

SKiM 500GD128DM



IGBT Modules

SKiM 500GD128DM

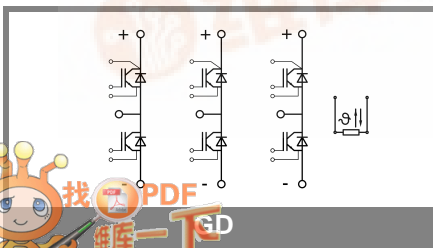
Preliminary Data

Features

- Homogeneous Si
- SPT = Soft Punch Through Technology
- V_{CEsat} with positive temperature coefficient
- High Short circuit capability, self limiting to $6 \times I_C$
- 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

- AC inverter drives
- Uninterruptable Power supplies



Absolute Maximum Ratings		$T_c = 25^\circ\text{C}$, unless otherwise specified	
Symbol	Conditions	Values	Units
IGBT			
V_{CES}		1200	V
I_C	$T_s = 25 (70)^\circ\text{C}$	425 (325)	A
I_{CRM}	$t_p = 1 \text{ ms}$	600	A
V_{GES}		± 20	V
$T_j (T_{stg})$		- 40 ... + 150 (125)	$^\circ\text{C}$
T_{cop}	max. case operating temperature	125	$^\circ\text{C}$
V_{isol}	AC, 1 min.	2500	V

Inverse diode			
Symbol	Conditions	Values	Units
I_F	$T_s = 25 (70)^\circ\text{C}$	450 (340)	A
I_{FRM}	$t_p = 1 \text{ ms}$	600	A
I_{FSM}	$t_p = 10 \text{ ms; sin.; } T_j = 150^\circ\text{C}$	3300	A

Characteristics		$T_{case} = 25^\circ\text{C}$, unless otherwise specified			
Symbol	Conditions	min.	typ.	max.	Units
IGBT					
$V_{GE(th)}$	$V_{GE} = V_{CE}; I_C = 9 \text{ mA}$	4,45	5,5	6,55	V
I_{CES}	$V_{GE} = 0; V_{CE} = V_{CES}; T_j = 25^\circ\text{C}$			0,3	mA
V_{CEO}	$T_j = 25 (125)^\circ\text{C}$		1 (0,9)	1,15 (1,05)	V
r_{CE}	$T_j = 25 (125)^\circ\text{C}$		3,3 (4,7)	4 (5)	m Ω
V_{CEsat}	$I_{Cnom} = 300 \text{ A}; V_{GE} = 15 \text{ V}; T_j = 25 (125)^\circ\text{C}$ on chip level		2 (2,3)	2,35 (2,55)	V
C_{ies}	$V_{GE} = 0; V_{CE} = 25 \text{ V}; f = 1 \text{ MHz}$		27		nF
C_{oes}	$V_{GE} = 0; V_{CE} = 25 \text{ V}; f = 1 \text{ MHz}$		6,5		nF
C_{res}	$V_{GE} = 0; V_{CE} = 25 \text{ V}; f = 1 \text{ MHz}$		5,4		nF
L_{CE}				20	nH
$R_{CC'+EE'}$	resistance, terminal-chip $T_c = 25 (125)^\circ\text{C}$		0,9 (1,1)		m Ω
$t_{d(on)}$	$V_{CC} = 600 \text{ V}$		190		ns
t_r	$I_{Cnom} = 300 \text{ A}$		75		ns
$t_{d(off)}$	$R_{Gon} = R_{Goff} = 3,3 \Omega$		650		ns
t_f	$T_j = 125^\circ\text{C}$		70		ns
$E_{on} (E_{off})$	$V_{GE} \pm 15 \text{ V}$		32 (34)		mJ
$E_{on} (E_{off})$	with SKHI 65; $T_j = 125^\circ\text{C}$ $V_{CC} = 600 \text{ V}; I_C = 300 \text{ A}$		35 (44)		mJ

Inverse diode				
Symbol	Conditions	min.	max.	Units
$V_F = V_{EC}$	$I_{Fnom} = 300 \text{ A}; V_{GE} = 0 \text{ V}; T_j = 25 (125)^\circ\text{C}$	2,3 (2,1)	2,6	V
V_{TO}	$T_j = 125^\circ\text{C}$		1,1	V
r_T	$T_j = 125^\circ\text{C}$		3,3	m Ω
I_{RRM}	$I_F = 300 \text{ A}; T_j = 125^\circ\text{C}$		360	A
Q_{rr}	$V_{GE} = 0 \text{ V}; di/dt = 6300 \text{ A}/\mu\text{s}$		45	μC
E_{rr}	$R_{Gon} = R_{Goff} = 3,3 \Omega$		18	mJ

