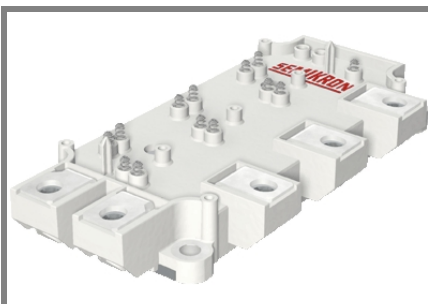


SEMiX 101GD126HDs



SEMiX® 13s

Trench IGBT Modules

SEMiX 101GD126HDs

Preliminary Data

Features

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

Typical Applications

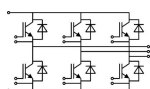
- AC inverter drives
- UPS
- Electronic Welding

Remarks

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

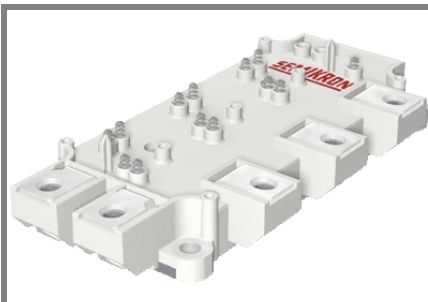
Absolute Maximum Ratings		T _{case} = 25°C, unless otherwise specified		
Symbol	Conditions		Values	Units
IGBT				
V _{CES}	T _j = 25 °C		1200	V
I _C	T _j = 150 °C	T _c = 25 °C	130	A
		T _c = 80 °C	90	A
I _{CRM}	I _{CRM} =2xI _{Cnom}		150	A
V _{GES}			± 20	V
t _{psc}	V _{CC} = 600 V; V _{GE} ≤ 20 V; T _j = 125 °C V _{CES} < 1200 V		10	μs
Inverse Diode				
I _F	T _j = 150 °C	T _c = 25 °C	115	A
		T _c = 80 °C	80	A
I _{FRM}	I _{FRM} =2xI _{Fnom}		150	A
I _{FSM}	t _p = 10 ms; sin. T _j = 25 °C		600	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 = 3 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	1	V
			T _J = 125 °C	0,9	V
r _{CE}	V _{GE} = 15 V		T _J = 25°C	9,3	mΩ
			T _J = 125°C	14,7	mΩ
V _{CE(sat)}	I _{Cnom} = 75 A, V _{GE} = 15 V		T _J = 25°C _{chiplev.}	1,7	V
			T _J = 125°C _{chiplev.}	2	V
C _{ies}	V _{CE} = 25, V _{GE} = 0 V f = 1 MHz			5,35	nF
C _{oes}				0,28	nF
C _{res}				0,24	nF
Q _G	V _{GE} = -8 ... +15V			600	nC
t _{d(on)}	R _{Gon} = 2 Ω	V _{CC} = 600V I _{Cnom} = 75A T _J = 125 °C		225	ns
t _r				40	ns
E _{on}			10	mJ	
t _{d(off)}	R _{Goff} = 2 Ω			470	ns
t _f				85	ns
E _{off}			11	mJ	
R _{th(j-c)}	per IGBT			0,27	K/W



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- High short circuit capability

