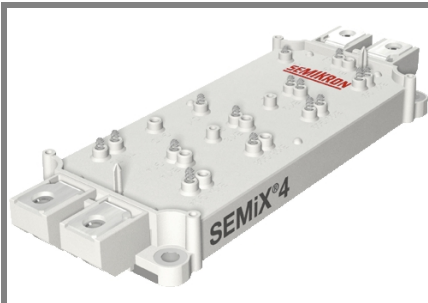


SEMiX 604GB176HDs



SEMiX® 4s

Trench IGBT Modules

SEMiX 604GB176HDs

Preliminary Data

Features

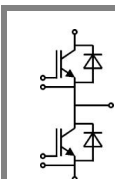
- Homogeneous Si
- Trench = Trenchgate technology
- $V_{CE(sat)}$ with positive temperature coefficient
- High short circuit capability

Typical Applications

- AC inverter drives
- UPS
- Electronic welders

Remarks

- short circuit capability is tested @ $V_{CC}=1000V$ (all other static parameters are tested @ $V_{CC}=1200V$)

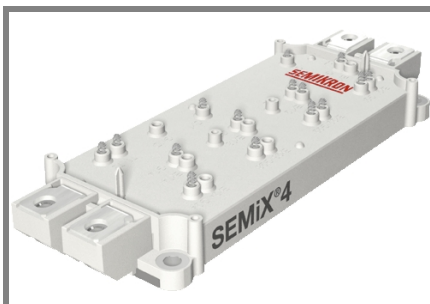


GB

Absolute Maximum Ratings		$T_c = 25\text{ }^\circ\text{C}$, unless otherwise specified			
Symbol	Conditions	Values			Units
IGBT					
V_{CES}	$T_j = 25\text{ }^\circ\text{C}$	1700			V
I_C	$T_j = 150\text{ }^\circ\text{C}$	$T_c = 25\text{ }^\circ\text{C}$	565		A
		$T_c = 80\text{ }^\circ\text{C}$	400		A
I_{CRM}	$I_{CRM}=2 \times I_{Cnom}$	800			A
V_{GES}		± 20			V
t_{psc}	$V_{CC} = 1200\text{ V}; V_{GE} \leq 20\text{ V}; T_j = 125\text{ }^\circ\text{C}$ $V_{CES} < 1700\text{ V}$	10			μs
Inverse Diode					
I_F	$T_j = 150\text{ }^\circ\text{C}$	$T_c = 25\text{ }^\circ\text{C}$	735		A
		$T_c = 80\text{ }^\circ\text{C}$	495		A
I_{FRM}	$I_{FRM}=2 \times I_{Fnom}$	800			A
I_{FSM}	$t_p = 10\text{ ms}; \sin.$	$T_j = 25\text{ }^\circ\text{C}$	2700		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		$T_c = 25\text{ }^\circ\text{C}$, unless otherwise specified			
Symbol	Conditions	min.	typ.	max.	Units
IGBT					
$V_{GE(th)}$	$V_{GE} = V_{CE}, I_C = 16\text{ mA}$	5,2	5,8	6,4	V
I_{CES}	$V_{GE} = 0\text{ V}, V_{CE} = V_{CES}$	$T_j = 25\text{ }^\circ\text{C}$	0,45		mA
		$T_j = 125\text{ }^\circ\text{C}$			mA
V_{CE0}		$T_j = 25\text{ }^\circ\text{C}$	1	1,2	V
		$T_j = 125\text{ }^\circ\text{C}$	0,9	1,1	V
r_{CE}	$V_{GE} = 0\text{ V}$	$T_j = 25\text{ }^\circ\text{C}$	2,5	3,1	$\text{m}\Omega$
		$T_j = 125\text{ }^\circ\text{C}$	3,9	4,5	$\text{m}\Omega$
$V_{CE(sat)}$	$I_{Cnom} = 400\text{ A}, V_{GE} = 15\text{ V}$	$T_j = 25\text{ }^\circ\text{C}_{chiplev.}$	2	2,45	V
		$T_j = 125\text{ }^\circ\text{C}_{chiplev.}$	2,45	2,9	V
C_{ies}			35,3		nF
C_{oes}	$V_{CE} = 25, V_{GE} = 0\text{ V}$	$f = 1\text{ MHz}$	1,5		nF
C_{res}			1,2		nF
Q_G	$V_{GE} = -8\text{ V} \dots +15\text{ V}$		3750		nC
$t_{d(on)}$	$R_{Gon} = 3\text{ }\Omega$	$V_{CC} = 1200\text{ V}$ $I_{Cnom} = 400\text{ A}$ $T_j = 125\text{ }^\circ\text{C}$	360		ns
t_r			65		ns
E_{on}			215		mJ
$t_{d(off)}$	$R_{Goff} = 3\text{ }\Omega$		900		ns
t_f			165		ns
E_{off}			165		mJ
$R_{th(j-c)}$	per IGBT			0,058	K/W

