

SEMiX 302GB126HDs



SEMiX® 2s

Trench IGBT Modules

SEMiX 302GB126HDs

Preliminary Data

Features

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

Typical Applications

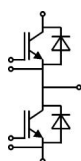
- AC inverter drives
- UPS
- Electronic Welding

Remarks

- Case temperature limited to $T_C = 125^\circ\text{C}$ max.

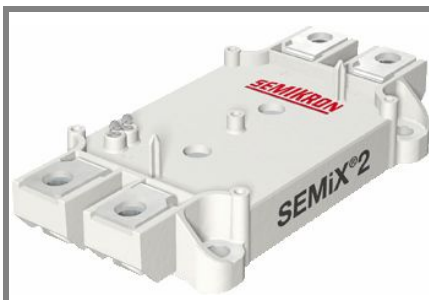
Absolute Maximum Ratings		T _{case} = 25°C, unless otherwise specified		
Symbol	Conditions		Values	Units
IGBT				
V _{CES}	T _j = 25 °C		1200	V
I _C	T _j = 150 °C	T _c = 25 °C	310	A
		T _c = 80 °C	220	A
I _{CRM}	I _{CRM} =2xI _{Cnom}		400	A
V _{GES}			± 20	V
t _{psc}	V _{CC} = 600 V; V _{GE} ≤ 20 V; T _j = 125 °C V _{CES} < 1200 V		10	µs
Inverse Diode				
I _F	T _j = 150 °C	T _c = 25 °C	290	A
		T _c = 80 °C	200	A
I _{FRM}	I _{FRM} =2xI _{Fnom}		400	A
I _{FSM}	t _p = 10 ms; sin. T _j = 25 °C		1300	A
Module				
I _{t(RMS)}			600	A
T _{vj}			- 40 ... + 150	°C
T _{stg}			- 40 ... + 125	°C
V _{isol}	AC, 1 min.		4000	V

Characteristics		T _{case} = 25°C, unless otherwise specified			
Symbol	Conditions	min.	typ.	max.	Units
IGBT					
V _{GE(th)}	V _{GE} = V _{CE} , I _C = 9 mA	5	5,8	6,5	V
I _{CES}	V _{GE} = 0 V, V _{CE} = V _{CES} T _j = 25 °C			0,3	mA
V _{CE0}	T _j = 25 °C T _j = 125 °C		1 0,9	1,2 1,1	V V
r _{CE}	V _{GE} = 15 V T _j = 25°C T _j = 125°C		3,5 5,5	4,8 6,8	mΩ mΩ
V _{CE(sat)}	I _{Cnom} = 200 A, V _{GE} = 15 V T _j = 25°C _{chiplev.} T _j = 125°C _{chiplev.}		1,7 2	2,15 2,45	V V
C _{ies}	V _{CE} = 25, V _{GE} = 0 V f = 1 MHz		14,4		nF
C _{oes}			0,75		nF
C _{res}			0,65		nF
Q _G	V _{GE} = -8 ... +15V		1600		nC
t _{d(on)}	R _{Gon} = 2,8 Ω	V _{CC} = 600V I _{Cnom} = 200A T _j = 125 °C	320		ns
t _r			50		ns
E _{on}	30			mJ	
t _{d(off)}	R _{Goff} = 2,8 Ω		600		ns
t _f			100		ns
E _{off}		26		mJ	
R _{th(j-c)}	per IGBT			0,12	K/W



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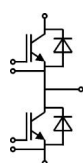
Remarks

- Case temperature limited to $T_C=125^\circ\text{C}$ max.

