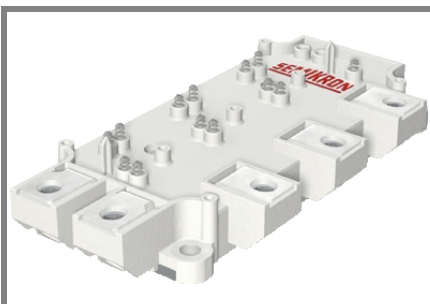


# SEMiX 101GD126HDs



**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

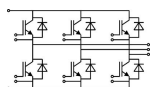
- AC inverter drives
- UPS
- Electronic Welding

#### Remarks

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

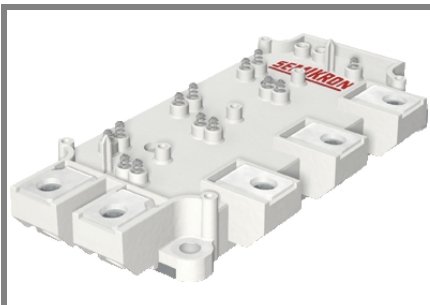
Absolute Maximum Ratings		$T_{case} = 25^\circ\text{C}$ , unless otherwise specified		
Symbol	Conditions	Values	Units	
<b>IGBT</b>				
$V_{CES}$	$T_j = 25^\circ\text{C}$	1200	V	
$I_C$	$T_j = 150^\circ\text{C}$	$T_c = 25^\circ\text{C}$	130	A
		$T_c = 80^\circ\text{C}$	90	A
$I_{CRM}$	$I_{CRM} = 2 \times I_{Cnom}$	150	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>				
$I_F$	$T_j = 150^\circ\text{C}$	$T_c = 25^\circ\text{C}$	115	A
		$T_c = 80^\circ\text{C}$	80	A
$I_{FRM}$	$I_{FRM} = 2 \times I_{Fnom}$	150	A	
$I_{FSM}$	$t_p = 10\text{ ms}; \sin.$	$T_j = 25^\circ\text{C}$	600	A
<b>Module</b>				
$I_{t(RMS)}$		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
<b>IGBT</b>					
$V_{GE(th)}$	$V_{GE} = V_{CE}, I_C = 3\text{ mA}$	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
$r_{CE}$	$V_{GE} = 15\text{ V}$	$T_j = 25^\circ\text{C}$	9,3	12,7	$\text{m}\Omega$
		$T_j = 125^\circ\text{C}$	14,7	18	$\text{m}\Omega$
$V_{CE(sat)}$	$I_{Cnom} = 75\text{ A}, V_{GE} = 15\text{ V}$	$T_j = 25^\circ\text{C}_{chiplev.}$	1,7	2,15	V
		$T_j = 125^\circ\text{C}_{chiplev.}$	2	2,45	V
$C_{ies}$	$V_{CE} = 25, V_{GE} = 0\text{ V}$	$f = 1\text{ MHz}$	5,35		nF
$C_{oes}$			0,28		nF
$C_{res}$			0,24		nF
$Q_G$	$V_{GE} = -8 \dots +15\text{V}$		600		nC
$t_{d(on)}$	$R_{Gon} = 2\ \Omega$	$V_{CC} = 600\text{V}$ $I_{Cnom} = 75\text{A}$	225		ns
$t_r$			40		ns
$E_{on}$	$R_{Goff} = 2\ \Omega$	$T_j = 125^\circ\text{C}$	10		mJ
$t_{d(off)}$			470		ns
$t_f$			85		ns
$E_{off}$			11		mJ
$R_{th(j-c)}$	per IGBT			0,27	K/W



