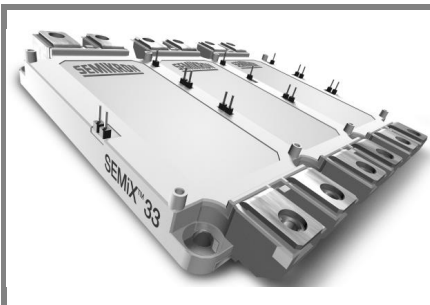


# SEMiX 503GD126HDc



**SEMiX® 33c**

## Trench IGBT Modules

### SEMiX 503GD126HDc

Preliminary Data

#### Features

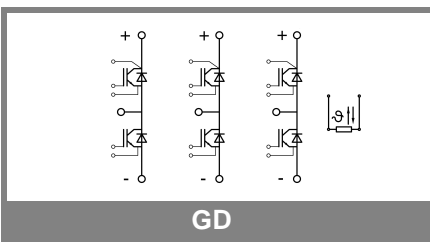
- Homogeneous Si
- Trench = Trenchgate technology
- $V_{CE(sat)}$  with positive temperature coefficient
- High short circuit capability

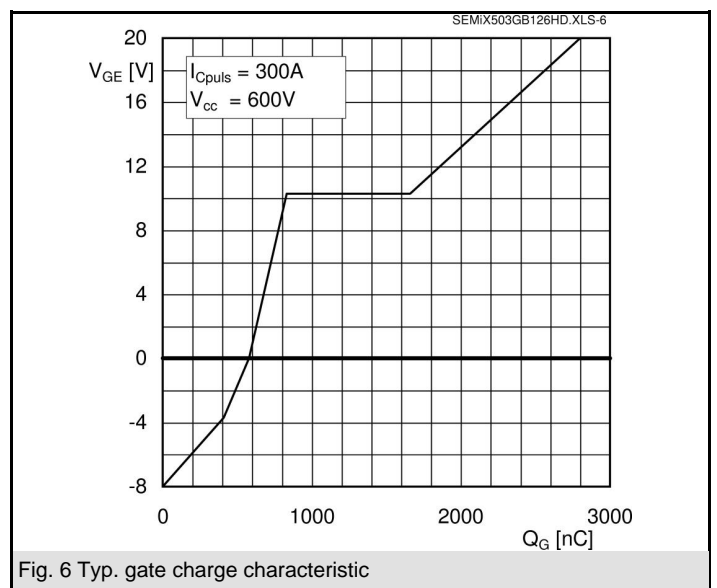
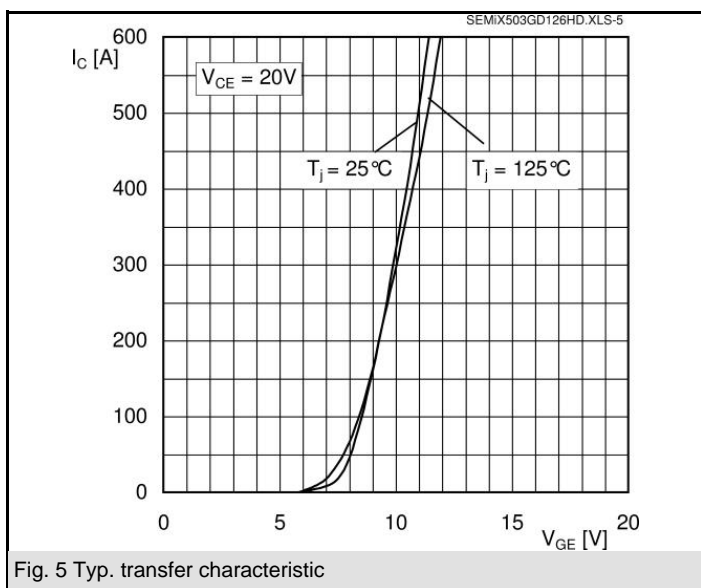
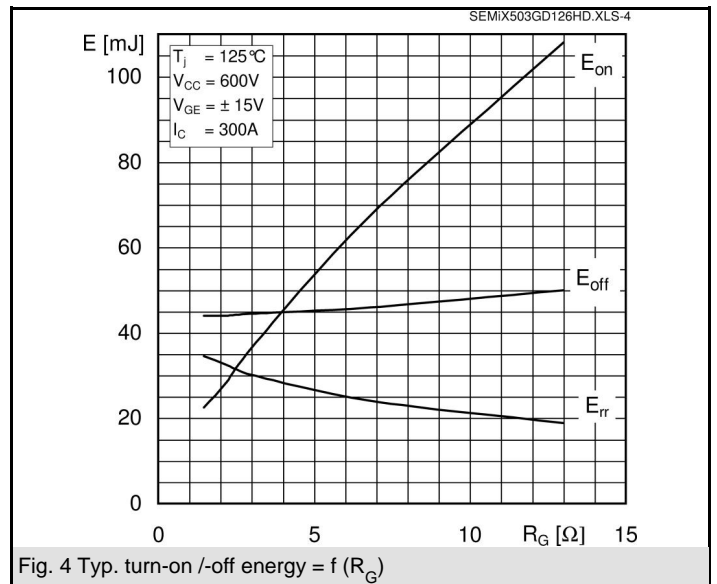
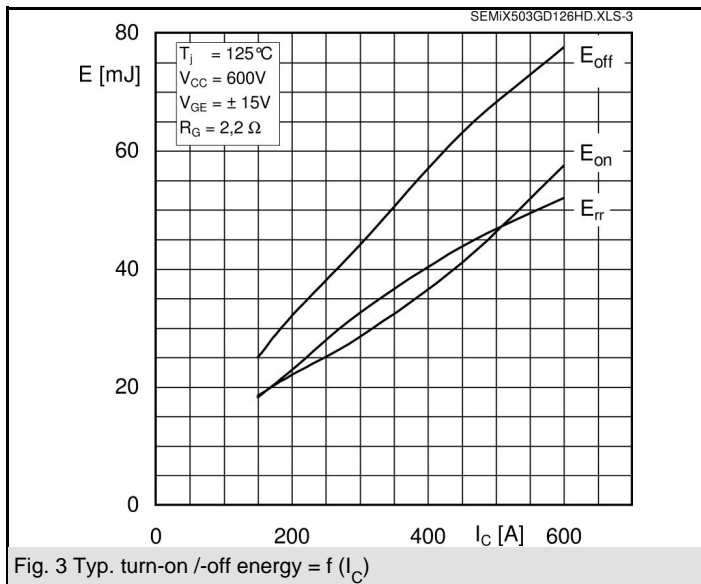
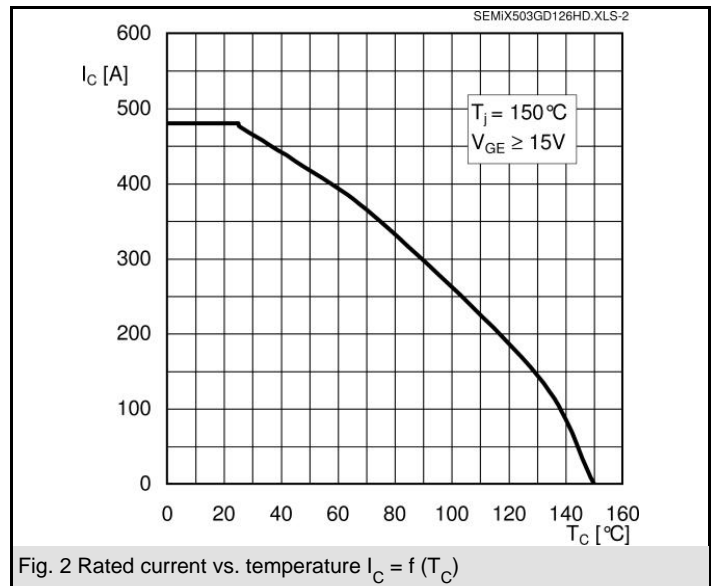
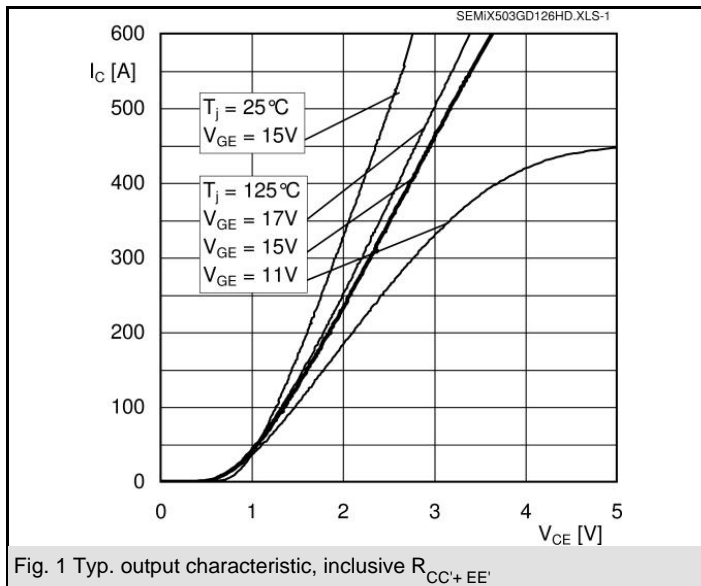
#### Typical Applications