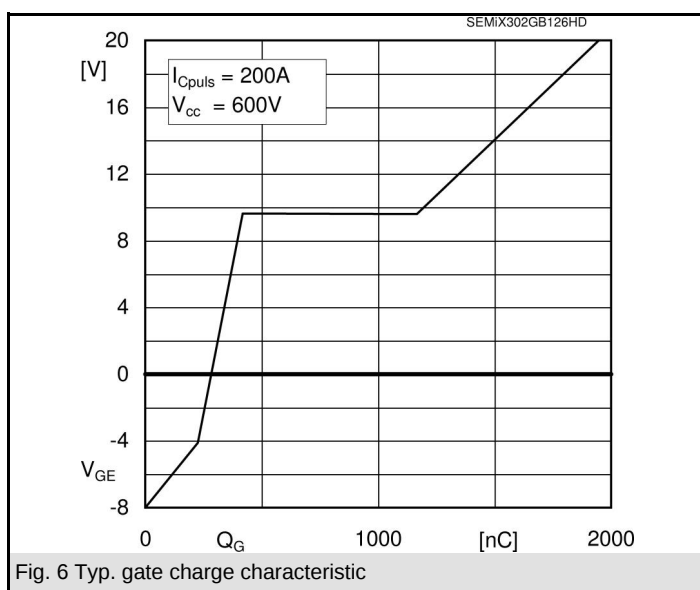
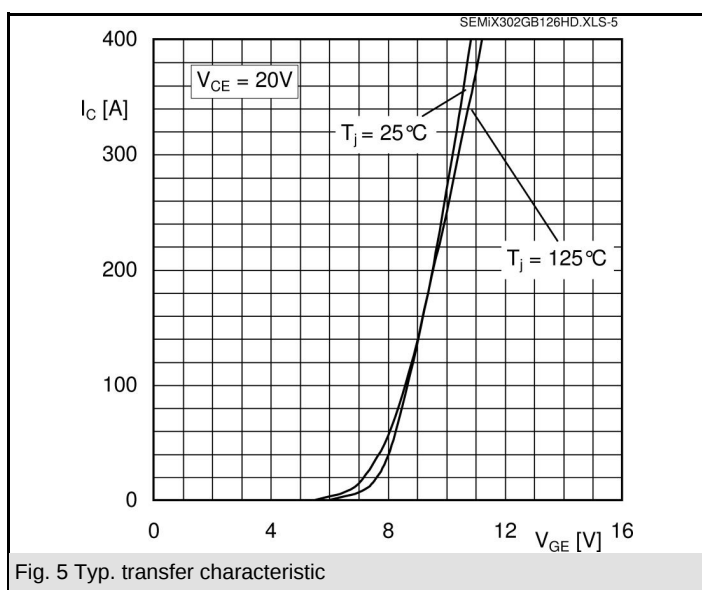
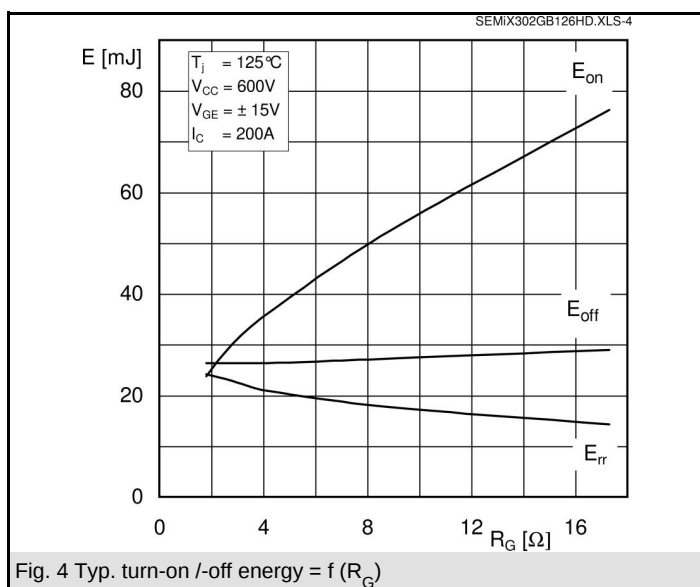
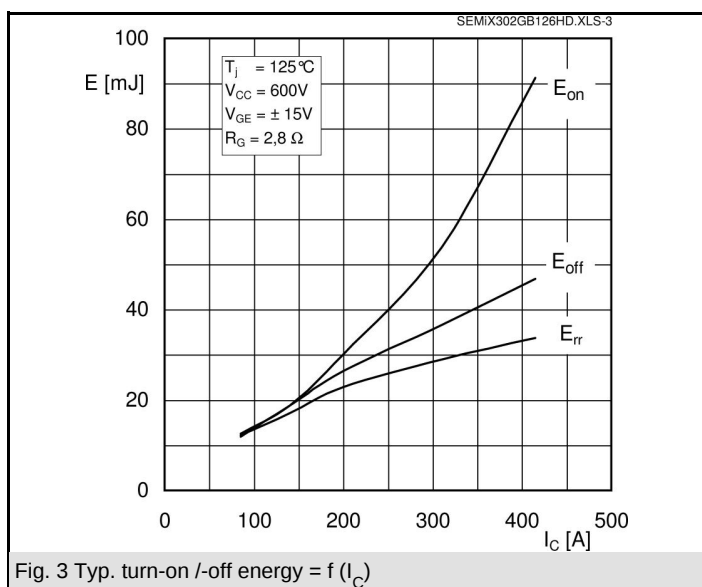
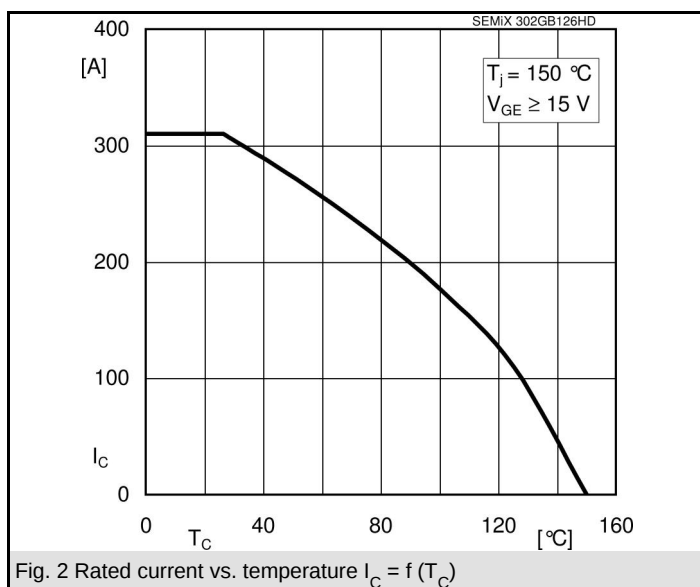
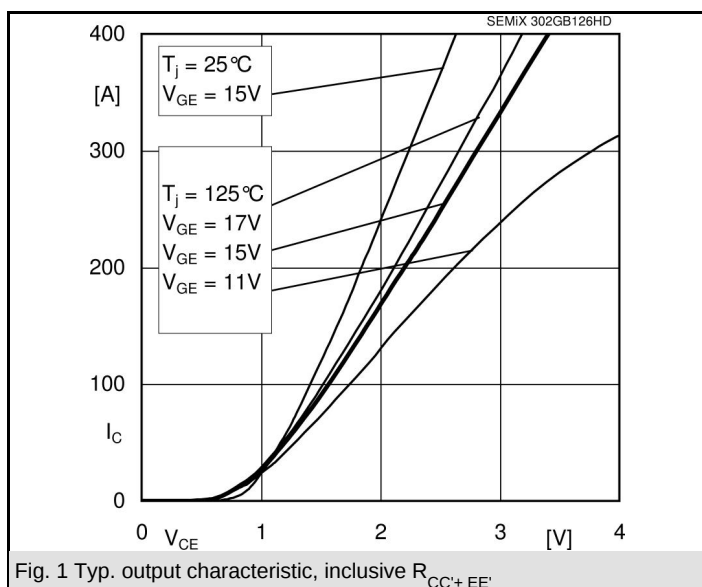
Characteristics					
Symbol	Conditions	min.	typ.	max.	Units
Inverse Diode					
$V_F = V_{EC}$	$I_{Fnom} = 200\text{ A}$; $V_{GE} = 0\text{ V}$				
	$T_j = 25^\circ\text{C}_{chiplev.}$		1,6	1,8	V
	$T_j = 125^\circ\text{C}_{chiplev.}$		1,6	1,8	V
V_{F0}	$T_j = 25^\circ\text{C}$		1	1,1	V
	$T_j = 125^\circ\text{C}$		0,8	0,9	V
r_F	$T_j = 25^\circ\text{C}$		3	3,5	mΩ
	$T_j = 125^\circ\text{C}$		4	4,5	mΩ
I_{RRM}	$I_{Fnom} = 200\text{ A}$		290		A
Q_{rr}	$di/dt = 5900\text{ A}/\mu\text{s}$		55		μC
E_{rr}	$V_{GE} = -15\text{ V}$; $V_{CC} = 600\text{ V}$		22,5		mJ
$R_{th(j-c)D}$	per diode			0,19	K/W
Module					
L_{CE}			18		nH
$R_{CC'+EE'}$	res., terminal-chip	$T_{case} = 25^\circ\text{C}$	0,7		mΩ
		$T_{case} = 125^\circ\text{C}$	1		mΩ
$R_{th(c-s)}$	per module		0,045		K/W
M_s	to heat sink (M5)		3	5	Nm
M_t	to terminals (M6)		2,5	5	Nm
w				250	g
Temperature sensor					
R_{100}	$T_c = 100^\circ\text{C}$ ($R_{25} = 5\text{ k}\Omega$)		0,493±5%		kΩ
$B_{100/125}$	$R(T) = R_{100} \exp[B_{100/125}(1/T - 1/T_{100})]$; $T[\text{K}]; B$		3550±2%		K

