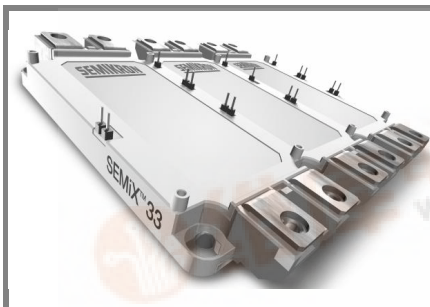


SEMIX 553GD128Dc



SEMIX® 33c

SPT IGBT Modules

SEMIX 553GD128Dc

Preliminary Data

Features

- Homogeneous Si
- SPT = Soft-Punch-Through technology
- $V_{CE(sat)}$ with positive temperature coefficient
- High short circuit capability

Typical Applications

- AC inverter drives
- UPS
- Electronic welders up to 20 kHz

Absolute Maximum Ratings

 $T_{case} = 25^{\circ}\text{C}$, unless otherwise specified

Symbol	Conditions	Values	Units
IGBT			
V_{CES}		1200	V
I_C	$T_c = 25\ (80)^{\circ}\text{C}$	540 (380)	A
I_{CRM}	$t_p = 1\ \text{ms}$	600	A
V_{GES}		± 20	V
T_{vj} , (T_{stg})	$T_{OPERATION} \leq T_{stg}$	- 40 ... + 150 (125)	$^{\circ}\text{C}$
V_{isol}	AC, 1 min.	4000	V

Inverse diode

I_F	$T_c = 25\ (80)^{\circ}\text{C}$	420 (280)	A
I_{FRM}	$t_p = 1\ \text{ms}$	600	A
I_{FSM}	$t_p = 10\ \text{ms}$; sin.; $T_j = 25^{\circ}\text{C}$	2300	A

Characteristics

 $T_{case} = 25^{\circ}\text{C}$, unless otherwise specified

Symbol	Conditions	min.	typ.	max.	Units
IGBT					
$V_{GE(th)}$	$V_{GE} = V_{CE}$, $I_C = 12\ \text{mA}$	4,5	5	6,5	V
I_{CES}	$V_{GE} = 0$, $V_{CE} = V_{CES}$, $T_j = 25\ (125)^{\circ}\text{C}$			0,3	mA
$V_{CE(TO)}$	$T_j = 25\ (125)^{\circ}\text{C}$		1 (0,9)	1,15 (1,05)	V
r_{CE}	$V_{GE} = 15\ \text{V}$, $T_j = 25\ (125)^{\circ}\text{C}$		3 (4,7)	4 (5)	m Ω
$V_{CE(sat)}$	$I_{Cnom} = 300\ \text{A}$, $V_{GE} = 15\ \text{V}$, $T_j = 25\ (125)^{\circ}\text{C}$, chip level		1,9 (2,3)	2,35 (2,55)	V
C_{ies}	under following conditions		27		nF
C_{oes}	$V_{GE} = 0$, $V_{CE} = 25\ \text{V}$, $f = 1\ \text{MHz}$		2		nF
C_{res}			1,3		nF
L_{CE}			20		nH
$R_{CC+EE'}$	terminal-chip, $T_c = 25\ (125)^{\circ}\text{C}$		0,7 (1)		m Ω
$t_{d(on)}/t_r$	$V_{CC} = 600\ \text{V}$, $I_{Cnom} = 300\ \text{A}$		185 / 65		ns
$t_{d(off)}/t_f$	$V_{GE} = \pm 15\ \text{V}$		635 / 80		ns
$E_{on} (E_{off})$	$R_{Gon} = R_{Goff} = 3\ \Omega$, $T_j = 125^{\circ}\text{C}$		25 (32)		mJ

Inverse diode

$V_F = V_{EC}$	$I_{Fnom} = 300\ \text{A}$; $V_{GE} = 0\ \text{V}$; $T_j = 25\ (125)^{\circ}\text{C}$, chip level	2 (1,8)	2,5 (2,3)	V
$V_{(TO)}$	$T_j = 25\ (125)^{\circ}\text{C}$	1,1	1,45 (1,25)	V
r_T	$T_j = 25\ (125)^{\circ}\text{C}$	3	3,5 (3,5)	m Ω
I_{RRM}	$I_{Fnom} = 300\ \text{A}$; $T_j = 25\ (125)^{\circ}\text{C}$	(324)		A
Q_{rr}	$di/dt = 5400\ \text{A}/\mu\text{s}$	(46)		μC
E_{rr}	$V_{GE} = -15\ \text{V}$	(17)		mJ