SEMiX 604GB176HDs



SEMiX® 4s

Trench IGBT Modules

SEMiX 604GB176HDs

Preliminary Data

Features

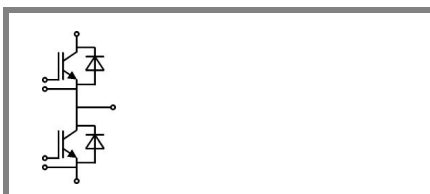
- Homogeneous Si
- Trench = Trenchgate technology
- $V_{CE(sat)}$ with positive temperature coefficient
- High short circuit capability

Typical Applications

- AC inverter drives
- UPS
- Electronic welders

Remarks

- short circuit capability is tested @ $V_{CC}=1000V$ (all other static parameters are tested @ $V_{CC}=1200V$)

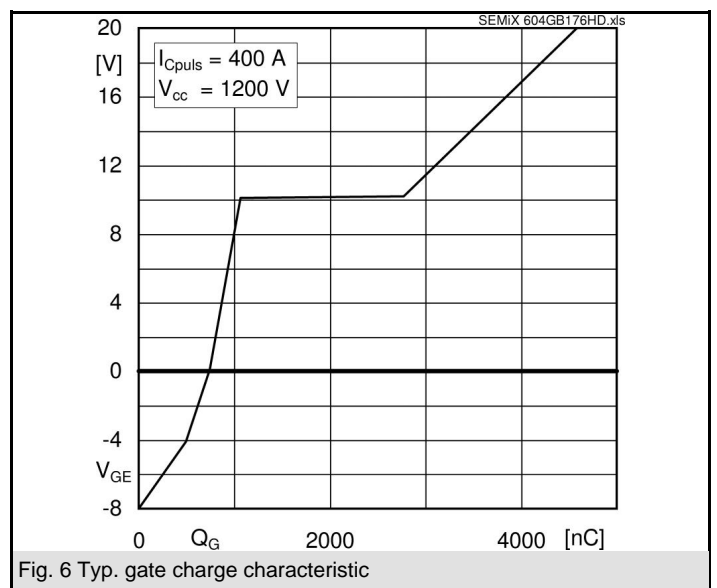
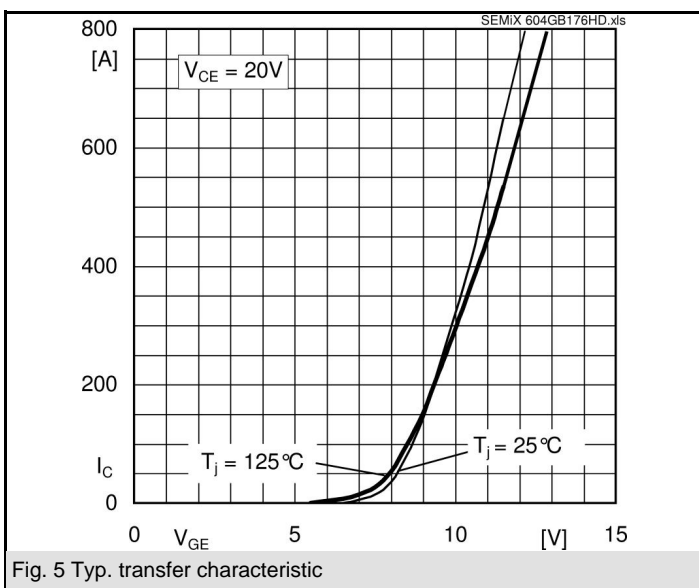
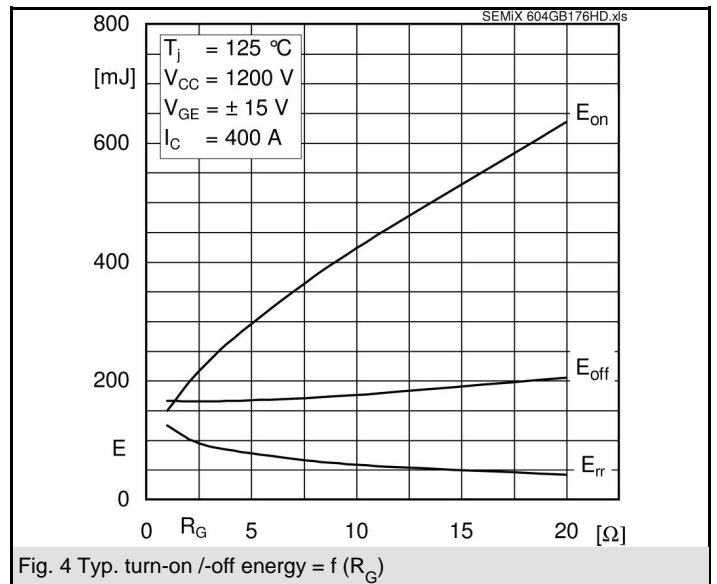
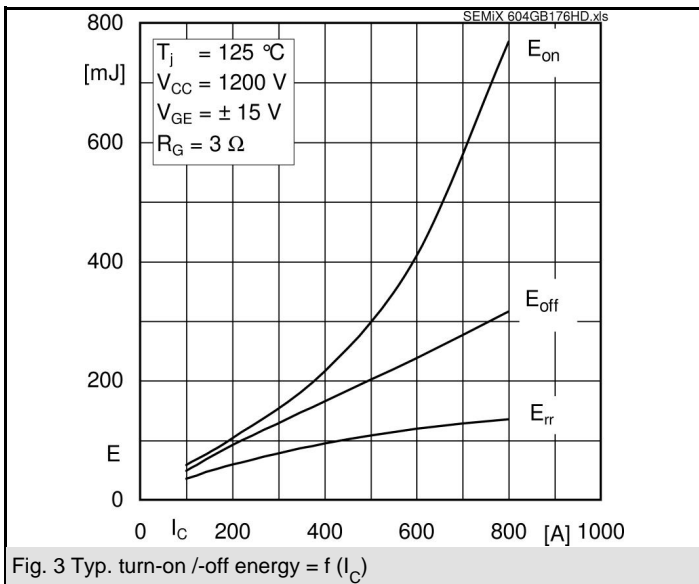
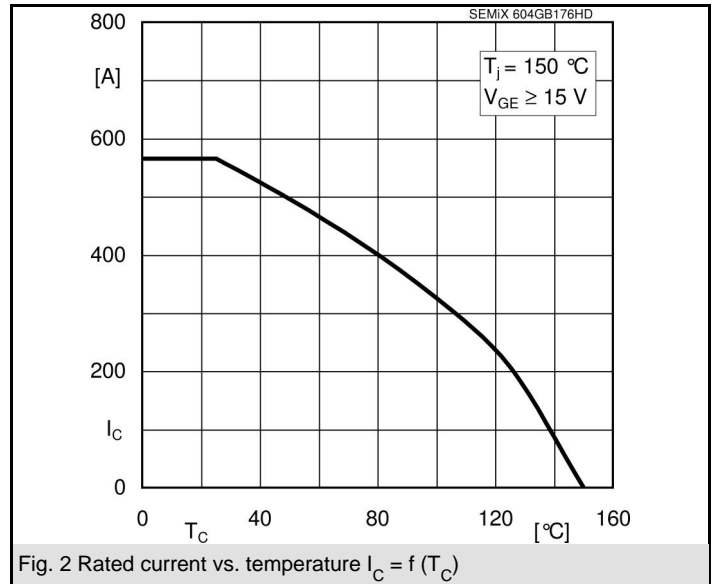
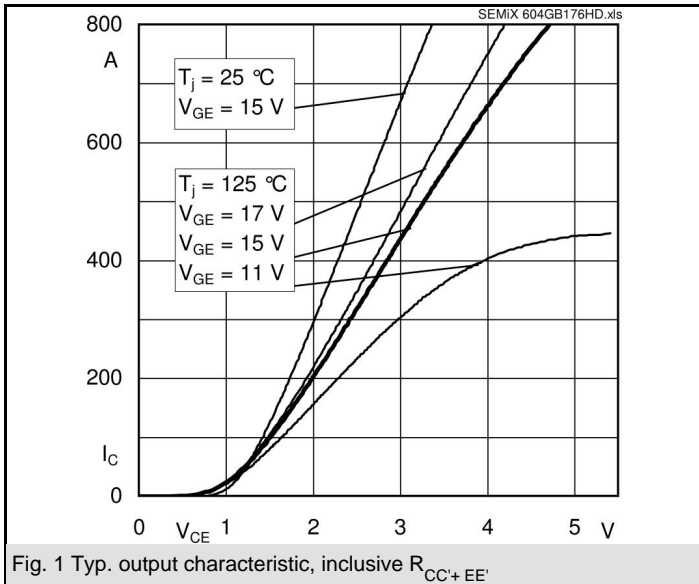