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**SEMiX® 13s**

## Trench IGBT Modules

### SEMiX 101GD126HDs

#### Preliminary Data

#### Features

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

#### Typical Applications

- AC inverter drives
- UPS
- Electronic Welding

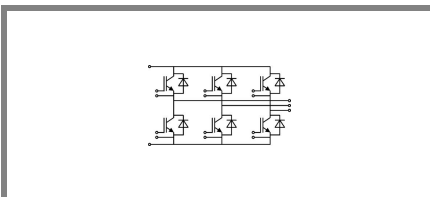
#### Remarks

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

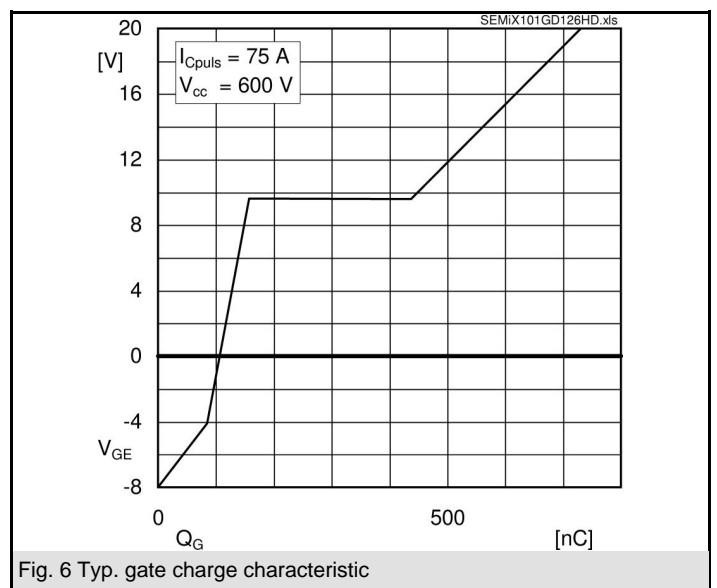
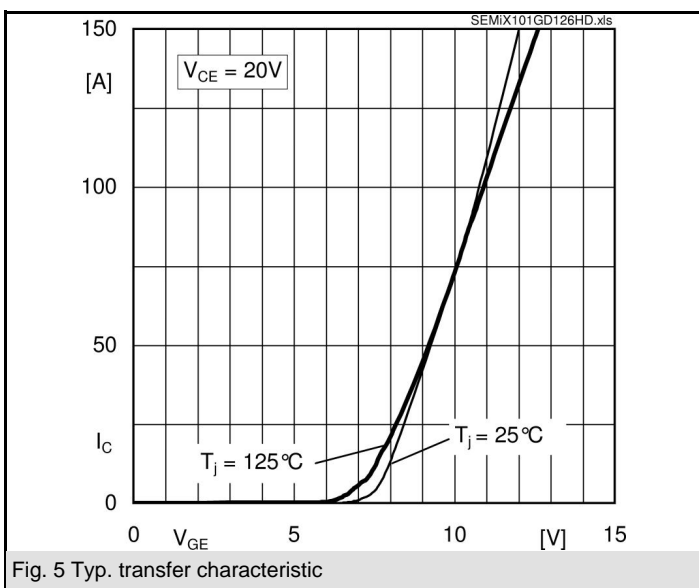
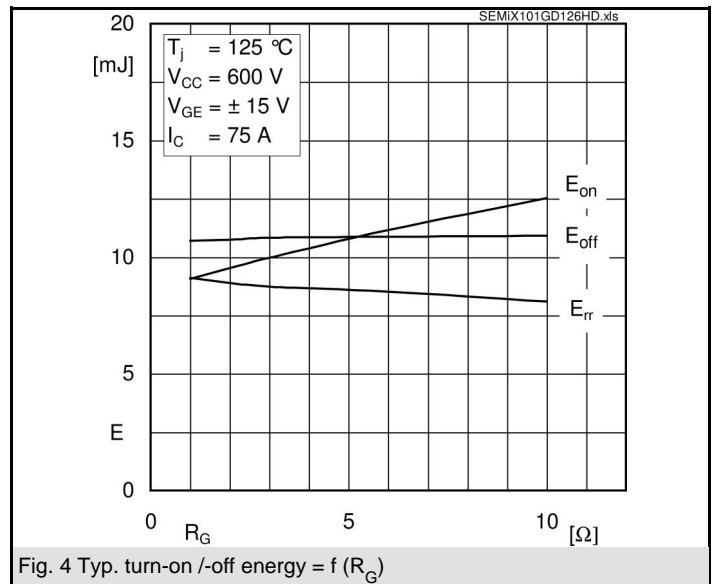
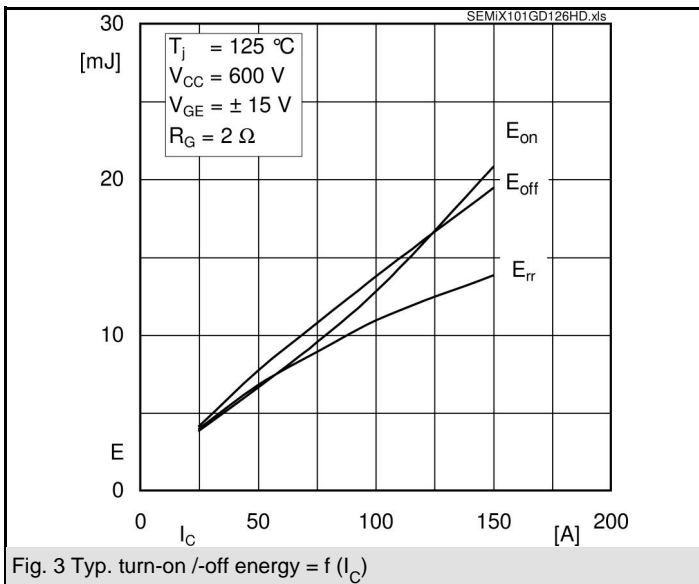
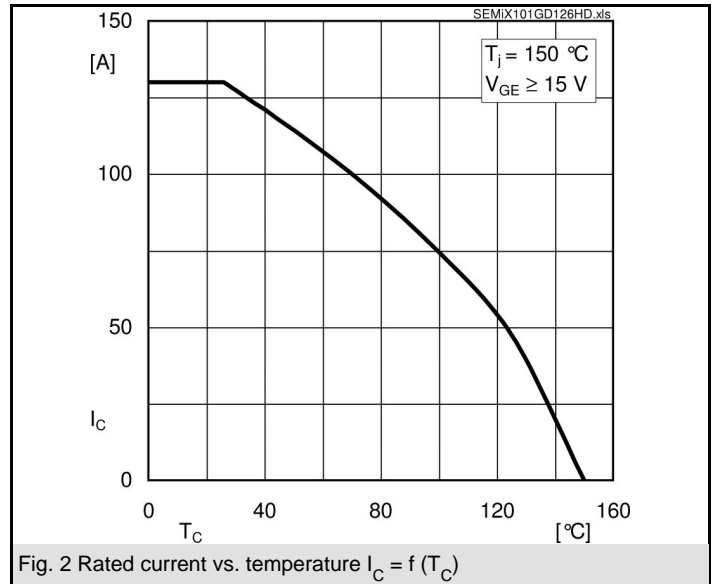
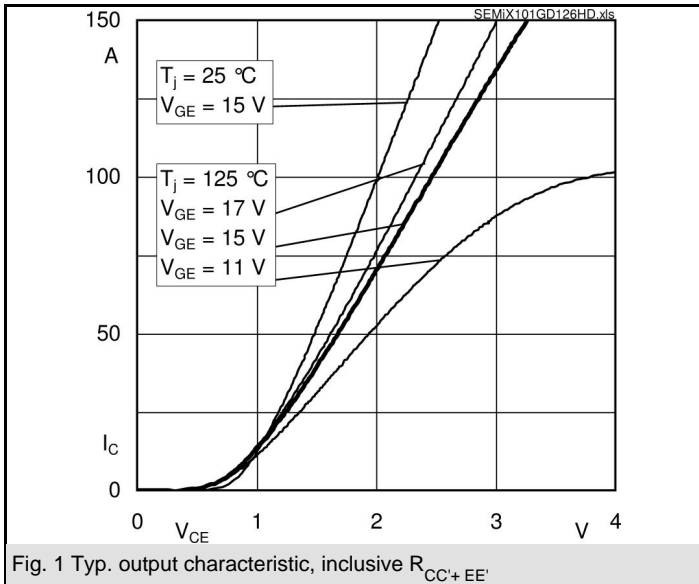
Characteristics			min.	typ.	max.	Units
Symbol	Conditions					
<b>Inverse Diode</b>						
$V_F = V_{EC}$	$I_{Fnom} = 75 \text{ A}; V_{GE} = 0 \text{ V}$	$T_j = 25^\circ\text{C}_{chiplev.}$		1,6	1,8	V
		$T_j = 125^\circ\text{C}_{chiplev.}$		1,6	1,8	V
$V_{F0}$		$T_j = 25^\circ\text{C}$		1	1,1	V
		$T_j = 125^\circ\text{C}$		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
$I_{RRM}$	$I_{Fnom} = 75 \text{ A}$	$T_j = 125^\circ\text{C}$		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
<b>Module</b>						
$L_{CE}$				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
<b>Temperature sensor</b>						
$R_{100}$	$T_c = 100^\circ\text{C}$ ( $R_{25} = 5 \text{ k}\Omega$ )			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