Typical Applications

- AC inverter drives
- UPS
- Electronic Welding

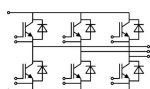
Remarks

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

Characteristics					
Symbol	Conditions	min.	typ.	max.	Units
Inverse Diode					
$V_F = V_{EC}$	$I_{Fnom} = 75 \text{ A}; V_{GE} = 0 \text{ V}$				
	$T_j = 25^{\circ}\text{C}_{chiplev.}$		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	$T_j = 25^{\circ}\text{C}$		8	9,3	mΩ
	$T_j = 125^{\circ}\text{C}$		10,7	12	mΩ
I_{RRM}	$I_{Fnom} = 75 \text{ A}$		97		A
Q_{rr}	$di/dt = 2240 \text{ A}/\mu\text{s}$		20		μC
E_{rr}	$V_{GE} = -15 \text{ V}; V_{CC} = 600 \text{ V}$		9		mJ
$R_{th(j-c)D}$	per diode			0,46	K/W
Module					
L_{CE}			20		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		0,04		K/W
M_s	to heat sink (M5)		3	5	Nm
M_t	to terminals (M6)		2,5	5	Nm
w				350	g
Temperature sensor					
R_{100}	$T_c = 100^{\circ}\text{C}$ ($R_{25} = 5 \text{ k}\Omega$)		0,493±5%		kΩ
$B_{100/125}$	$R(T) = R_{100} \exp[B_{100/125}(1/T - 1/T_{100})]$ $T[\text{K}]$		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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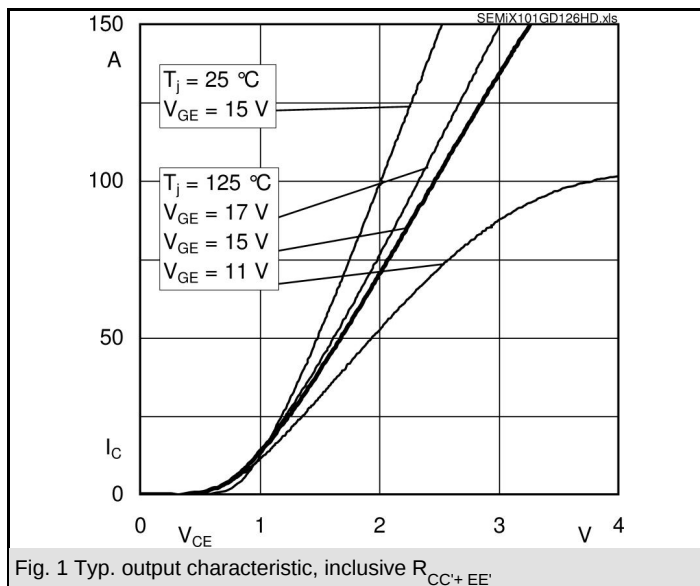