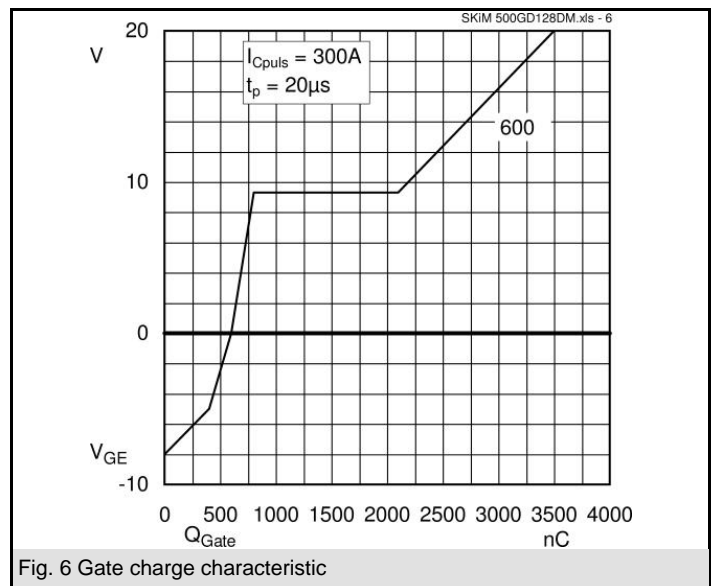
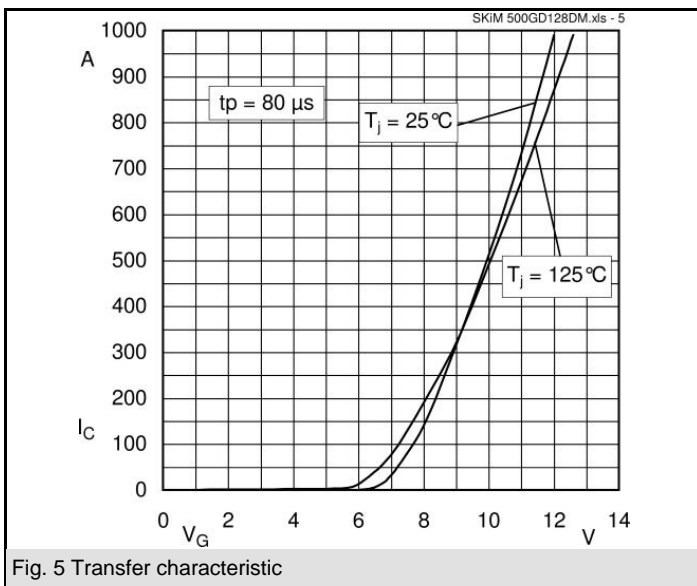
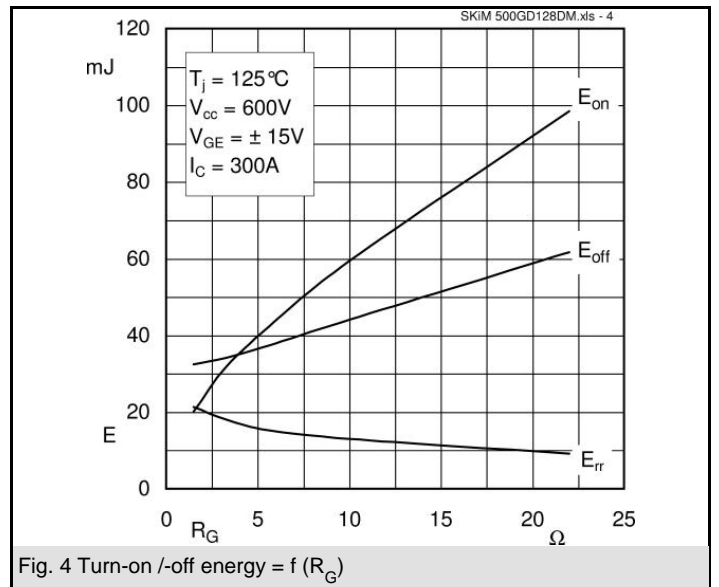
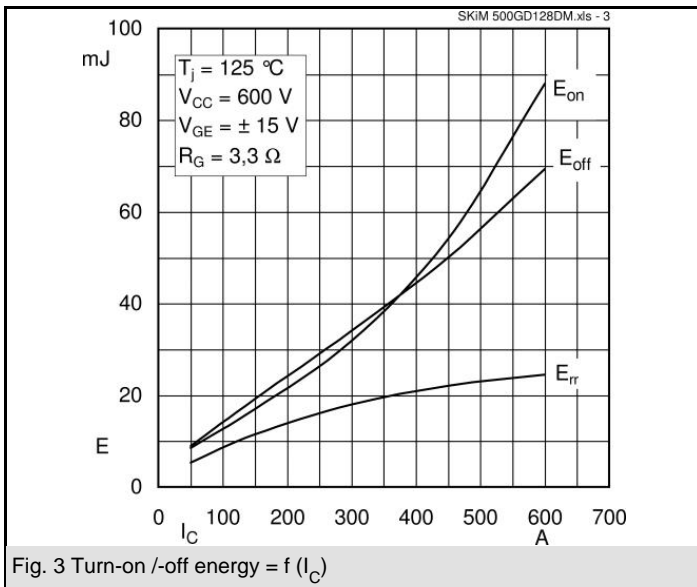
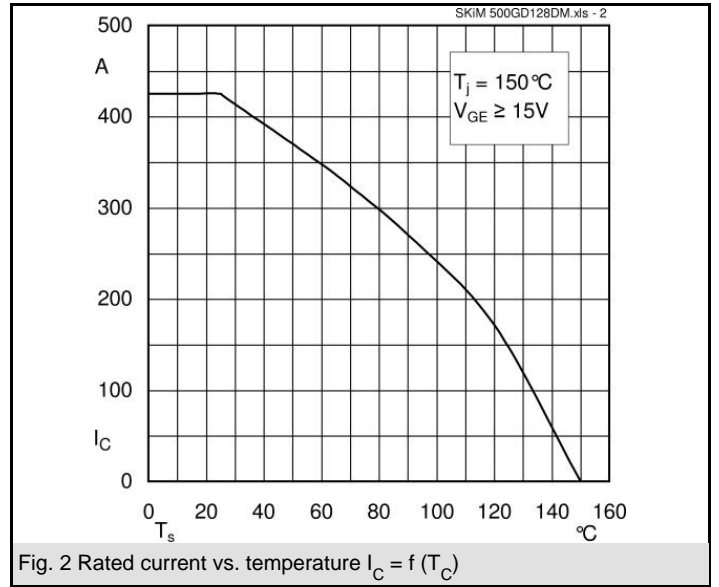