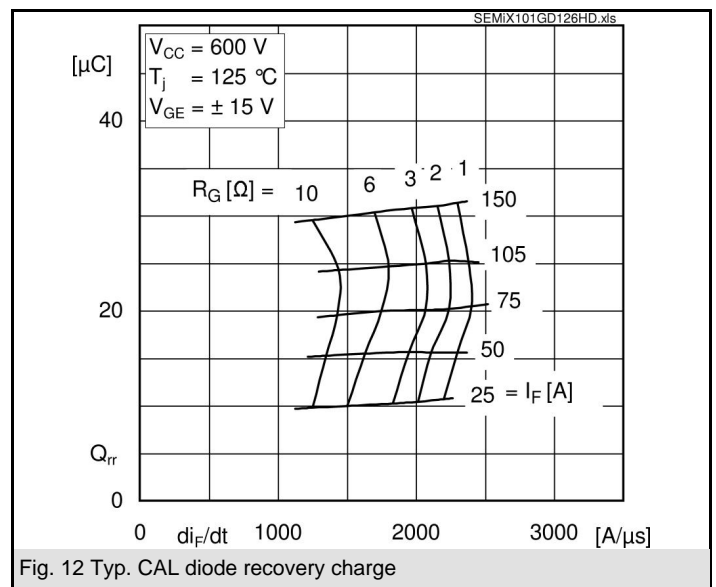
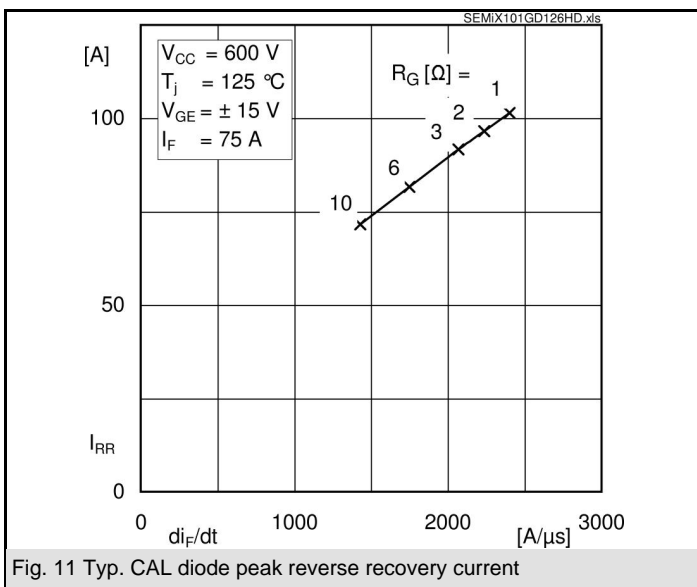
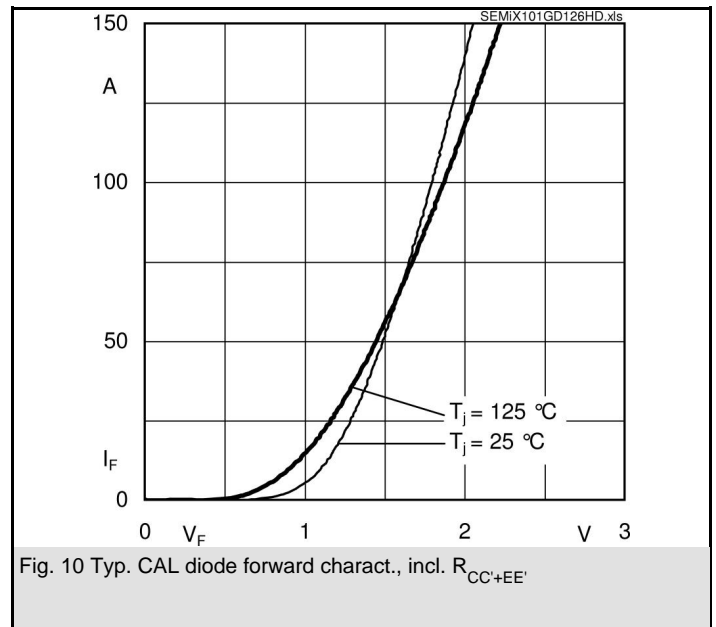
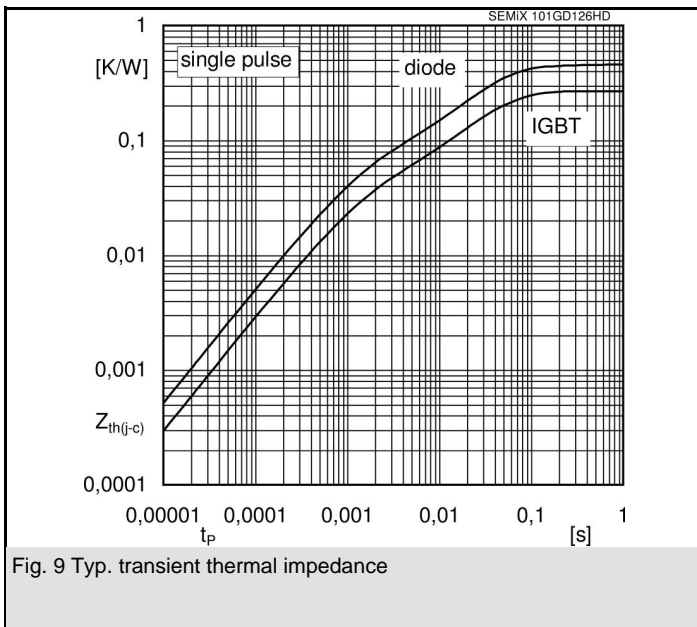
