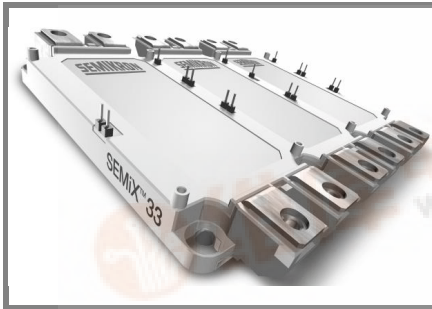


# SEMIX 503GD126HDC



SEMIX® 33c

## Trench IGBT Modules

### SEMIX 503GD126HDC

#### Preliminary Data

#### Features

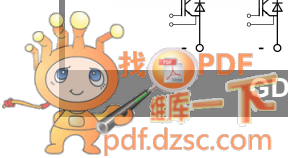
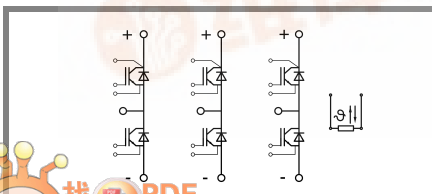
- Homogeneous Si
- Trench = Trenchgate technology
- $V_{CE(sat)}$  with positive temperature coefficient
- High short circuit capability

#### Typical Applications

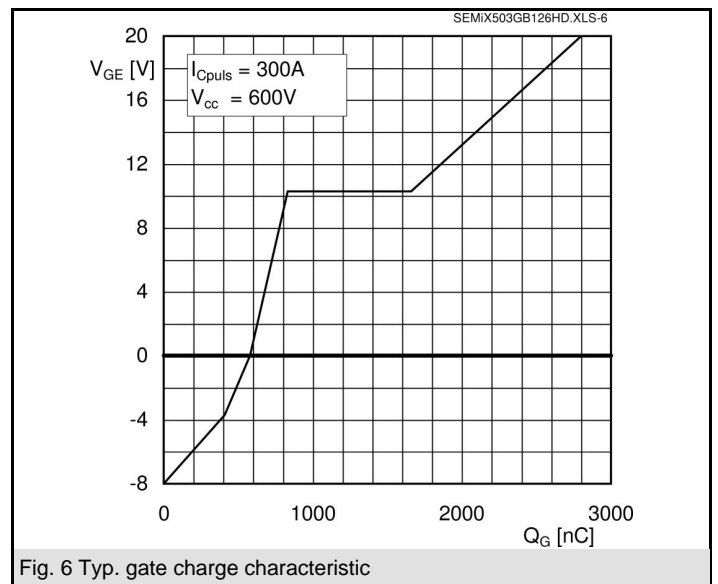
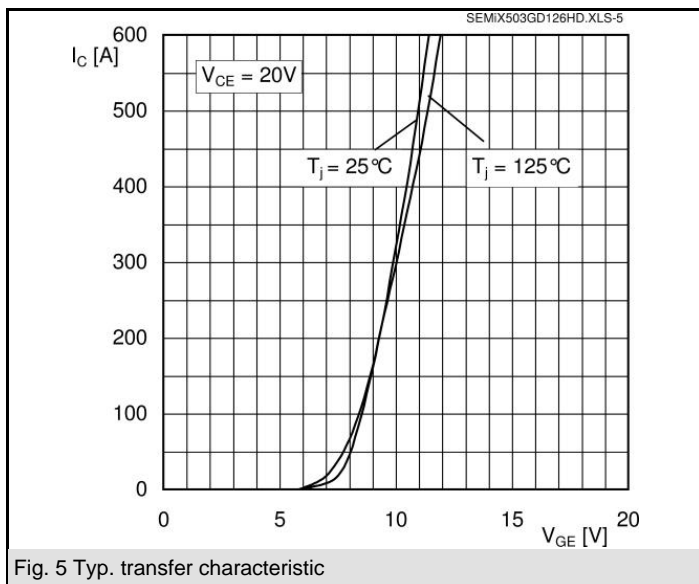
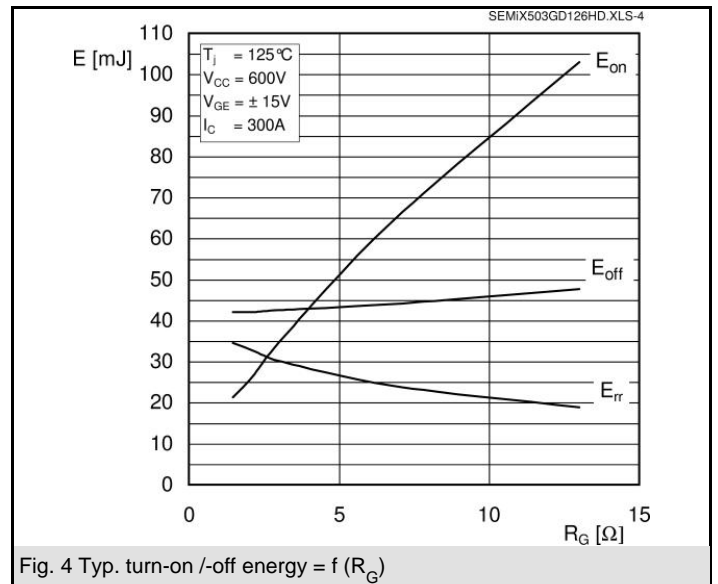
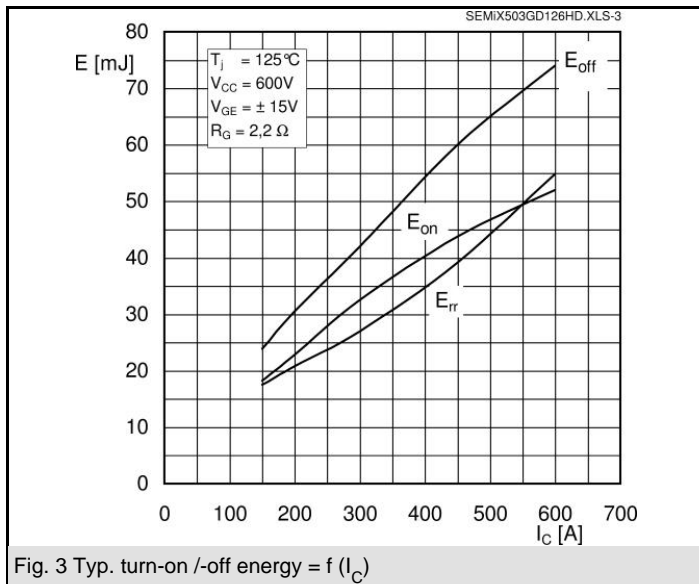
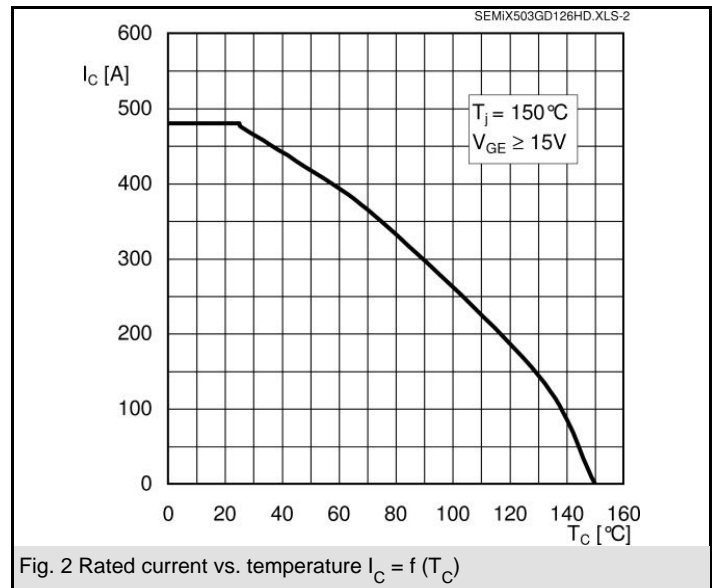
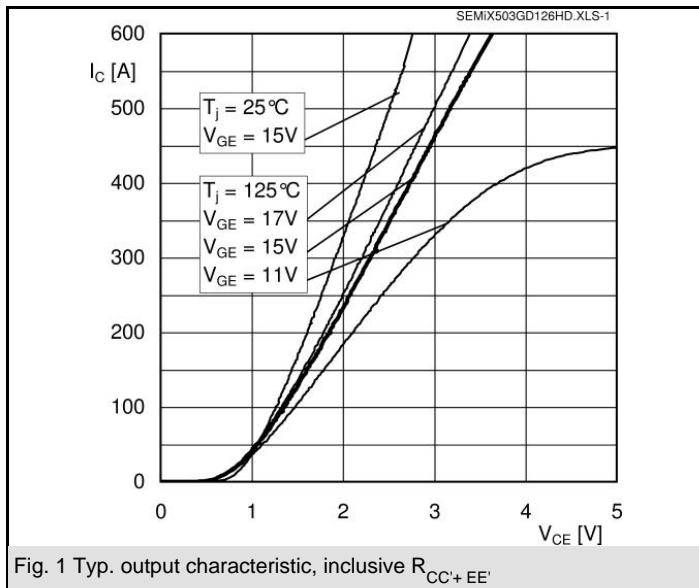
- AC inverter
- UPS
- Electronic Welding