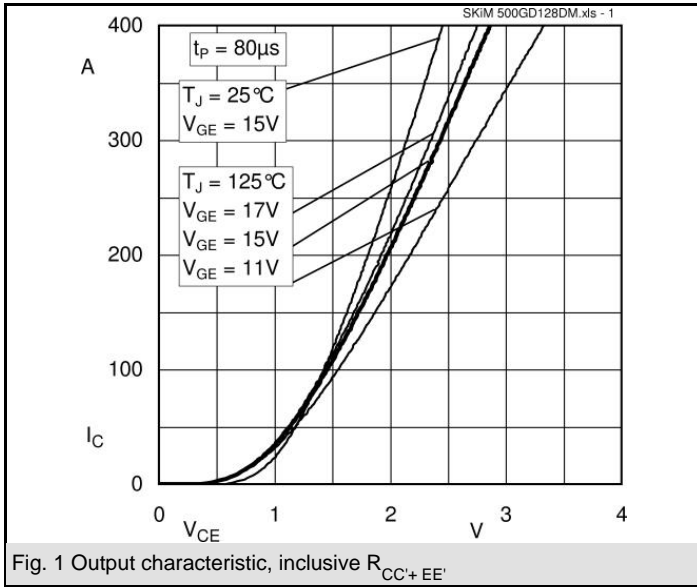
Thermal characteristics				
Symbol	Conditions	min.	max.	Units
$R_{th(j-s)}$	per IGBT		0,09	K/W
$R_{th(j-s)}$	per FWD		0,125	K/W

