

SKiM 150GD126D

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SKiM® 4

IGBT Modules

SKiM 150GD126D

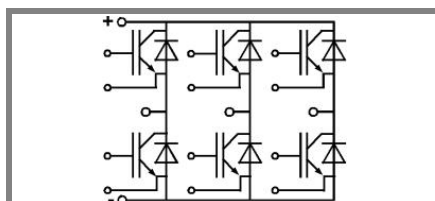
Preliminary Data

Features

- Trench gate IGBT with field stop layer
- with CAL HD (High Density) Diode
- Low inductance case
- 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

- Switched mode power supplies
- Three phase inverters for AC motor speed control



GD

Absolute Maximum Ratings		T _c = 25 °C, unless otherwise specified	
Symbol	Conditions	Values	Units
IGBT			
V _{CES}	T _s = 25 (70) °C	1200	V
I _C	T _s = 25 (70) °C	140 (105)	A
I _{CRM}	t _p = 1 ms	300	A
V _{GES}		± 20	V
T _j (T _{stg})		- 40 ... 150 (125)	°C
T _{cop}	max. case operating temperature	125	°C
V _{isol}	AC, 1 min.	2500	V
Inverse diode			
I _F	T _s = 25 (70) °C	130 (100)	A
I _{FRM}	t _p = 1 ms	300	A
I _{FSM}	t _p = 10 ms; sin.; T _j = 150 °C	1100	A

Characteristics		T _c = 25 °C, unless otherwise specified			
Symbol	Conditions	min.	typ.	max.	Units
IGBT					
V _{GE(th)}	V _{GE} = V _{CE} ; I _C = 6 mA	5	5,8	6,5	V
I _{CES}	V _{GE} = 0; V _{CE} = V _{CES} ; T _j = 25 °C		0,2	0,6	mA
V _{CEO}	T _j = 25 (125) °C		1 (0,9)	1,2	V
r _{CE}	T _j = 25 (125) °C		4,67 (7,33)	6,67	mΩ
V _{CEsat}	I _{Cnom} = 150 A; V _{GE} = 15 V, T _j = 25 (125) °C on chip level		1,7 (2)	2,15	V
C _{ies}	V _{GE} = 0; V _{CE} = 25 V; f = 1 MHz		11,5		nF
C _{oes}	V _{GE} = 0; V _{CE} = 25 V; f = 1 MHz		0,8		nF
C _{res}	V _{GE} = 0; V _{CE} = 25 V; f = 1 MHz		0,8		nF
L _{CE}				15	nH
R _{CC'+EE'}	resistance, terminal-chip T _c = 25 (125) °C		1,35 (1,75)		mΩ
t _{d(on)}	V _{CC} = 600 V		320		ns
t _r	I _{Cnom} = 150 A		75		ns
t _{d(off)}	R _{Gon} = R _{Goff} = 9 Ω		800		ns
t _f	T _j = 125 °C		130		ns
E _{on} (E _{off})	V _{GE} ± 15 V		11 (19)		mJ
E _{on} (E _{off})	with SKHI 64; T _j = 125 °C V _{CC} = 600 V; I _C = 150 A				mJ
Inverse diode					
V _F = V _{EC}	I _{Fnom} = 100 A; V _{GE} = 0 V; T _j = 25 (125) °C		2 (1,8)	2,55 (2,3)	V
V _{TO}	T _j = 25 (125) °C		1,1	1,45 (1,25)	V
r _T	T _j = 25 (125) °C		9	13 (11)	mΩ
I _{RRM}	I _F = 100 A; T _j = 125 °C				A
Q _{rr}	V _{GE} = 0 V di/dt = A/μs				μC
E _{rr}	R _{Gon} = R _{Goff} = 9 Ω		12		mJ
Thermal characteristics					
R _{th(j-s)}	per IGBT			0,36	K/W
R _{th(j-s)}	per FWD			0,56	K/W
Temperature Sensor					
R _{TS}	T = 25 (100) °C		1 (1,67)		kΩ
tolerance	T = 25 (100) °C		3 (2)		%
Mechanical data					
M ₁	to heatsink (M5)	2		3	Nm
M ₂	for terminals (M6)	4		5	Nm
w				310	g