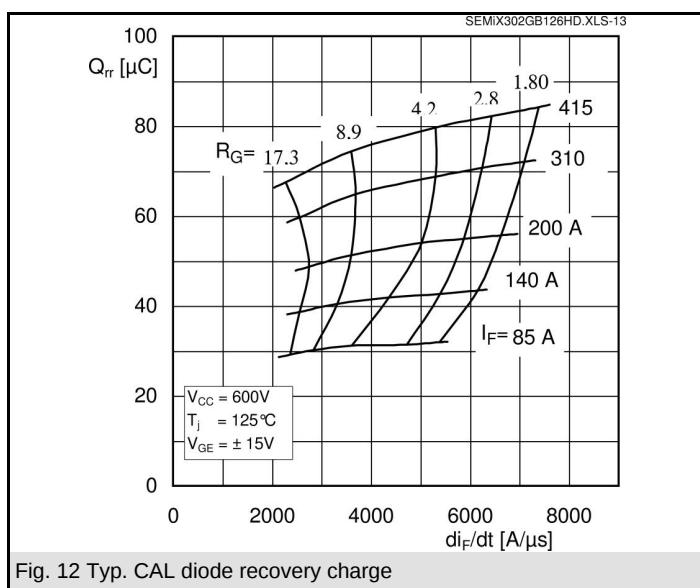
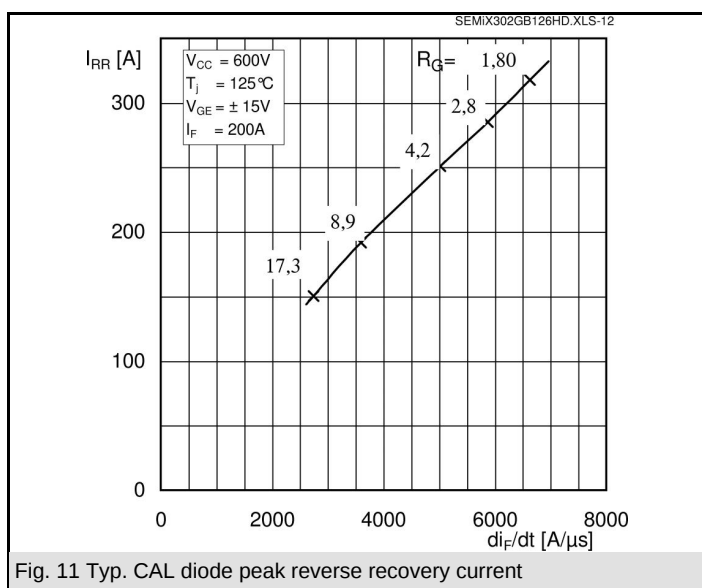
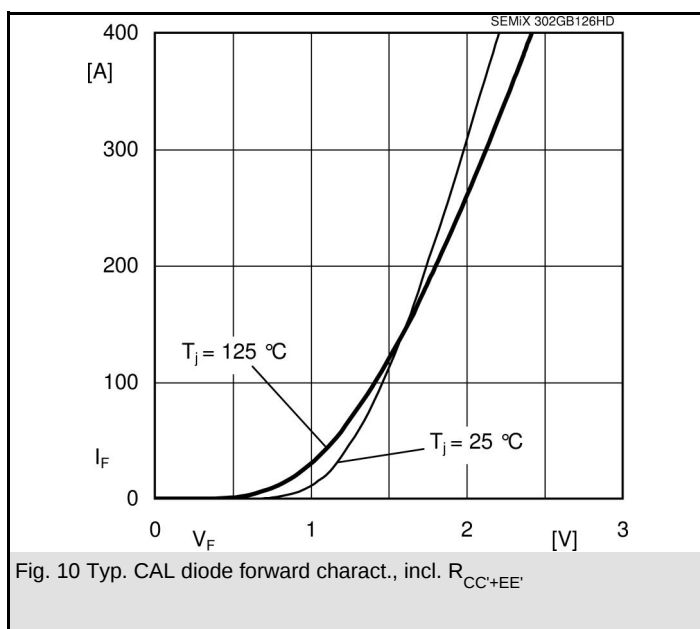
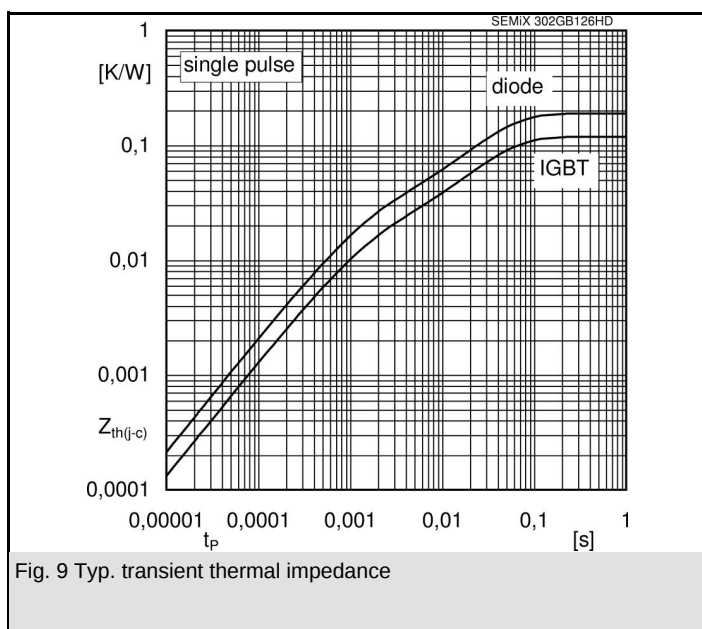
