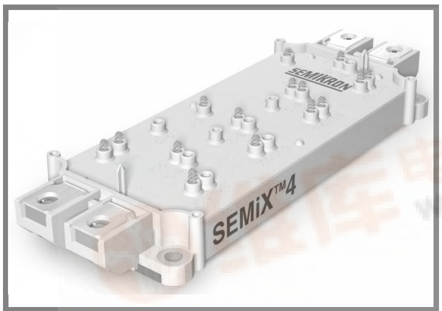
SEMiX 904GB126HDs



SEMiX® 4s

Trench IGBT Modules

SEMiX 904GB126HDs

Target Data

Features

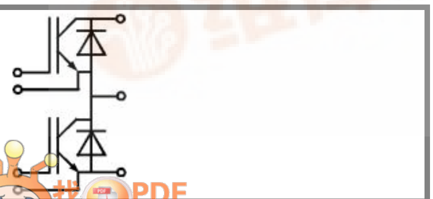
- Homogeneous Si
- Trench = Trenchgate technology
- $V_{CE(sat)}$ with positive temperature coefficient
- High short circuit capability

Typical Applications

- AC inverter drives
- UPS
- Electronic welders

Absolute Maximum Ratings		T_c = 25 °C, unless otherwise specified	
Symbol	**Conditions**	**Values**	**Units**
IGBT			
V_{CES}		1200	V
I_C	T_c = 25 (80) °C	910 (640)	A
I_{CRM}	t_p = 1 ms	1200	A
V_{GES}		± 20	V
T_{vj}, (T_{stg})	$T_{OPERATION} \leq T_{stg}$	- 40 ... + 150 (125)	°C
V_{isol}	AC, 1 min.	4000	V
Inverse diode			
I_F	T_c = 25 (80) °C	710 (480)	A
I_{FRM}	t_p = 1 ms	1200	A
I_{FSM}	t_p = 10 ms; sin.; T_j = 25 °C	3600	A

Characteristics			T_c = 25 °C, unless otherwise specified		
Symbol	**Conditions**	**min.**	**typ.**	**max.**	**Units**
IGBT					
$V_{GE(th)}$	$V_{GE} = V_{CE}$, I_C = 24 mA	5	5,8	6,5	V
I_{CES}	V_{GE} = 0, $V_{CE} = V_{CES}$, T_j = 25 () °C			3	mA
$V_{CE(TO)}$	T_j = 25 (125) °C		1 (0,9)	1,2 (1,1)	V
r_{CE}	V_{GE} = 15 V, T_j = 25 (125) °C		1,17 (1,83)	1,6 (2,3)	mΩ
$V_{CE(sat)}$	I_{Cnom} = 600 A, V_{GE} = 15 V, T_j = 25 (125) °C, chip level		1,7 (2)	2,15 (2,45)	V
C_{ies}	under following conditions		43		nF
C_{oes}	V_{GE} = 0, V_{CE} = 25 V, f = 1 MHz		2,3		nF
C_{res}			2		nF
L_{CE}			22		nH
$R_{CC'+EE'}$	terminal-chip, T_c= 25 (125) °C		0,7 (1)		mΩ
$t_{d(on)}/t_r$	V_{CC} = 600 V, I_{Cnom} = 600 A		441 / 83		ns
$t_{d(off)}/t_f$	V_{GE} = = ± 15 V		706 / 127		ns
E_{on} (E_{off})	$R_{Gon} = R_{Goff}$ = 1,6 Ω, T_j = 125 °C		60 (88)		mJ
Inverse diode					
$V_F = V_{EC}$	I_{Fnom} = 600 A; V_{GE} = 0 V; T_j = 25 (125) °C, chip level		1,6 (1,6)	1,8 (1,8)	V
$V_{(TO)}$	T_j = 25 (125) °C		1 (0,8)	1,1 (0,9)	V
r_T	T_j = 25 (125) °C		1 (1,3)	1,2 (1,5)	mΩ
I_{RRM}	I_{Fnom} = 600 A; T_j = 25 (125) °C		625		A
Q_{rr}	di/dt = 8400 A/µs		165		µC
E_{rr}	V_{GE} = -15 V		75		mJ
Thermal characteristics					
$R_{th(j-c)}$	per IGBT			0,042	K/W
$R_{th(j-c)D}$	per Inverse Diode			0,09	K/W
$R_{th(j-c)FD}$	per FWD				K/W
$R_{th(c-s)}$	per module		0,03		K/W
Temperature sensor					
R_{25}	T_c = 25 °C		5 ±5%		kΩ
$B_{25/85}$	$R_2=R_1exp[B(1/T_2-1/T_1)]$; T[K];B		3420		K
Mechanical data					
M_s/M_t	to heatsink (M5) / for terminals (M6)	3/2,5		5 /5	Nm
w			390		g



