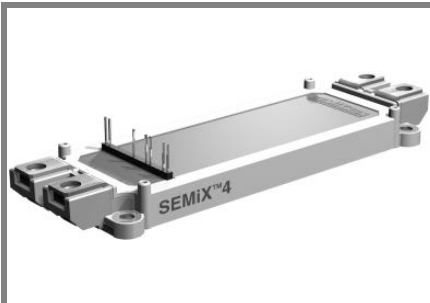


SEMiX 604GB126HD



SEMiX[®] 4

Trench IGBT Modules

SEMiX 604GB126HD

Preliminary Data

Features

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

Typical Applications

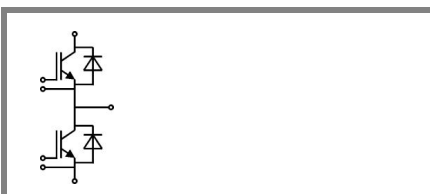
- AC inverter drives
- UPS
- Electronic Welding

Remarks

- Case temperatur limited to $T_C=125^\circ\text{C}$ max.
- Not for new design

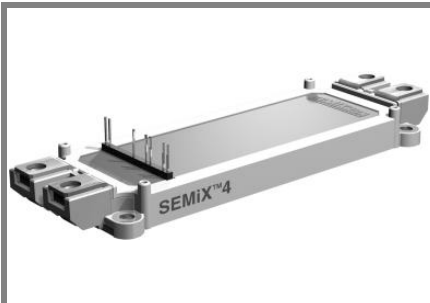
Absolute Maximum Ratings		$T_{case} = 25^\circ\text{C}$, unless otherwise specified		
Symbol	Conditions	Values		Units
IGBT				
V_{CES}	$T_j = 25^\circ\text{C}$	1200		V
I_C	$T_j = 150^\circ\text{C}$	$T_c = 25^\circ\text{C}$	595	A
		$T_c = 80^\circ\text{C}$	415	A
I_{CRM}	$I_{CRM}=2 \times I_{Cnom}$	800		A
V_{GES}		± 20		V
t_{psc}	$V_{CC} = 600\text{ V}; V_{GE} \leq 20\text{ V}; T_j = 125^\circ\text{C}$ $V_{CES} < 1200\text{ V}$	10		μs
Inverse Diode				
I_F	$T_j = 150^\circ\text{C}$	$T_c = 25^\circ\text{C}$	535	A
		$T_c = 80^\circ\text{C}$	370	A
I_{FRM}	$I_{FRM}=2 \times I_{Fnom}$	800		A
I_{FSM}	$t_p = 10\text{ ms}; \text{sin.}$	$T_j = 25^\circ\text{C}$	2500	A
Module				
$I_{t(RMS)}$		600		A
T_{vj}		- 40 ... + 150		$^\circ\text{C}$
T_{stg}		- 40 ... + 125		$^\circ\text{C}$
V_{isol}	AC, 1 min.	4000		V

Characteristics		$T_{case} = 25^\circ\text{C}$, unless otherwise specified			
Symbol	Conditions	min.	typ.	max.	Units
IGBT					
$V_{GE(th)}$	$V_{GE} = V_{CE}, I_C = 16\text{ mA}$	5	5,8	6,5	V
I_{CES}	$V_{GE} = 0\text{ V}, V_{CE} = V_{CES}$			0,3	mA
V_{CE0}		$T_j = 25^\circ\text{C}$	1	1,2	V
		$T_j = 125^\circ\text{C}$	0,9	1,1	V
r_{CE}	$V_{GE} = 15\text{ V}$	$T_j = 25^\circ\text{C}$	1,8	2,4	m Ω
		$T_j = 125^\circ\text{C}$	2,8	3,4	m Ω
$V_{CE(sat)}$	$I_{Cnom} = 400\text{ A}, V_{GE} = 15\text{ V}$	$T_j = 25^\circ\text{C}_{chiplev.}$	1,7	2,15	V
		$T_j = 125^\circ\text{C}_{chiplev.}$	2	2,45	V
C_{ies}	$V_{CE} = 25, V_{GE} = 0\text{ V}$	$f = 1\text{ MHz}$	28,8		nF
C_{oes}			1,51		nF
C_{res}			1,31		nF
Q_G	$V_{GE} = -8 \dots +15\text{V}$		3200		nC
$t_{d(on)}$	$R_{Gon} = 2,2\ \Omega$	$V_{CC} = 600\text{V}$ $I_{Cnom} = 400\text{A}$	330		ns
t_r			70		ns
E_{on}	$R_{Goff} = 2,2\ \Omega$	$T_j = 125^\circ\text{C}$	36		mJ
$t_{d(off)}$			630		ns
t_f			130		ns
E_{off}			60		mJ
$R_{th(j-c)}$	per IGBT		0,065		K/W



