



SKiM® 5

Trench IGBT modules

SKiM 600GD126DLM

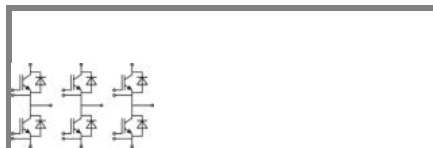
Target Data

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*

- Uninterruptable power supplies (UPS)
- 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 _j = °C		1200	V
I _C	T _j = 150 °C	T _{heatsink} = 25 °C	524	A
		T _{heatsink} = 70 °C	361	A
I _{CRM}	I _{CRM} = 2xI _{CNOM} ; V _{CC} =800V		900	A
V _{GES}			± 20	V
t _{psc}	V _{CC} = 800 V; V _{GE} ≤ 20 V; T _j = 150 °C V _{CES} < 1200 V		10	µs
Inverse Diode				
I _F	T _j = 150 °C	T _{heatsink} = 25 °C	388	A
		T _{heatsink} = 70 °C	289	A
I _{FRM}	I _{FRM} = 2 x I _{FNOM}		600	A
I _{FSM}	t _p = 10 ms; sin. T _j = 150 °C		3300	A
Module				
I _{t(RMS)}				A
T _{vj}			-40 ... +150	°C
T _{stg}			-40 ... +125	°C
V _{isol}	AC, 1 min.		2500	V

Characteristics			T _c = 25 °C, unless otherwise specified			
Symbol	Conditions		min.	typ.	max.	Units
IGBT						
V _{GE(th)}	V _{GE} = V _{CE} , I _C = 18 mA		5	5,8	6,5	V
I _{CES}	V _{GE} = 0 V, V _{CE} = V _{CES} T _j = 25 °C				5,0	mA
V _{CE0}	T _j = 25 °C T _j = 125 °C			1	1,2	V
				0,9	1,1	V
r _{CE}	V _{GE} = 15 V T _j = 25°C T _j = 125°C			1,44	1,89	mΩ
				2,33	2,78	mΩ
V _{CE(sat)}	I _{Cnom} = 450 A, V _{GE} = 15 V T _j = 25°C _{chiplev.} T _j = 125°C _{chiplev.}			1,65	2,05	V
				1,95	2,35	V
C _{ies}	V _{CE} = 25, V _{GE} = 0 V f = 1 MHz			35		nF
C _{oes}				2,5		nF
C _{res}				2,4		nF
Q _G	V _{GE} = -8V/+15V			3000		nC
R _{Gint}	T _j = 25 °C			1,7		Ω
t _{d(on)}	R _{Gon} = 2 Ω di/dt = 6800 A/μs	V _{CC} = 600V I _C = 450A		315		ns
t _r				70		ns
E _{on}				37		mJ
t _{d(off)}	R _{Goff} = 2 Ω di/dt = 3200 A/μs	T _j = 125 °C V _{GE} = ± 15V		680		ns
t _f				90		ns
E _{off}				60		mJ
R _{th(j-s)}	per IGBT			0,09		K/W



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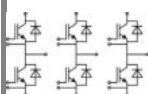
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Characteristics					
Symbol	Conditions	min.	typ.	max.	Units
Inverse Diode					
$V_F = V_{EC}$	$I_{Fnom} = 300 \text{ A}; V_{GE} = 0 \text{ V}$				
	$T_j = 25 \text{ }^{\circ}\text{C}_{chiplev.}$		2	2,5	V
	$T_j = 125 \text{ }^{\circ}\text{C}_{chiplev.}$		1,8	2,3	V
V_{F0}	$T_j = 25 \text{ }^{\circ}\text{C}$		1,1	1,45	V
	$T_j = 125 \text{ }^{\circ}\text{C}$		0,85	1,2	V
r_F	$T_j = 25 \text{ }^{\circ}\text{C}$		3	3,5	mΩ
	$T_j = 125 \text{ }^{\circ}\text{C}$		3,17	3,67	mΩ
I_{RRM}	$I_F = 450 \text{ A}$		380		A
Q_{rr}	$di/dt = 7000 \text{ A}/\mu\text{s}$		52		μC
E_{rr}	$V_{GE} = -15 \text{ V};$ $R_{Gon} = R_{Goff} = 2 \Omega$		21,3		mJ
$R_{th(j-s)}$	per diode		0,125		K/W
Module					
L_{CE}				20	nH
$R_{CC'+EE'}$	res., terminal-chip	$T_{case} = 25 \text{ }^{\circ}\text{C}$	0,9		mΩ
		$T_{case} = 125 \text{ }^{\circ}\text{C}$	1,1		mΩ
M_s	to heat sink M5		2	3	Nm
M_t	to terminals M6		4	5	Nm
w				460	g
Temperature sensor					
R_{TS}	$T = 25 (100)^{\circ}\text{C}$		1 (1,67)		kΩ
Tolerance	$T = 25 (100)^{\circ}\text{C}$		3 (2)		%