Temperature Sensor				
Symbol	Conditions	min.	max.	Units
R_{TS}	$T = 25 (100)^\circ\text{C}$		1 (1,67)	k Ω
tolerance	$T = 25 (100)^\circ\text{C}$		3 (2)	%

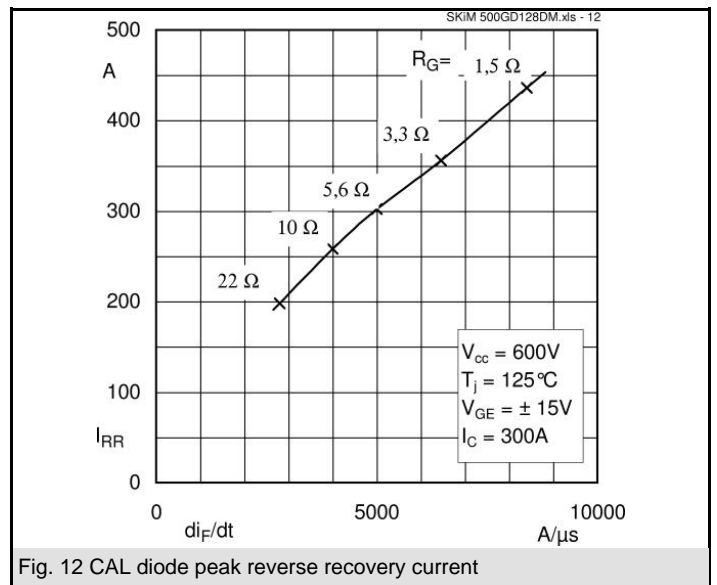
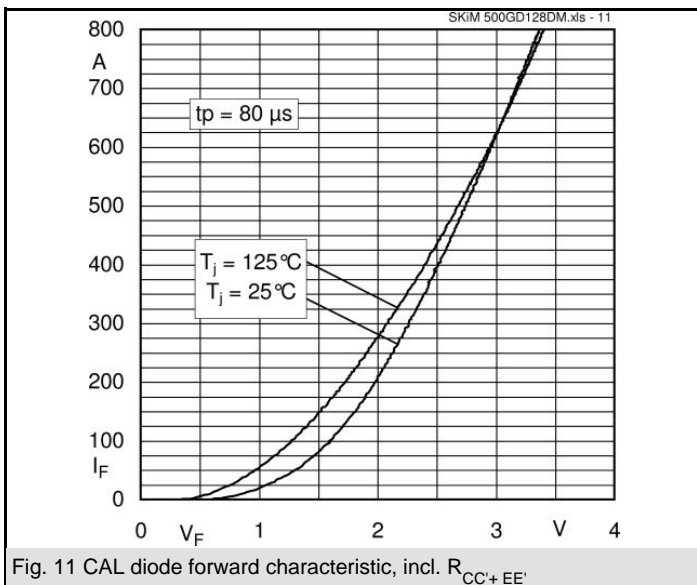
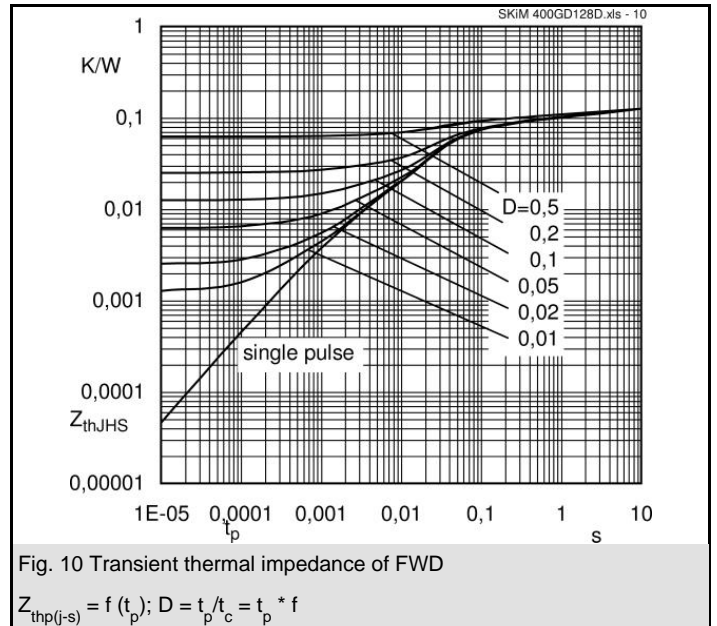