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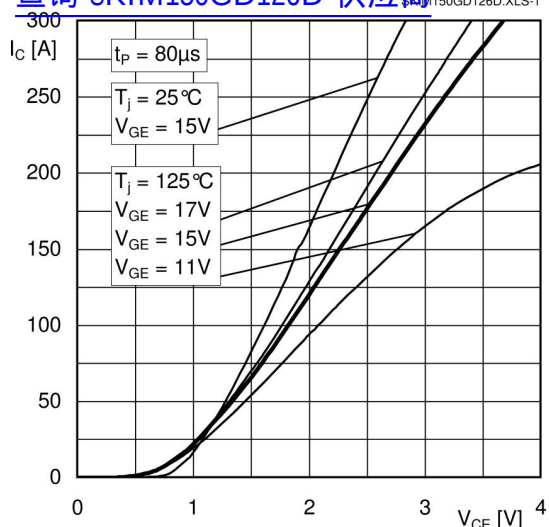


Fig. 1 Output characteristic, inclusive $R_{CC'+EE'}$

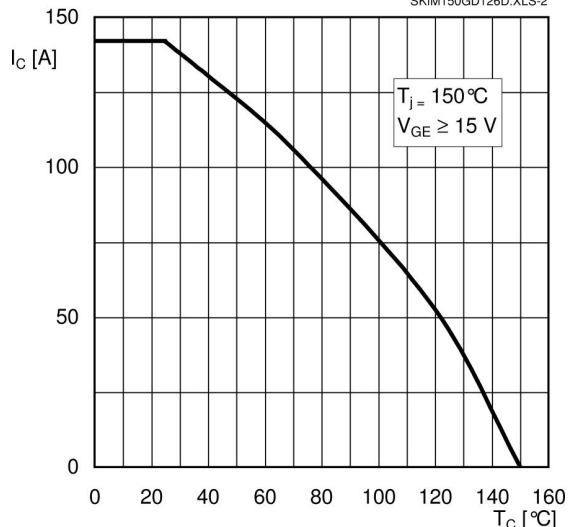


Fig. 2 Rated current vs. temperature $I_C = f(T_C)$