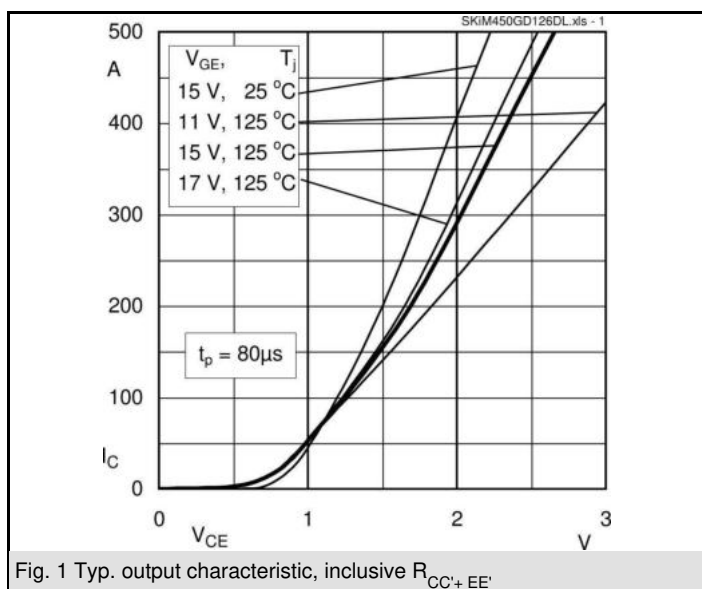


Fig. 1 Typ. output characteristic, inclusive $R_{CC'+EE'}$

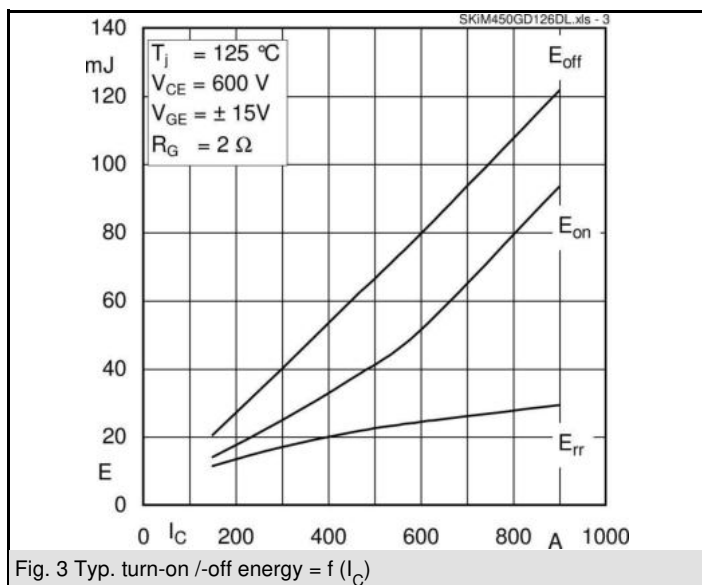


Fig. 3 Typ. turn-on /-off energy = $f(I_C)$

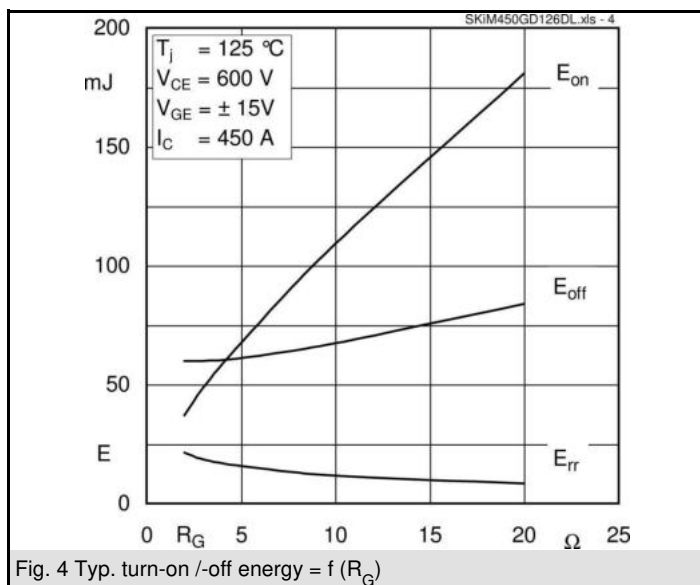