GB

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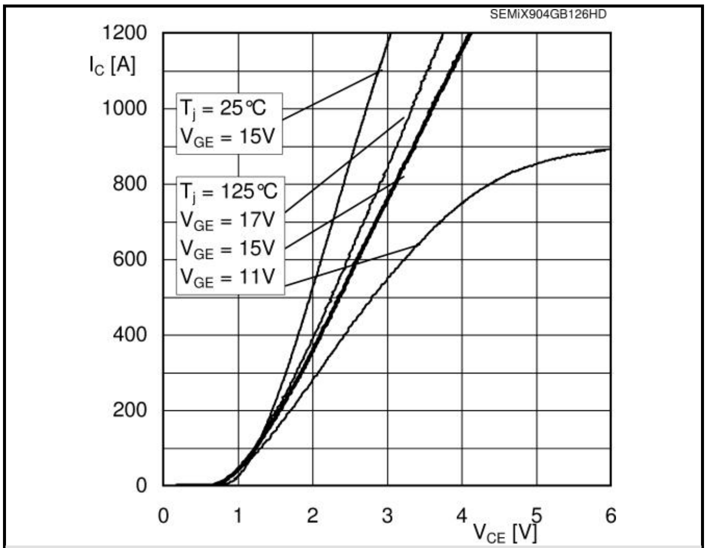

Fig. 1 Typ. output characteristic, inclusive $R_{CC'+EE'}$

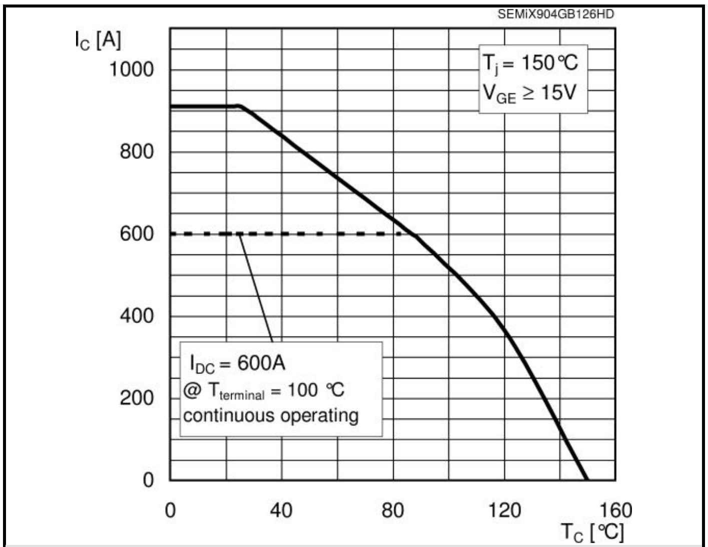

Fig. 2 Rated current vs. temperature $I_C = f(T_C)$

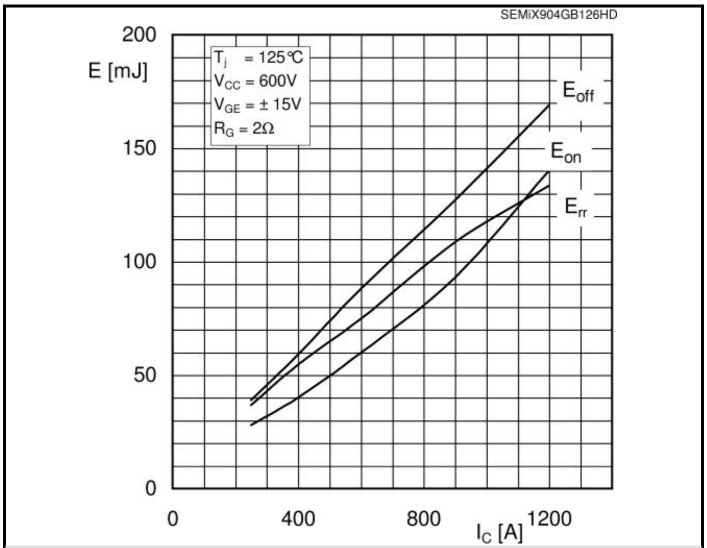

Fig. 3 Typ. turn-on /-off energy = f (I_C)