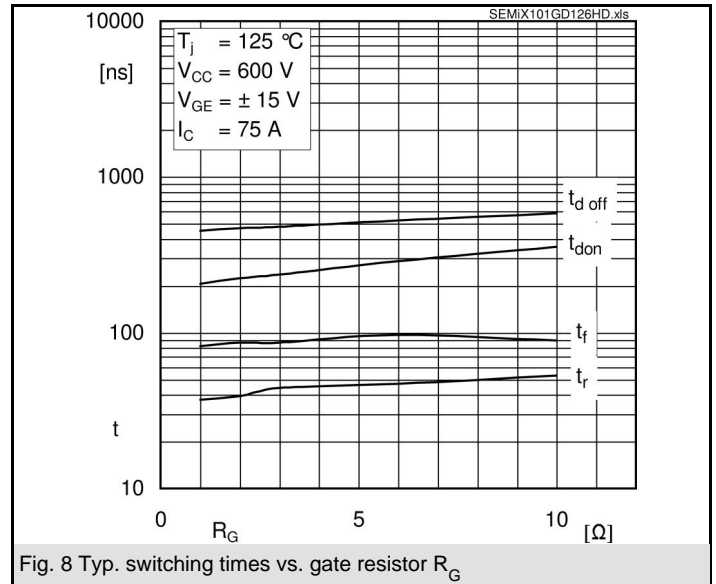
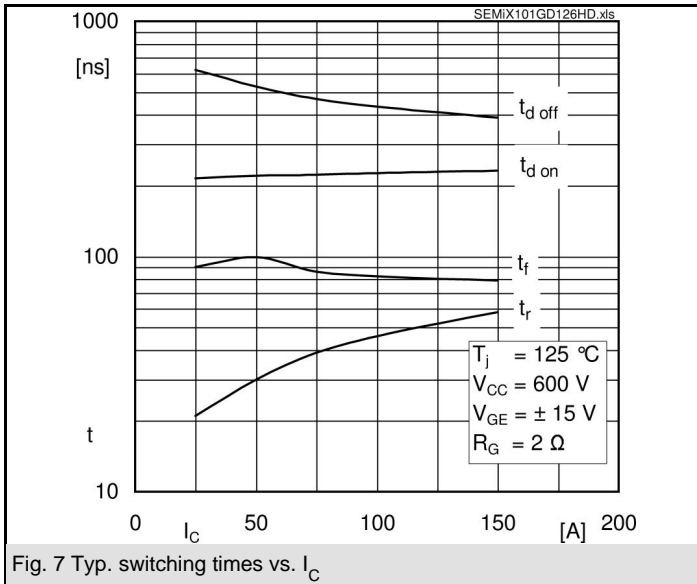
This is an electrostatic discharge sensitive device (ESDS), international standard IEC 60747-1, Chapter IX.

