

# SEMiX 302GB126HDs



SEMiX<sup>®</sup> 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

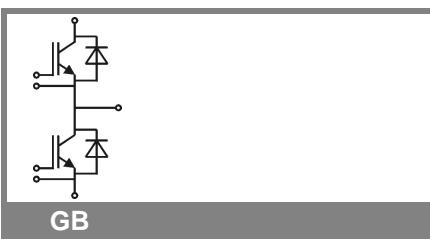
- AC inverter drives
- UPS
- Electronic Welding

#### Remarks

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

Absolute Maximum Ratings		$T_{case} = 25^\circ\text{C}$ , unless otherwise specified		
Symbol	Conditions	Values	Units	
<b>IGBT</b>				
$V_{CES}$	$T_j = 25^\circ\text{C}$	1200	V	
$I_C$	$T_j = 150^\circ\text{C}$	$T_c = 25^\circ\text{C}$	300	A
		$T_c = 80^\circ\text{C}$	210	A
$I_{CRM}$	$I_{CRM} = 2 \times I_{Cnom}$ , $t_p = 1\text{ ms}$	400	A	
$V_{GES}$		$\pm 20$	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	$\mu\text{s}$	
<b>Inverse Diode</b>				
$I_F$	$T_j = 150^\circ\text{C}$	$T_c = 25^\circ\text{C}$	250	A
		$T_c = 80^\circ\text{C}$	170	A
$I_{FRM}$	$I_{FRM} = 2 \times I_{Fnom}$ , $t_p = 1\text{ ms}$	400	A	
$I_{FSM}$	$t_p = 10\text{ ms}$ ; sin.	$T_j = 25^\circ\text{C}$	1300	A
<b>Module</b>				
$I_{t(RMS)}$		600	A	
$T_{vj}$		- 40 ... + 150	$^\circ\text{C}$	
$T_{stg}$	$T_{OPERATION} \leq T_{stg}$	- 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
<b>IGBT</b>					
$V_{GE(th)}$	$V_{GE} = V_{CE}$ , $I_C = 6,4\text{ mA}$	5	5,8	6,5	V
$I_{CES}$	$V_{GE} = 0\text{ V}$ , $V_{CE} = V_{CES}$			1,3	mA
$V_{CE0}$		$T_j = 25^\circ\text{C}$	1	1,2	V
		$T_j = 125^\circ\text{C}$	0,9	1,1	V
$r_{CE}$	$V_{GE} = 15\text{ V}$	$T_j = 25^\circ\text{C}$	3,5	4,8	m $\Omega$
		$T_j = 125^\circ\text{C}$	5,5	6,8	m $\Omega$
$V_{CE(sat)}$	$I_{Cnom} = 200\text{ A}$ , $V_{GE} = 15\text{ V}$	$T_j = 25^\circ\text{C}_{chiplev.}$	1,7	2,15	V
		$T_j = 125^\circ\text{C}_{chiplev.}$	2	2,45	V
$C_{ies}$	$V_{CE} = 25$ , $V_{GE} = 0\text{ V}$	$f = 1\text{ MHz}$	14,4		nF
$C_{oes}$			0,8		nF
$C_{res}$			0,7		nF
$Q_G$	$V_{GE} = -8 \dots +15\text{V}$		1400		nC
$t_{d(on)}$	$R_{Gon} = 2,8\ \Omega$	$V_{CC} = 600\text{V}$ $I_{Cnom} = 200\text{A}$	320		ns
$t_r$			50		ns
$E_{on}$	$R_{Goff} = 2,8\ \Omega$	$T_j = 125^\circ\text{C}$	30		mJ
$t_{d(off)}$			600		ns
$t_f$			100		ns
$E_{off}$			26		mJ
$R_{th(j-c)}$	per IGBT			0,125	K/W



