

SKiM 600GD126DLM ...



SKiM[®] 5

Trench IGBT modules

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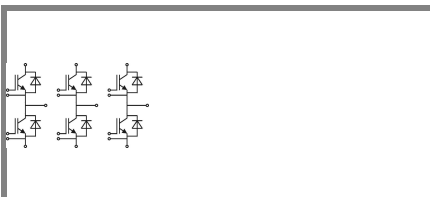
Target Data

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		$T_c = 25\text{ }^\circ\text{C}$, unless otherwise specified		
Symbol	Conditions	Values	Units	
IGBT				
V_{CES}	$T_j = \text{ }^\circ\text{C}$	1200	V	
I_C	$T_j = 150\text{ }^\circ\text{C}$	$T_{\text{heatsink}} = 25\text{ }^\circ\text{C}$	524	A
		$T_{\text{heatsink}} = 70\text{ }^\circ\text{C}$	361	A
I_{CRM}	$I_{CRM} = 2 \times I_{CNOM}; V_{CC} = 800\text{V}$	900	A	
V_{GES}		± 20	V	
t_{psc}	$V_{CC} = 800\text{ V}; V_{GE} \leq 20\text{ V}; T_j = 150\text{ }^\circ\text{C}$ $V_{CES} < 1200\text{ V}$	10	μs	
Inverse Diode				
I_F	$T_j = 150\text{ }^\circ\text{C}$	$T_{\text{heatsink}} = 25\text{ }^\circ\text{C}$	388	A
		$T_{\text{heatsink}} = 70\text{ }^\circ\text{C}$	289	A
I_{FRM}	$I_{FRM} = 2 \times I_{FNOM}$	600	A	
I_{FSM}	$t_p = 10\text{ ms}; \text{sin.}$	$T_j = 150\text{ }^\circ\text{C}$	3300	A
Module				
$I_{t(RMS)}$			A	
T_{vj}		-40 ... +150	$^\circ\text{C}$	
T_{stg}		-40 ... +125	$^\circ\text{C}$	
V_{isol}	AC, 1 min.	2500	V	

Characteristics		$T_c = 25\text{ }^\circ\text{C}$, unless otherwise specified			
Symbol	Conditions	min.	typ.	max.	Units
IGBT					
$V_{GE(th)}$	$V_{GE} = V_{CE}; I_C = 18\text{ mA}$	5	5,8	6,5	V
I_{CES}	$V_{GE} = 0\text{ V}; V_{CE} = V_{CES}$	$T_j = 25\text{ }^\circ\text{C}$	0,6		mA
			$T_j = 125\text{ }^\circ\text{C}$	0,9	1,1
V_{CE0}		$T_j = 25\text{ }^\circ\text{C}$	1	1,2	V
		$T_j = 125\text{ }^\circ\text{C}$	0,9	1,1	V
r_{CE}	$V_{GE} = 15\text{ V}$	$T_j = 25\text{ }^\circ\text{C}$	1,44	1,89	$\text{m}\Omega$
		$T_j = 125\text{ }^\circ\text{C}$	2,33	2,78	$\text{m}\Omega$
$V_{CE(sat)}$	$I_{Cnom} = 450\text{ A}; V_{GE} = 15\text{ V}$	$T_j = 25\text{ }^\circ\text{C}_{\text{chiplev.}}$	1,65	2,05	V
		$T_j = 125\text{ }^\circ\text{C}_{\text{chiplev.}}$	1,95	2,35	V
C_{res}	$V_{CE} = 25; V_{GE} = 0\text{ V}$	$f = 1\text{ MHz}$	35		nF
C_{oes}			2,5		nF
C_{res}			2,4		nF
Q_G	$V_{GE} = -8\text{V}/+15\text{V}$		3000		nC
R_{Gint}	$T_j = 25\text{ }^\circ\text{C}$		1,7		Ω
$t_{d(on)}$	$R_{Gon} = 2\text{ }\Omega$	$V_{CC} = 600\text{V}$	315		ns
			E_{on}	$I_C = 450\text{A}$	70
$t_{d(off)}$	$R_{Goff} = 2\text{ }\Omega$	$T_j = 125\text{ }^\circ\text{C}$	37		mJ
			t_f	$V_{GE} = \pm 15\text{V}$	680
E_{off}	$di/dt = 3200\text{ A}/\mu\text{s}$	90		ns	
		60		mJ	
$R_{th(j-s)}$	per IGBT		0,09		K/W



