SKiM® 5

Trench IGBT modules

SKiM 600GD126DLM

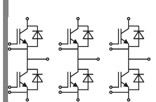
Target Data

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

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} ≤ 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			5,0	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

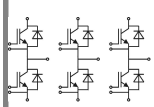
Target Data

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

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)		%

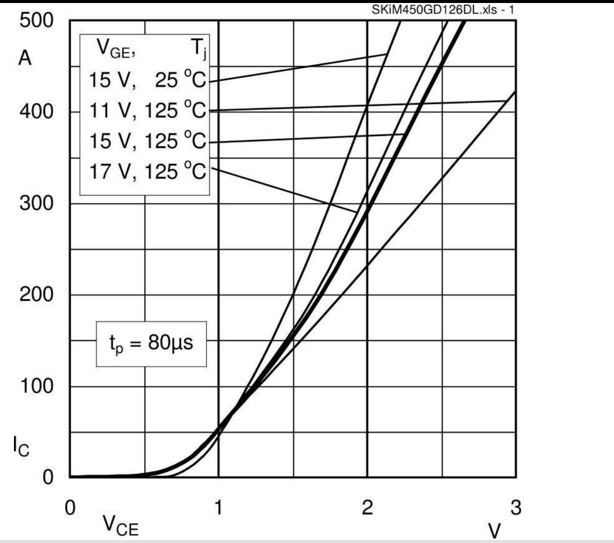


Fig. 1 Typ. output characteristic, inclusive $R_{CC'+ EE'}$

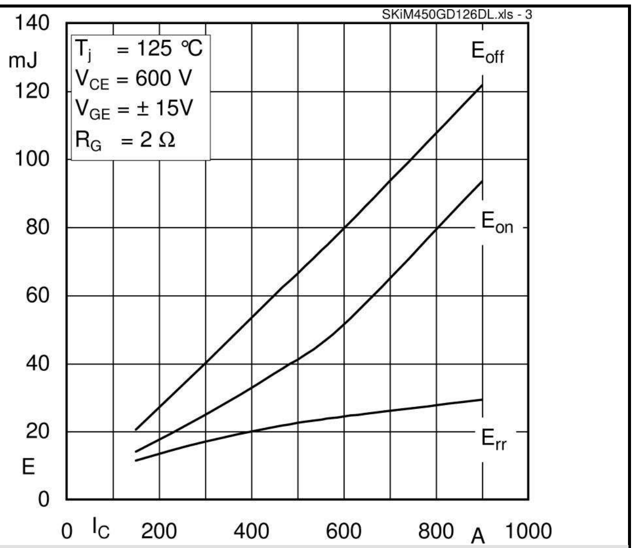


Fig. 3 Typ. turn-on /-off energy = f (I_C)

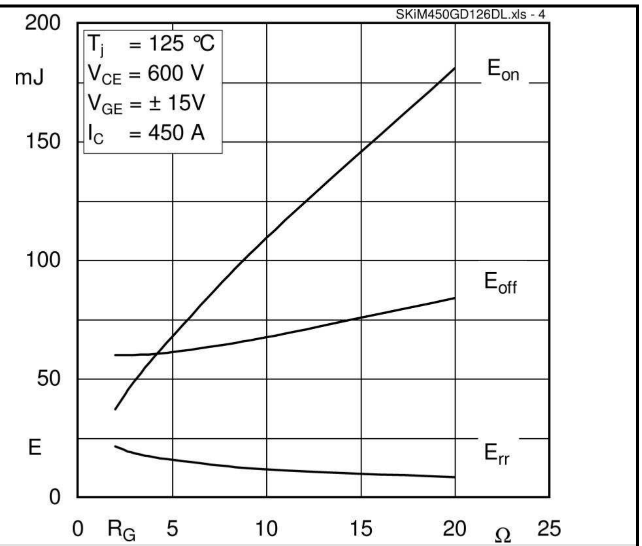


Fig. 4 Typ. turn-on /-off energy = f (R_G)