Thermal characteristics

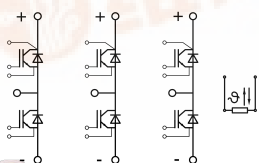
$R_{th(j-c)}$	per IGBT		0,06	K/W
$R_{th(j-c)D}$	per Inverse Diode		0,11	K/W
$R_{th(j-c)FD}$	per FWD			K/W
$R_{th(c-s)}$	per module		0,014	K/W

Temperature sensor

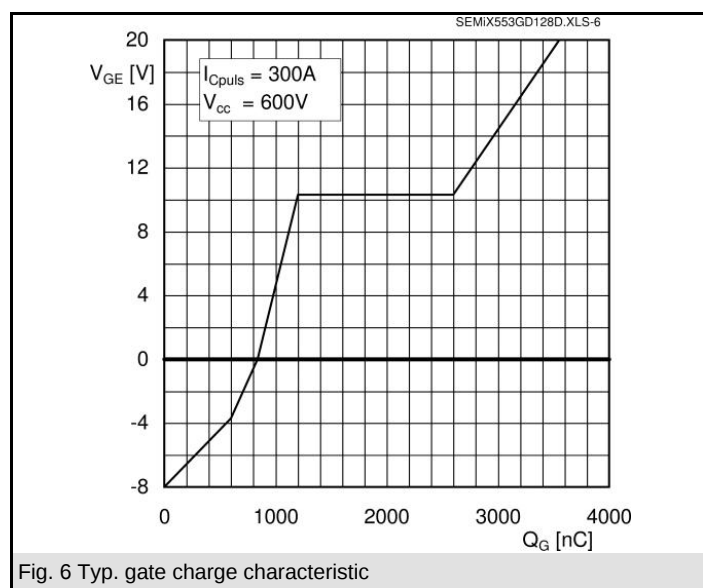
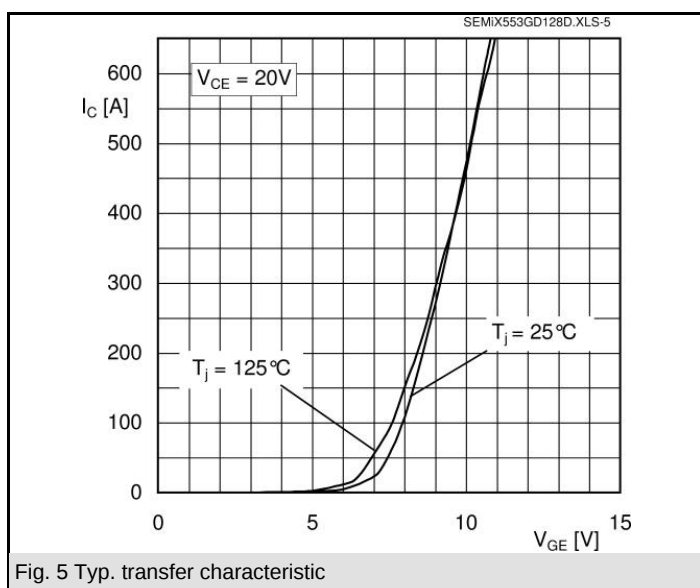
