

SKiM 380GD176DM

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SKiM® 5

Trench IGBT Modules

SKiM 380GD176DM

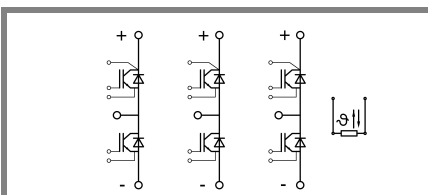
Target Data

Features

- Homogeneous Si
- Trench = Trenchgate Technology
- Low inductance case
- Isolated by AlN DCB (Direct Copper Bonded) ceramic plate
- Pressure contact technology for thermal contacts
- V_{CEsat} with positive temperature coefficient
- High short circuit capability, limiting to $6 \times I_C$
- Integrated temperature sensor
- Spring contact system to attach driver PCB to the auxiliary terminals

Typical Applications

- AC inverter drives mains 575 - 750 V AC
- public transport (auxiliary syst.)

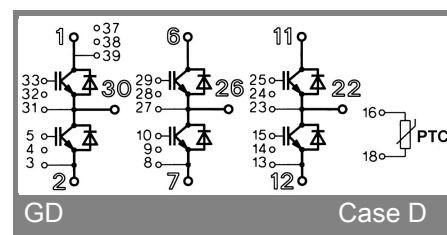
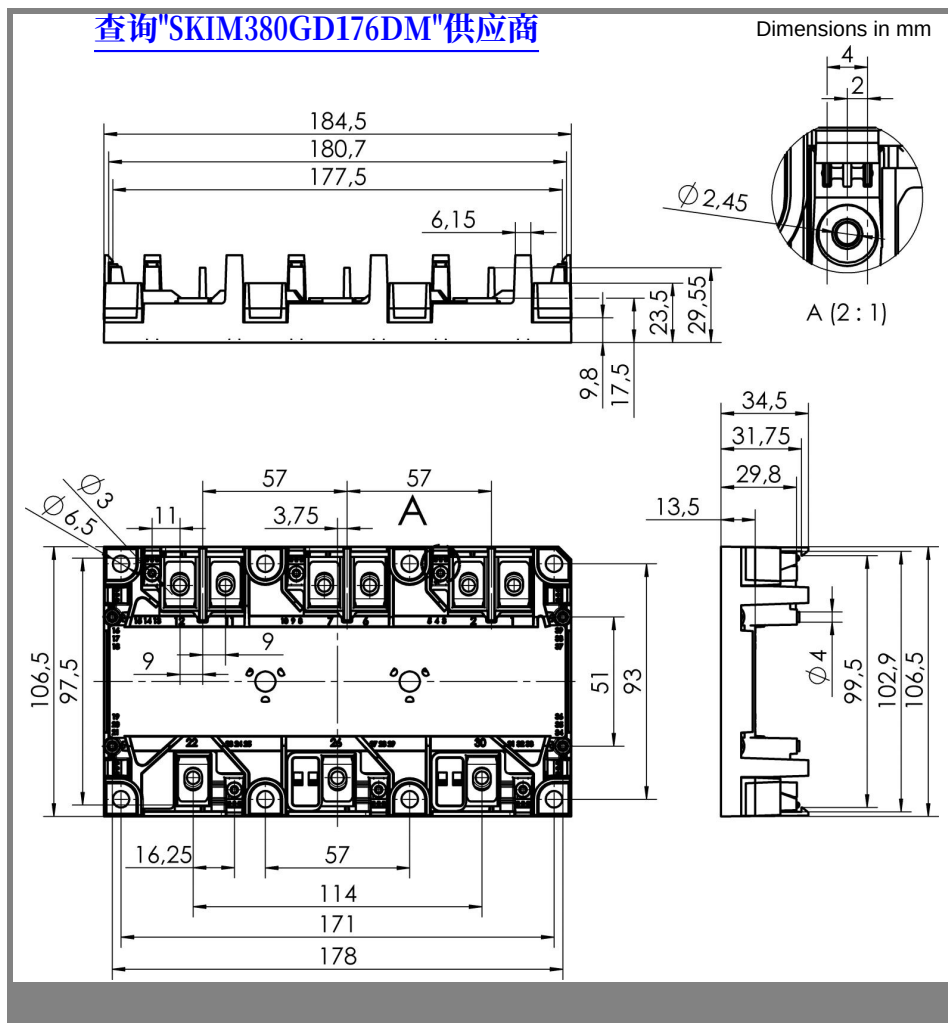