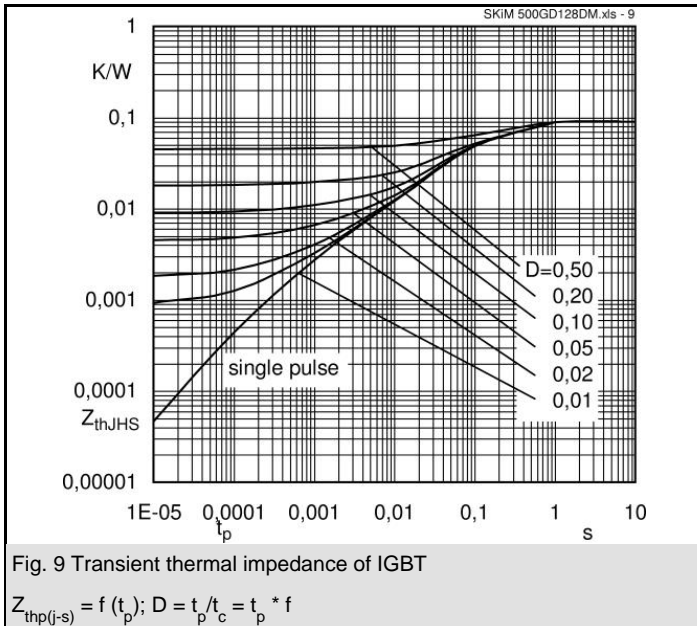
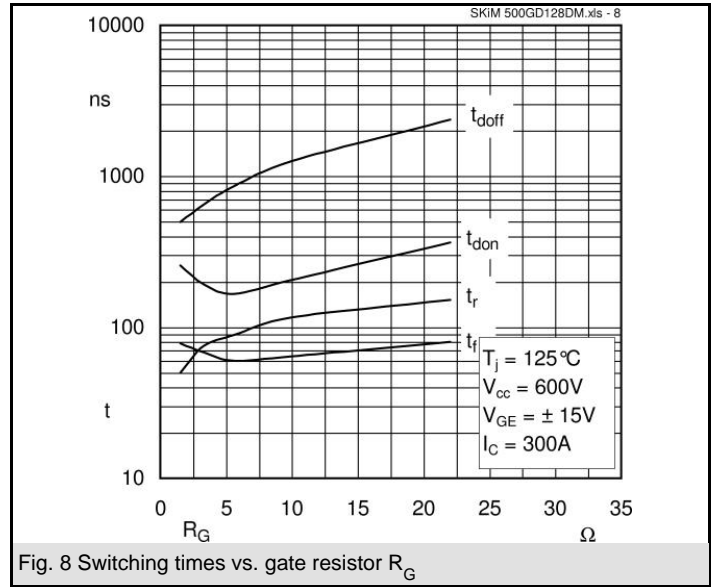
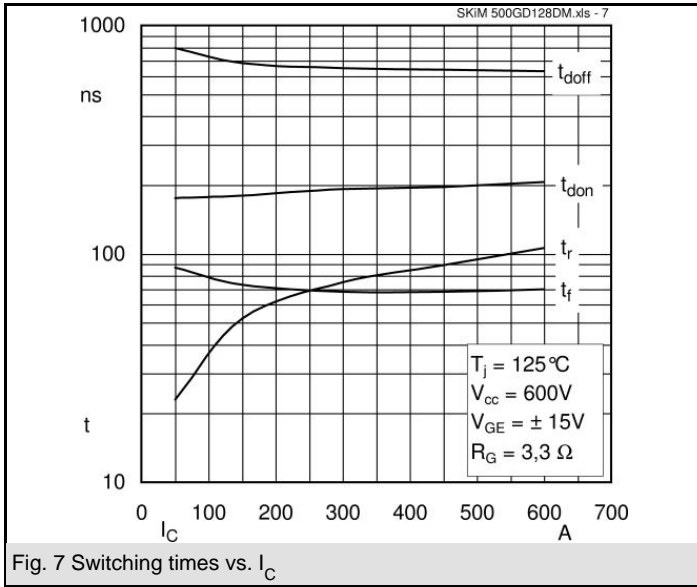
Mechanical data				
Symbol	Conditions	min.	max.	Units
M_1	to heatsink (M5)	2	3	Nm
M_2	for terminals (M6)	4	5	Nm
w			460	g