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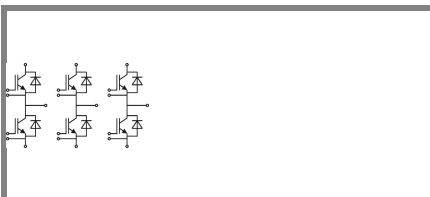
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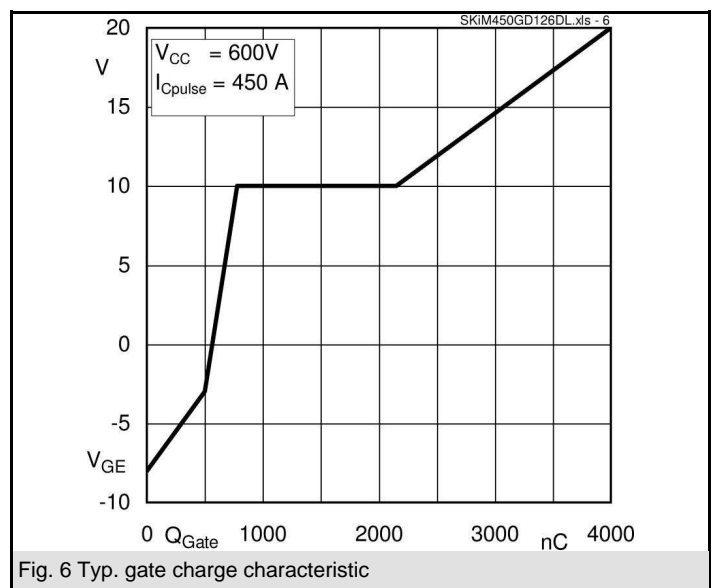