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#### Features

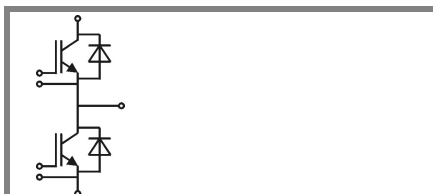
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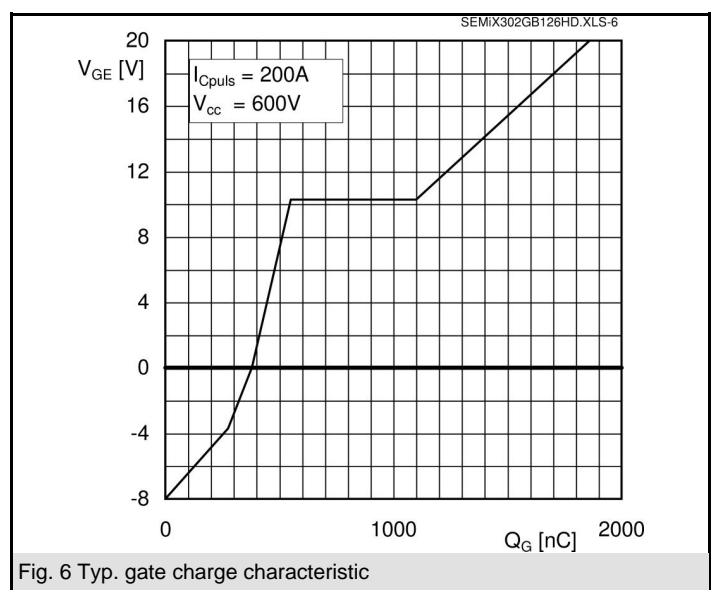