Fig. 1 Typ. output characteristic, inclusive $R_{CC'+EE'}$

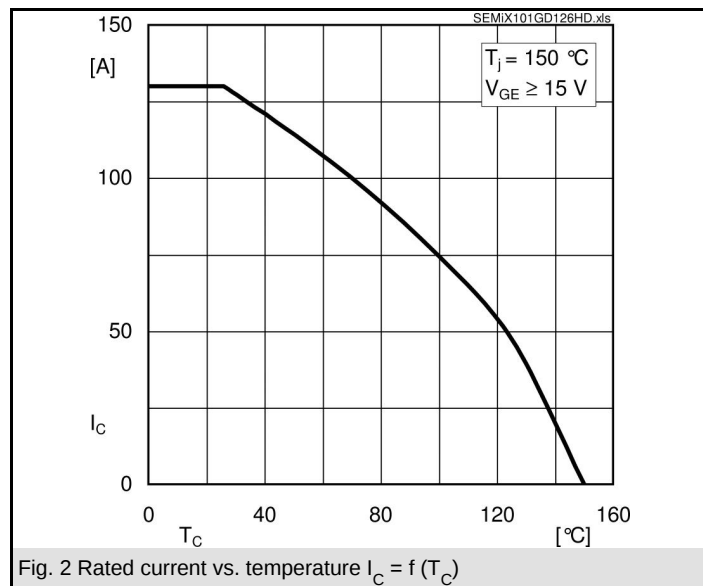


Fig. 2 Rated current vs. temperature $I_C = f(T_C)$

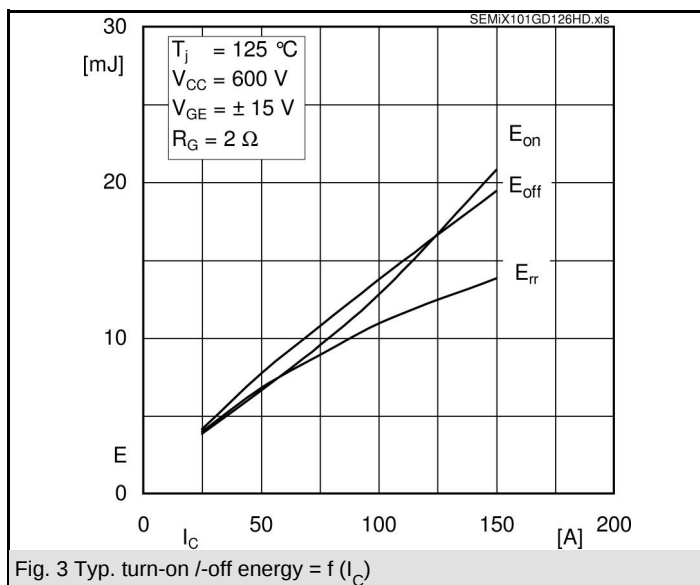


