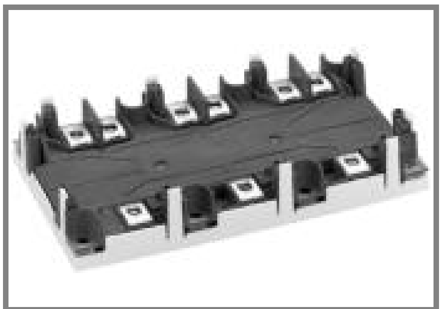
SKiM 600GD126DLM ...



SKiM® 5

Trench IGBT modules

SKiM 600GD126DLM

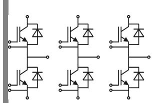
Target Data

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*

- Uninteruptable power supplies (UPS)
- Three phase inverters for AC motor speed control



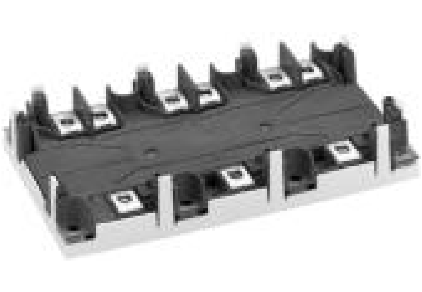
GD

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} = 2x$I_{CNOM;}$ V_{CC}=800V		900	A
V_{GES}			± 20	V
t_{psc}	V_{CC} = 800 V; $V_{GE} \leq$ 20 V; VCES < 1200 V	T_j = 150 °C	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			0,6	mA
V_{CE0}		T_j = 25 °C		1	1,2	V
		T_j = 125 °C		0,9	1,1	V
r_{CE}	V_{GE} = 15 V	T_j = 25°C		1,44	1,89	mΩ
		T_j = 125°C		2,33	2,78	mΩ
$V_{CE(sat)}$	I_{Cnom} = 450 A, V_{GE} = 15 V	T_j = 25°$C_{chiplev.}$		1,65	2,05	V
		T_j = 125°$C_{chiplev.}$		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	V_{CC} = 600V		315		ns
t_r	di/dt = 6800 A/µs	I_C= 450A		70		ns
E_{on}		T_j = 125 °C		37		mJ
$t_{d(off)}$	R_{Goff} = 2 Ω	V_{GE} = ± 15V		680		ns
t_f	di/dt = 3200 A/µs			90		ns
E_{off}				60		mJ
$R_{th(j-s)}$	per IGBT			0,09		K/W



SKiM® 5

Trench IGBT modules

SKiM 600GD126DLM

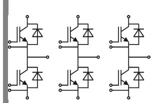
Target Data

Features

- Trench gate IGBT with field stop layer
- Low inductance case
- Fast & soft inverse CAL diodes
- Isolated by AIN 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*

- Uninteruptable power supplies (UPS)
- Three phase inverters for AC motor speed control



GD

Characteristics						
Symbol	**Conditions**		**min.**	**typ.**	**max.**	**Units**
Inverse Diode						
$V_F = V_{EC}$	I_{Fnom} = 300 A; V_{GE} = 0 V	T_j = 25 °$C_{chiplev.}$		2	2,5	V
		T_j = 125 °$C_{chiplev.}$		1,8	2,3	V
V_{F0}		T_j = 25 °C		1,1	1,45	V
		T_j = 125 °C		0,85	1,2	V
r_F		T_j = 25 °C		3	3,5	mΩ
		T_j = 125 °C		3,17	3,67	mΩ
I_{RRM}	I_F = 450 A	T_j = 125 °C		380		A
Q_{rr}	di/dt = 7000 A/µs			52		µC
E_{rr}	V_{GE} = -15V;			21,3		mJ
	R_{Gon}=R_{Goff}=2Ω					
$R_{th(j-s)}$	per diode			0,125		K/W
Module						
L_{CE}					20	nH
$R_{CC'+EE'}$	res., terminal-chip	T_{case}= 25 °C		0,9		mΩ
		T_{case}= 125 °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)°C			1 (1,67)		kΩ
Tolerance	T = 25 (100)°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.