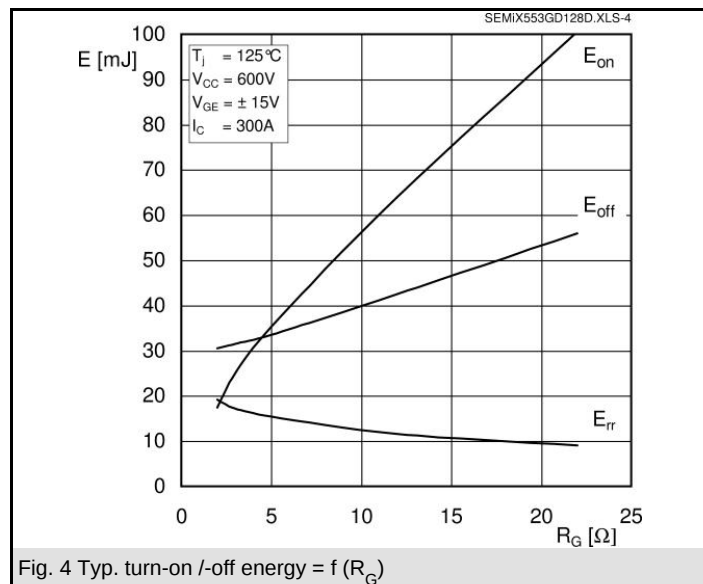
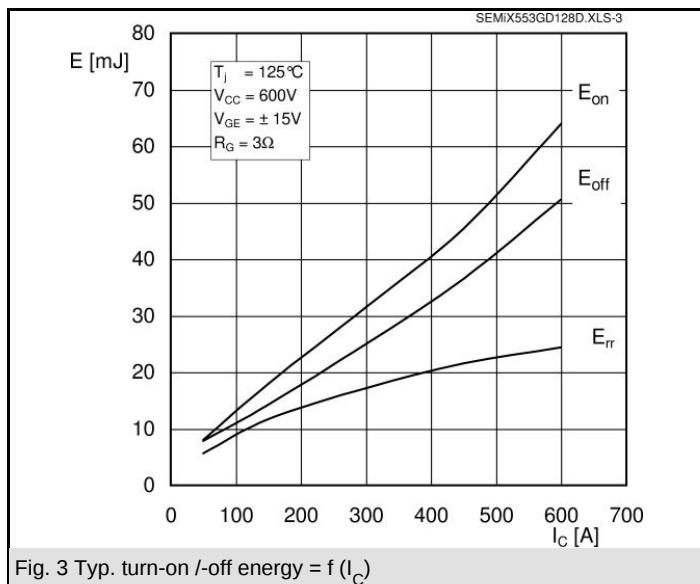
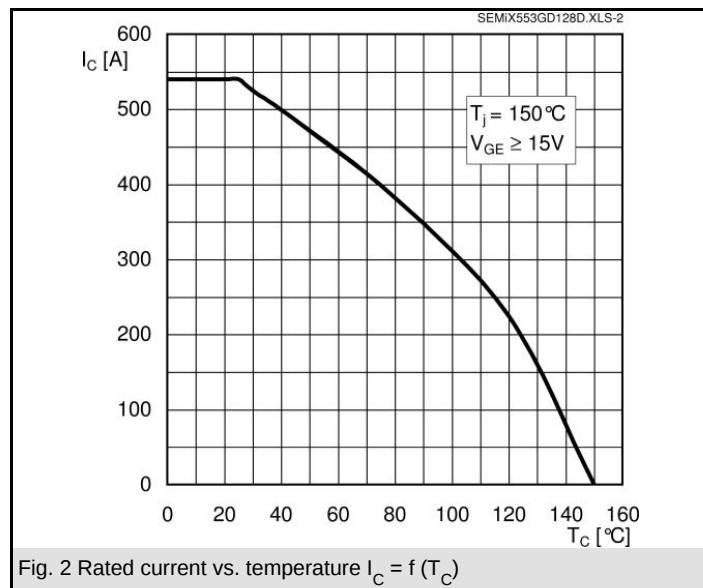
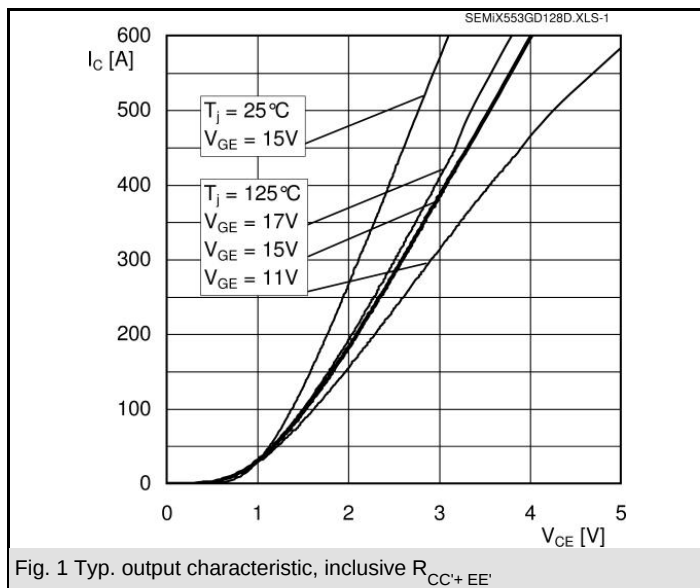
R_{25}	$T_c = 25^{\circ}\text{C}$	5 $\pm$ 5%	k Ω
$B_{25/85}$	$R_2 = R_1 \exp[B(1/T_2 - 1/T_1)]$; $T[K]$; B	3420	K