Absolute Maximum Ratings		$T_{case} = 25^{\circ}C$ , unless otherwise specified		
Symbol	Conditions	Values	Units	
<b>IGBT</b>				
$V_{CES}$		1200	V	
$I_C$	$T_c = 25 (80) ^{\circ}C$	480 (330)	A	
$I_{CRM}$	$t_p = 1 ms$	600	A	
$V_{GES}$		$\pm 20$	V	
$T_{vj}$ , ( $T_{stg}$ )	$T_{OPERATION} \leq T_{stg}$	- 40 ... + 150 (125)	$^{\circ}C$	
$V_{isol}$	AC, 1 min.	4000	V	
<b>Inverse diode</b>				
$I_F$	$T_c = 25 (80) ^{\circ}C$	430 (290)	A	
$I_{FRM}$	$t_p = 1 ms$	600	A	
$I_{FSM}$	$t_p = 10 ms$ ; sin.; $T_j = 25 ^{\circ}C$	2000	A	

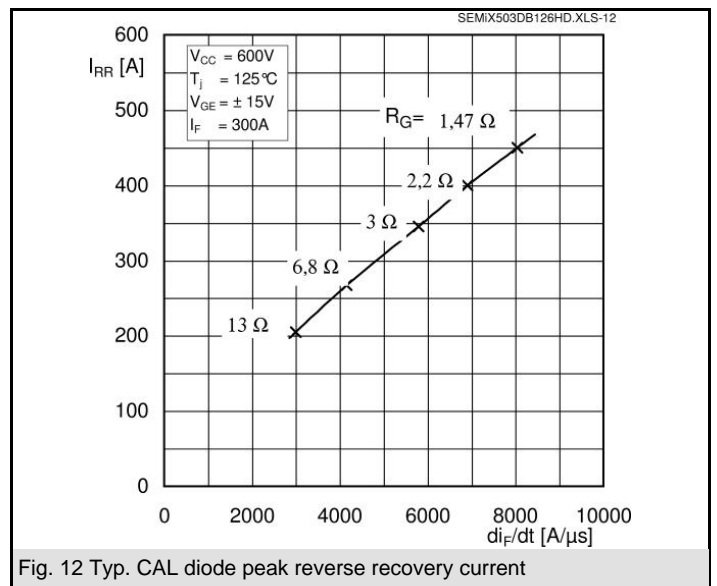
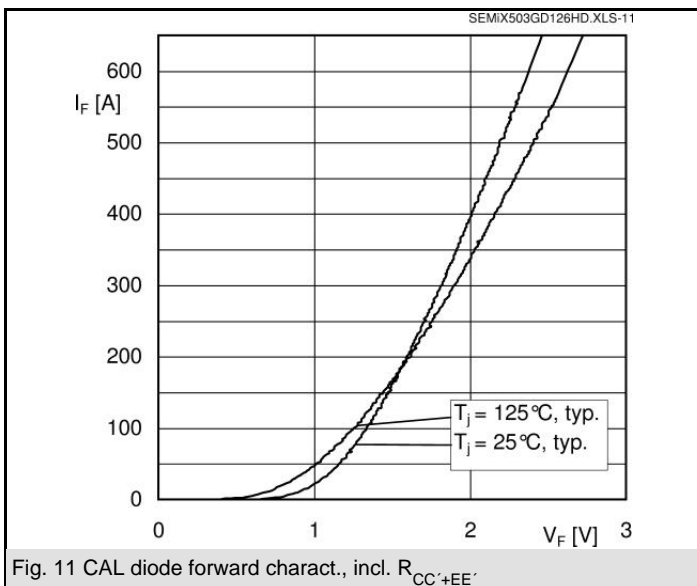
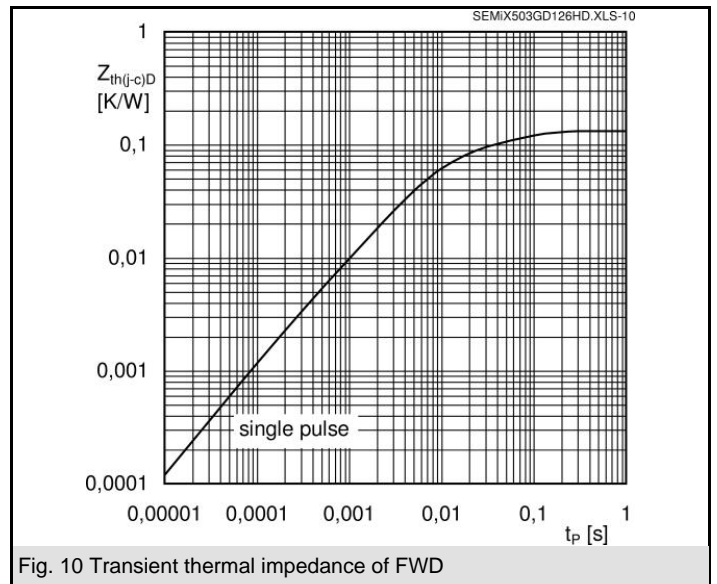
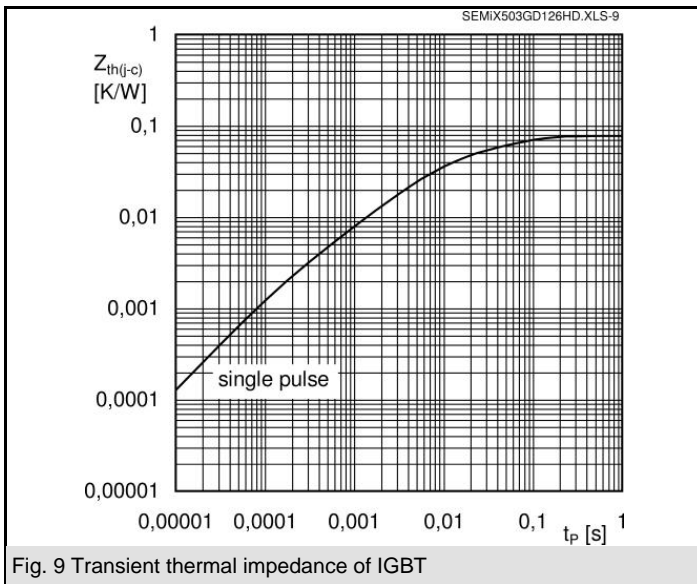
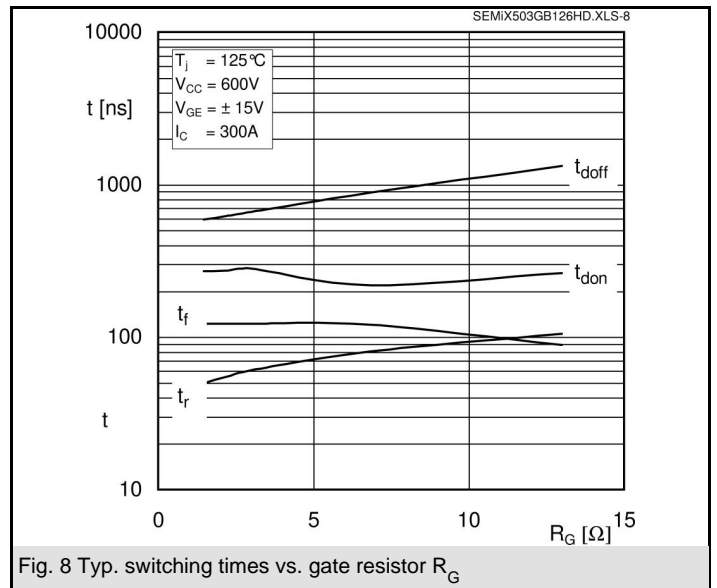
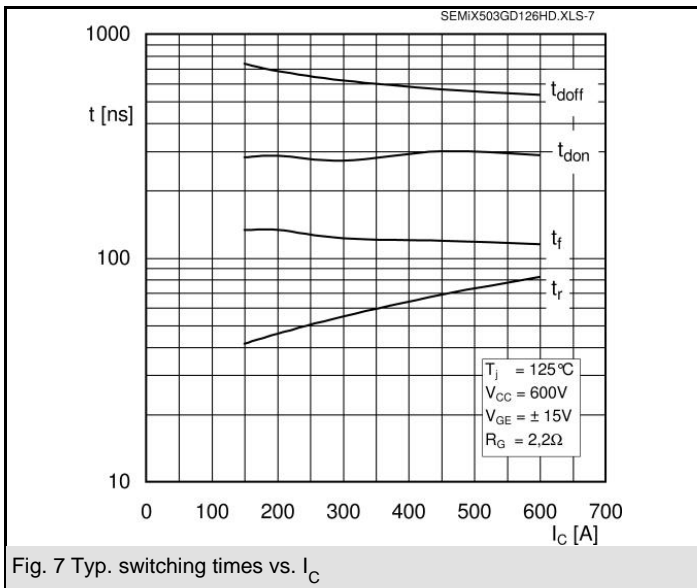
Characteristics		$T_{case} = 25^{\circ}C$ , unless otherwise specified			
Symbol	Conditions	min.	typ.	max.	Units