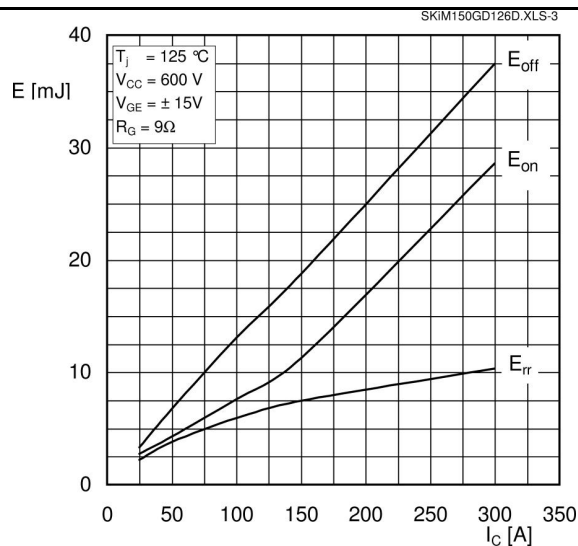


Fig. 3 Turn-on /-off energy = $f(I_C)$

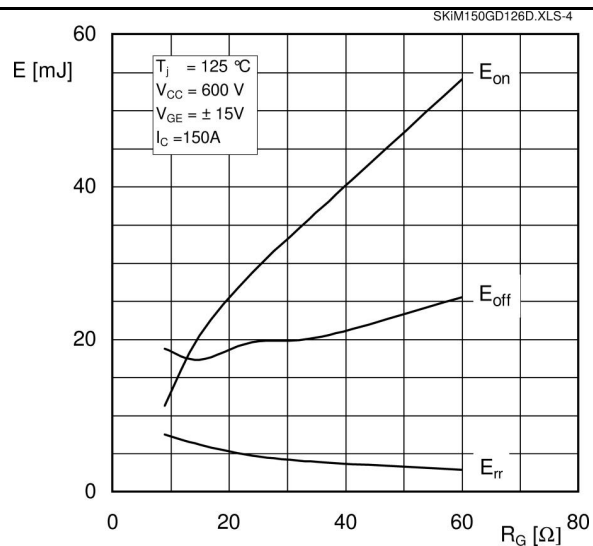


Fig. 4 Turn-on /-off energy = $f(R_G)$

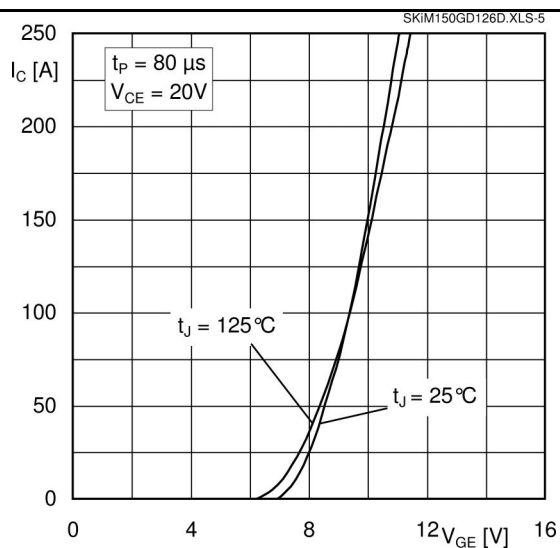


Fig. 5 Transfer characteristic

