

SKiM 220GD176D



SKiM[®] 4

IGBT Modules

SKiM 220GD176D

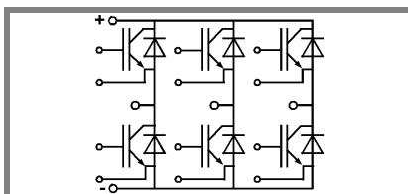
Target Data

Features

- Homogenous Si
- Trench = Trenchgate Technology
- V_{CEsat} with positive temperature coefficient
- High short circuit capability, self limiting to $6 \times I_C$

Typical Applications

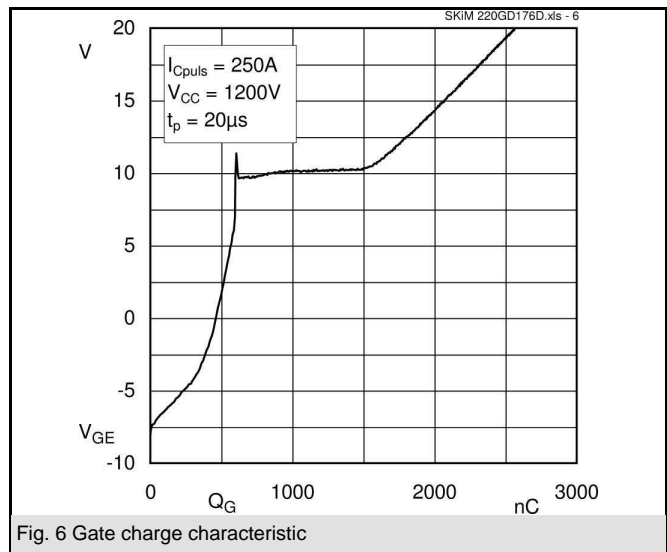
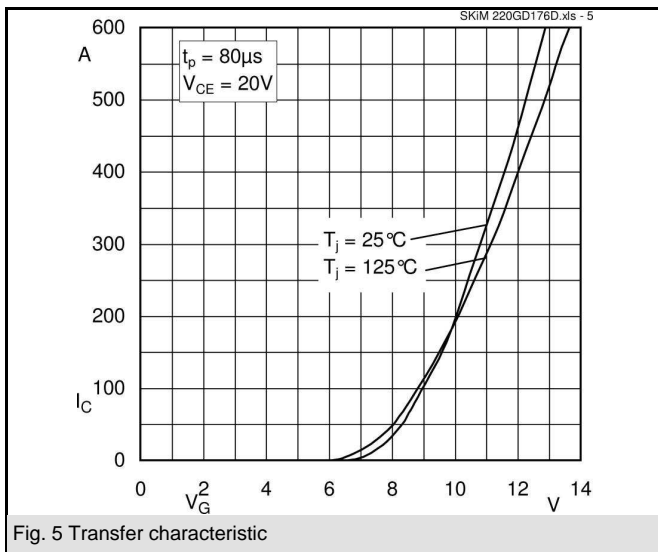
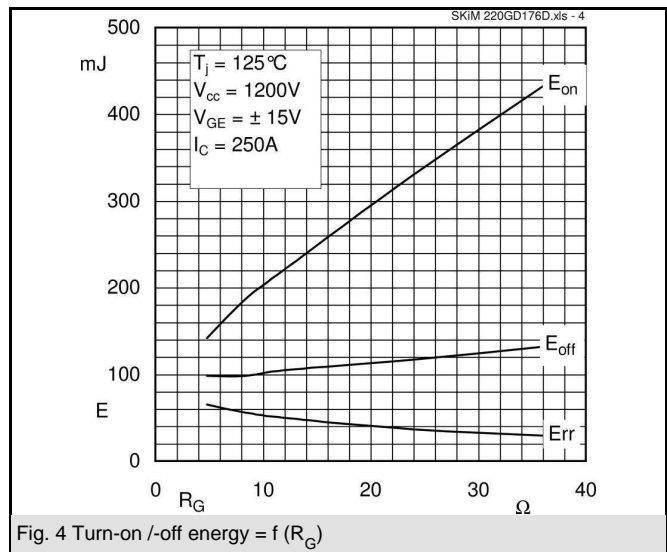
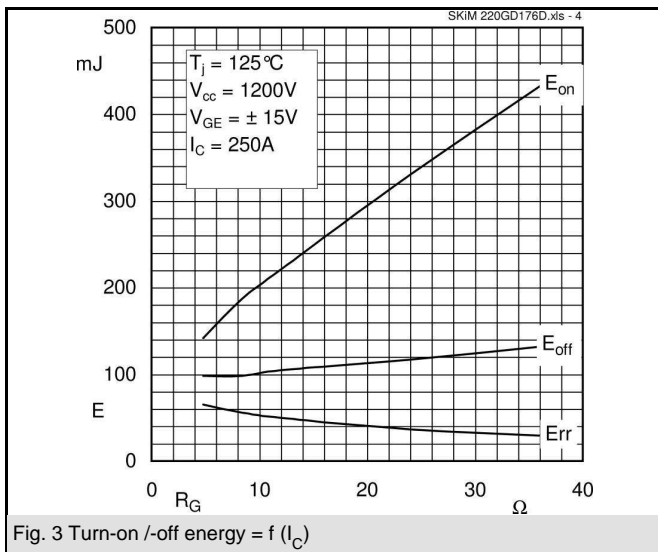
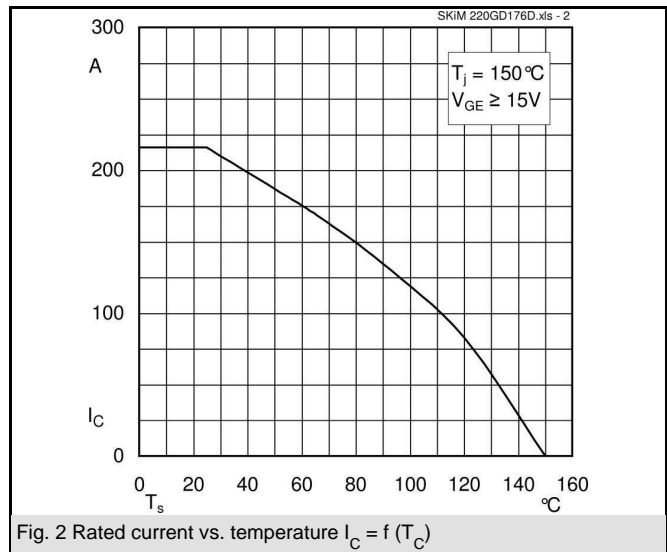
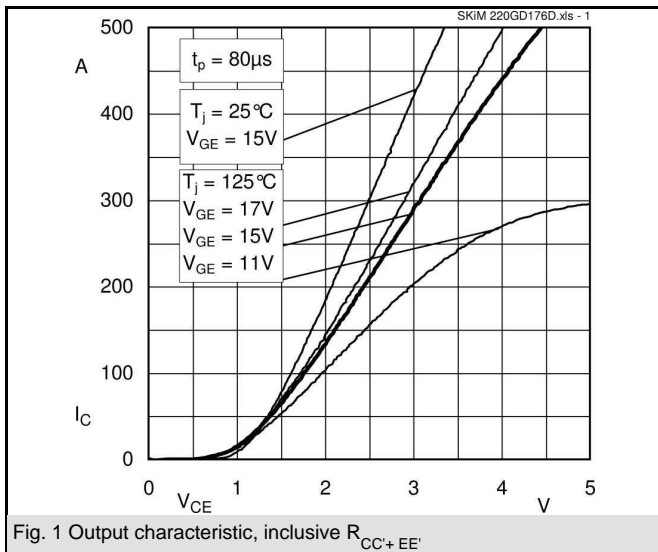
- AC inverter drives mains 575 - 750 V AC
- public transport (auxiliary syst.)