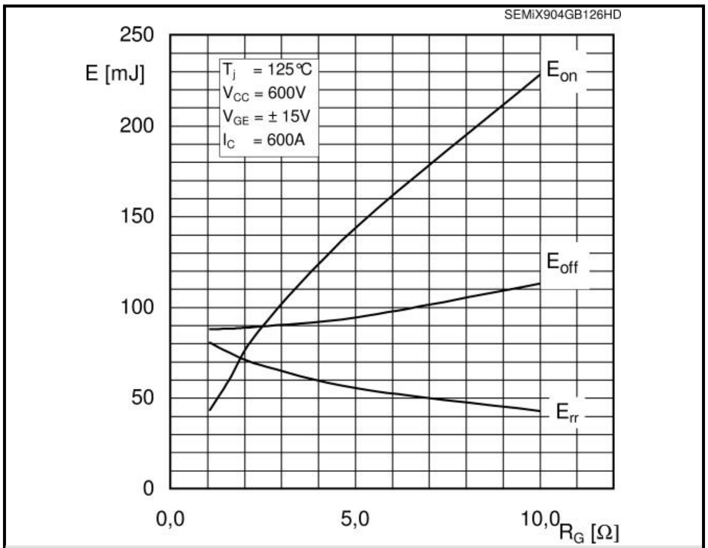

Fig. 4 Typ. turn-on /-off energy = f (R_G)