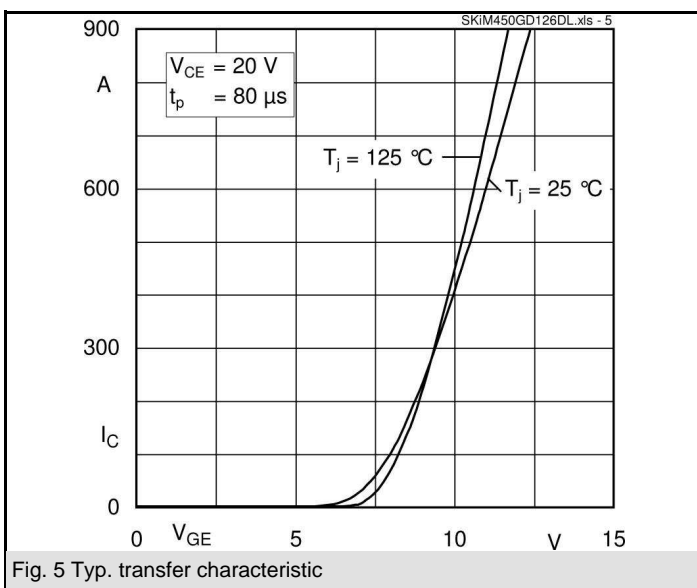
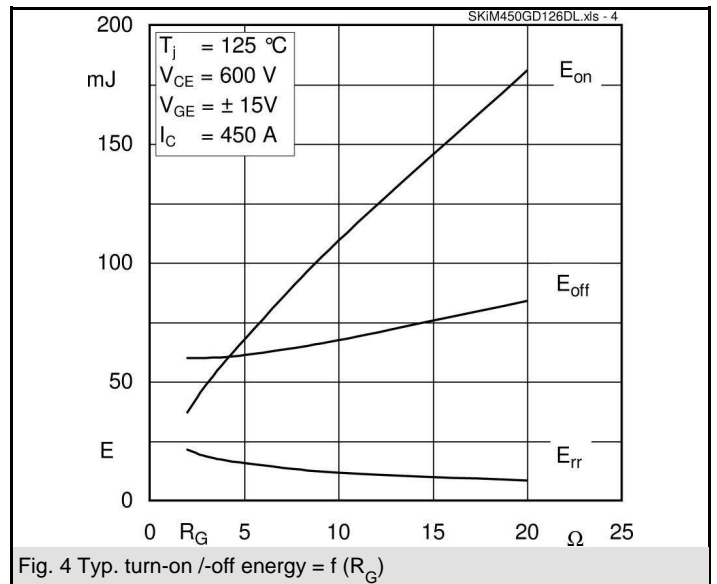
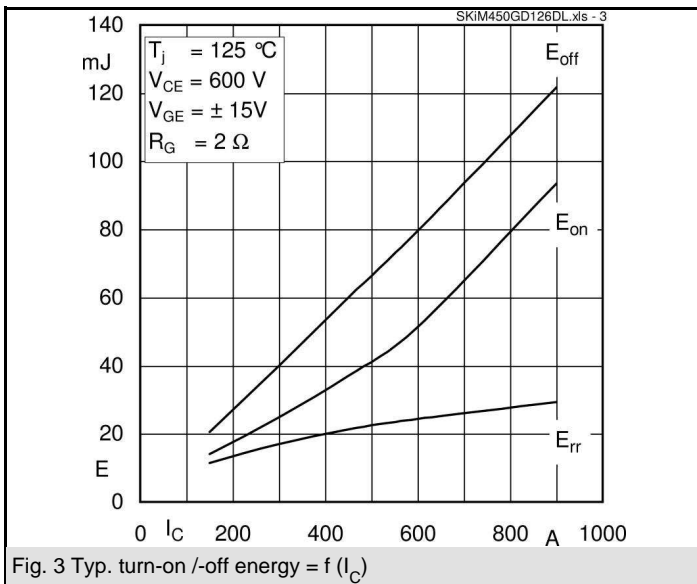
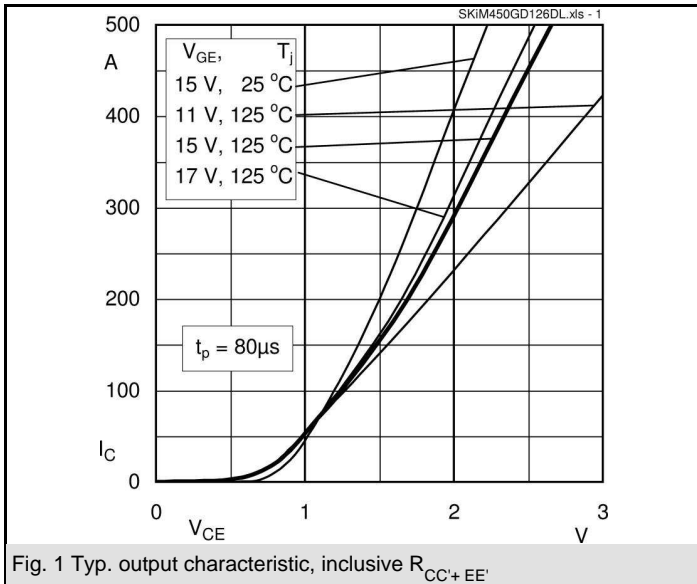