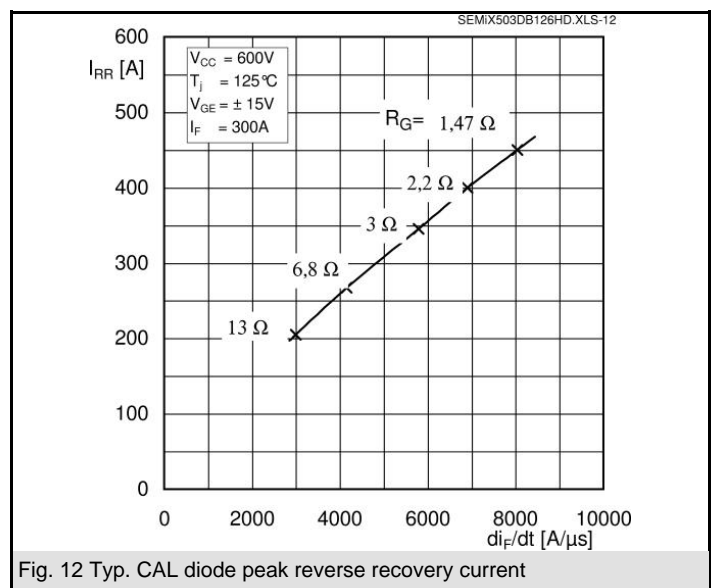
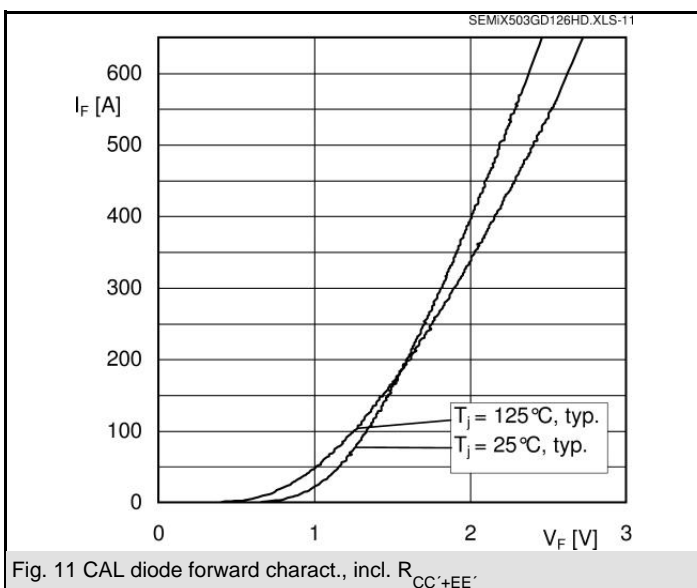
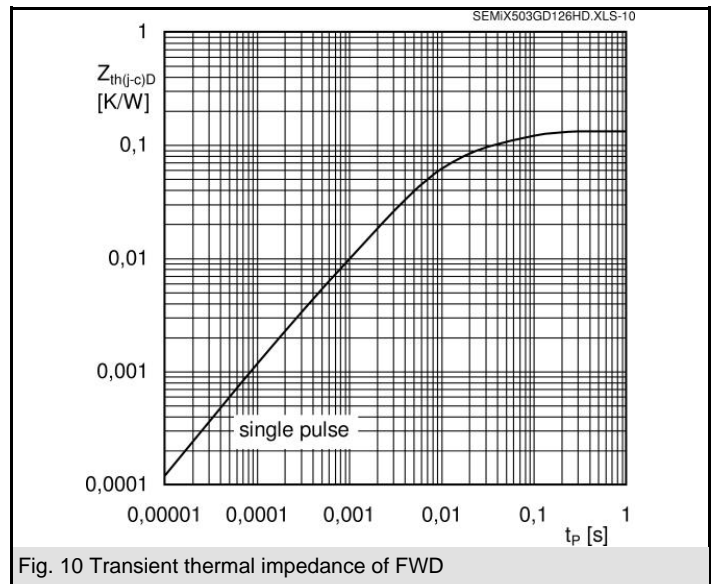
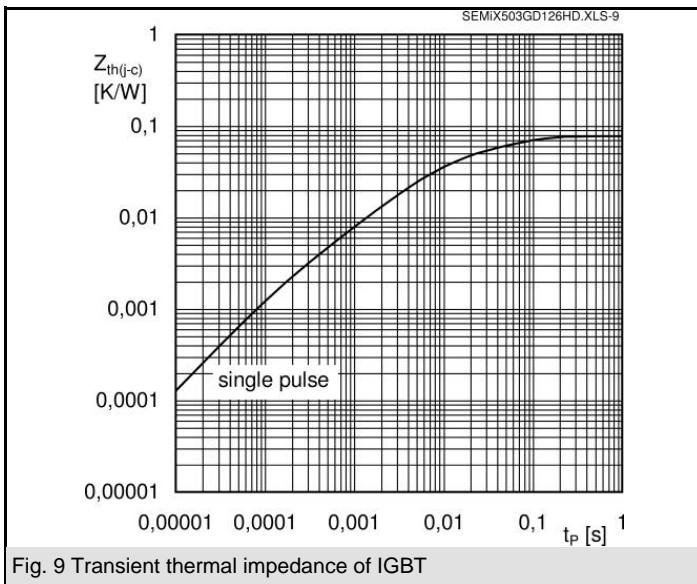