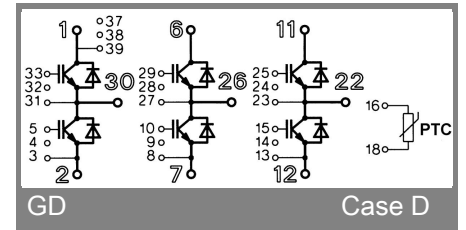
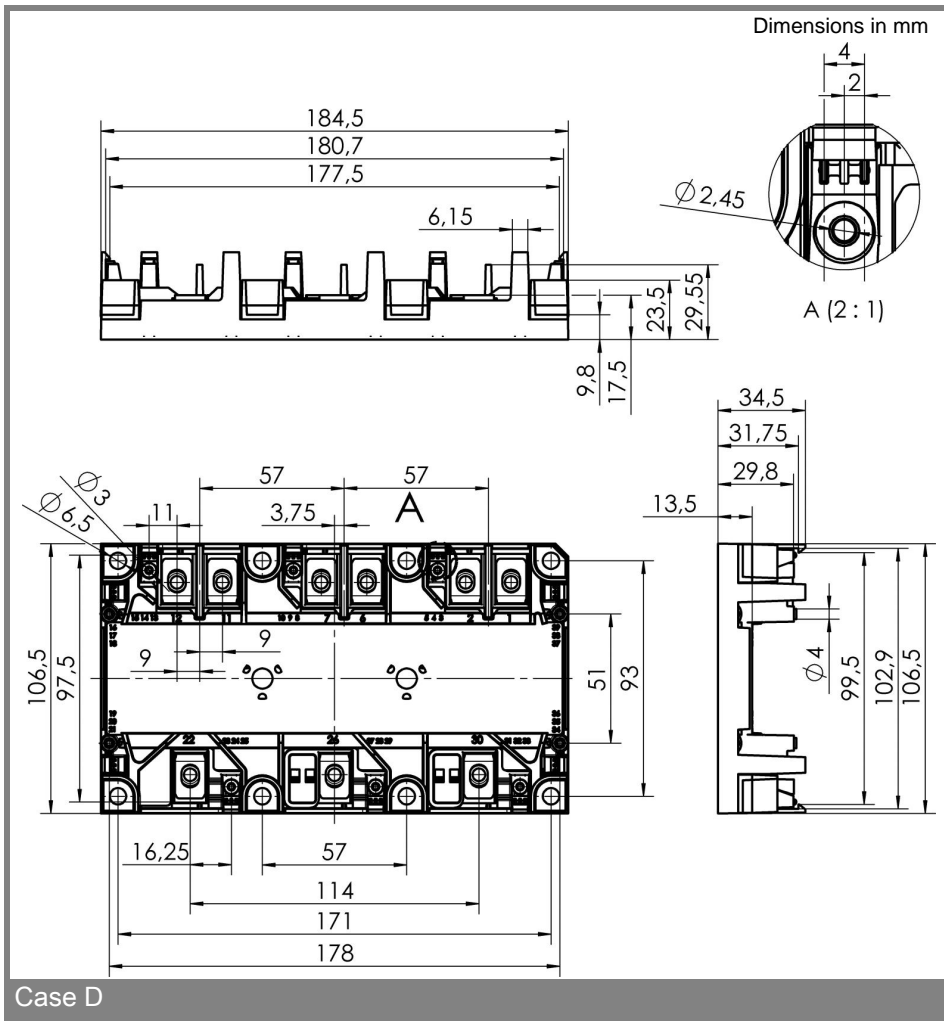
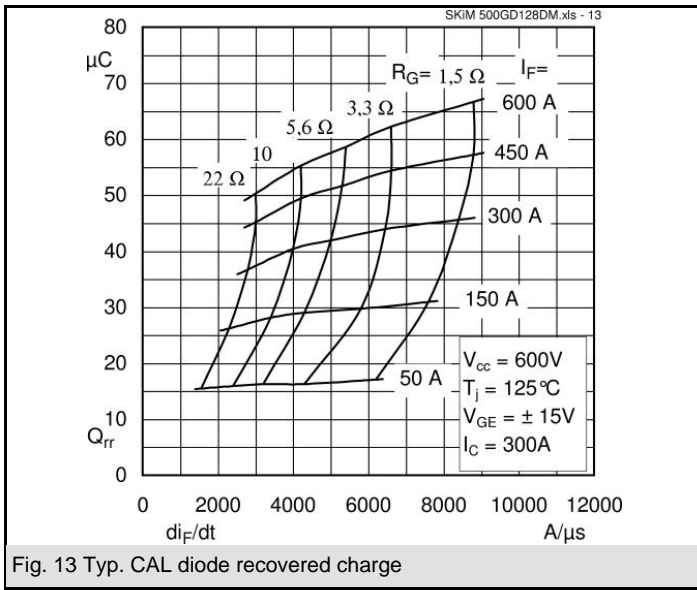
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This is an electrostatic discharge sensitive device (ESDS), international standard IEC 60747-1, Chapter IX.

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