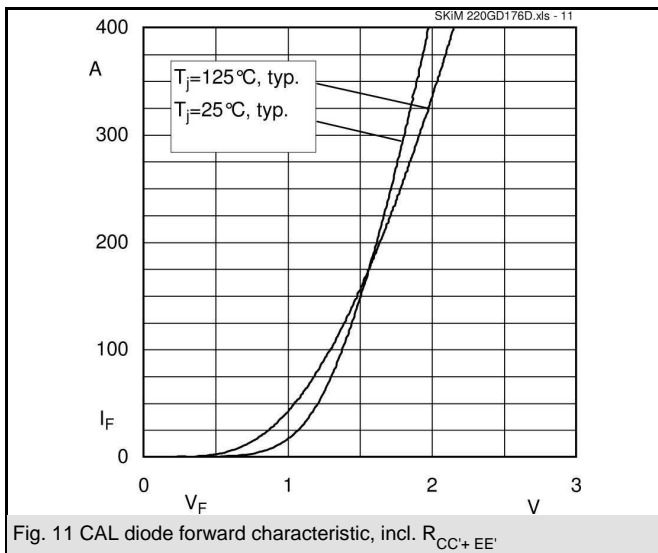
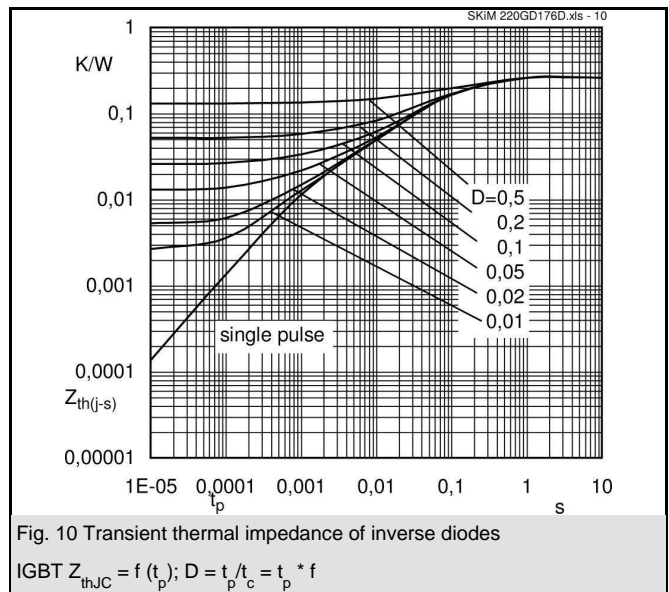
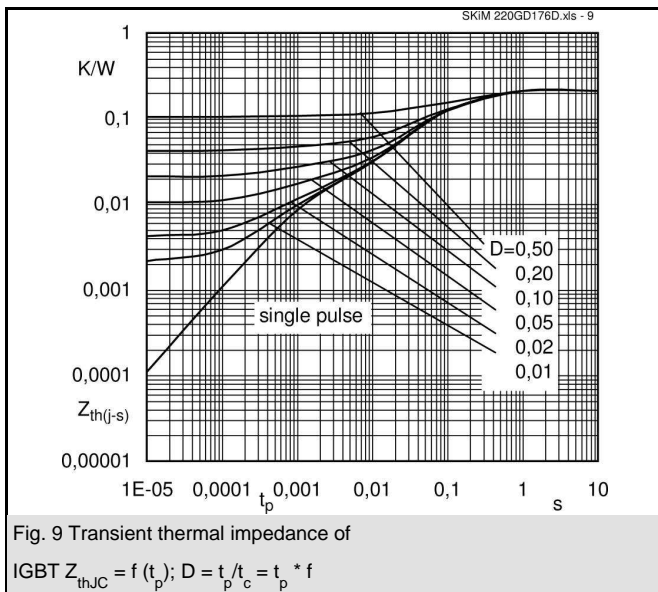
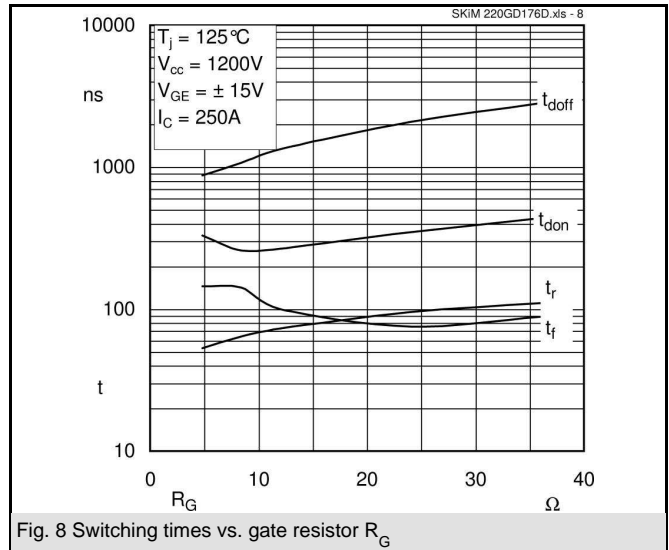
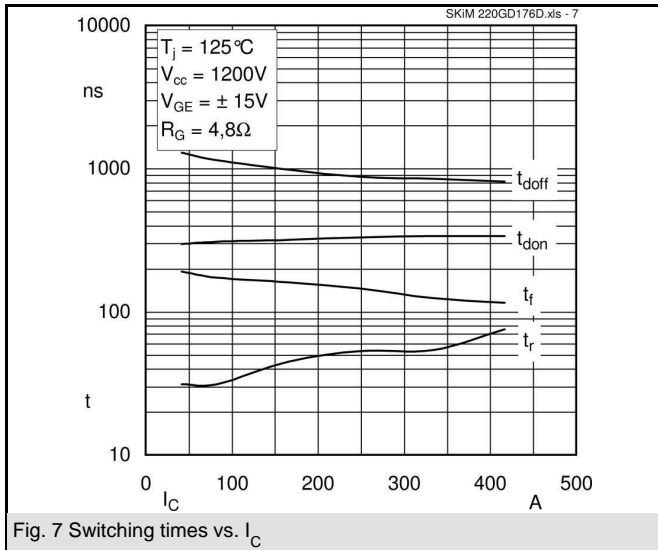