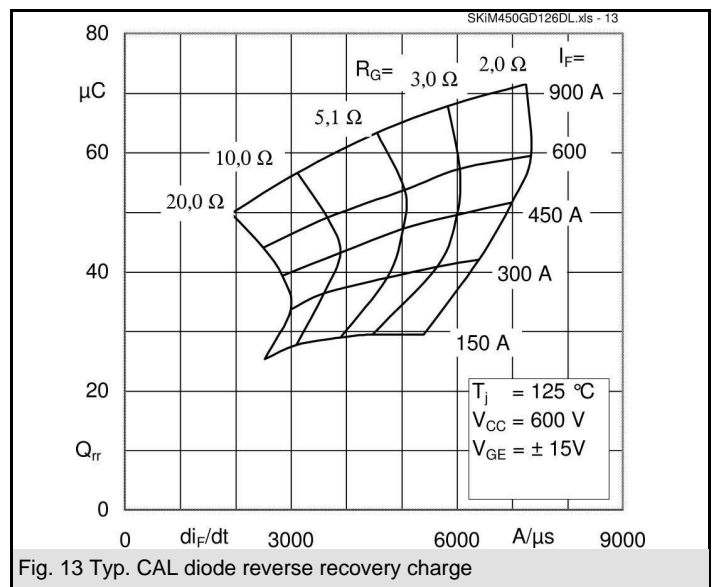
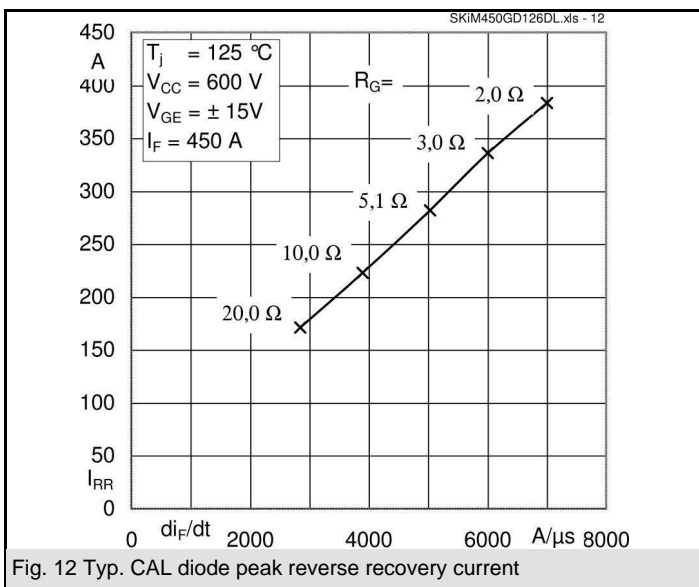
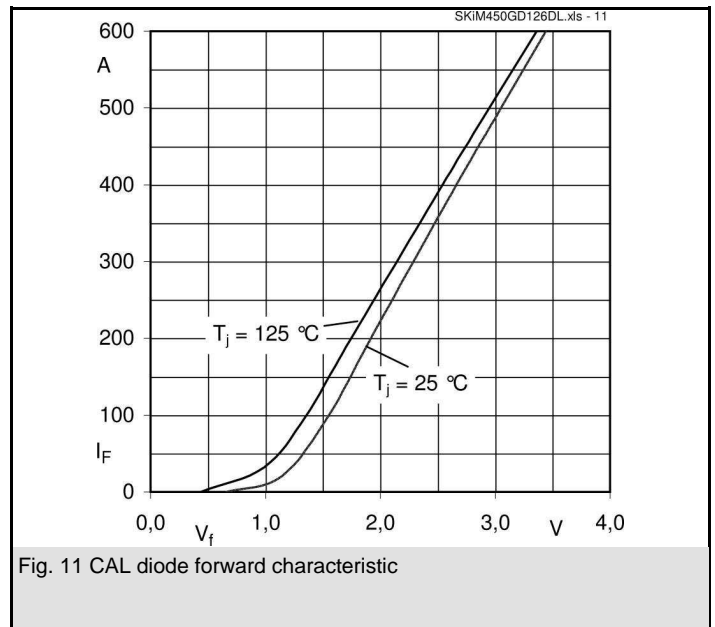
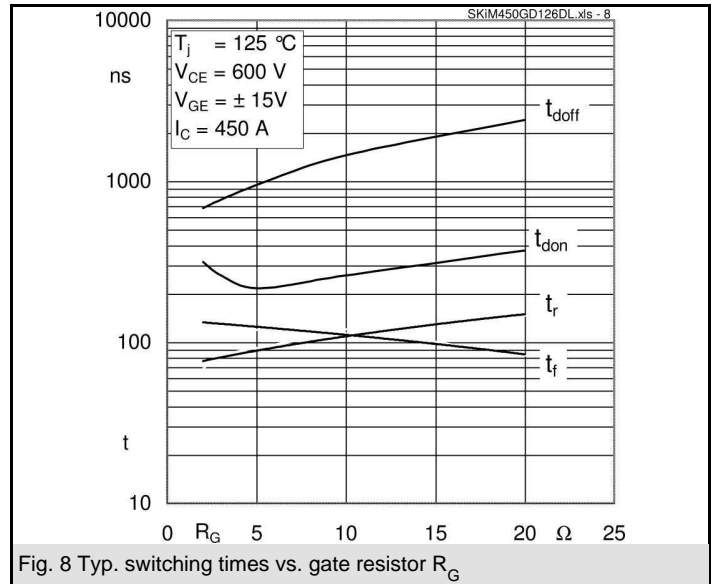
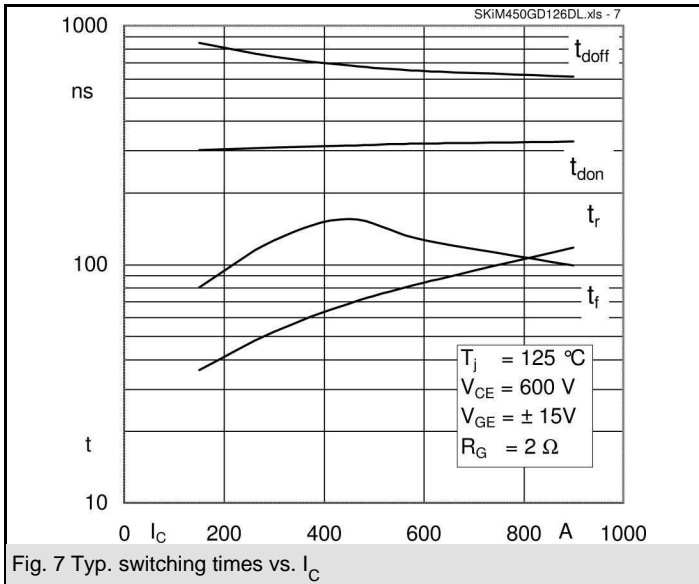
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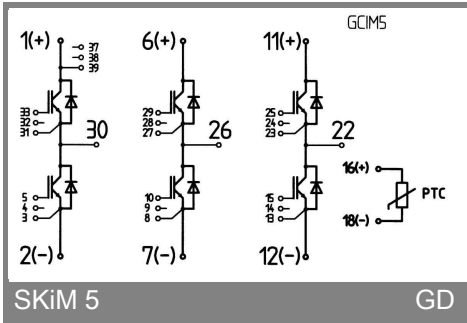
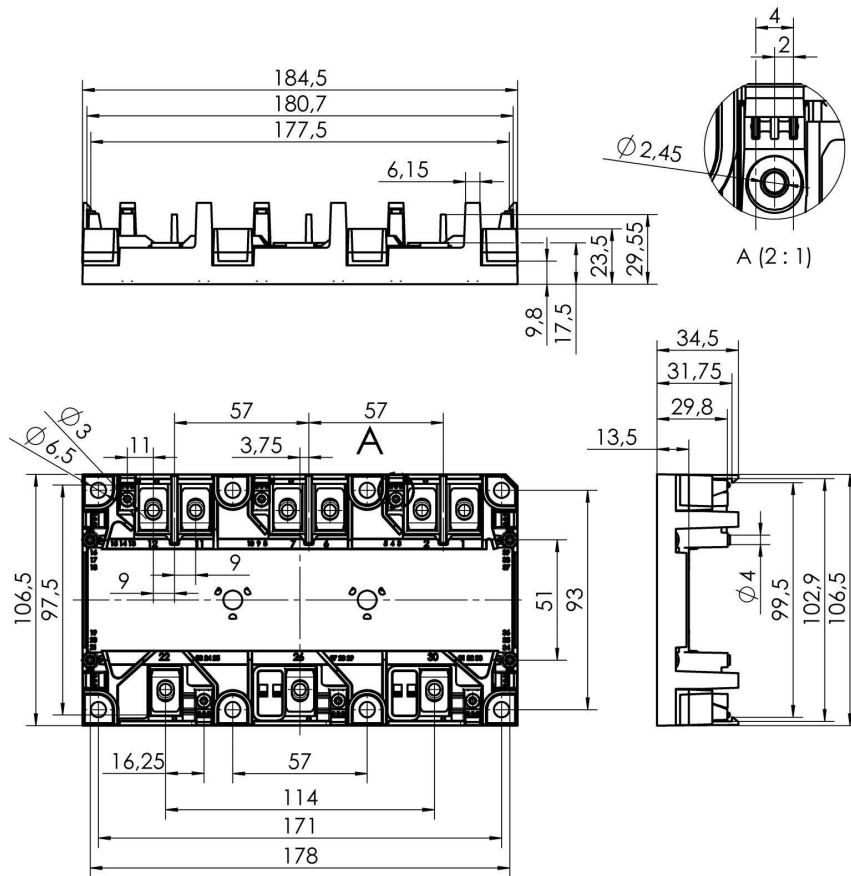
Characteristics		min.	typ.	max.	Units
Inverse Diode					
$V_F = V_{EC}$	$I_{Fnom} = 300 \text{ A}; V_{GE} = 0 \text{ V}$		2	2,5	V
	$T_j = 25 \text{ }^\circ\text{C}_{chiplev.}$				
	$T_j = 125 \text{ }^\circ\text{C}_{chiplev.}$		1,8	2,3	V
V_{F0}			1,1	1,45	V
	$T_j = 25 \text{ }^\circ\text{C}$				
	$T_j = 125 \text{ }^\circ\text{C}$		0,85	1,2	V
r_F			3	3,5	m Ω
	$T_j = 25 \text{ }^\circ\text{C}$				
	$T_j = 125 \text{ }^\circ\text{C}$		3,17	3,67	m Ω
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		m Ω
		$T_{case} = 125 \text{ }^\circ\text{C}$	1,1		m Ω
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)		k Ω
Tolerance	$T = 25 (100)^\circ\text{C}$		3 (2)		%

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

* The specifications of our components may not be considered as an assurance of component characteristics. Components have to be tested for the respective application. Adjustments may be necessary. The use of SEMIKRON products in life support appliances and systems is subject to prior specification and written approval by SEMIKRON. We therefore strongly recommend prior consultation of our personal.







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