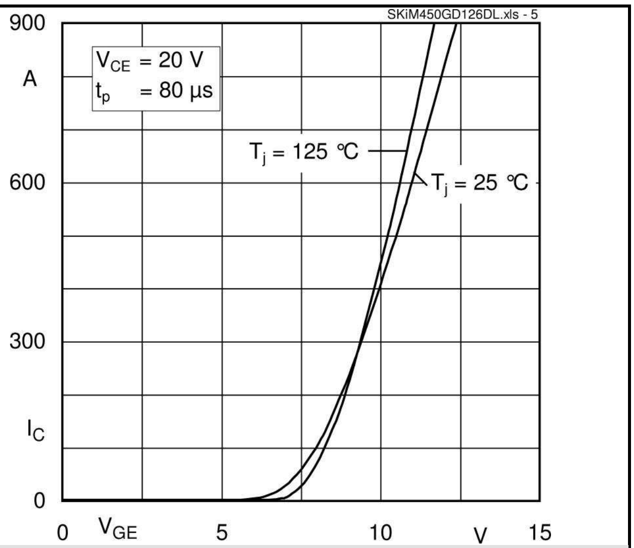


Fig. 5 Typ. transfer characteristic

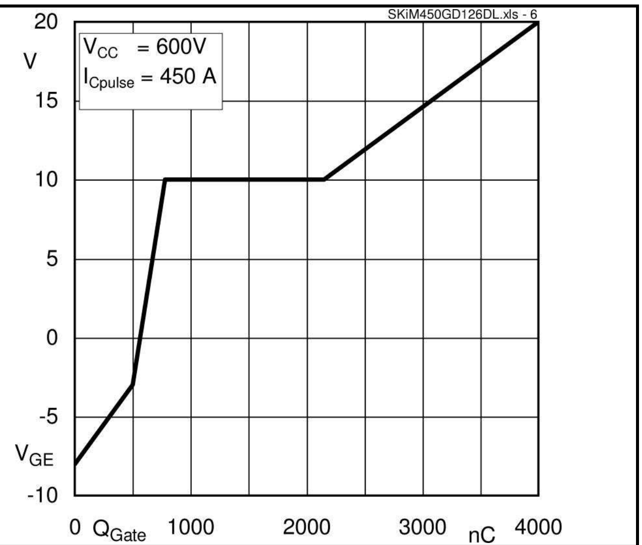


Fig. 6 Typ. gate charge characteristic

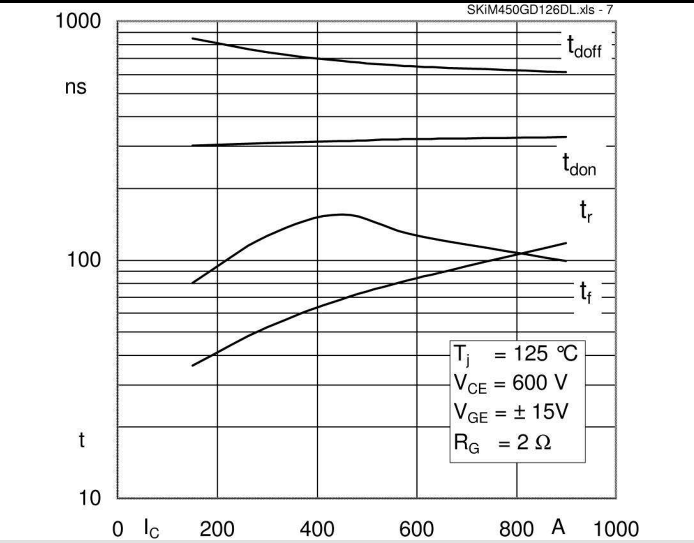


Fig. 7 Typ. switching times vs. I_C