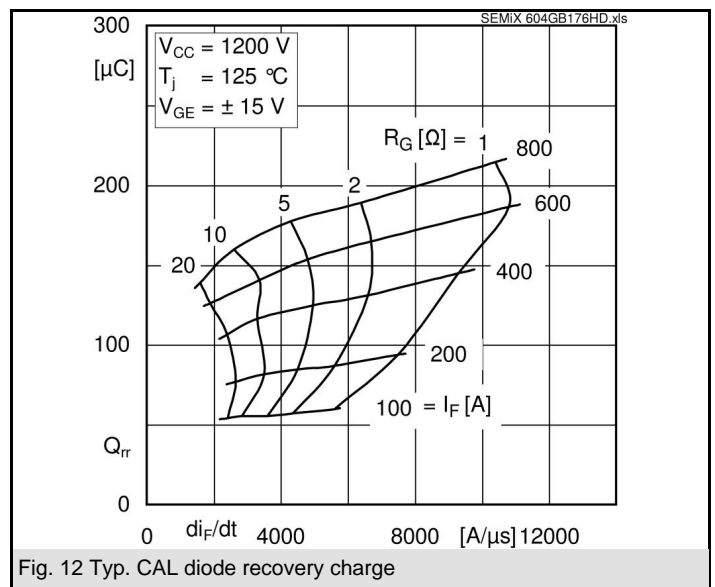
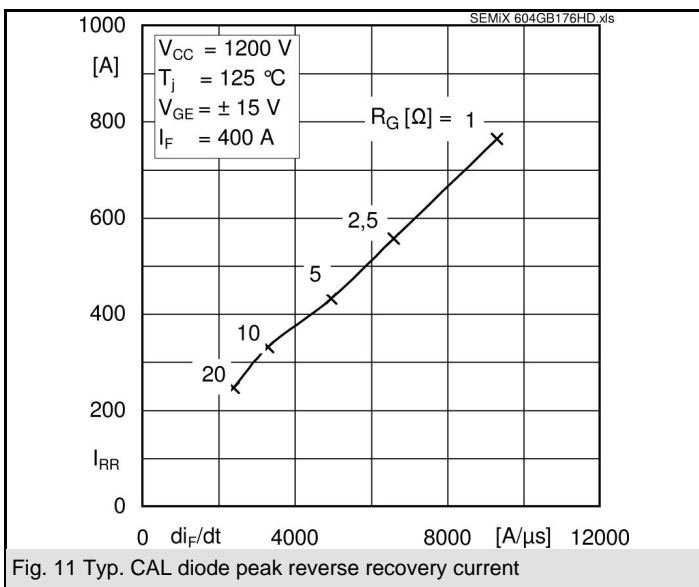
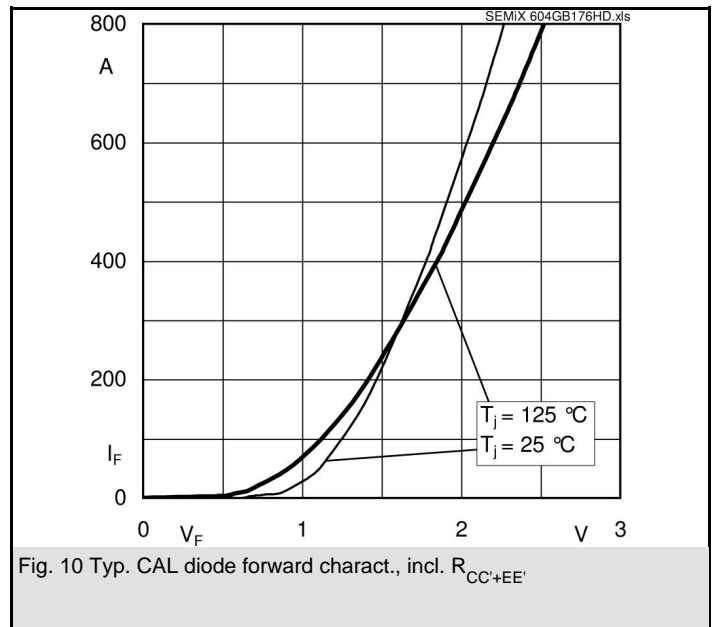
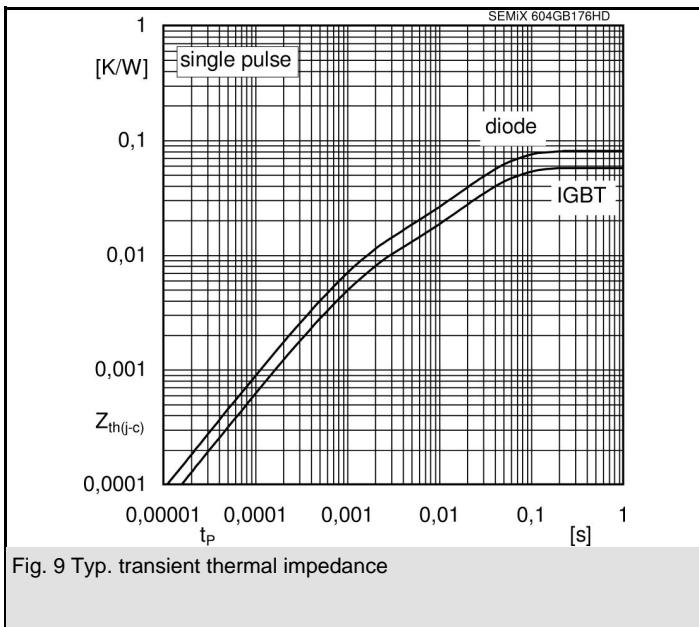
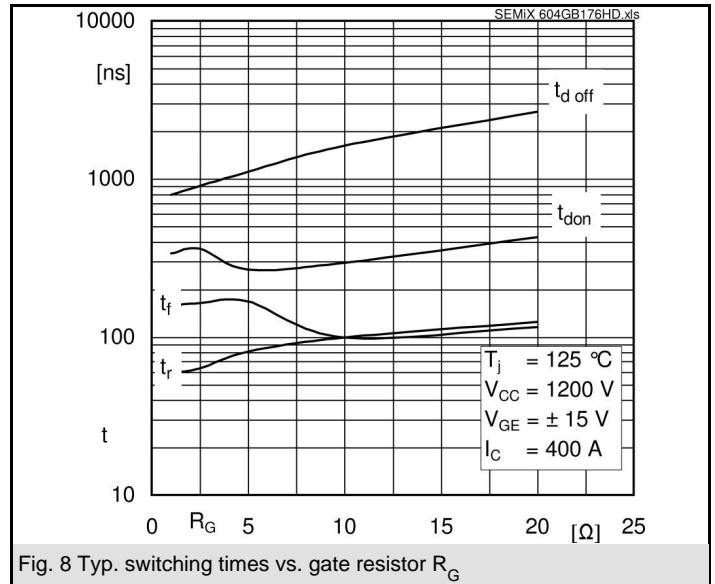
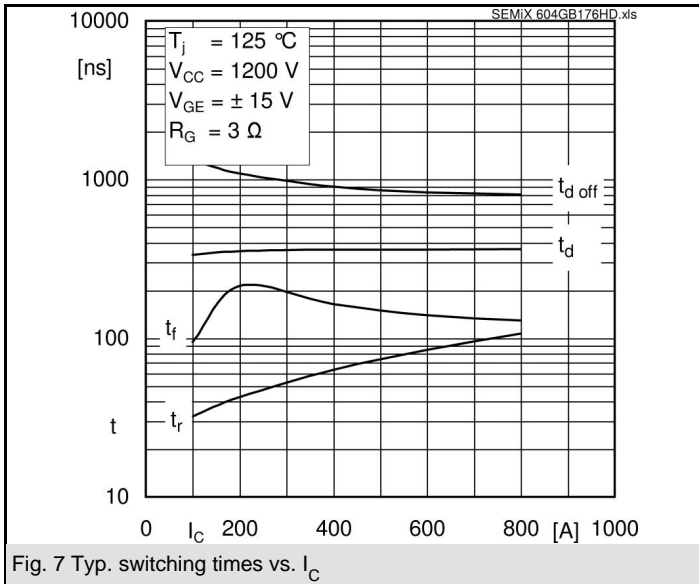
GB