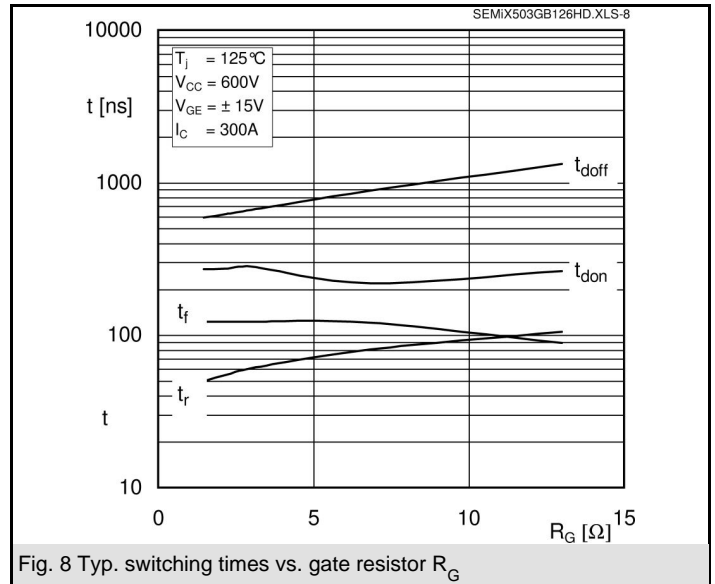
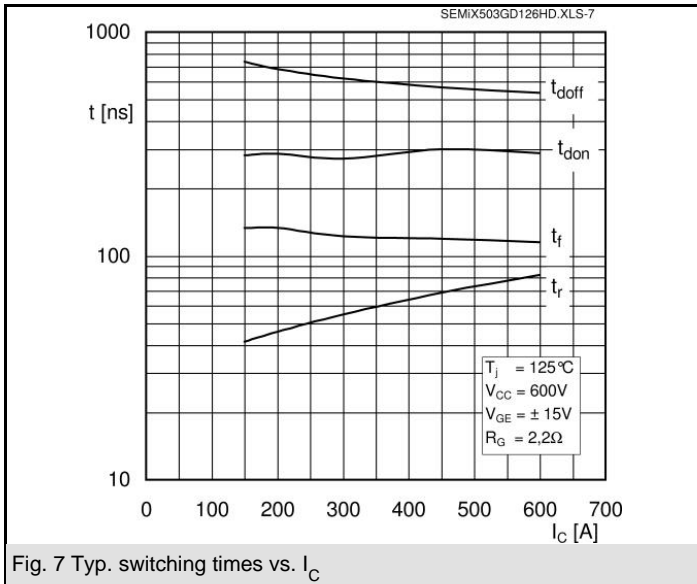
- AC inverter
- UPS
- Electronic Welding