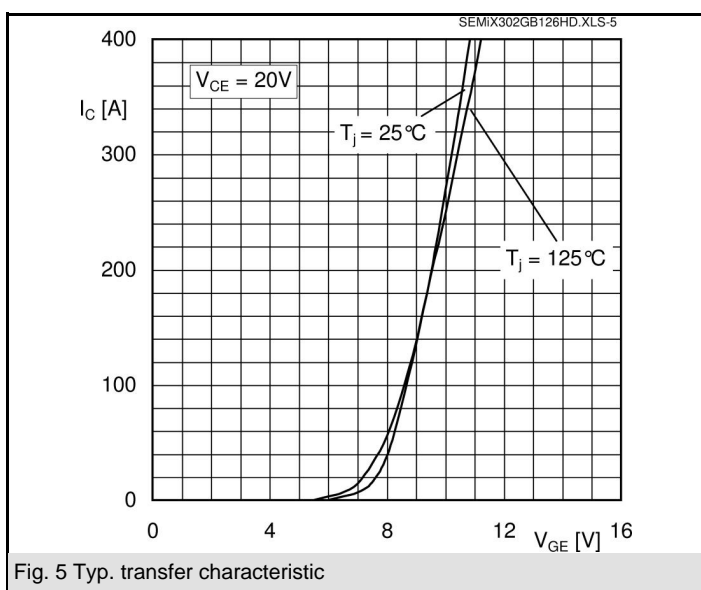
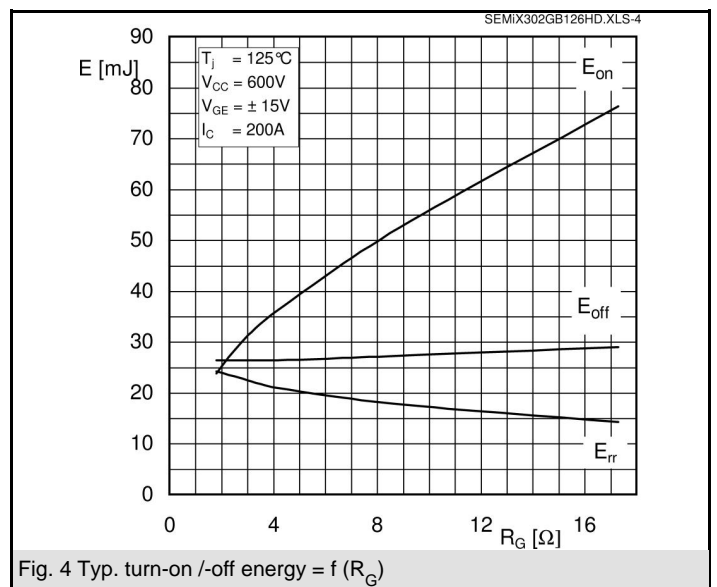
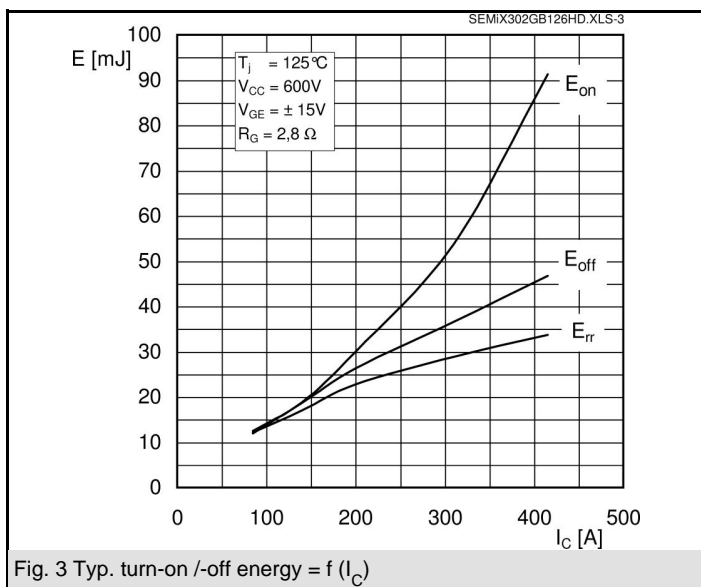
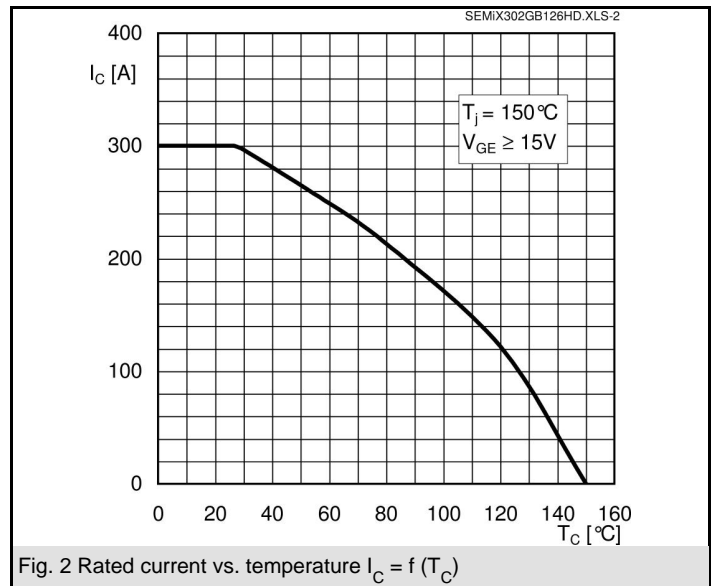
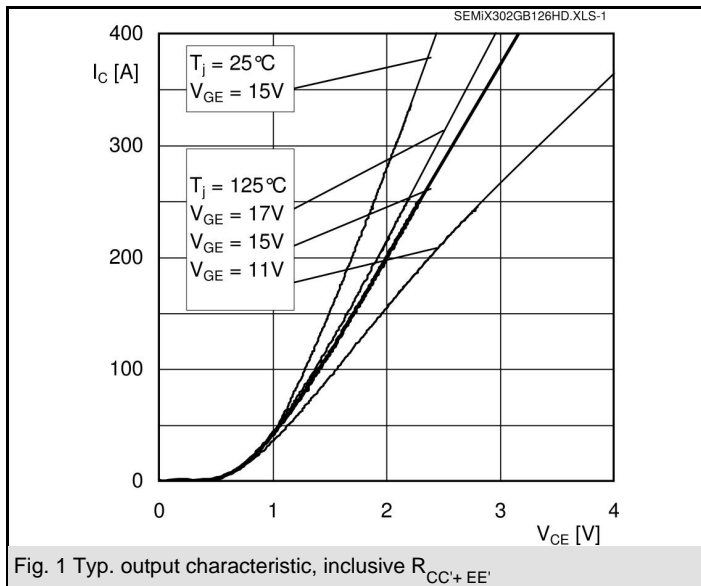