<b>IGBT</b>					
$V_{GE(th)}$	$V_{GE} = V_{CE}$ , $I_C = 12 mA$	5	5,8	6,5	V
$I_{CES}$	$V_{GE} = 0$ , $V_{CE} = V_{CES}$ , $T_j = 25 (^{\circ}) ^{\circ}C$			0,3	mA
$V_{CE(TO)}$	$T_j = 25 (125) ^{\circ}C$		1 (0,9)	1,2 (1,1)	V
$r_{CE}$	$V_{GE} = 15 V$ , $T_j = 25 (125) ^{\circ}C$		2,2 (3,7)	3,2 (4,5)	m $\Omega$
$V_{CE(sat)}$	$I_{Cnom} = 300 A$ , $V_{GE} = 15 V$ , $T_j = 25 (125) ^{\circ}C$ , chip level		1,7 (2)	2,15 (2,45)	V
$C_{ies}$	under following conditions		22		nF
$C_{oes}$	$V_{GE} = 0$ , $V_{CE} = 25 V$ , $f = 1 MHz$		1,1		nF
$C_{res}$			1		nF
$L_{CE}$			20		nH
$R_{CC+EE}$	terminal-chip, $T_c = 25 (125) ^{\circ}C$		0,7 (1)		m $\Omega$
$t_{d(on)}/t_r$	$V_{CC} = 600 V$ , $I_{Cnom} = 300 A$		275 / 55		ns
$t_{d(off)}/t_f$	$V_{GE} = \pm 15 V$		625 / 125		ns
$E_{on} (E_{off})$	$R_{Gon} = R_{Goff} = 2,2 \Omega$ , $T_j = 125 ^{\circ}C$		27 (42)		mJ