Fig. 4 Typ. turn-on /-off energy = $f(R_G)$

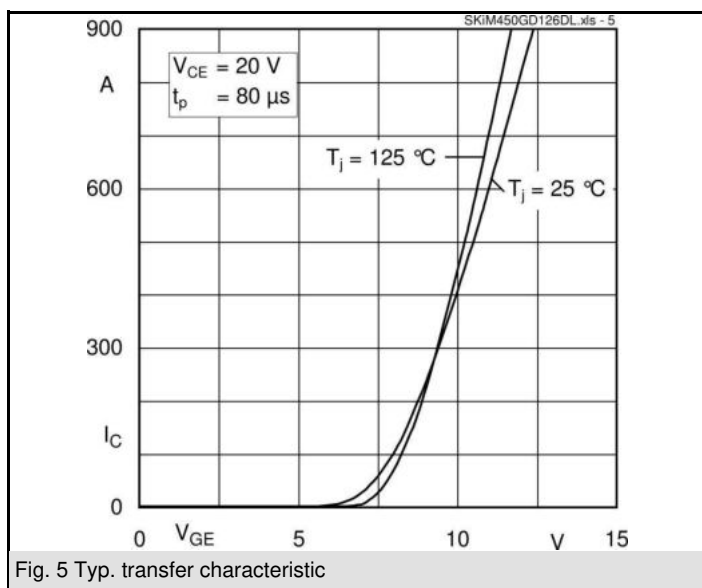


Fig. 5 Typ. transfer characteristic

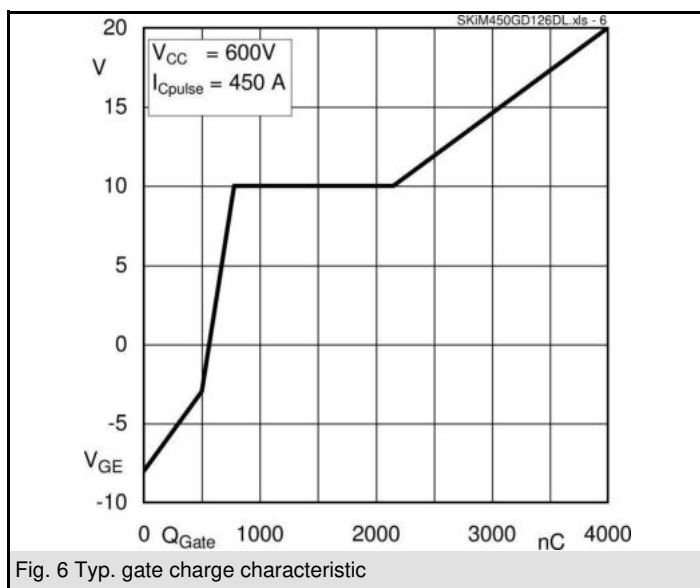
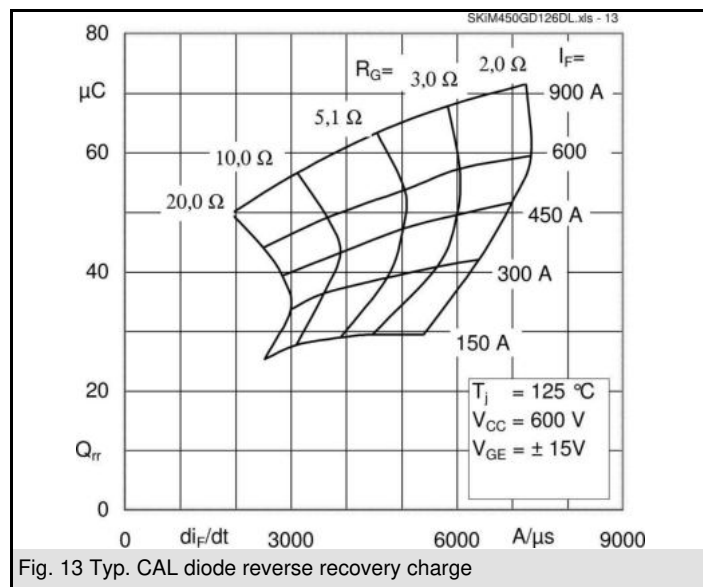