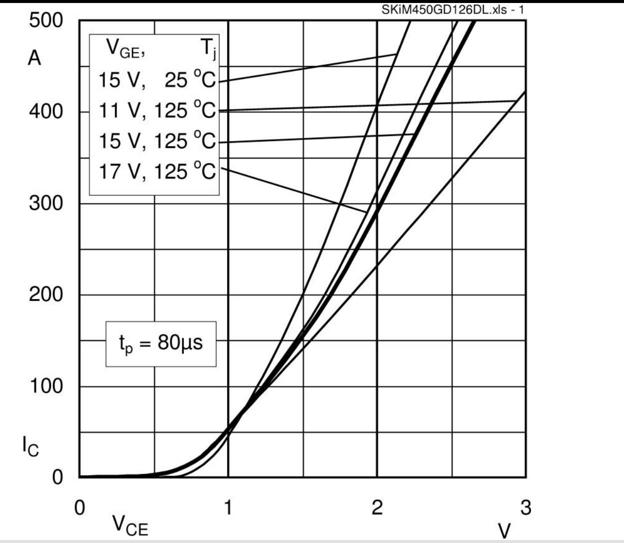


Fig. 1 Typ. output characteristic, inclusive $R_{CC'+ EE'}$

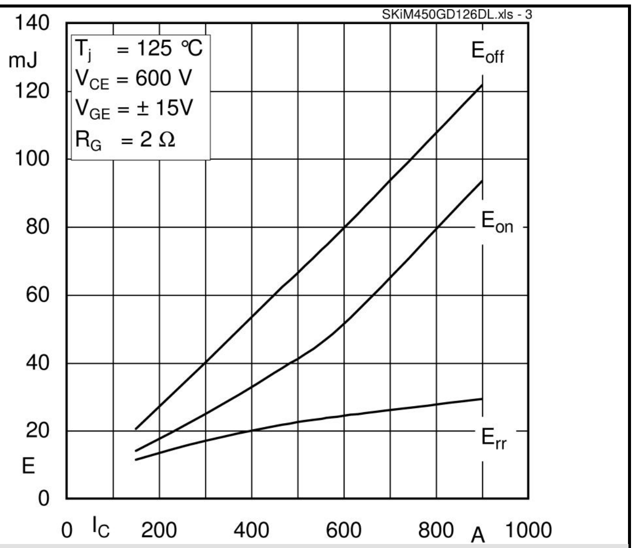


Fig. 3 Typ. turn-on /-off energy = f (I_C)

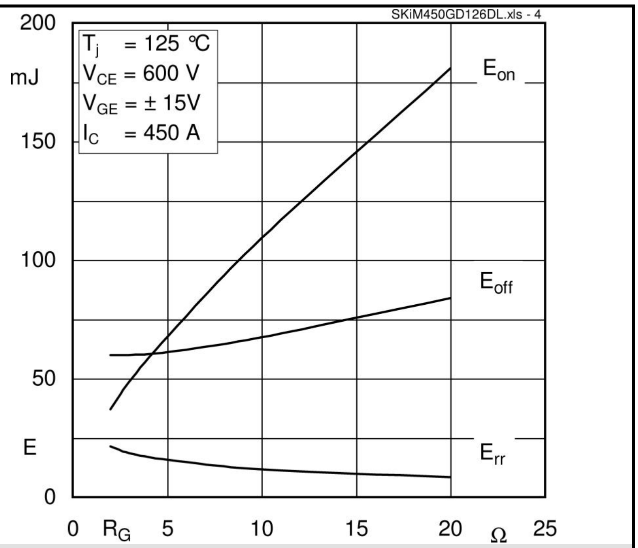


Fig. 4 Typ. turn-on /-off energy = f (R_G)