Mechanical data

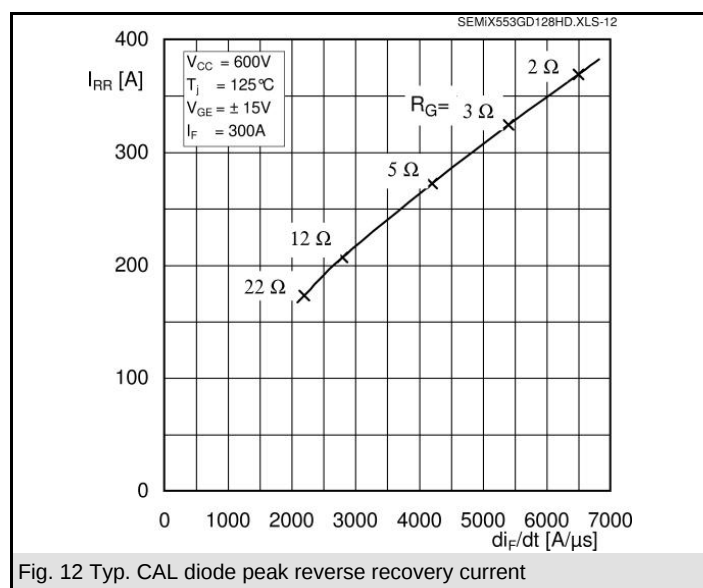
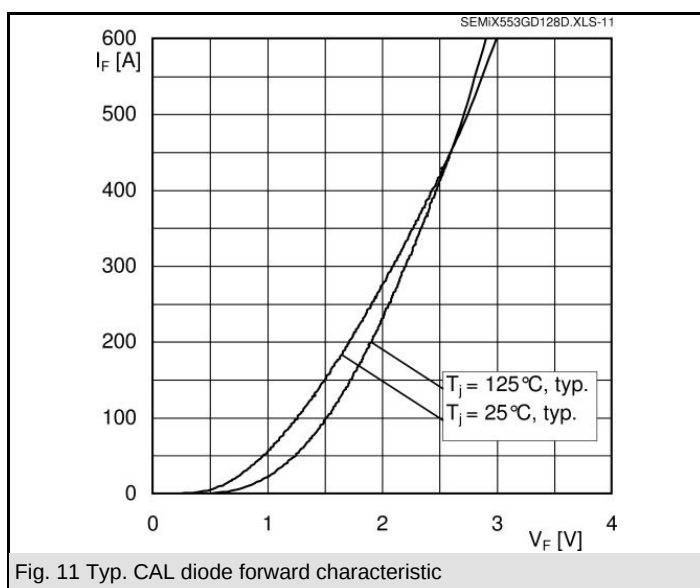
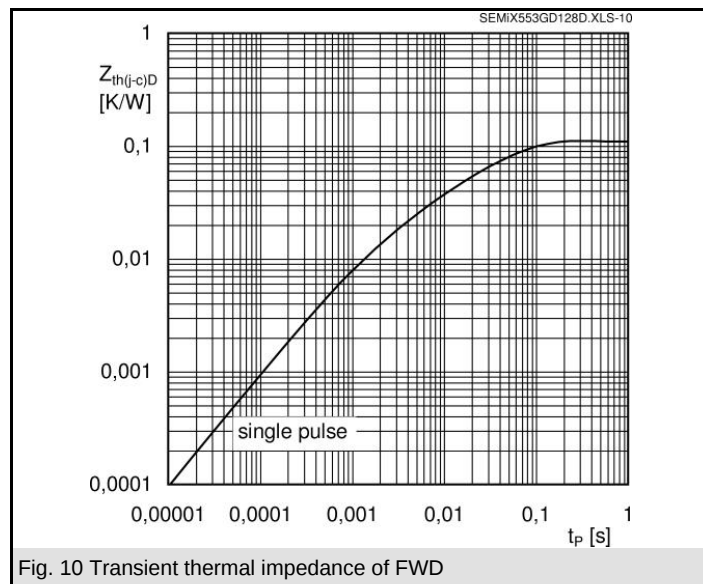
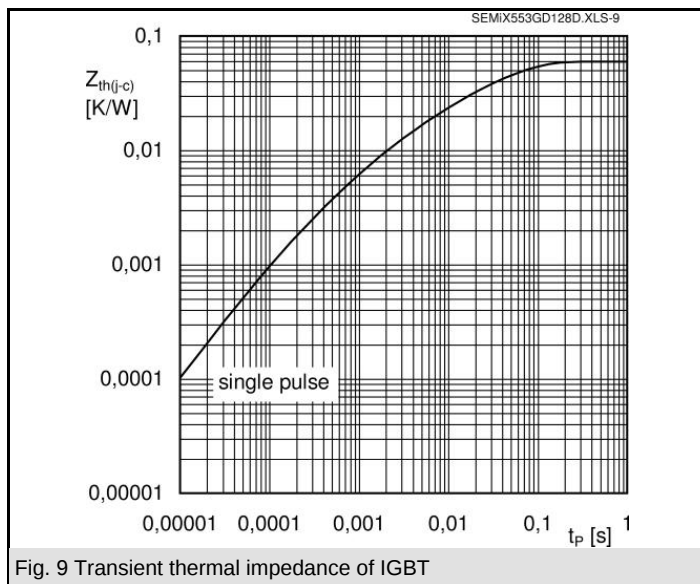