Fig. 3 Typ. turn-on /off energy = $f(I_C)$

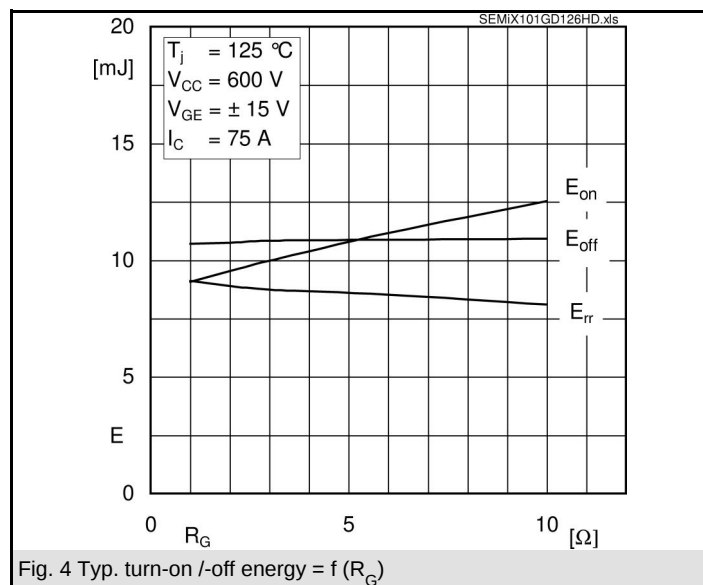


Fig. 4 Typ. turn-on /off energy = $f(R_G)$

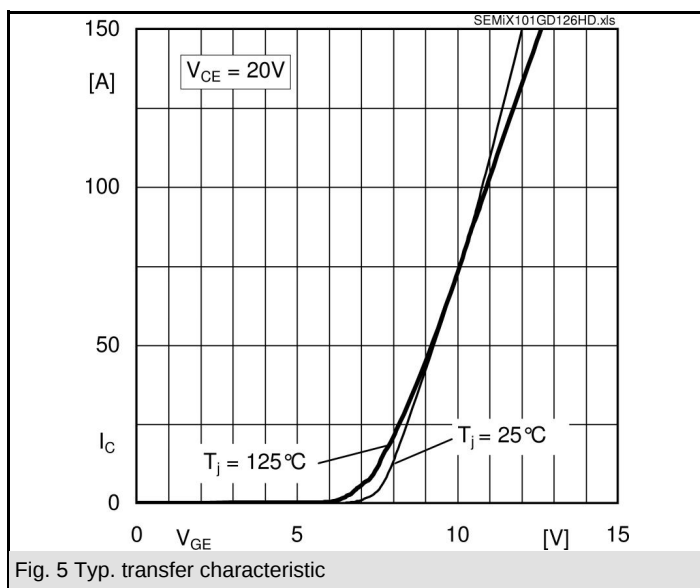


Fig. 5 Typ. transfer characteristic