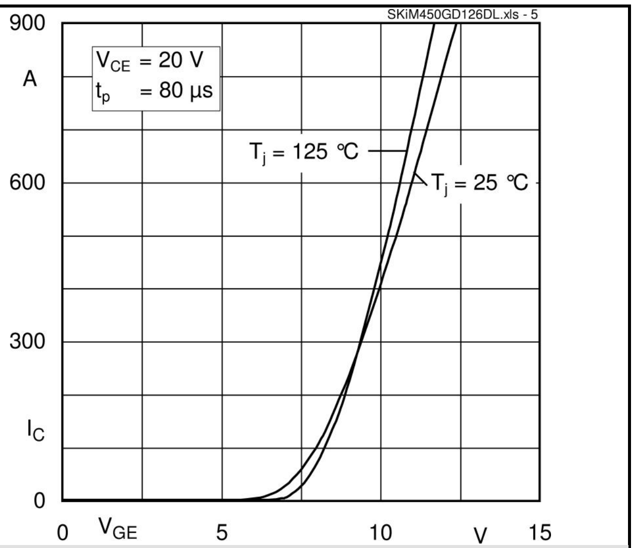


Fig. 5 Typ. transfer characteristic

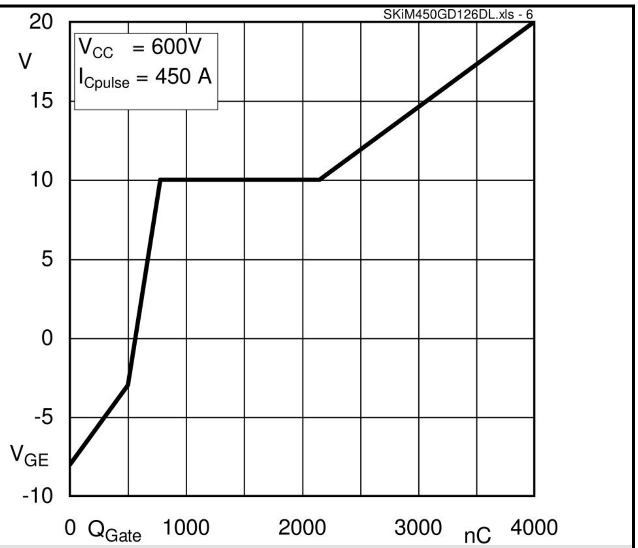


Fig. 6 Typ. gate charge characteristic

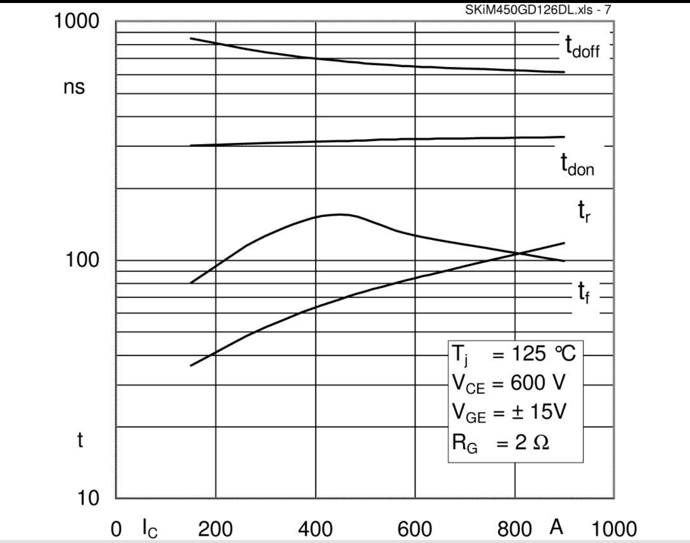


Fig. 7 Typ. switching times vs. I_C