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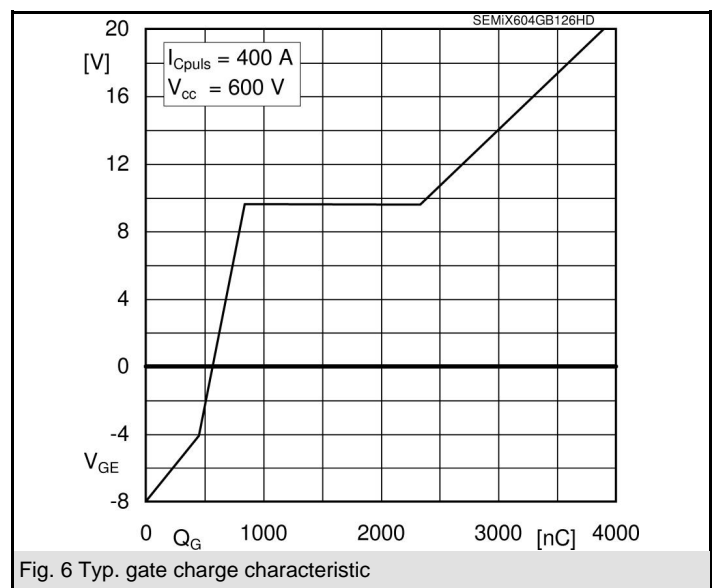
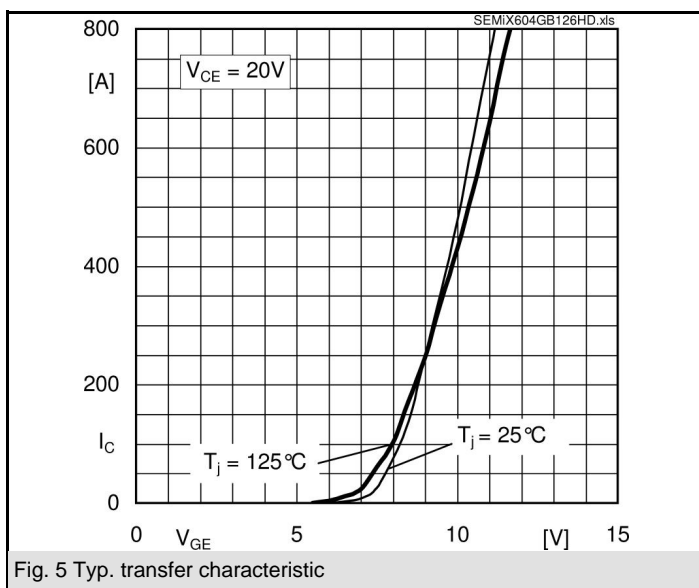