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

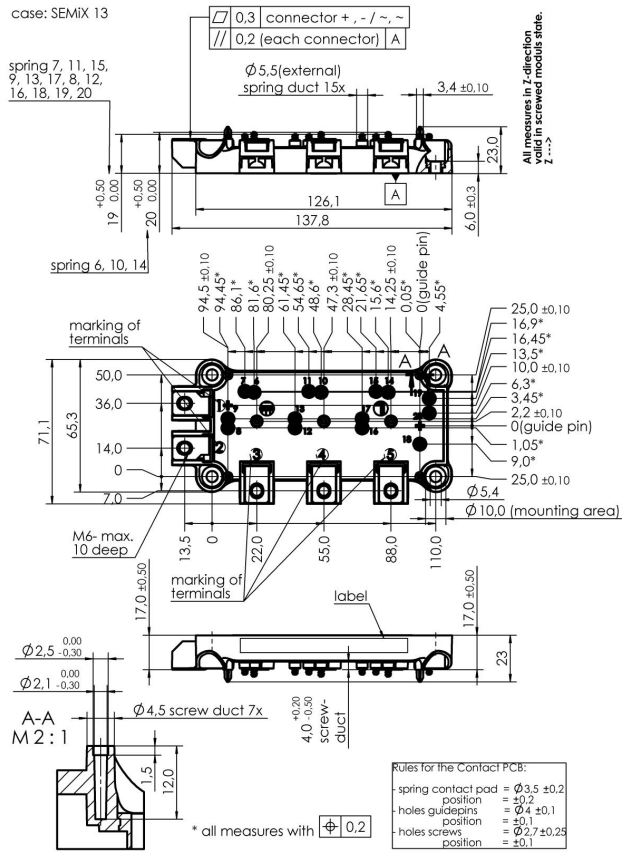


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# SEMiX 101GD126HDs



Case SEMiX 13s