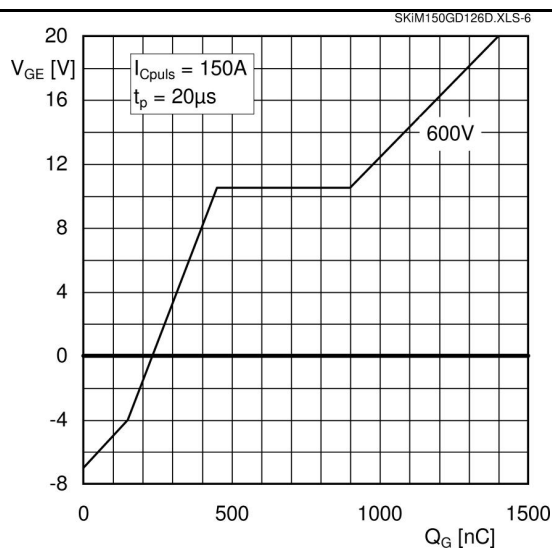
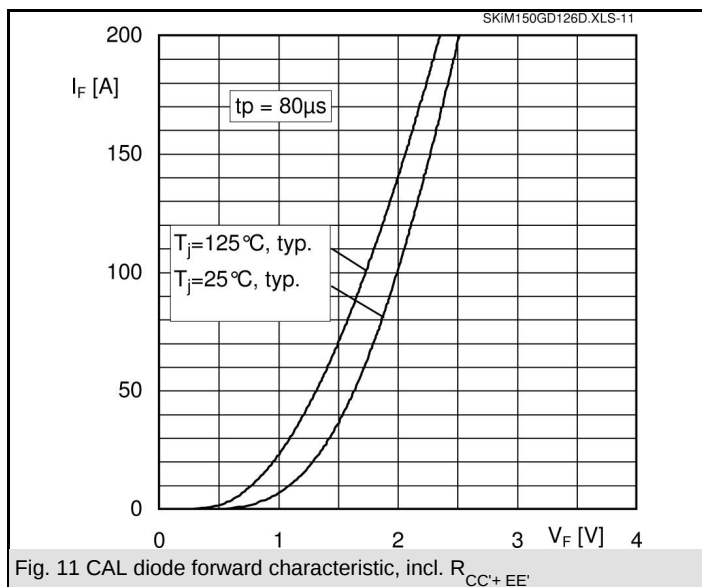
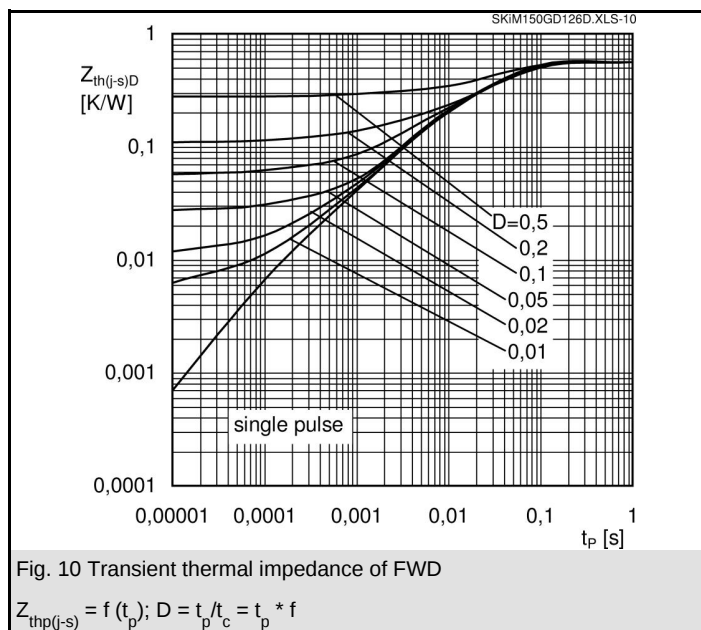
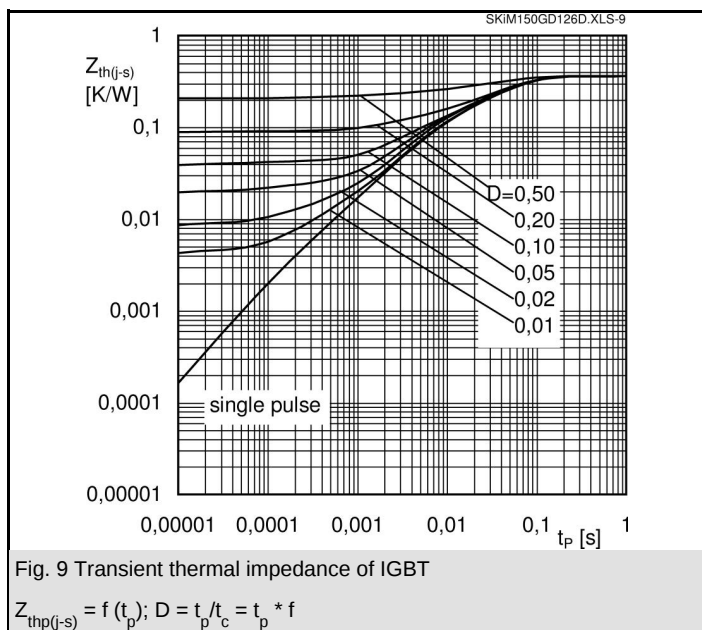
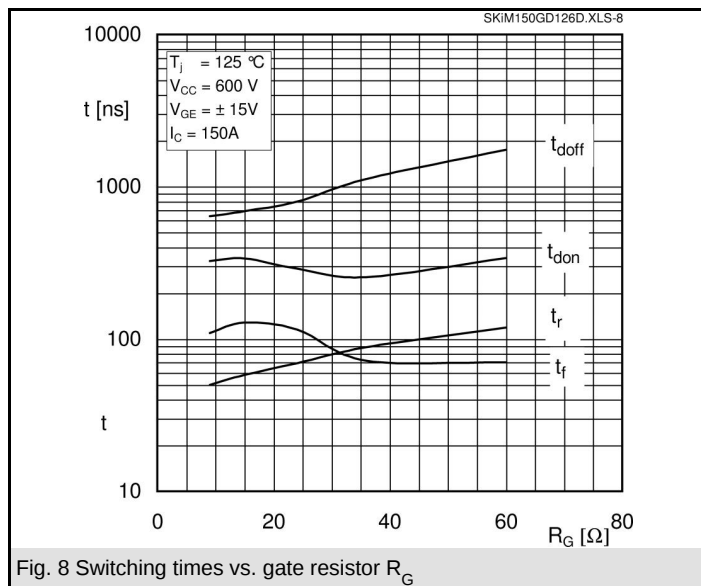
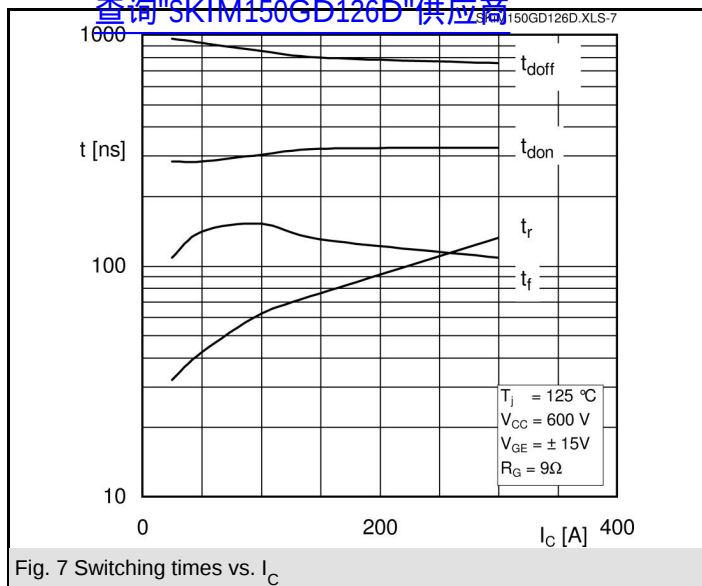