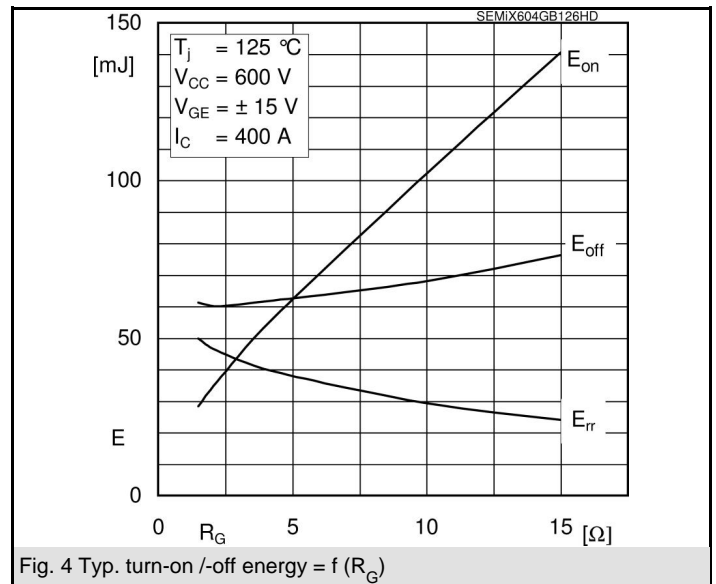
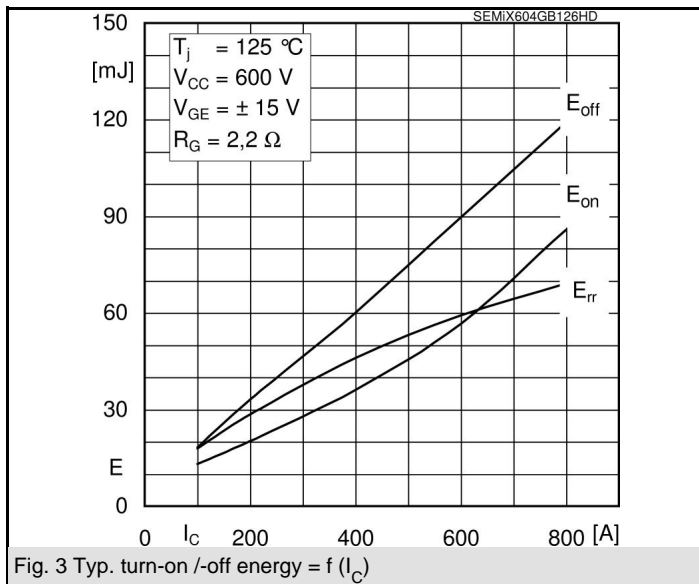
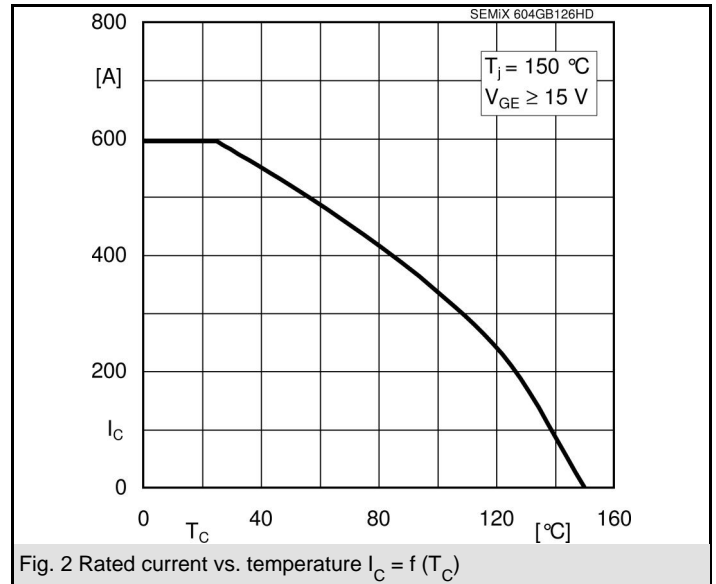
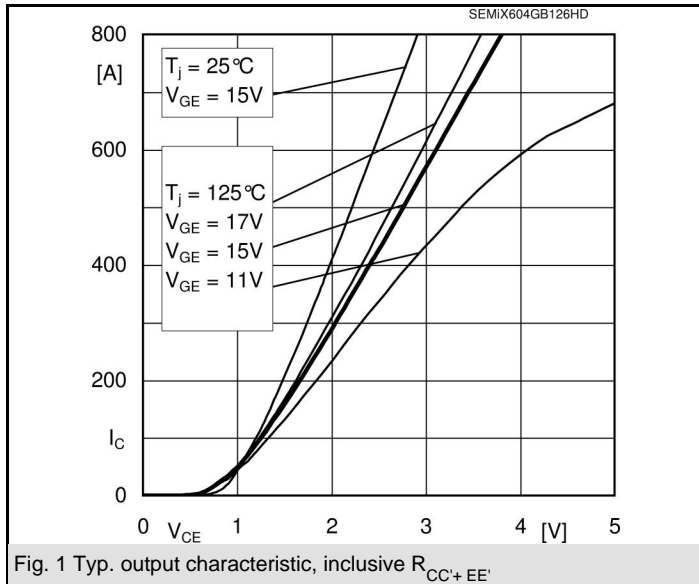