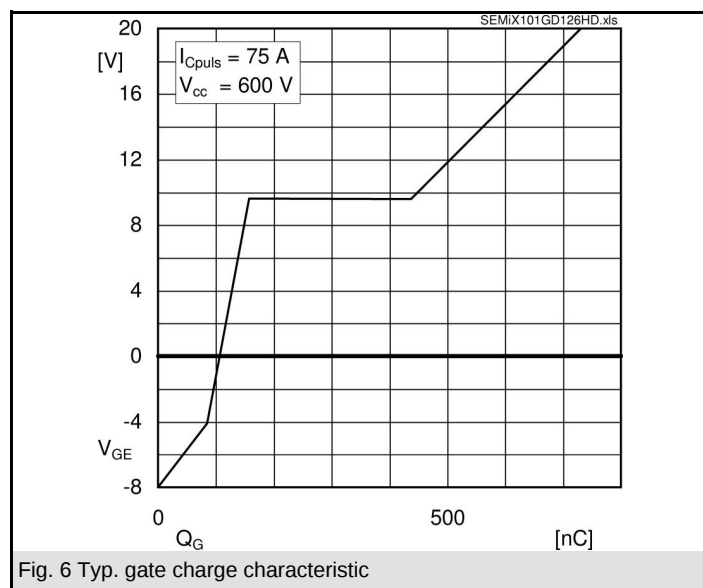
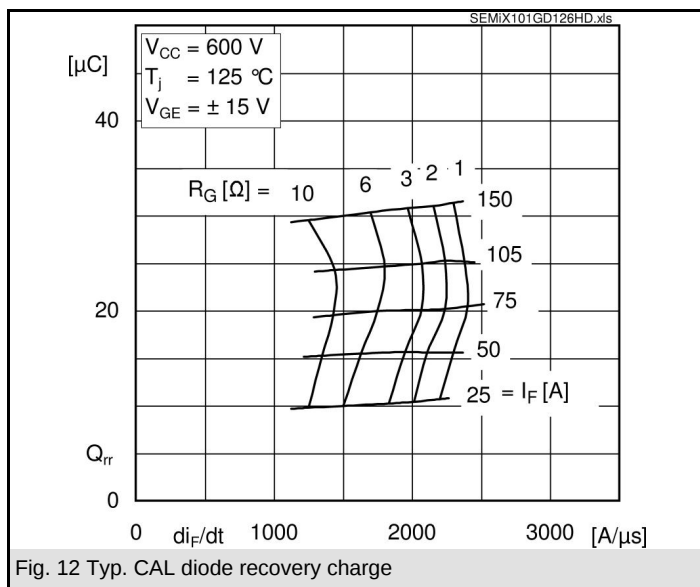
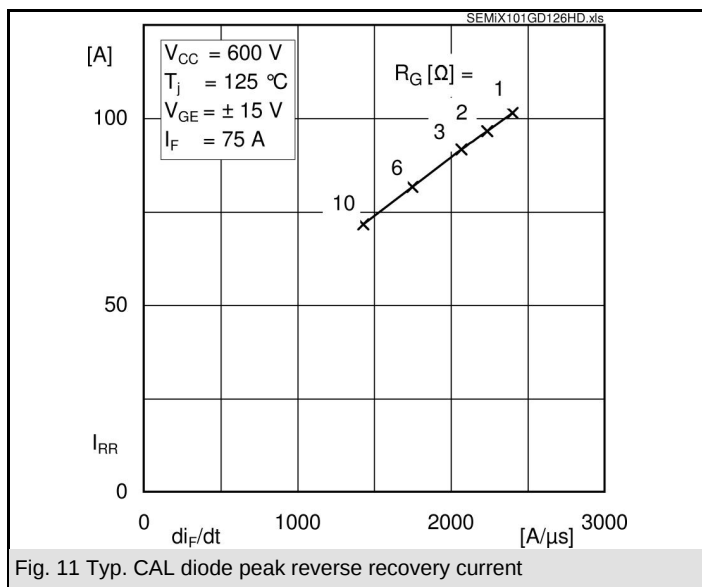
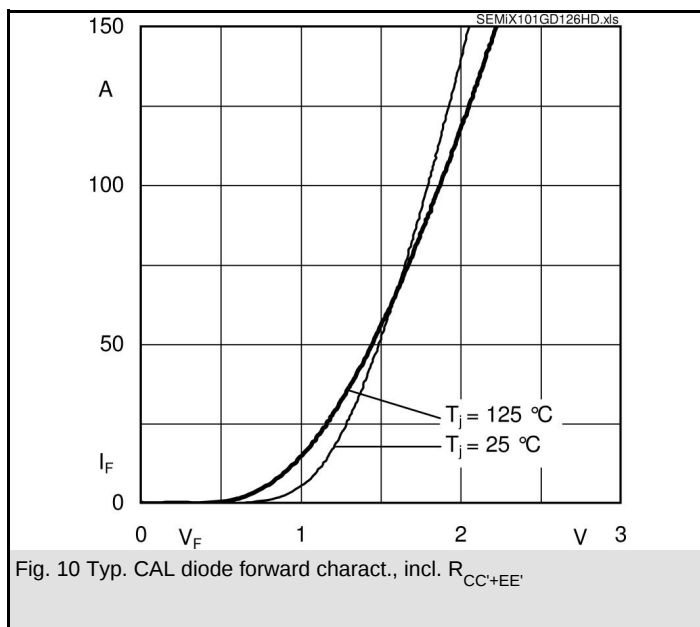
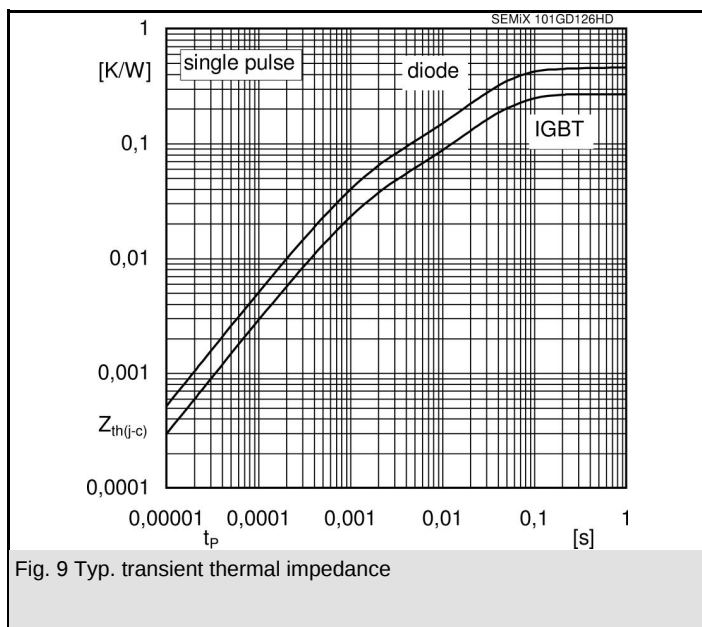