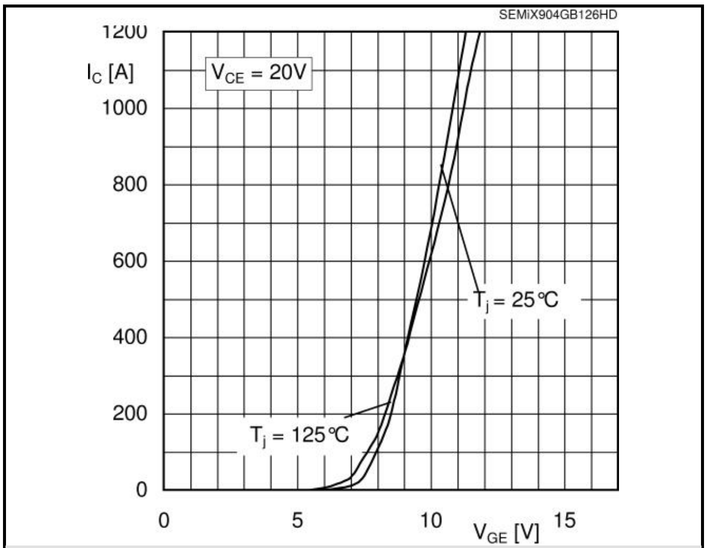

Fig. 5 Typ. transfer characteristic

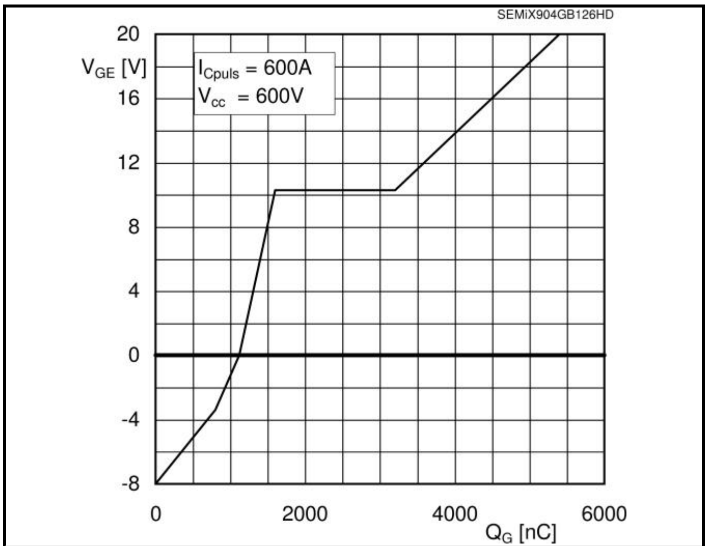

Fig. 6 Typ. gate charge characteristic

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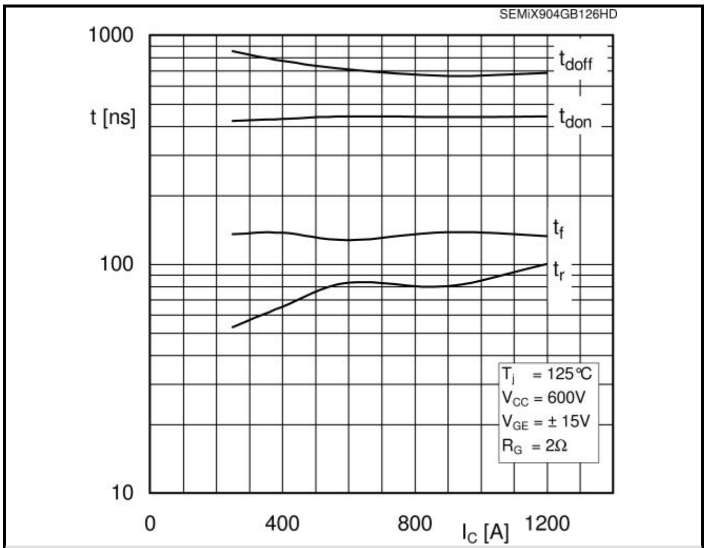