<b>Inverse diode</b>					
$V_F = V_{EC}$	$I_{Fnom} = 300 A$ ; $V_{GE} = 0 V$ ; $T_j = 25 (125) ^{\circ}C$ , chip level		1,6 (1,6)	1,8 (1,8)	V
$V_{(TO)}$	$T_j = 25 (125) ^{\circ}C$		1 (0,8)	1,1 (0,9)	V
$r_T$	$T_j = 25 (125) ^{\circ}C$		2 (2,7)	2,3 (3)	m $\Omega$
$I_{RRM}$	$I_{Fnom} = 300 A$ ; $T_j = 25 (125) ^{\circ}C$		(400)		A
$Q_{rr}$	$di/dt = 6900 A/\mu s$		(77)		$\mu C$
$E_{rr}$	$V_{GE} = -15 V$		(32,5)		mJ
<b>Thermal characteristics</b>					
$R_{th(j-c)}$	per IGBT			0,078	K/W
$R_{th(j-c)D}$	per Inverse Diode			0,133	K/W
$R_{th(j-c)FD}$	per FWD				K/W
$R_{th(c-s)}$	per module		0,014		K/W
<b>Temperature sensor</b>					
$R_{25}$	$T_c = 25 ^{\circ}C$		5 $\pm$ 5%		k $\Omega$
$B_{25/85}$	$R_2 = R_1 \exp[B/(1/T_2 - 1/T_1)]$ ; $T[K]; B$		3420		K
<b>Mechanical data</b>					
$M_s/M_t$	to heatsink (M5) / for terminals (M6)	3/2,5		5 / 5	Nm
w			882		g