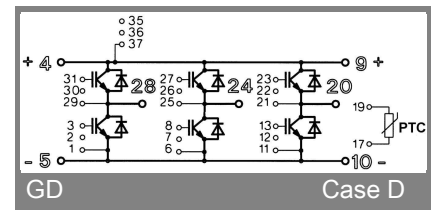
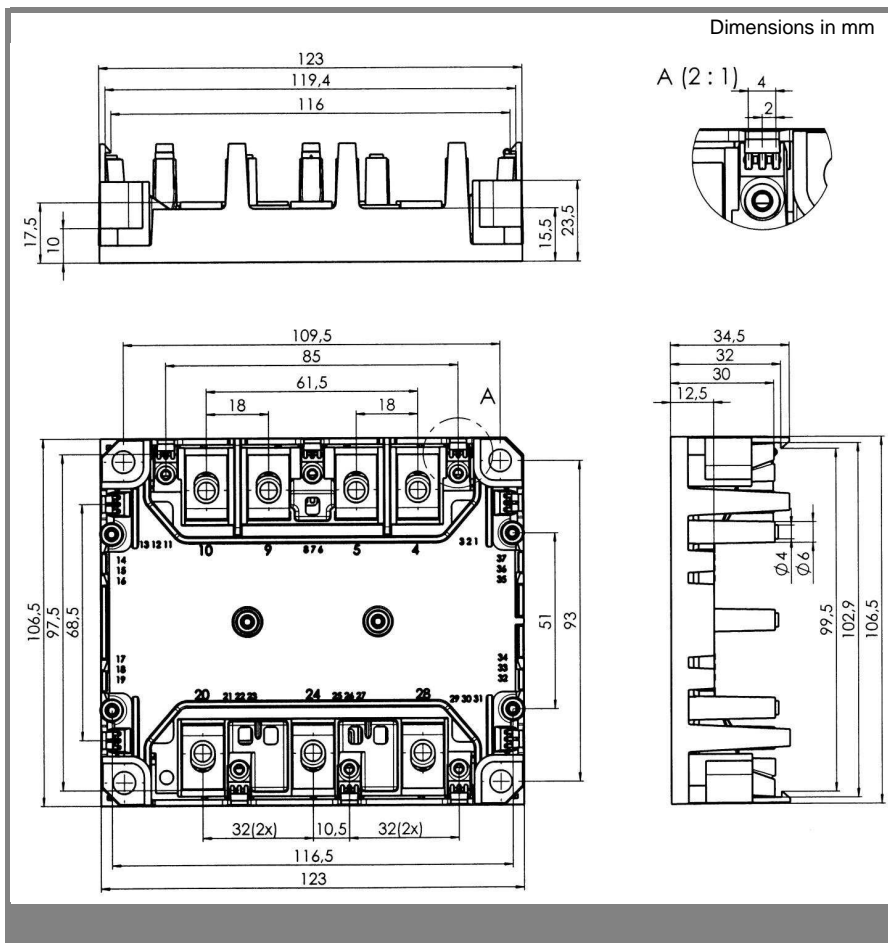
GD