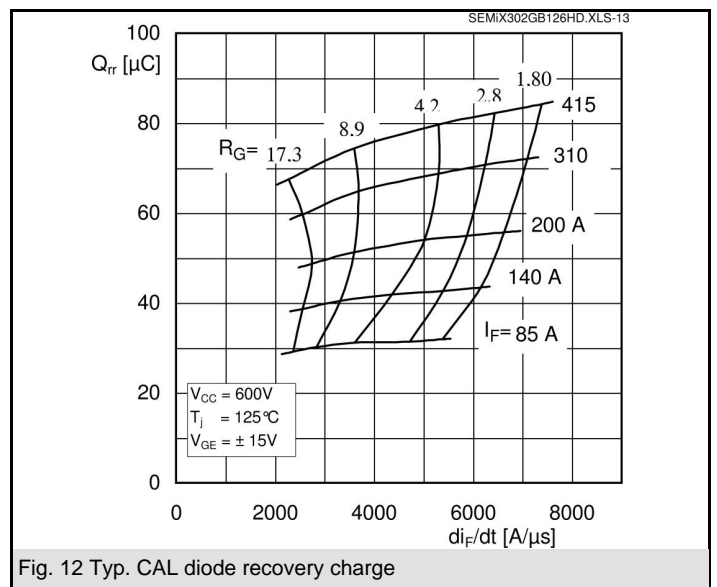
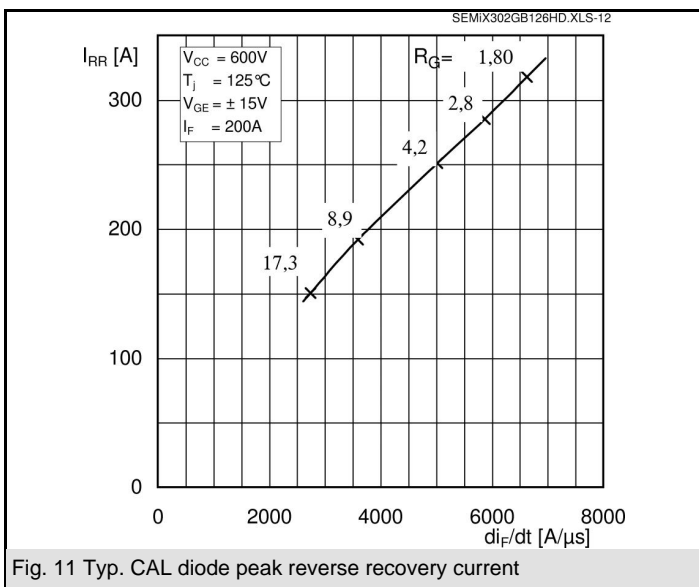
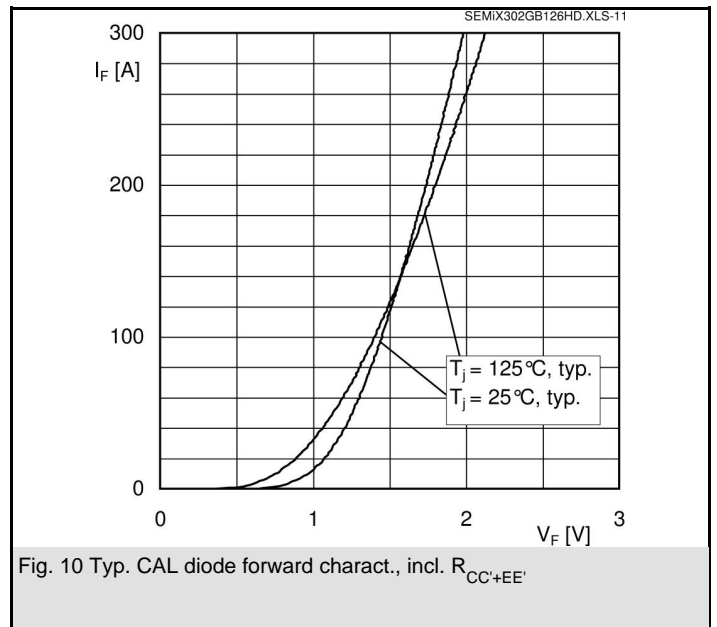
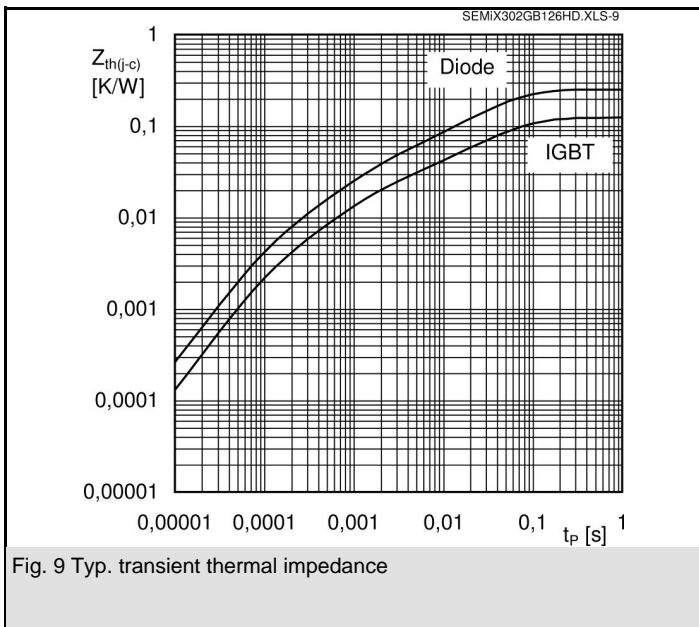
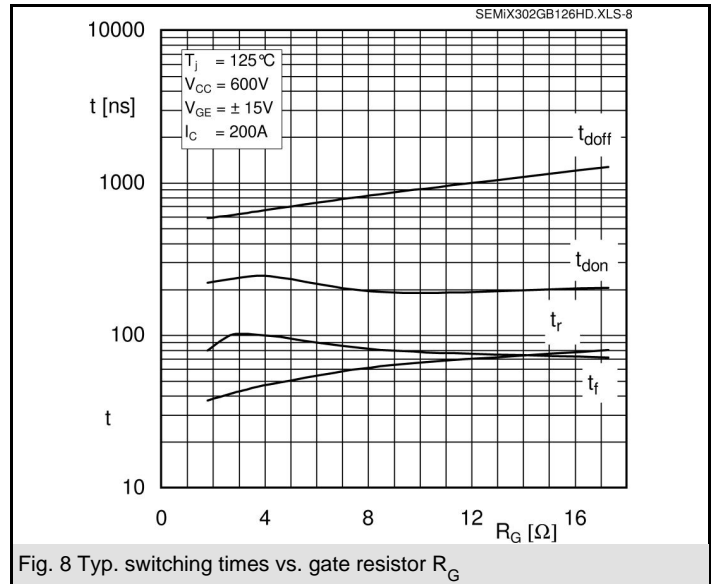
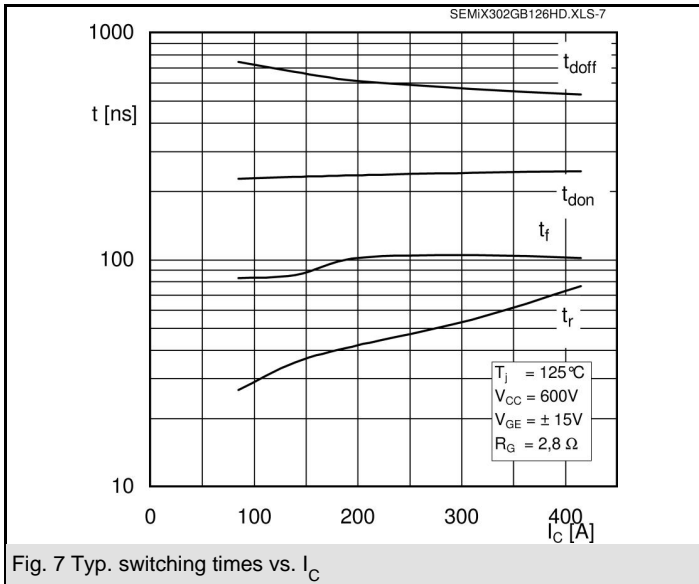
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Characteristics		min.	typ.	max.	Units
<b>Symbol</b>	<b>Conditions</b>				
<b>Inverse Diode</b>					
$V_F = V_{EC}$	$I_{Fnom} = 200 \text{ A}; V_{GE} = 0 \text{ V}$		1,6	1,8	V
					$T_j = 25^\circ\text{C}$
			1,6	1,8	$T_j = 125^\circ\text{C}$
$V_{F0}$			1	1,1	V
					$T_j = 25^\circ\text{C}$
			0,8	0,9	$T_j = 125^\circ\text{C}$
$r_F$			3	3,5	$m\Omega$
					$T_j = 25^\circ\text{C}$
			4	4,5	$T_j = 125^\circ\text{C}$
$I_{RRM}$	$I_{Fnom} = 200 \text{ A}$		290		A
$Q_{rr}$	$di/dt = 5900 \text{ A}/\mu\text{s}$		55		$\mu\text{C}$
$E_{off}$	$V_{GE} = -15 \text{ V}; V_{CC} = 600 \text{ V}$		22		mJ
$R_{th(j-c)D}$	per diode			0,25	K/W
<b>Module</b>					
$L_{CE}$			18		nH
$R_{CC'+EE'}$	res., terminal-chip	$T_{case} = 25^\circ\text{C}$	0,7		$m\Omega$
		$T_{case} = 125^\circ\text{C}$	1		$m\Omega$
$R_{th(c-s)}$	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
<b>Temperature sensor</b>					
$R_{100}$	$T_c = 100^\circ\text{C}$ ( $R_{25} = 5 \text{ k}\Omega$ )		0,493 $\pm$ 5%		$\text{k}\Omega$
$B_{100/125}$	$R(T) = R_{100} \exp[B_{100/125} (1/T - 1/T_{100})]$ ; $T[\text{K}]; B$		3550 $\pm$ 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.