Fig. 7 Typ. switching times vs. I_C

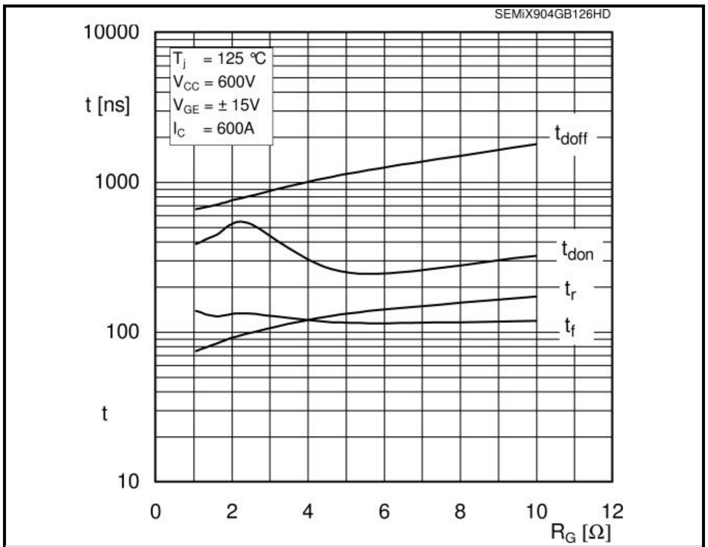

Fig. 8 Typ. switching times vs. gate resistor R_G

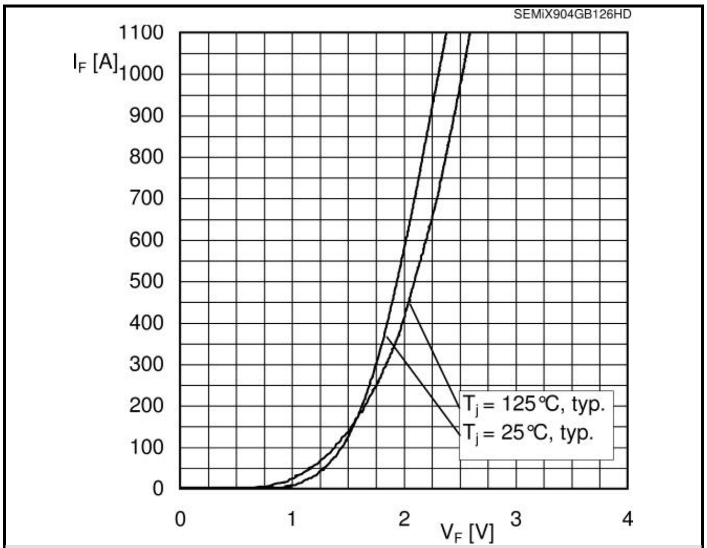

Fig. 11 CAL diode forw. charact., inclusive $R_{CC'+EE'}$

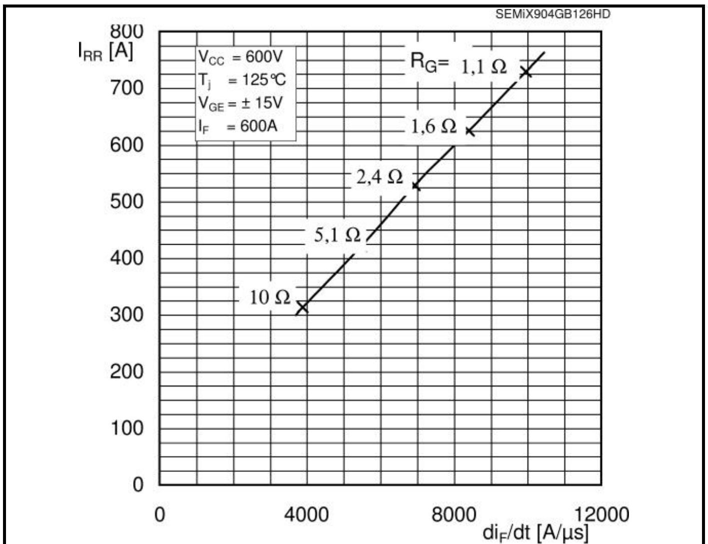

Fig. 12 Typ. CAL diode peak reverse recovery current

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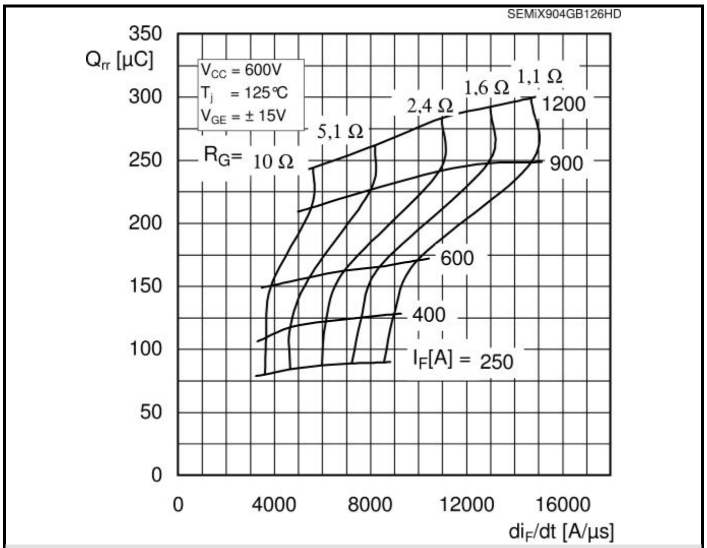
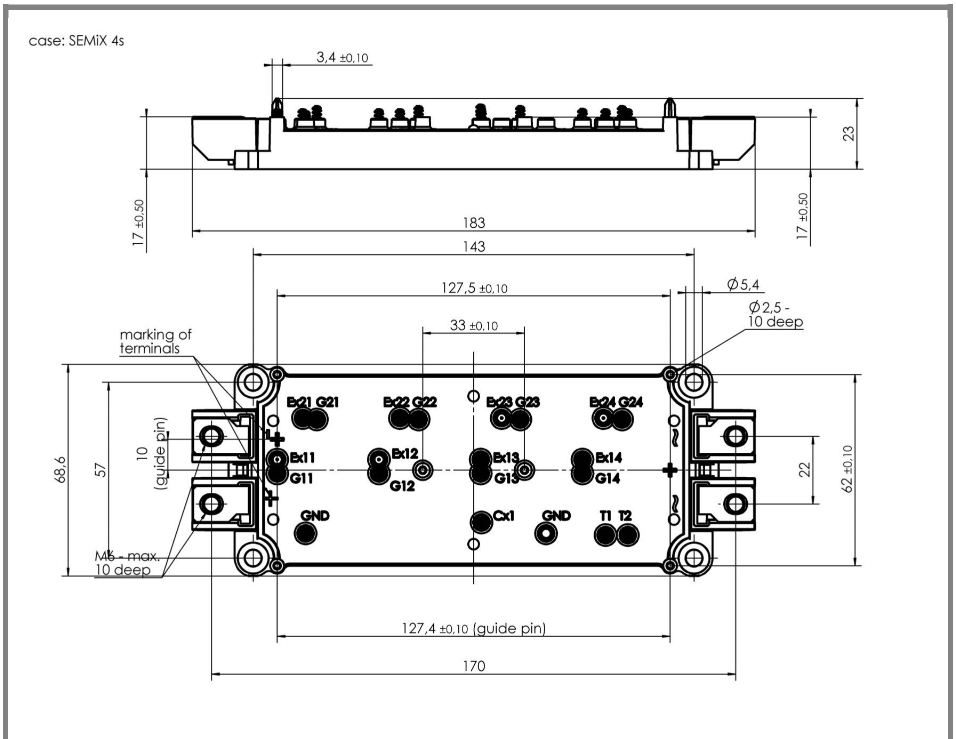
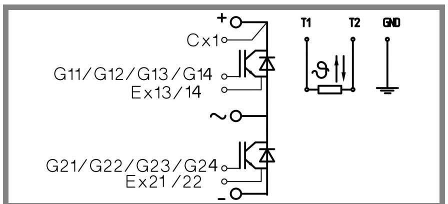


Fig. 13 Typ. CAL diode recovered charge



Case SEMiX 4s



GB pinout SEMiX 4s

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

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