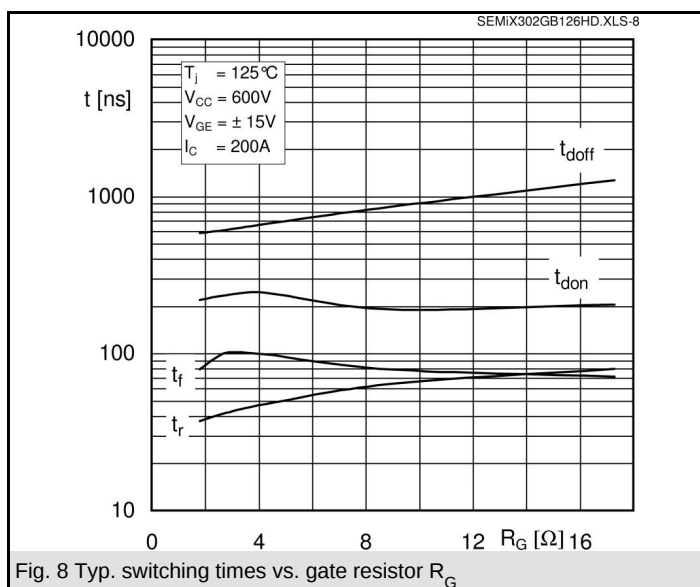
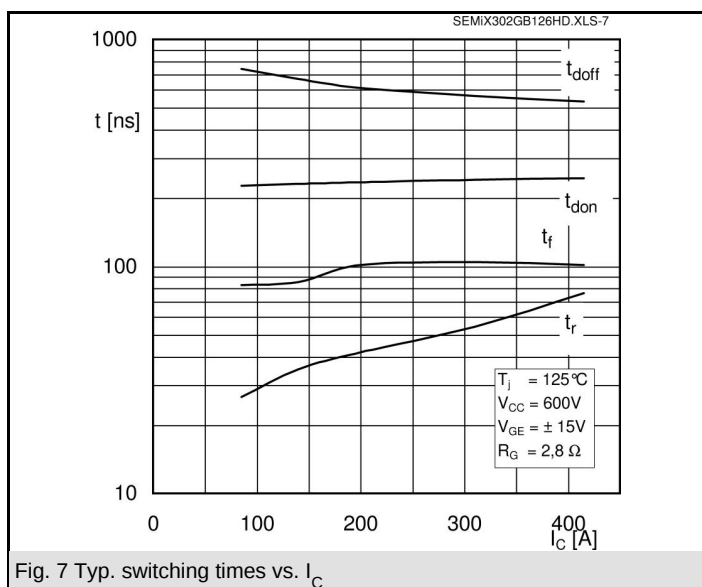
This is an electrostatic discharge sensitive device (ESDS), international standard IEC 60747-1, Chapter IX.