Characteristics		min.	typ.	max.	Units
Inverse Diode					
$V_F = V_{EC}$	$I_{Fnom} = 400 A; V_{GE} = 0 V$		1,5	1,7	V
	$T_j = 25 ^\circ C_{chiplev.}$				
	$T_j = 125 ^\circ C_{chiplev.}$		1,45	1,65	V
V_{F0}			1,1	1,3	V
	$T_j = 25 ^\circ C$				
	$T_j = 125 ^\circ C$		0,9	1,1	V
r_F			1		mΩ
	$T_j = 25 ^\circ C$				
	$T_j = 125 ^\circ C$		1,3		mΩ
I_{RRM}	$I_{Fnom} = 400 A$		560		A
Q_{rr}	$di/dt = 6600 A/\mu s$		131		μC
E_{rr}	$V_{GE} = -15 V; V_{CC} = 1200 V$		59		mJ
$R_{th(j-c)D}$	per diode			0,081	K/W
Module					
L_{CE}			22		nH
$R_{CC'+EE'}$	res., terminal-chip	$T_{case} = 25 ^\circ C$	0,7		mΩ
		$T_{case} = 125 ^\circ C$	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}	$T_c = 100 ^\circ C (R_{25} = 5 k\Omega)$		0,493±5%		kΩ
$B_{100/125}$	$R(T) = R_{100} \exp[B_{100/125} (1/T - 1/T_{100})]$; $T[K]; B$		3550±2%		K