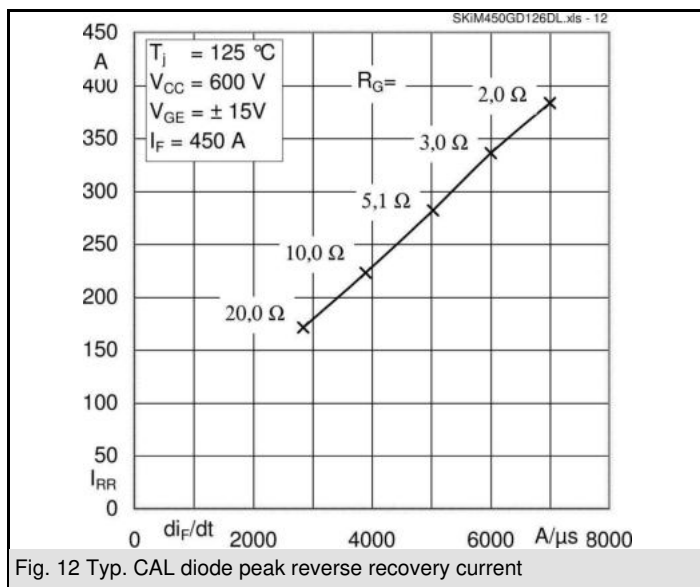
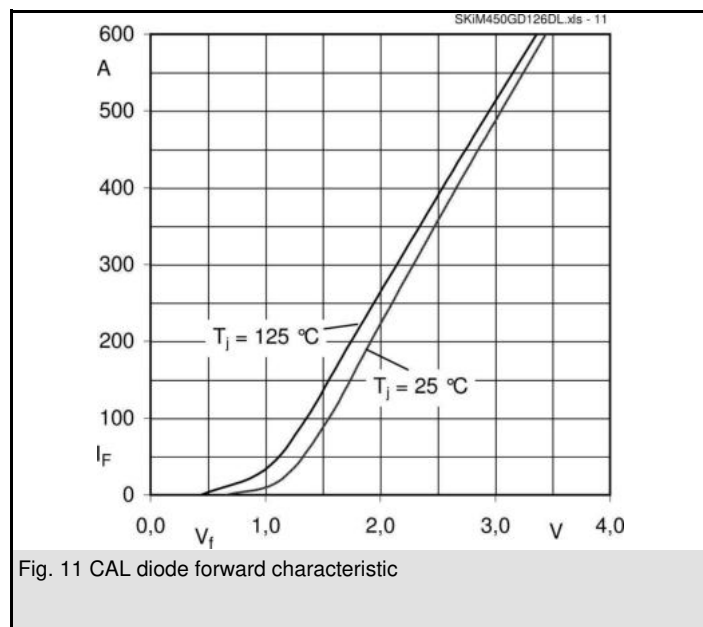
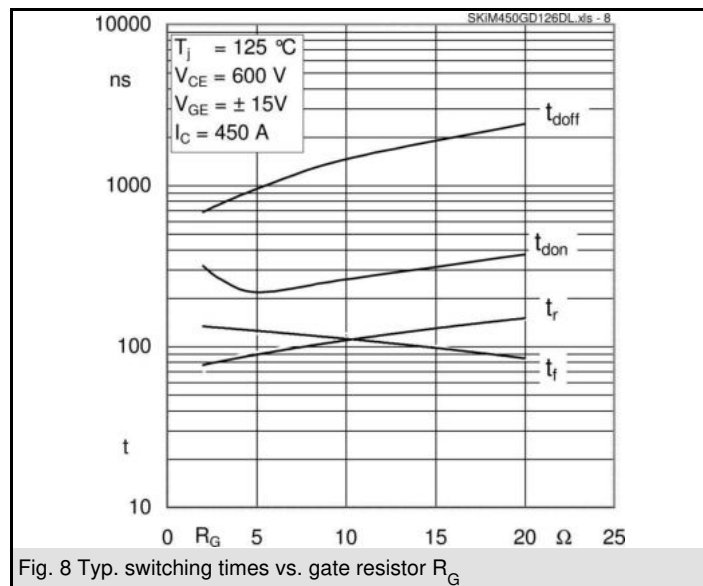
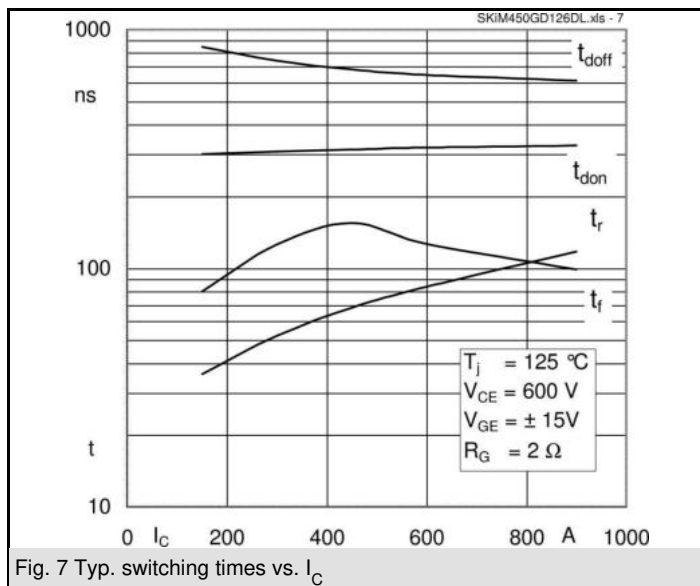
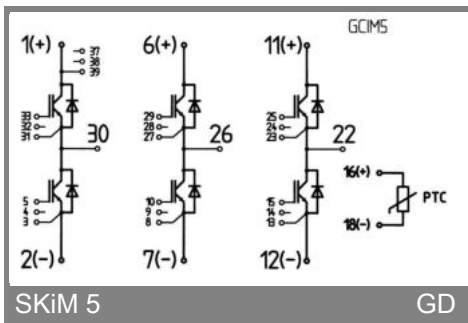