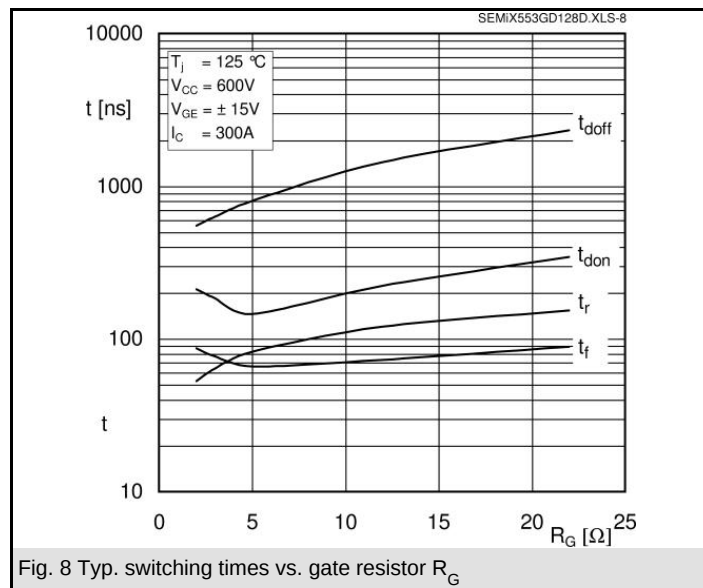
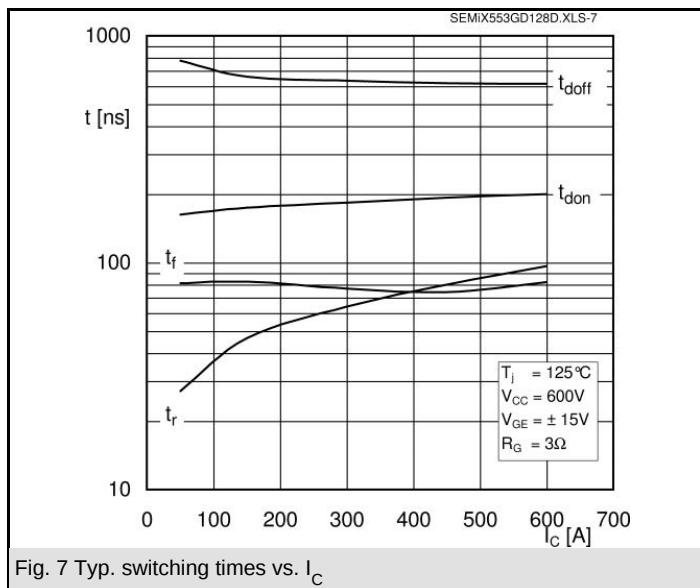
M_s/M_t	to heatsink (M5) / for terminals (M6)	3/2,5	5 / 5	Nm
w		866		g



