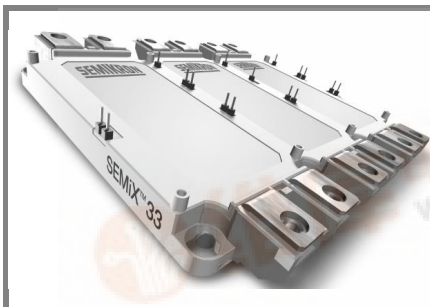


SEMIX 353GD176HDC



SEMIX® 33c

Trench IGBT Modules

SEMIX 353GD176HDC

Preliminary Data

Features

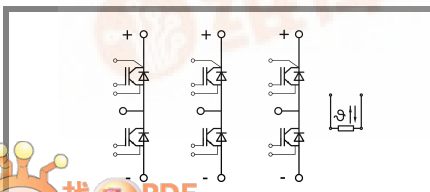
- Homogeneous Si
- Trench = Trenchgate technology
- $V_{CE(sat)}$ with positive temperature coefficient
- High short circuit capability

Typical Applications

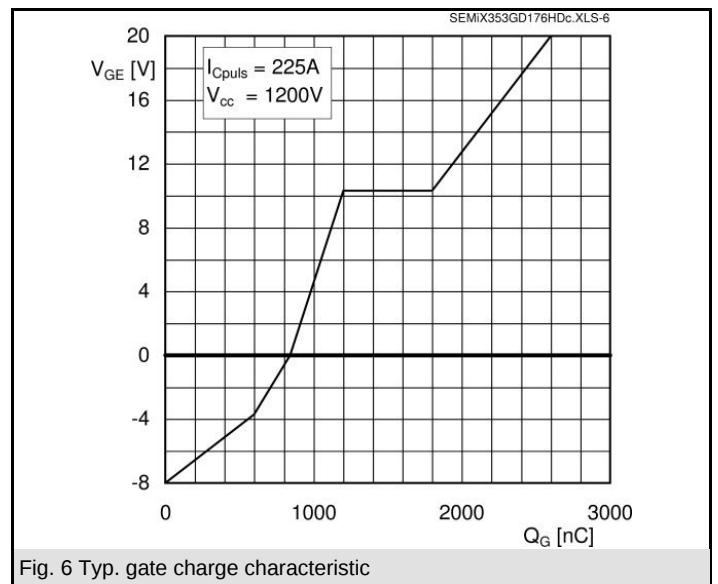
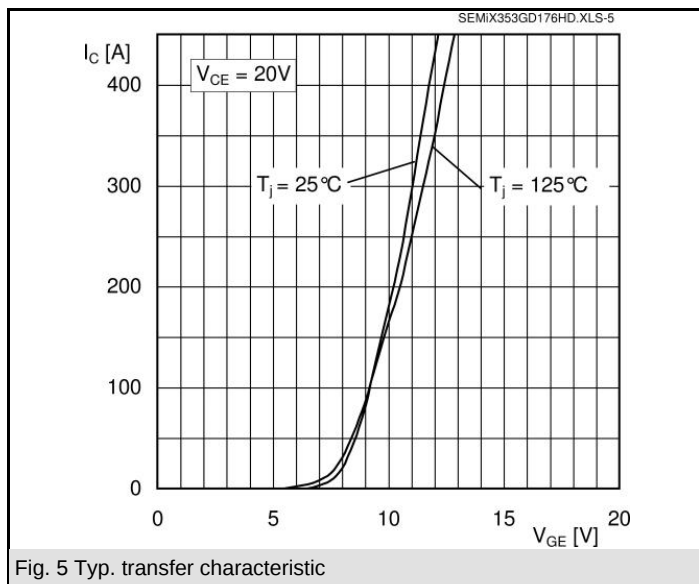
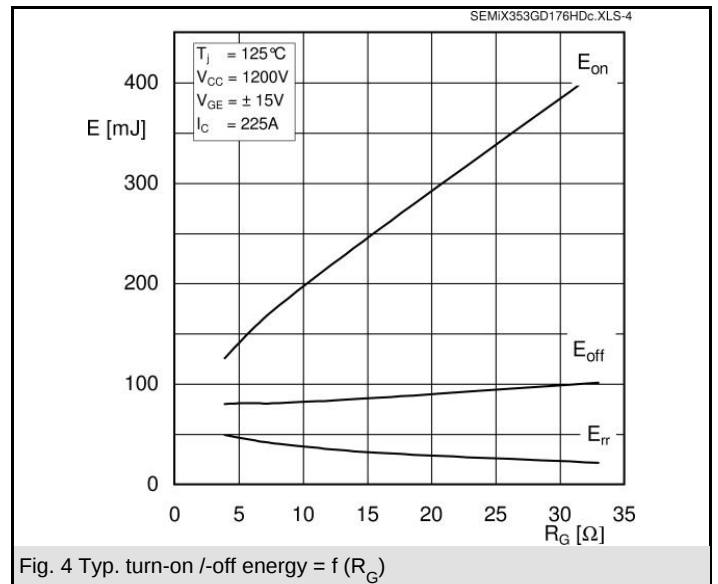
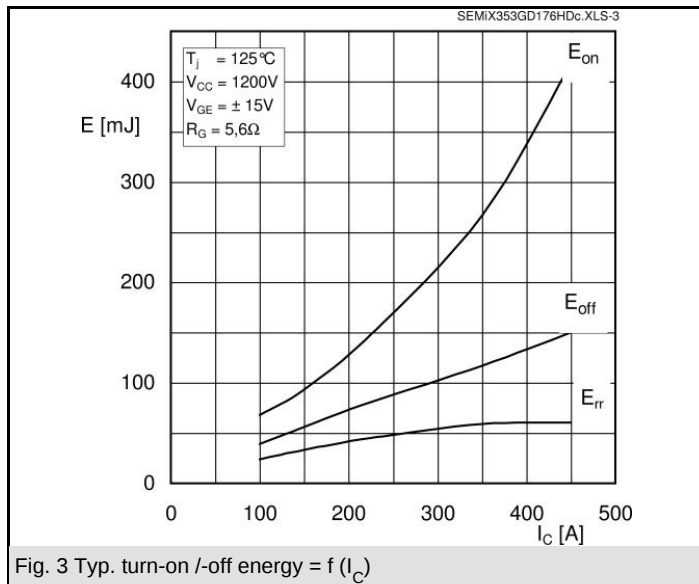
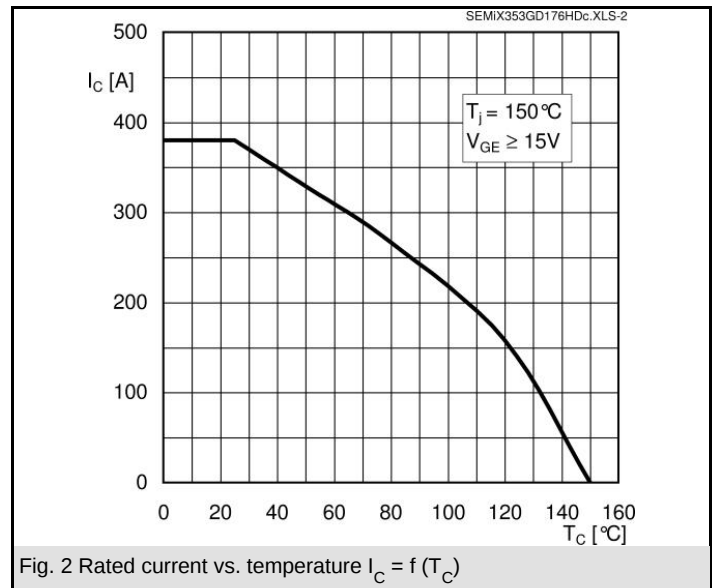
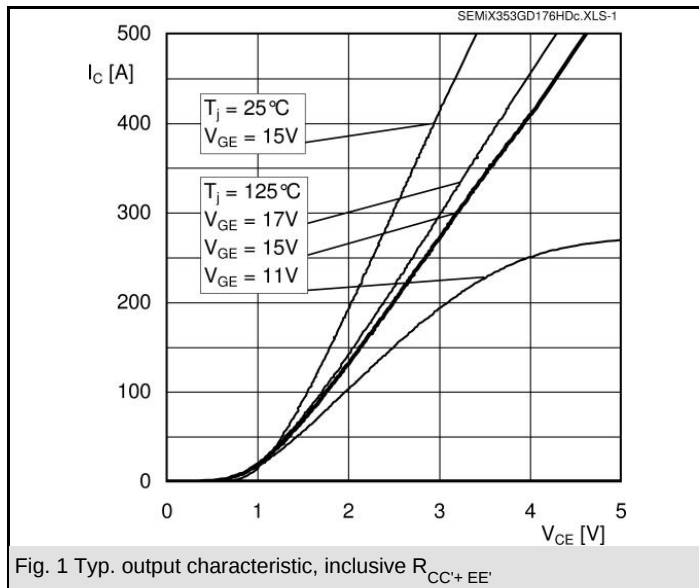
- Matrix Converter
- Resonant Inverter
- Current Source Inverter