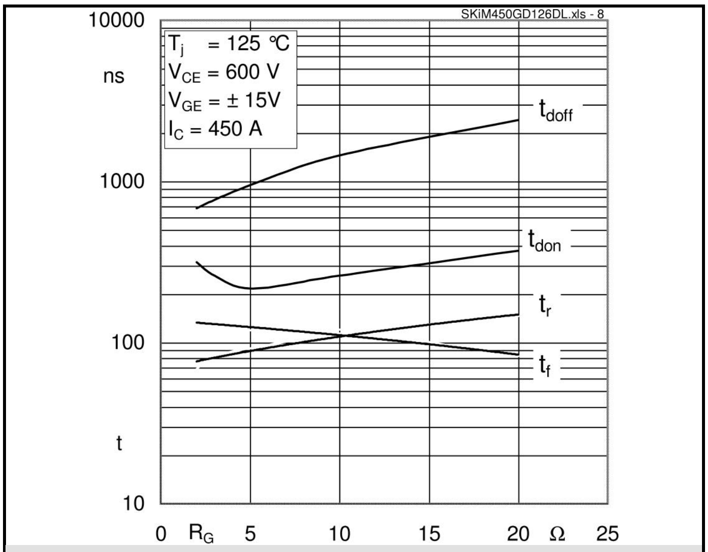


Fig. 8 Typ. switching times vs. gate resistor R_G

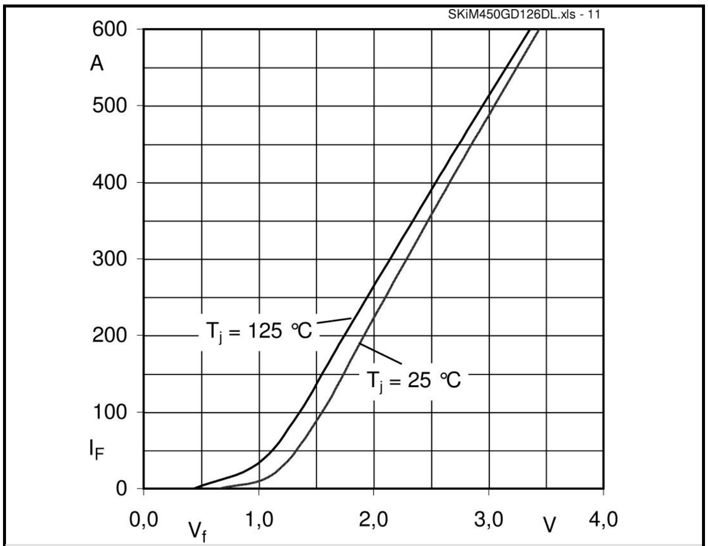


Fig. 11 CAL diode forward characteristic

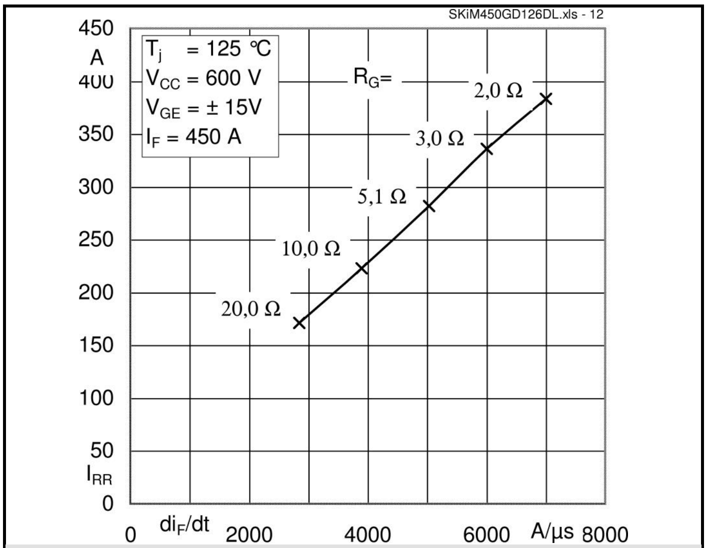


Fig. 12 Typ. CAL diode peak reverse recovery current