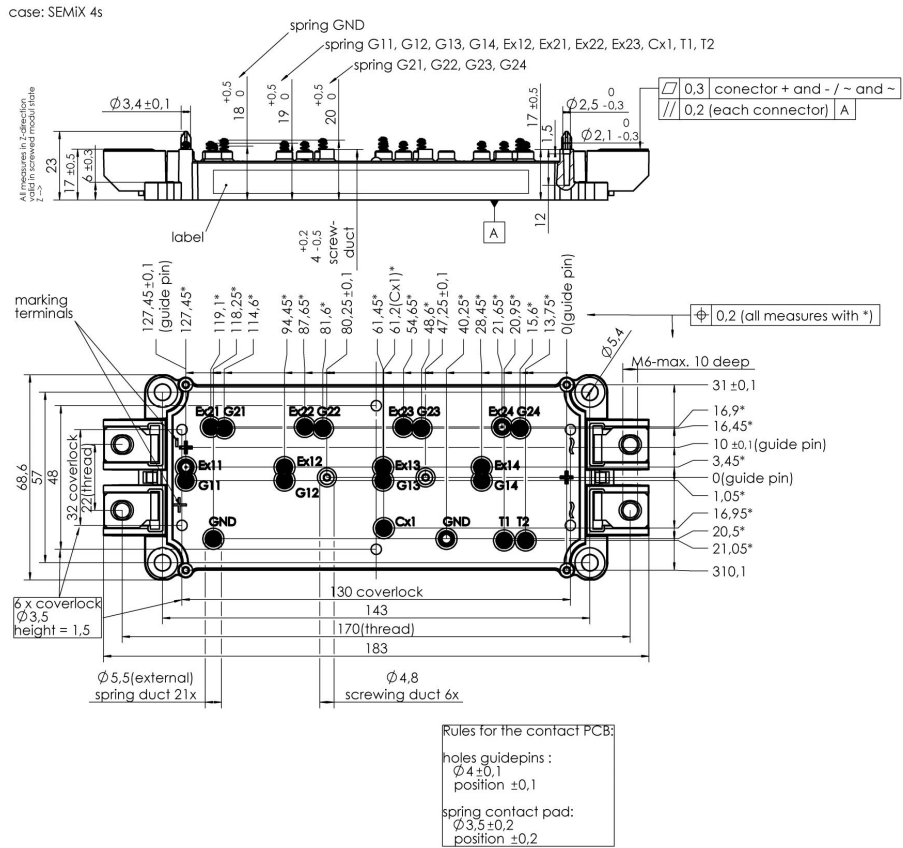
This is an electrostatic discharge sensitive device (ESDS), international standard IEC 60747-1, Chapter IX.

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





SEMiX 604GB176HDs



Case SEMiX 4s