Absolute Maximum Ratings		$T_{case} = 25^{\circ}C$, unless otherwise specified	
Symbol	Conditions	Values	Units
IGBT			
V_{CES}		1700	V
I_C	$T_C = 25 (80)^{\circ}C$	380 (270)	A
I_{CRM}	$t_p = 1 ms$	450	A
V_{GES}		± 20	V
T_{vj} , (T_{stg})	$T_{OPERATION} \leq T_{stg}$	- 40 ... + 150 (125)	$^{\circ}C$
V_{isol}	AC, 1 min.	4000	V
Inverse diode			
I_F	$T_C = 25 (80)^{\circ}C$	310 (210)	A
I_{FRM}	$t_p = 1 ms$	450	A
I_{FSM}	$t_p = 10 ms$; sin.; $T_j = 25^{\circ}C$	1800	A

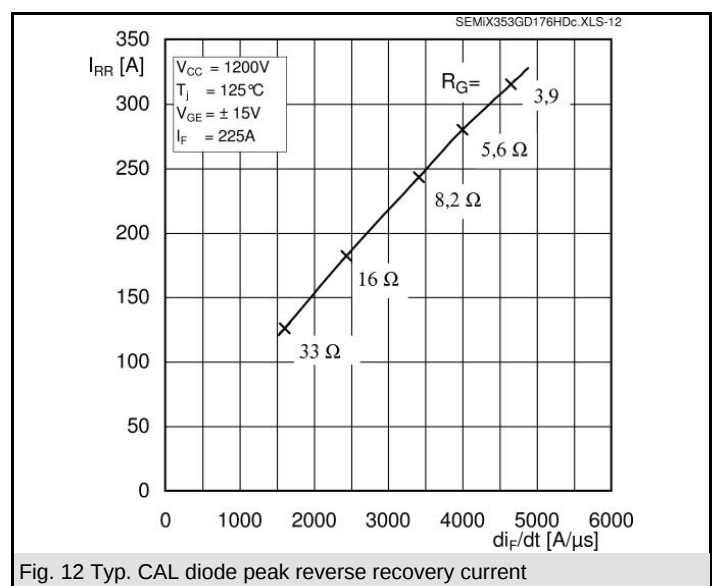
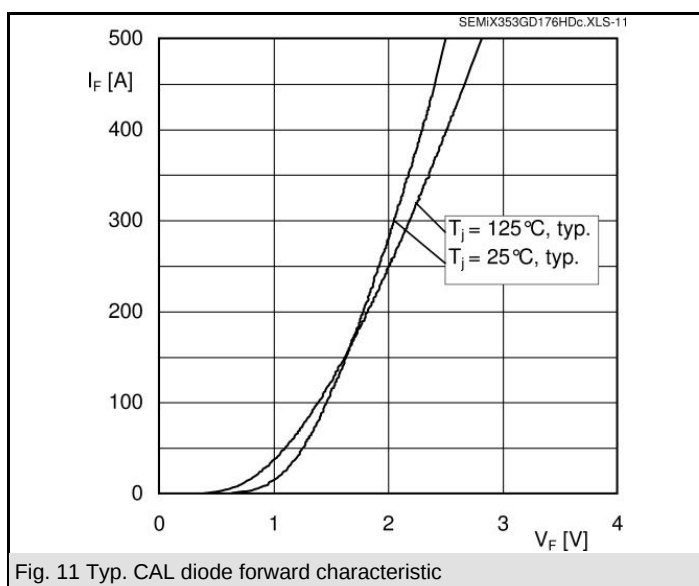
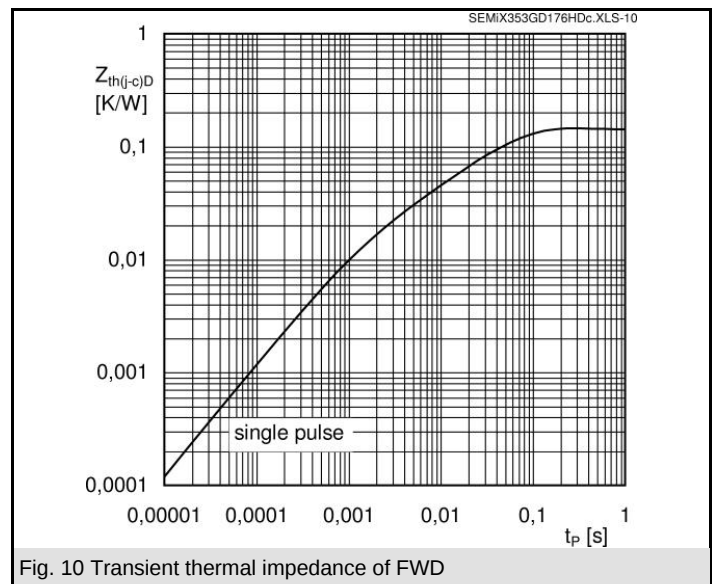
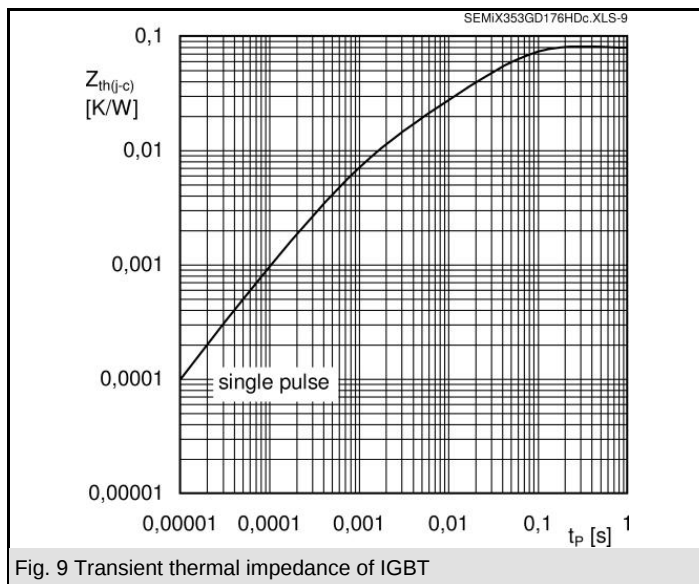
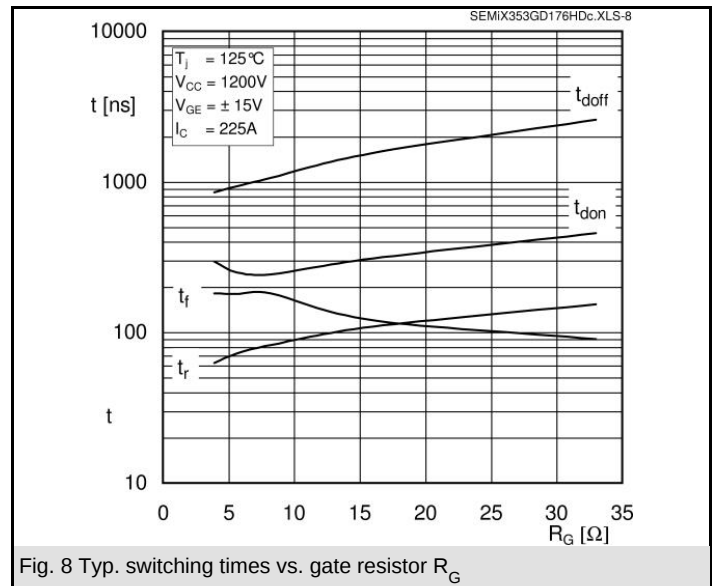
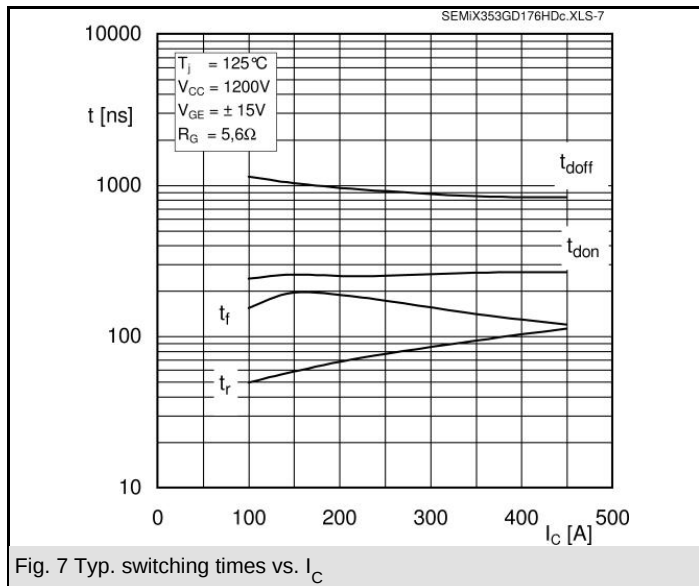
Characteristics		$T_{case} = 25^{\circ}C$, unless otherwise specified			