GD

Absolute Maximum Ratings		$T_c = 25^\circ\text{C}$, unless otherwise specified	
Symbol	Conditions	Values	Units
IGBT			
V_{CES}		1700	V
I_C	$T_s = 25 (70)^\circ\text{C}$	425 (325)	A
I_{CRM}	$t_p = 1 \text{ ms}$	750	A
V_{GES}		± 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.	3300	V
Inverse diode			
I_F	$T_s = 25 (70)^\circ\text{C}$	380 (285)	A
I_{FRM}	$t_p = \text{ms}$	750	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.	Units
IGBT					
$V_{GE(th)}$	$V_{GE} = V_{CE}$; $I_C = 18 \text{ mA}$	5,15	5,8	6,45	V
I_{CES}	$V_{GE} = 0$; $V_{CE} = V_{CES}$; $T_j = 25^\circ\text{C}$			0,3	mA
V_{CEO}	$T_j = 25 (125)^\circ\text{C}$			1,2 (1,1)	V
r_{CE}	$T_j = 25 (125)^\circ\text{C}$			3,3 (4,8)	$\text{m}\Omega$
V_{CEsat}	$I_{Cnom} = 375 \text{ A}$; $V_{GE} = 15 \text{ V}$; $T_j = 25 (125)^\circ\text{C}$ on chip level	1,6	2 (2,4)	2,45	V
C_{ies}	$V_{GE} = 0$; $V_{CE} = 25 \text{ V}$; $f = 1 \text{ MHz}$		33		nF
C_{oes}	$V_{GE} = 0$; $V_{CE} = 25 \text{ V}$; $f = 1 \text{ MHz}$		1,4		nF
C_{res}	$V_{GE} = 0$; $V_{CE} = 25 \text{ V}$; $f = 1 \text{ MHz}$		1,1		nF
L_{CE}				20	nH
$R_{CC'+EE'}$	resistance, terminal-chip $T_c = 25 (125)^\circ\text{C}$		0,9 (1,1)		$\text{m}\Omega$
$t_{d(on)}$	$V_{CC} = 1200 \text{ V}$				ns
t_r	$I_{Cnom} = 375 \text{ A}$				ns
$t_{d(off)}$	$R_{Gon} = R_{Goff} = \Omega$				ns
t_f	$T_j = 125^\circ\text{C}$				ns
$E_{on} (E_{off})$	$V_{GE} \pm 15 \text{ V}$		225 (150)		mJ
$E_{on} (E_{off})$	with SKHI 65; $T_j = 125^\circ\text{C}$; $V_{CC} = 1200 \text{ V}$; $I_C = 375 \text{ A}$				mJ
Inverse diode					
$V_F = V_{EC}$	$I_{Fnom} = 375 \text{ A}$; $V_{GE} = 0 \text{ V}$; $T_j = 25 (125)^\circ\text{C}$				V
V_{TO}	$T_j = 25 (125)^\circ\text{C}$				V
r_T	$T_j = 25 (125)^\circ\text{C}$				$\text{m}\Omega$
I_{RRM}	$I_F = 375 \text{ A}$; $T_j = 25^\circ\text{C}$				A
Q_{rr}	$V_{GE} = 0 \text{ V}$ di/dt = A/ μs				μC
E_{rr}	$R_{Gon} = R_{Goff} =$				mJ
Thermal characteristics					
$R_{th(j-s)}$	per IGBT			0,09	K/W
$R_{th(j-s)}$	per FWD			0,14	K/W
Temperature Sensor					
R_{TS}	$T = 25 (125)^\circ\text{C}$		1 (1,67)		$\text{k}\Omega$
tolerance	$T = 25 (125)^\circ\text{C}$		3 (2)		%
Mechanical data					
M_1	to heatsink (M5)	2	3		Nm
M_2	for terminals (M6)	4	5		Nm
w			460		g

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

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