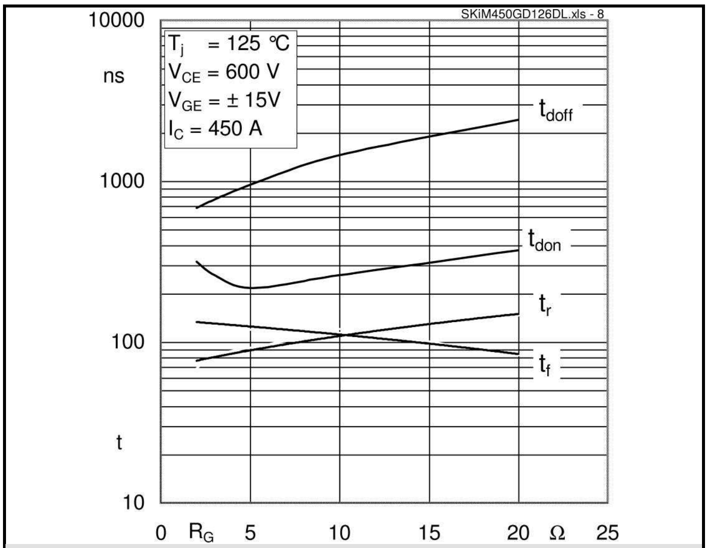


Fig. 8 Typ. switching times vs. gate resistor R_G

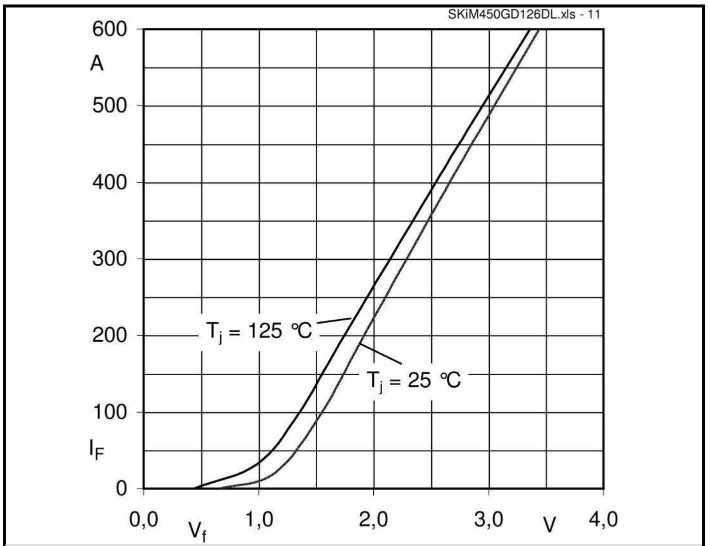


Fig. 11 CAL diode forward characteristic

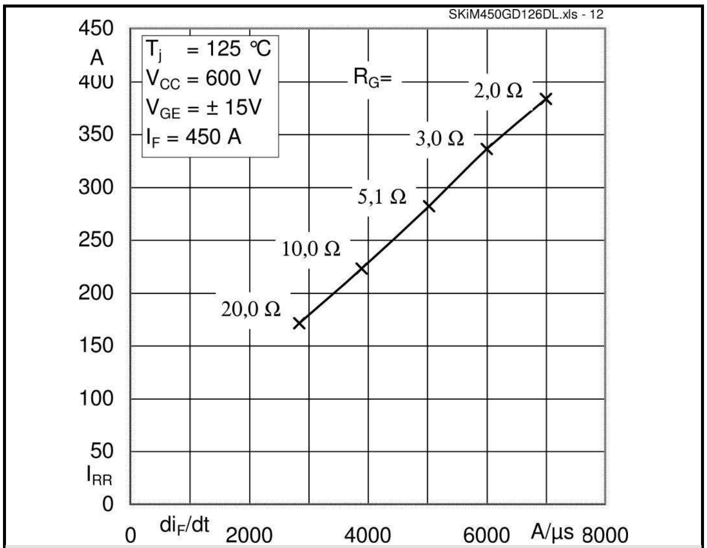


Fig. 12 Typ. CAL diode peak reverse recovery current