Symbol	Conditions	min.	typ.	max.	Units
IGBT					
$V_{GE(th)}$	$V_{GE} = V_{CE}$, $I_C = 9 mA$	5,2	5,8	6,4	V
I_{CES}	$V_{GE} = 0$, $V_{CE} = V_{CES}$, $T_j = 25 (^{\circ})^{\circ}C$			0,45	mA
$V_{CE(TO)}$	$T_j = 25 (125)^{\circ}C$		1 (0,9)	1,2 (1,1)	V
r_{CE}	$V_{GE} = 15 V$, $T_j = 25 (125)^{\circ}C$		4,4 (6,9)	5,5 (8)	m Ω
$V_{CE(sat)}$	$I_{Cnom} = 225 A$, $V_{GE} = 15 V$, $T_j = 25 (125)^{\circ}C$, chip level		2 (2,45)	2,45 (2,9)	V
C_{ies}	under following conditions		17,1		nF
C_{oes}	$V_{GE} = 0$, $V_{CE} = 25 V$, $f = 1 MHz$		0,8		nF
C_{res}			0,7		nF
L_{CE}			20		nH
$R_{CC+EE'}$	terminal-chip, $T_C = 25 (125)^{\circ}C$		0,7 (1)		m Ω
$t_{d(on)}/t_r$	$V_{CC} = 1200 V$, $I_{Cnom} = 225 A$		250 / 75		ns
$t_{d(off)}/t_f$	$V_{GE} = \pm 15 V$		930 / 180		ns
$E_{on} (E_{off})$	$R_{Gon} = R_{Goff} = 5,6 \Omega$, $T_j = 125^{\circ}C$		148 (81)		mJ
Inverse diode					
$V_F = V_{EC}$	$I_{Fnom} = 225 A$; $V_{GE} = 0 V$; $T_j = 25 (125)^{\circ}C$, chip level		1,7 (1,7)	1,9 (1,9)	V
$V_{(TO)}$	$T_j = 25 (125)^{\circ}C$		1,1 (0,9)	1,3 (1,1)	V
r_T	$T_j = 25 (125)^{\circ}C$		2,7 (3,6)	2,7 (3,6)	m Ω
I_{RRM}	$I_{Fnom} = 225 A$; $T_j = 25 (125)^{\circ}C$		(280)		A
Q_{rr}	$di/dt = 4000 A/\mu s$		(83)		μC
E_{rr}	$V_{GE} = -15 V$		(45)		mJ
Thermal characteristics					
$R_{th(j-c)}$	per IGBT			0,08	K/W
$R_{th(j-c)D}$	per Inverse Diode			0,143	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}	$T_C = 25^{\circ}C$		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			882		g