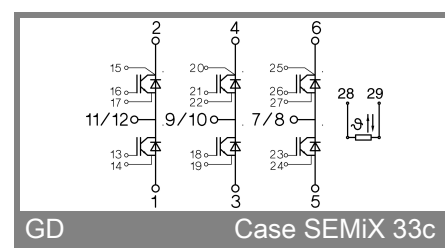
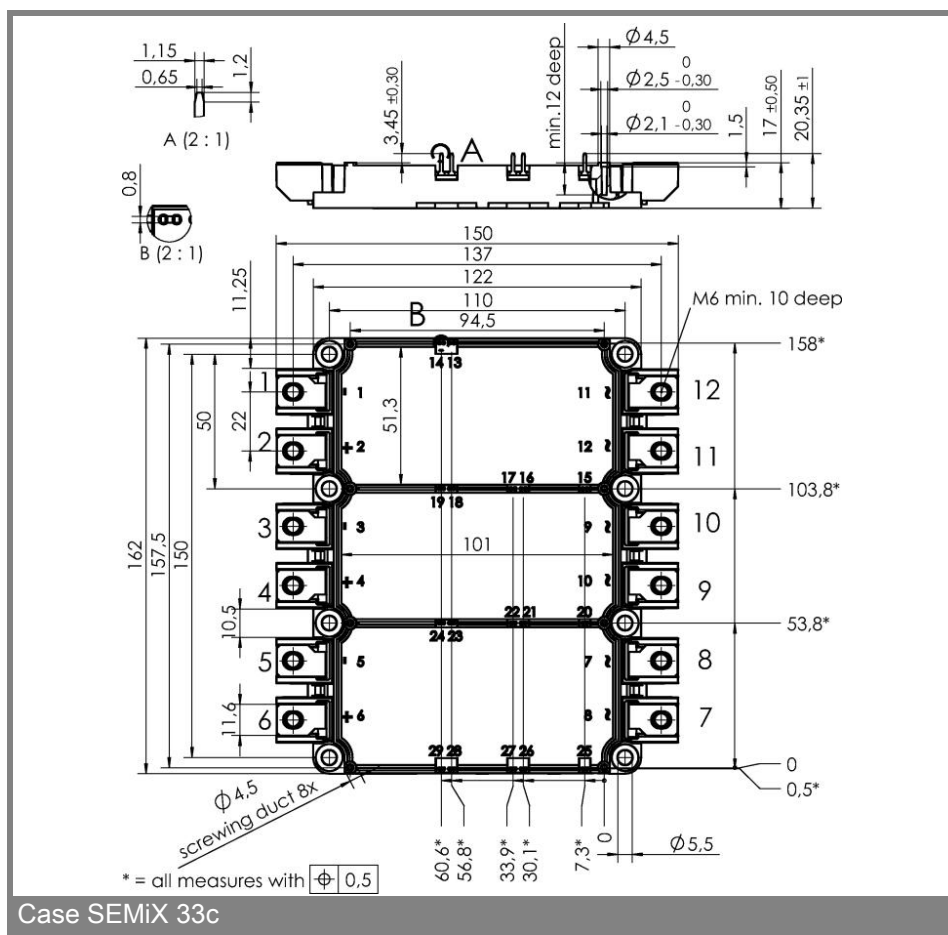
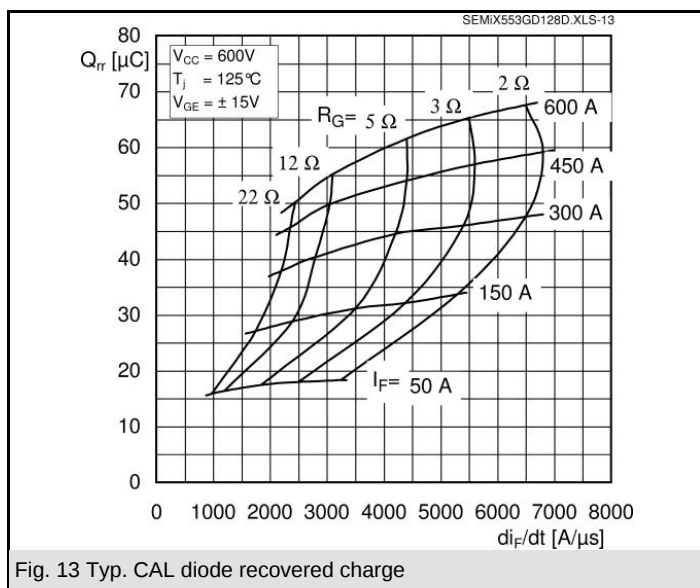
SEMiX 553GD128Dc



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

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