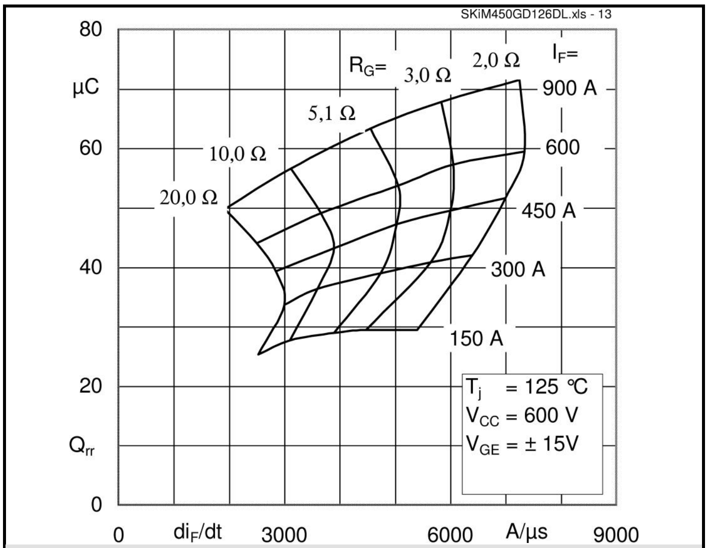
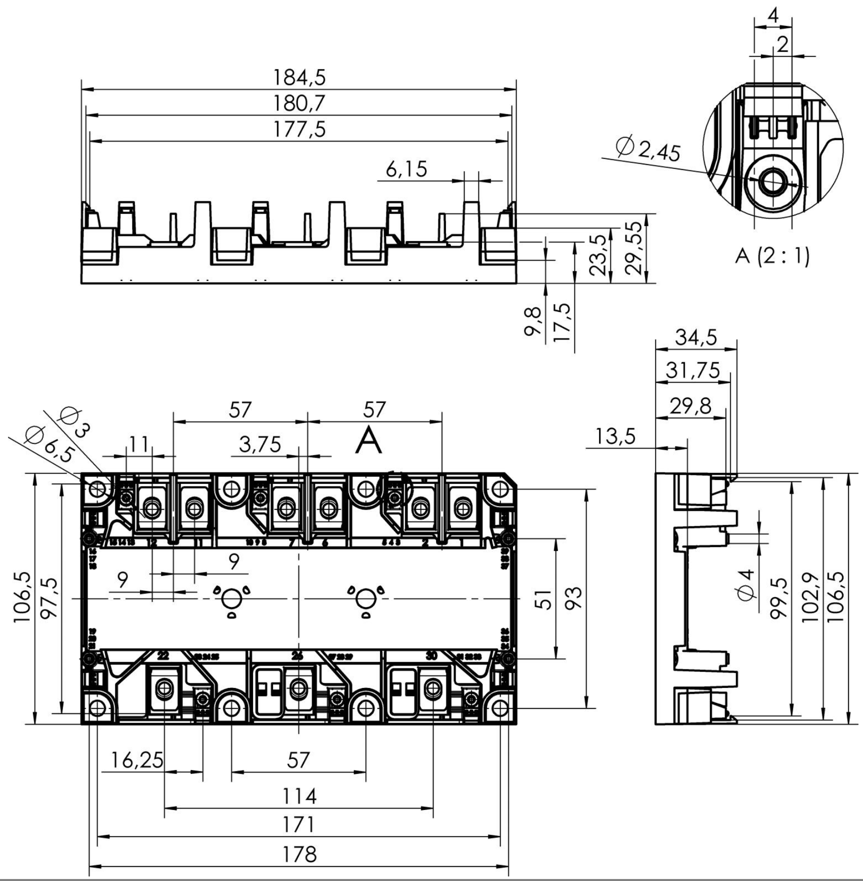
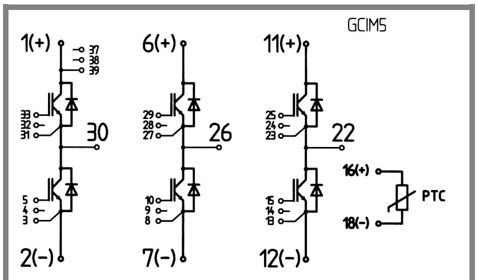


Fig. 13 Typ. CAL diode reverse recovery charge

UL recognized file no. E 63 532





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