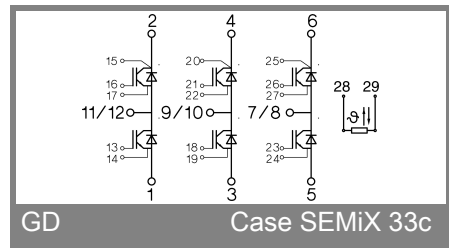
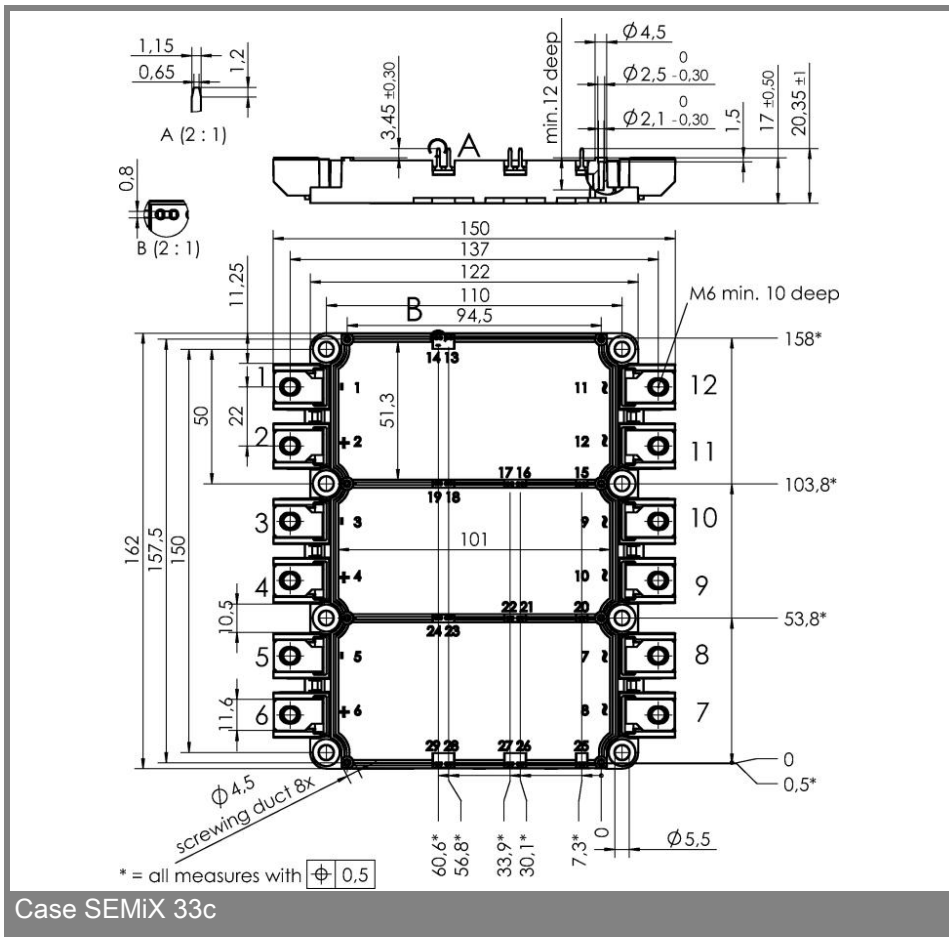
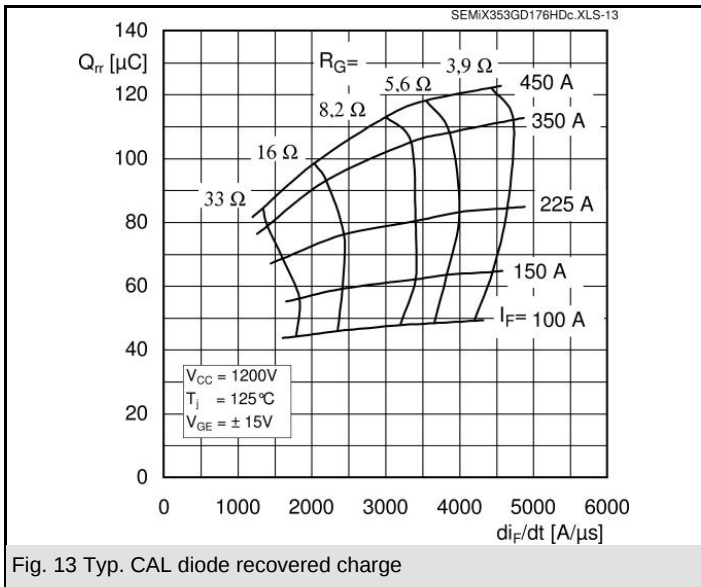
SEMiX 353GD176HDc



SEMiX 353GD176HDc



SEMiX 353GD176HDc



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

This technical information specifies semiconductor devices but promises no characteristics. No warranty or guarantee expressed or implied is made regarding delivery, performance or suitability.