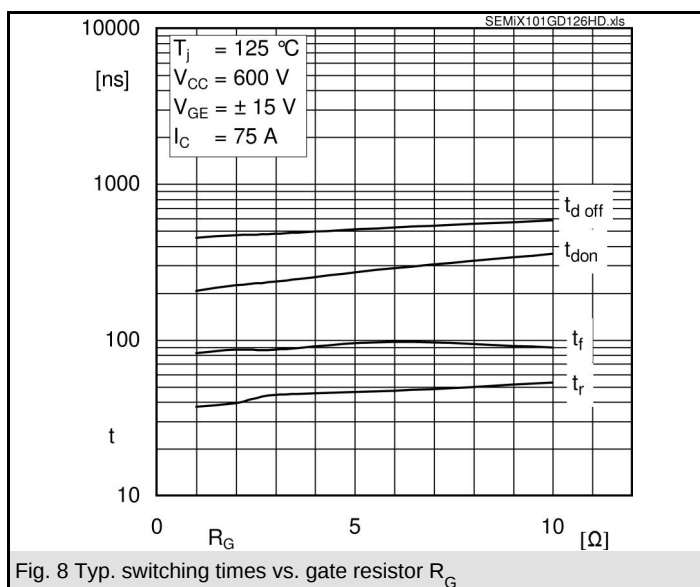
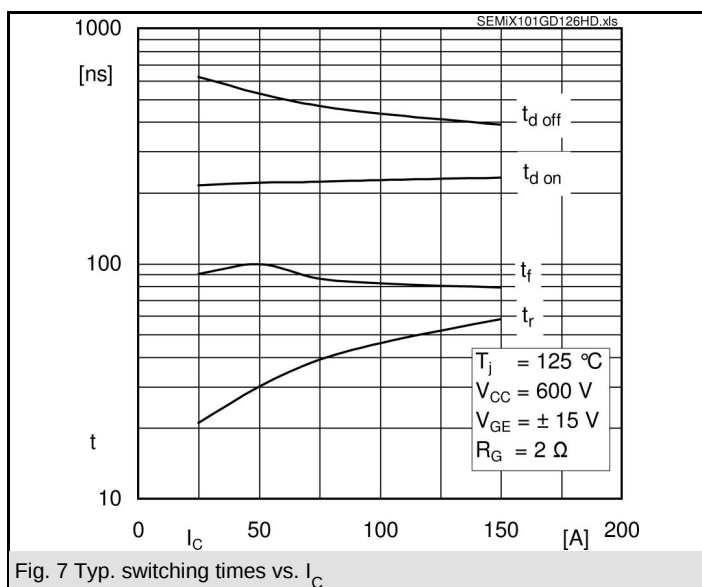
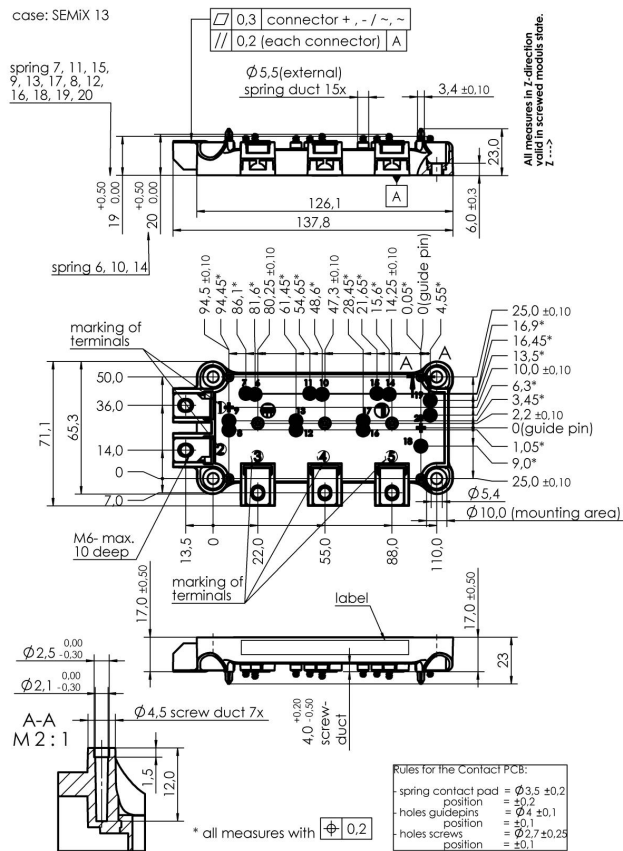


Fig. 6 Typ. gate charge characteristic



SEMiX 101GD126HDs



Case SEMiX 13s