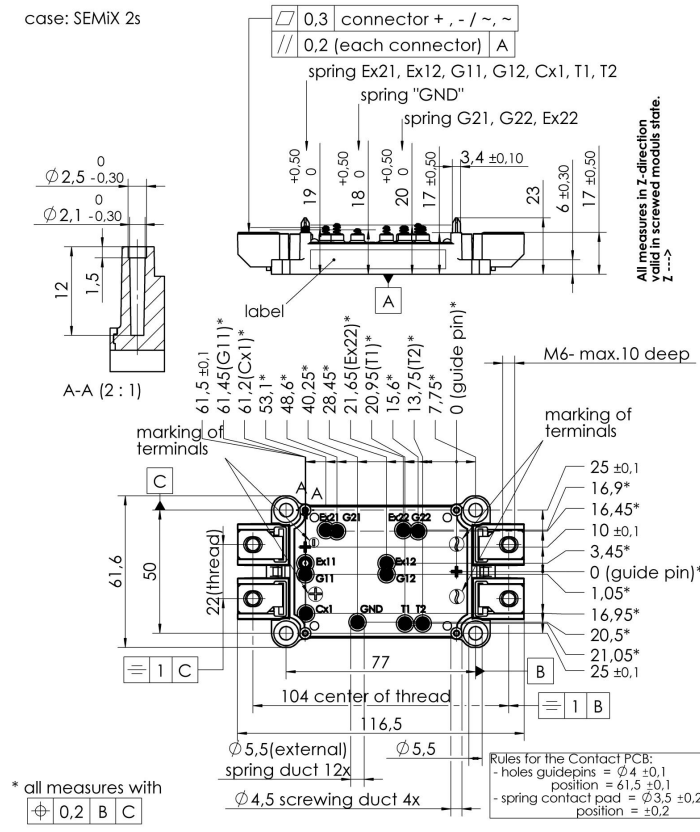




# SEMiX 302GB126HDs

UL Recognized  
File no. E 63 532

Dimensions in mm



Case SEMiX 2s