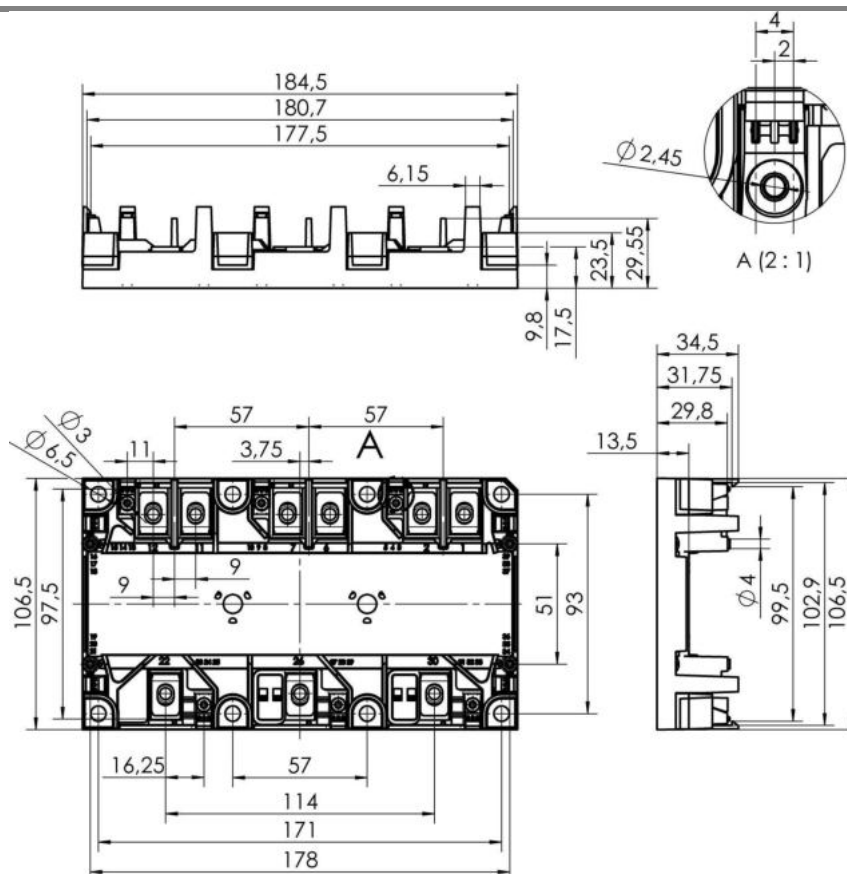


Fig. 6 Typ. gate charge characteristic



UL recognized file

no. E 63 532



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

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