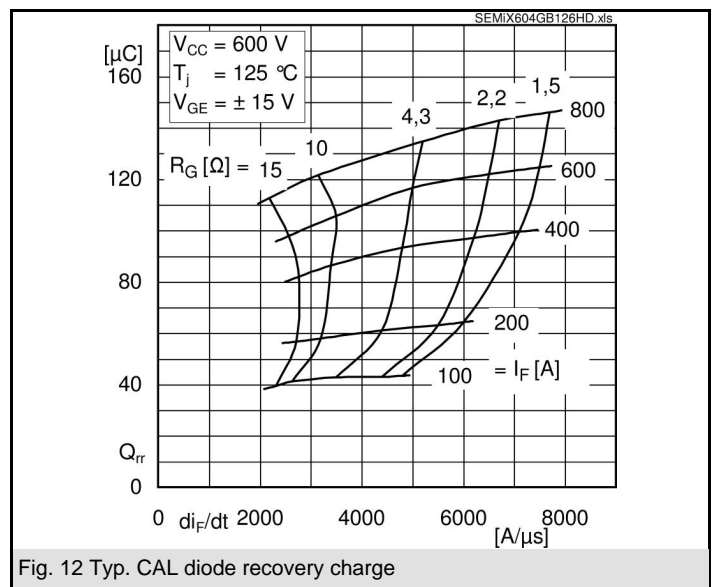
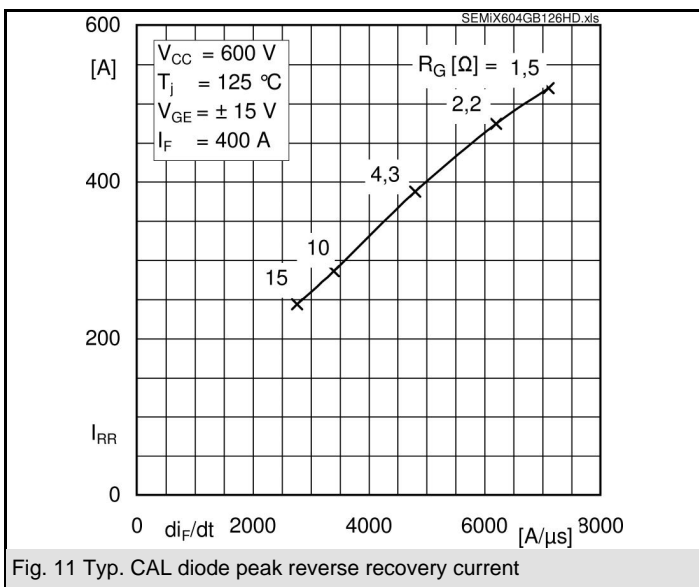
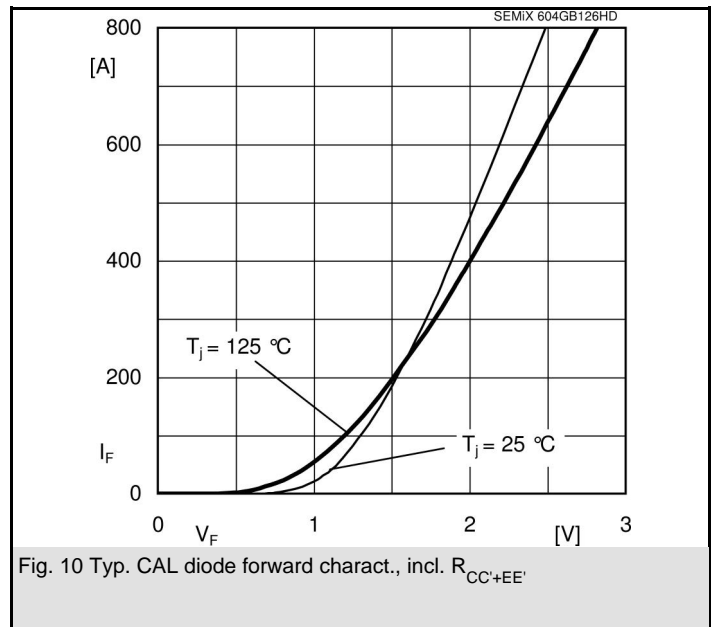
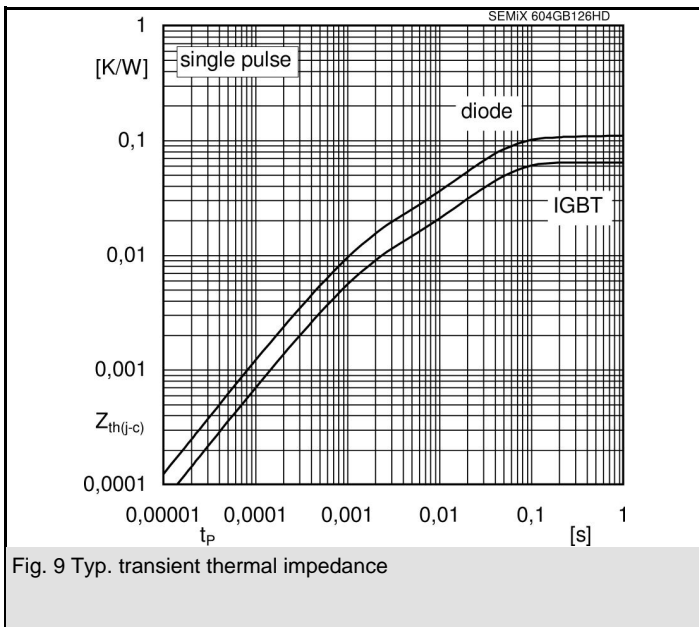
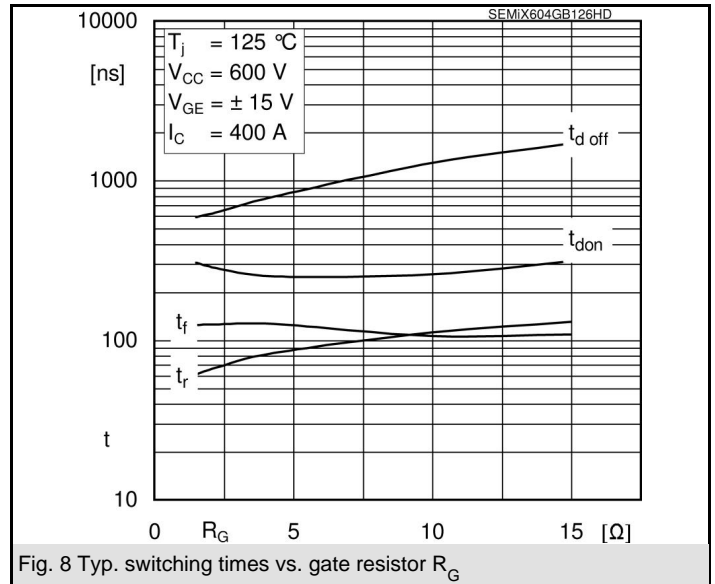
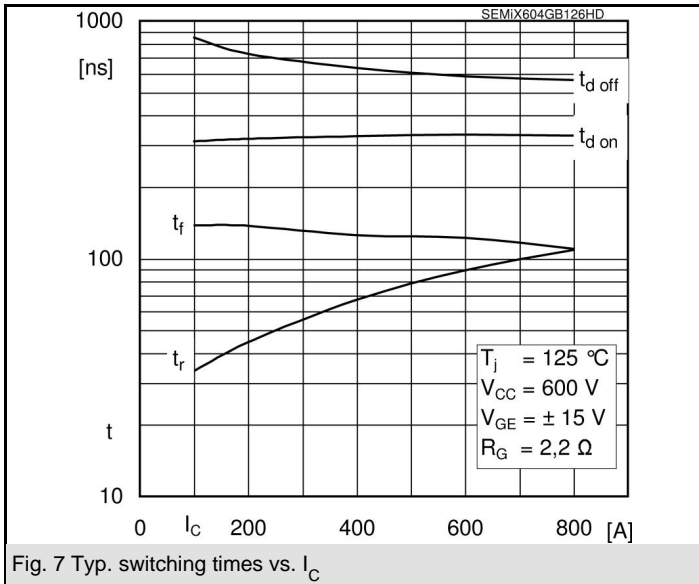
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Characteristics				min.	typ.	max.	Units
Symbol	Conditions						
Inverse Diode							
$V_F = V_{EC}$	$I_{Fnom} = 400 \text{ A}; V_{GE} = 0 \text{ V}$	$T_j = 25^\circ\text{C}_{chiplev.}$		1,6	1,8		V
		$T_j = 125^\circ\text{C}_{chiplev.}$		1,6	1,8		V
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		$T_j = 25^\circ\text{C}$		1,5	1,8		mΩ
		$T_j = 125^\circ\text{C}$		2	2,3		mΩ
I_{RRM}	$I_{Fnom} = 400 \text{ A}$	$T_j = 125^\circ\text{C}$		475			A
Q_{rr}	$di/dt = 6200 \text{ A}/\mu\text{s}$			100			μC
E_{rr}	$V_{GE} = -15 \text{ V}; V_{CC} = 600 \text{ V}$			46			mJ
$R_{th(j-c)D}$	per diode				0,11		K/W
Module							
L_{CE}				22			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			0,03			K/W
M_s	to heat sink (M5)			3	5		Nm
M_t	to terminals (M6)			2,5	5		Nm
w					400		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