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
$I_{CRM}$	$t_p = 1 \text{ ms}$	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
$I_{FRM}$	$t_p = 1 \text{ ms}$	600	A
$I_{FSM}$	$t_p = 10 \text{ ms; sin.; } T_j = 25 ^{\circ}C$	2000	A

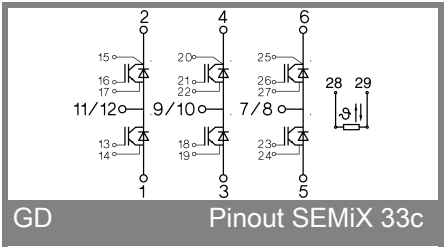
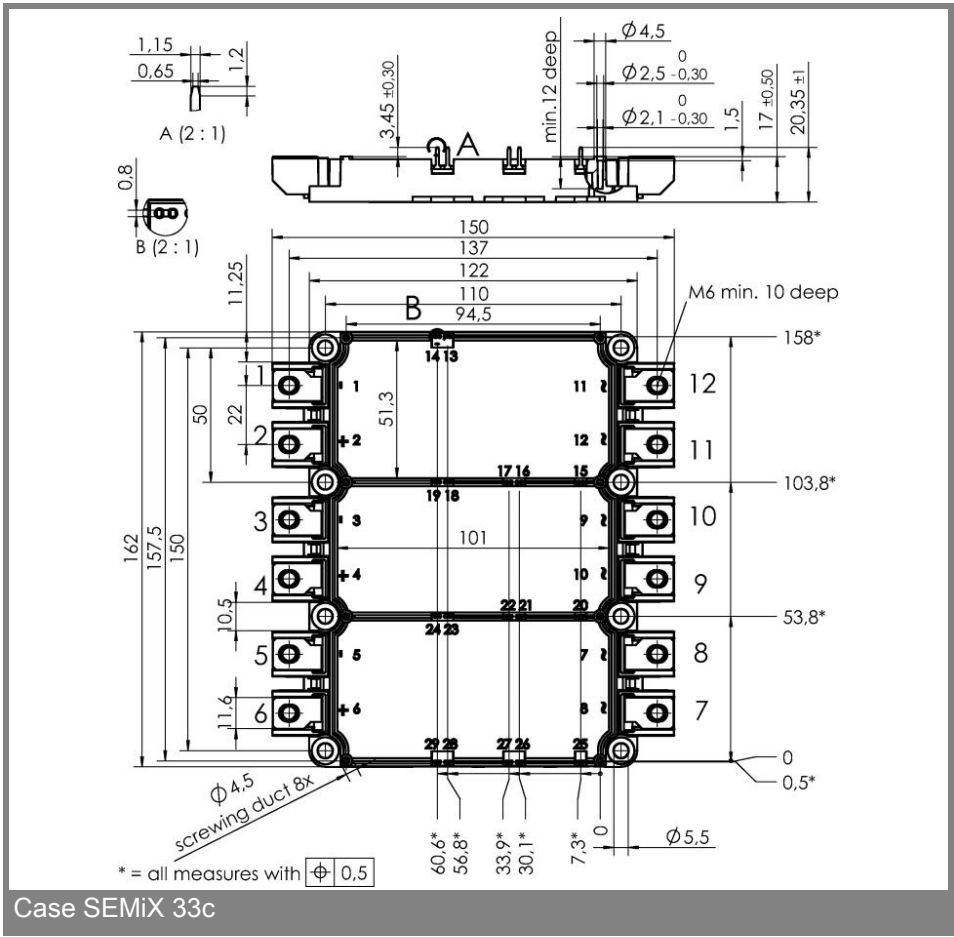
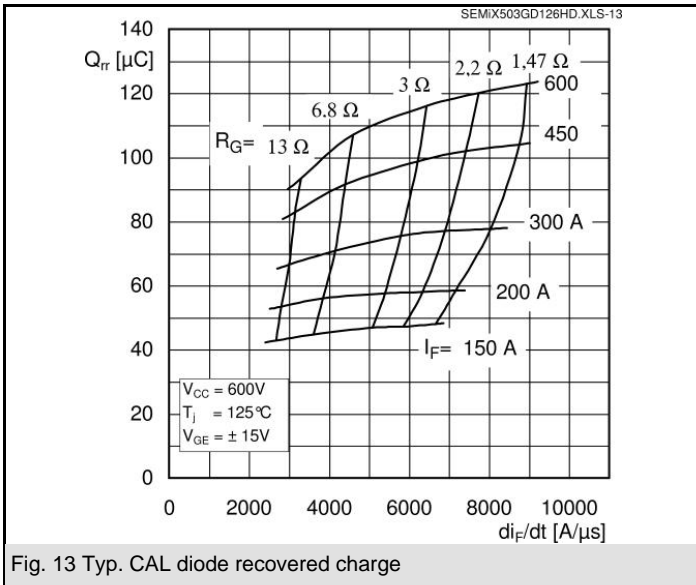
Characteristics		$T_{case} = 25^{\circ}C$ , unless otherwise specified			
Symbol	Conditions	min.	typ.	max.	Units
<b>IGBT</b>					
$V_{GE(th)}$	$V_{GE} = V_{CE}, I_C = 12 \text{ mA}$	5	5,8	6,5	V
$I_{CES}$	$V_{GE} = 0, V_{CE} = V_{CES}, T_j = 25 ( ) ^{\circ}C$			0,3	mA
$V_{CE(TO)}$	$T_j = 25 (125) ^{\circ}C$		1 (0,9)	1,2 (1,1)	V
$r_{CE}$	$V_{GE} = 15 \text{ V}, T_j = 25 (125) ^{\circ}C$		2,2 (3,7)	3,2 (4,5)	m $\Omega$
$V_{CE(sat)}$	$I_{Cnom} = 300 \text{ A}, V_{GE} = 15 \text{ V}, T_j = 25 (125) ^{\circ}C$ , chip level		1,7 (2)	2,15 (2,45)	V
$C_{ies}$	under following conditions		22		nF
$C_{oes}$	$V_{GE} = 0, V_{CE} = 25 \text{ V}, f = 1 \text{ MHz}$		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 $\Omega$
$t_{d(on)}/t_r$	$V_{CC} = 600 \text{ V}, I_{Cnom} = 300 \text{ A}$		275 / 55		ns
$t_{d(off)}/t_f$	$V_{GE} = \pm 15 \text{ V}$		625 / 125		ns
$E_{on} (E_{off})$	$R_{Gon} = R_{Goff} = 2,2 \Omega, T_j = 125 ^{\circ}C$		28,5 (44)		mJ
<b>Inverse diode</b>					
$V_F = V_{EC}$	$I_{Fnom} = 300 \text{ A}; V_{GE} = 0 \text{ V}; T_j = 25 (125) ^{\circ}C$ , 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 $\Omega$
$I_{RRM}$	$I_{Fnom} = 300 \text{ A}; T_j = 25 (125) ^{\circ}C$		(400)		A
$Q_{rr}$	$di/dt = 6900 \text{ A}/\mu\text{s}$		(77)		$\mu\text{C}$
$E_{rr}$	$V_{GE} = -15 \text{ V}$		(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



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.