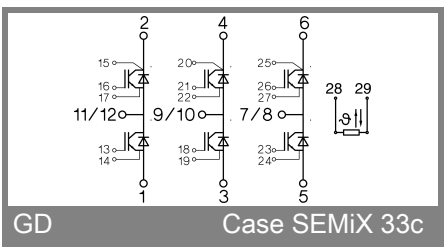
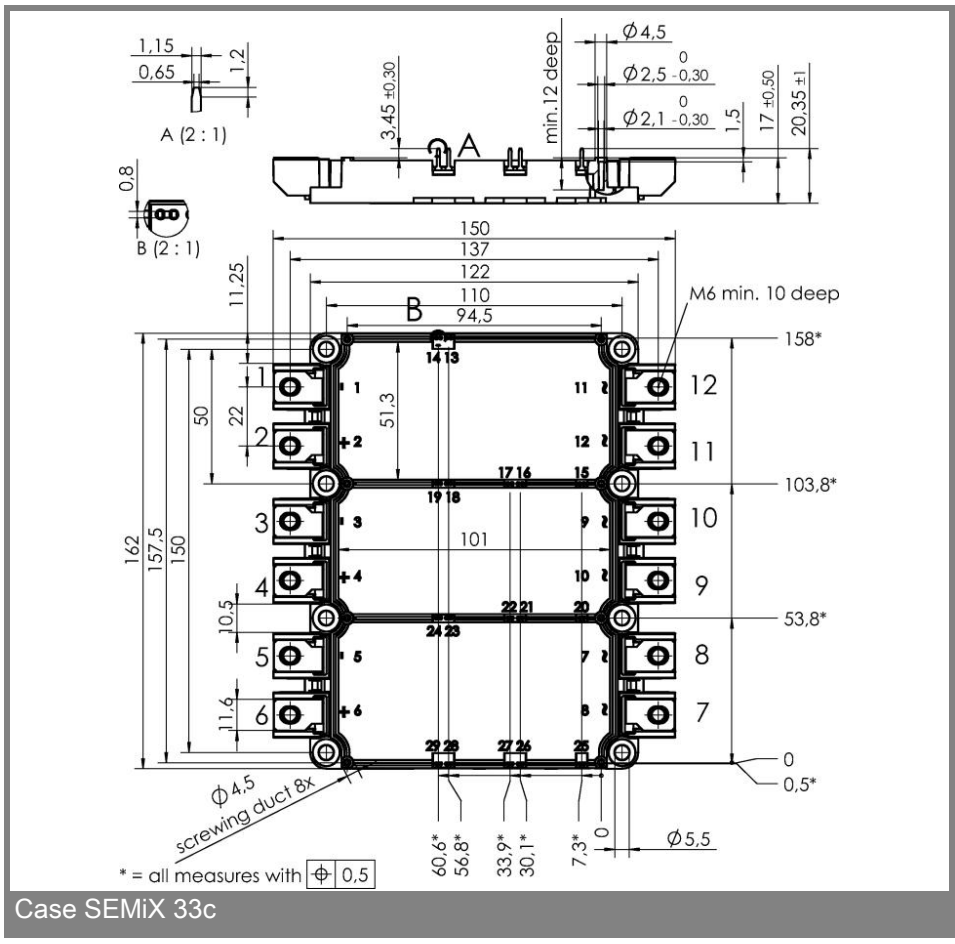
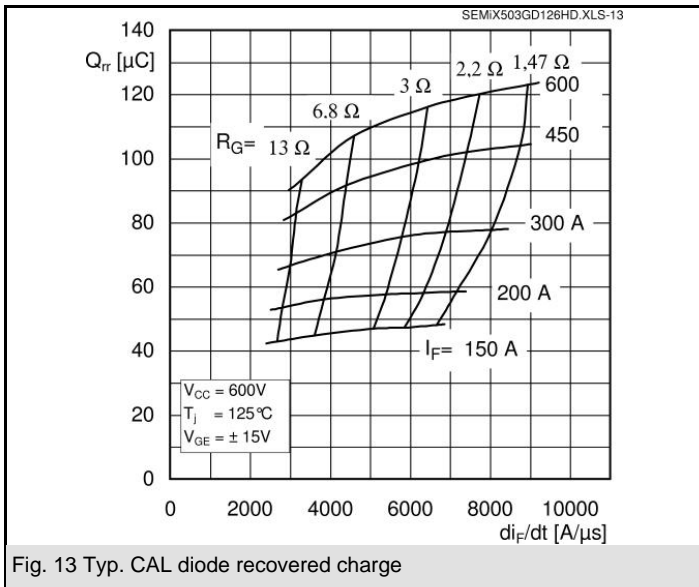
# SEMiX 503GD126HDc



# SEMIX 503GD126HDc



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

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