Absolute Maximum Ratings		$T_c = 25^\circ\text{C}$, unless otherwise specified	
Symbol	Conditions	Values	Units
IGBT			
V_{CES}		1700	V
I_C	$T_s = 25 (70)^\circ\text{C}$	220 (150)	A
I_{CRM}	$t_p = 1 \text{ ms}$	440	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	$T_s = 25 (70)^\circ\text{C}$	220 (165)	A
I_{FRM}	$t_p = 1 \text{ ms}$	440	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
IGBT					
$V_{GE(th)}$	$V_{GE} = V_{CE}$; $I_C = 10 \text{ mA}$	5,15	5,8	6,45	V
I_{CES}	$V_{GE} = 0$; $V_{CE} = V_{CES}$; $T_j = 25^\circ\text{C}$		0,1	0,3	mA
V_{CEO}	$T_j = 25 (125)^\circ\text{C}$		1 (0,9)	1,2 (1,1)	V
r_{CE}	$T_j = 25 (125)^\circ\text{C}$		4 (6)	5 (7,2)	m Ω
V_{CEsat}	$I_{Cnom} = 250 \text{ A}$; $V_{GE} = 15 \text{ V}$, $T_j = 25 (125)^\circ\text{C}$ on chip level		2 (2,4)	2,45 (2,9)	V
C_{ies}	$V_{GE} = 0$; $V_{CE} = 25 \text{ V}$; $f = 1 \text{ MHz}$		22		nF
C_{oes}	$V_{GE} = 0$; $V_{CE} = 25 \text{ V}$; $f = 1 \text{ MHz}$		0,9		nF
C_{res}	$V_{GE} = 0$; $V_{CE} = 25 \text{ V}$; $f = 1 \text{ MHz}$		0,7		nF
L_{CE}				15	nH
$R_{CC'+EE'}$	resistance, terminal-chip $T_c = 25 (125)^\circ\text{C}$		1,35 (1,75)		m Ω
$t_{d(on)}$	$V_{CC} = 1200 \text{ V}$				ns
t_r	$I_{Cnom} = 250 \text{ A}$				ns
$t_{d(off)}$	$R_{Gon} = R_{Goff} = \Omega$				ns
t_f	$T_j = 125^\circ\text{C}$				ns
$E_{on} (E_{off})$	$V_{GE} \pm 15 \text{ V}$		150 (100)		mJ
$E_{on} (E_{off})$	with SKHI 6; $T_j = ^\circ\text{C}$ $V_{CC} = \text{V}$; $I_C = \text{A}$				mJ
Inverse diode					
$V_F = V_{EC}$	$I_{Fnom} = 200 \text{ A}$; $V_{GE} = 15 \text{ V}$; $T_j = 25 (125)^\circ\text{C}$		1,7 (1,8)	1,9 (2)	V
V_{TO}	$T_j = 25 (125)^\circ\text{C}$		1,1 (0,9)	1,3 (1,1)	V
r_T	$T_j = 25 (125)^\circ\text{C}$		3 (4,5)	3 (4,5)	m Ω
I_{RRM}	$I_F = 200 \text{ A}$; $T_j = 125^\circ\text{C}$				A
Q_{rr}	$V_{GE} = \text{V di/dt} = \text{A}/\mu\text{s}$				μC
E_{rr}	$R_{Gon} = R_{Goff} =$				mJ
Thermal characteristics					
$R_{th(j-s)}$	per IGBT			0,21	K/W
$R_{th(j-s)}$	per FWD			0,26	K/W
Temperature Sensor					
R_{TS}	$T = 25 (100)^\circ\text{C}$		1 (1,67)		k Ω
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				310	g







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

This technical information specifies semiconductor devices but promises no characteristics. No warranty or guarantee expressed or implied is made regarding delivery, performance or suitability.