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



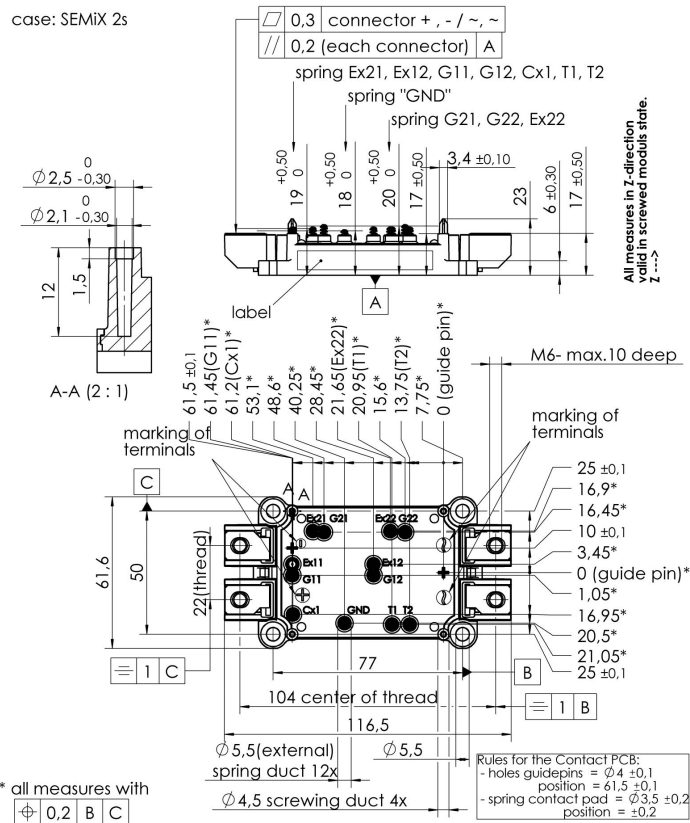
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case: SEMiX 2s



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