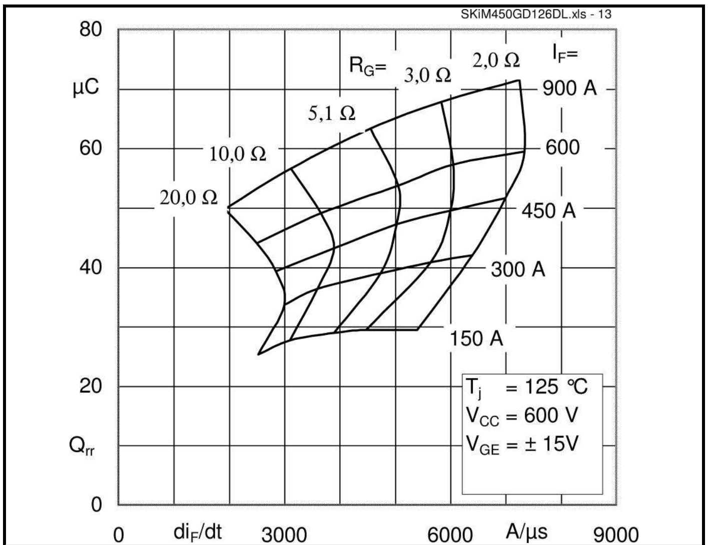
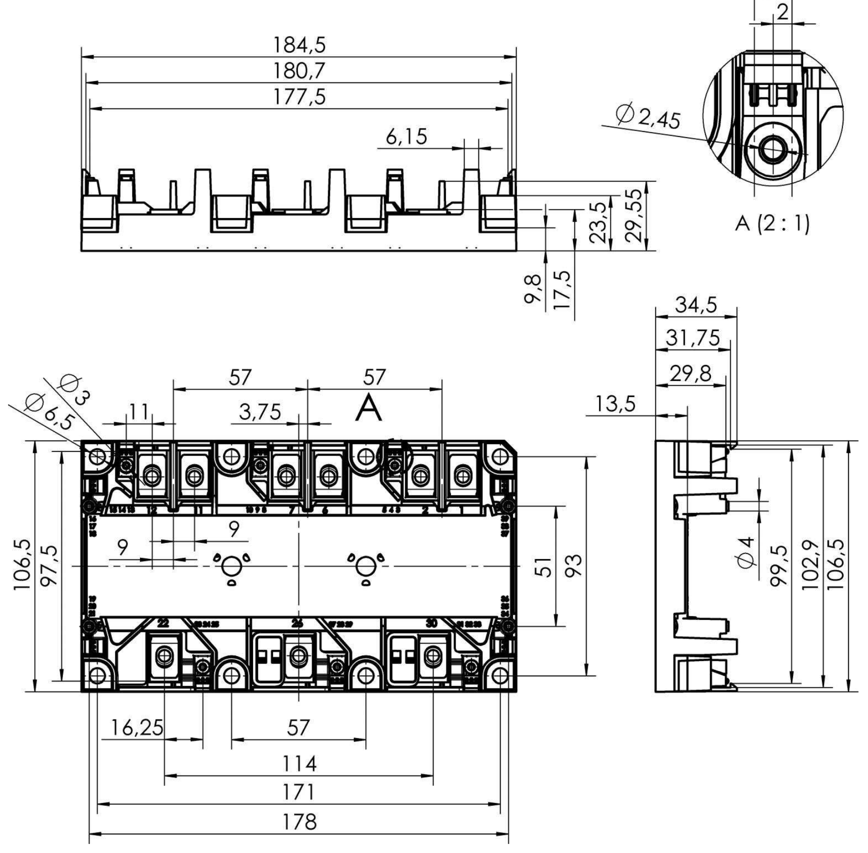
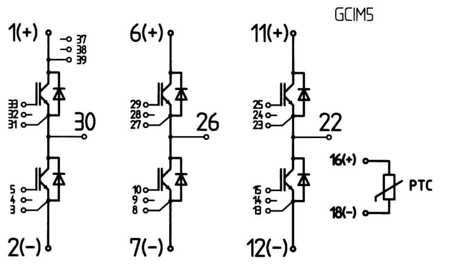


Fig. 13 Typ. CAL diode reverse recovery charge

UL recognized file no. E 63 532





SKiM 5 GD

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