2		3	Nm
$M_2$	for terminals (M6)	4		5	Nm
w				310	g

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

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