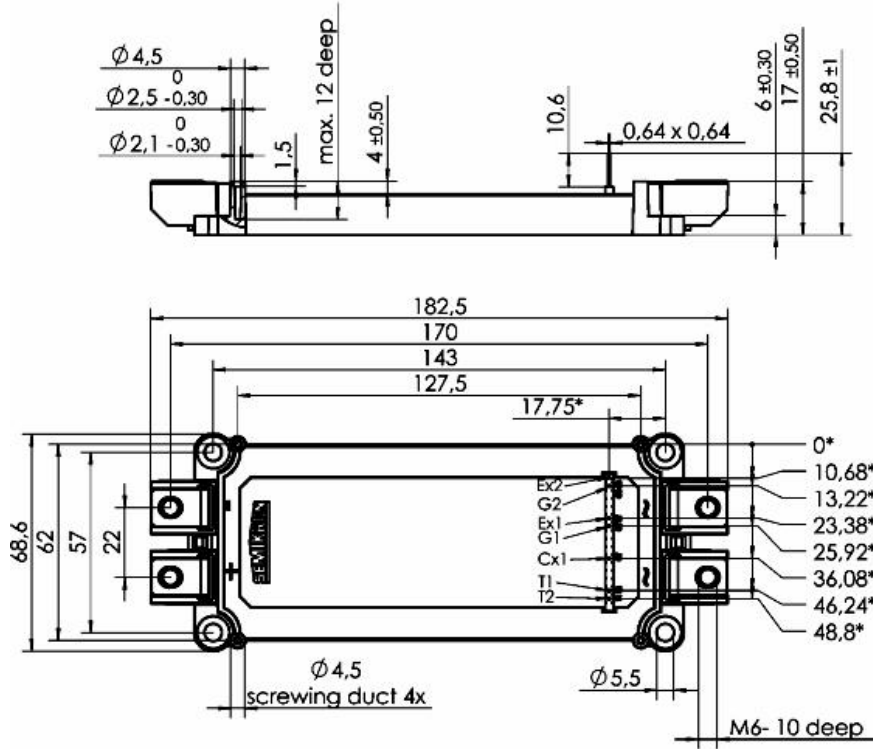
This is an electrostatic discharge sensitive device (ESDS), international standard IEC 60747-1, Chapter IX.

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



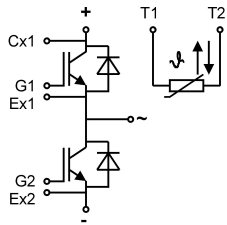


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*= all measures with $\pm 0,5$

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Pinout

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