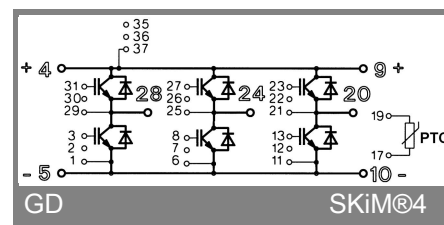
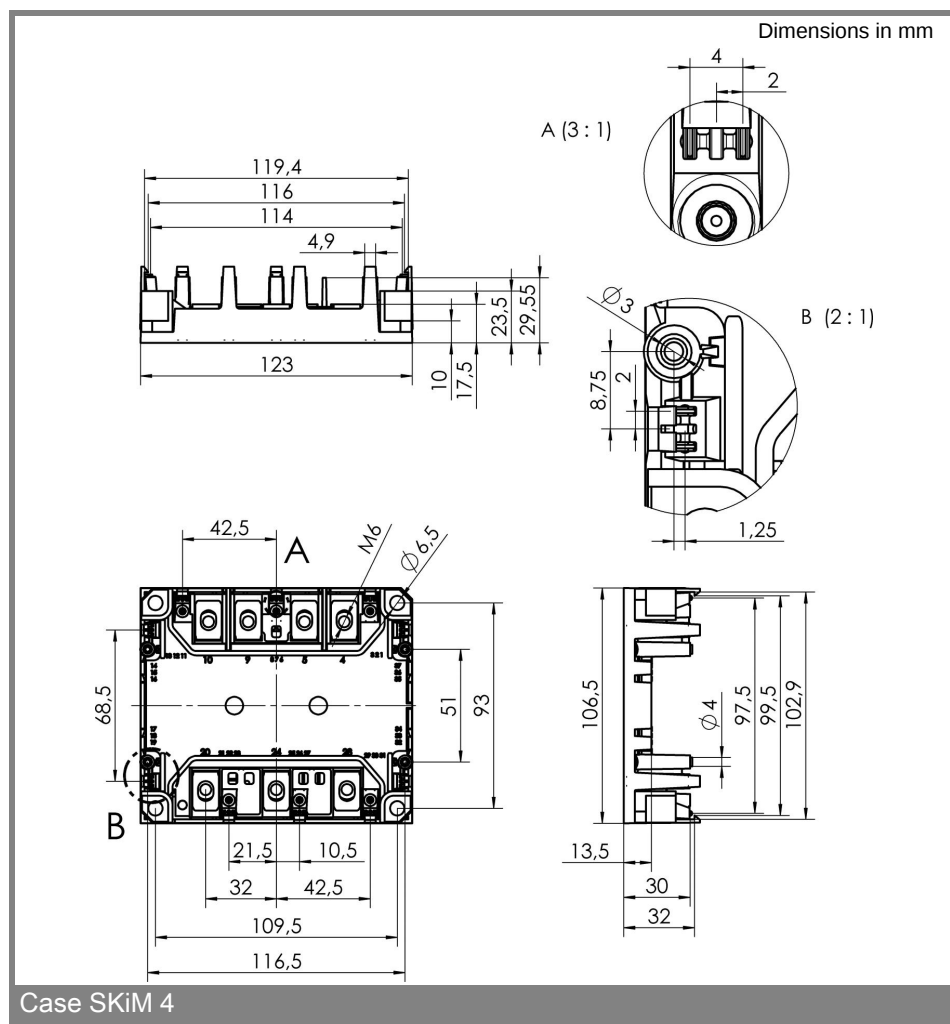


Fig. 6 Gate charge characteristic

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

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