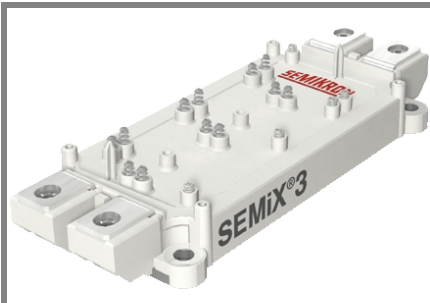


SEMiX 603GB066HDs



SEMiX® 3s

Trench IGBT Modules

SEMiX 603GB066HDs

SEMiX 603GAL066HDs

SEMiX 603GAR066HDs

Preliminary Data

Features

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

Typical Applications

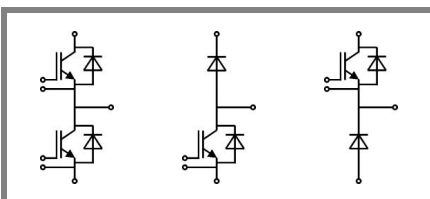
- Matrix Converter
- Resonant Inverter
- Current Source Inverter

Remarks

- Case temperature limited to $T_C = 125^\circ\text{C}$ max.
- Product reliability results are valid for $T_J = 150^\circ\text{C}$
- SC data: $t_p \leq 6 \mu\text{s}$; $V_{GE} \leq 15 \text{ V}$; $T_J = 150^\circ\text{C}$; $V_{CC} = 360 \text{ V}$, use of soft RG necessary
- take care of over-voltage caused by stray inductance

Absolute Maximum Ratings		$T_{case} = 25^\circ\text{C}$, unless otherwise specified		
Symbol	Conditions	Values	Units	
IGBT				
V_{CES}	$T_J = 25^\circ\text{C}$	600	V	
I_C	$T_J = 175^\circ\text{C}$	$T_c = 25^\circ\text{C}$	720	A
		$T_c = 80^\circ\text{C}$	540	A
I_{CRM}	$I_{CRM} = 2 \times I_{Cnom}$	1200	A	
V_{GES}		± 20	V	
t_{psc}	$V_{CC} = 360 \text{ V}$; $V_{GE} \leq 15 \text{ V}$; $T_J = 150^\circ\text{C}$ $V_{CES} < 600 \text{ V}$	6	μs	
Inverse Diode				
I_F	$T_J = 175^\circ\text{C}$	$T_c = 25^\circ\text{C}$	760	A
		$T_c = 80^\circ\text{C}$	555	A
I_{FRM}	$I_{FRM} = 2 \times I_{Fnom}$	1200	A	
I_{FSM}	$t_p = 10 \text{ ms}$; sin.	$T_J = 25^\circ\text{C}$	1800	A
Module				
$I_{t(RMS)}$		600	A	
T_{vj}		- 40 ... + 175	$^\circ\text{C}$	
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					
$V_{GE(th)}$	$V_{GE} = V_{CE}$; $I_C = 9,6 \text{ mA}$		5,8		V
I_{CES}	$V_{GE} = 0 \text{ V}$; $V_{CE} = V_{CES}$			0,45	mA
V_{CE0}		$T_J = 25^\circ\text{C}$	0,9	1	V
		$T_J = 150^\circ\text{C}$	0,85	0,9	V
r_{CE}	$V_{GE} = 15 \text{ V}$	$T_J = 25^\circ\text{C}$	0,9	1,5	m Ω
		$T_J = 150^\circ\text{C}$	1,4	2	m Ω
$V_{CE(sat)}$	$I_{Cnom} = 600 \text{ A}$; $V_{GE} = 15 \text{ V}$	$T_J = 25^\circ\text{C}_{chiplev.}$	1,45	1,9	V
		$T_J = 150^\circ\text{C}_{chiplev.}$	1,7	2,1	V
C_{ies}	$V_{CE} = 25$; $V_{GE} = 0 \text{ V}$	$f = 1 \text{ MHz}$	37		nF
C_{oes}			2,3		nF
C_{res}			1,1		nF
Q_G	$V_{GE} = -8 \dots +15 \text{ V}$		4800		nC
$t_{d(on)}$	$R_{Gon} = 3 \Omega$	$V_{CC} = 300 \text{ V}$ $I_{Cnom} = 600 \text{ A}$	150		ns
t_r			145		ns
E_{on}	$R_{Goff} = 3 \Omega$	$T_J = 150^\circ\text{C}$	12		mJ
$t_{d(off)}$			1050		ns
t_f			105		ns
E_{off}			43		mJ
$R_{th(j-c)}$	per IGBT			0,087	K/W

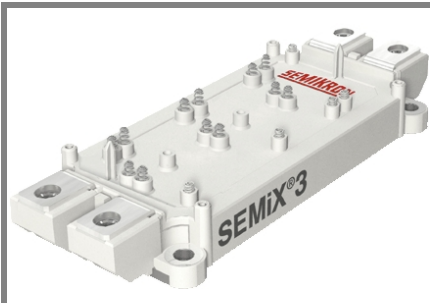


GB

GAL

GAR

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Preliminary Data

Features

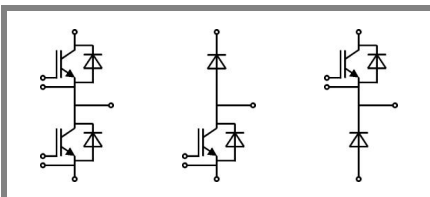
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GB

GAL

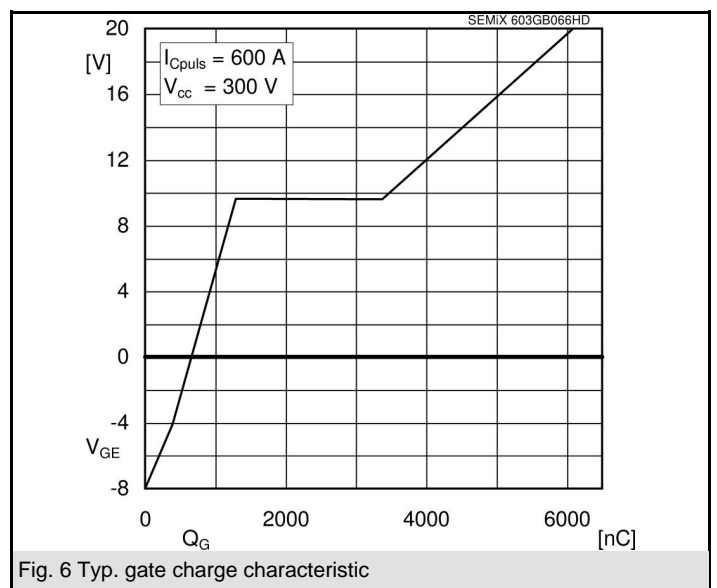
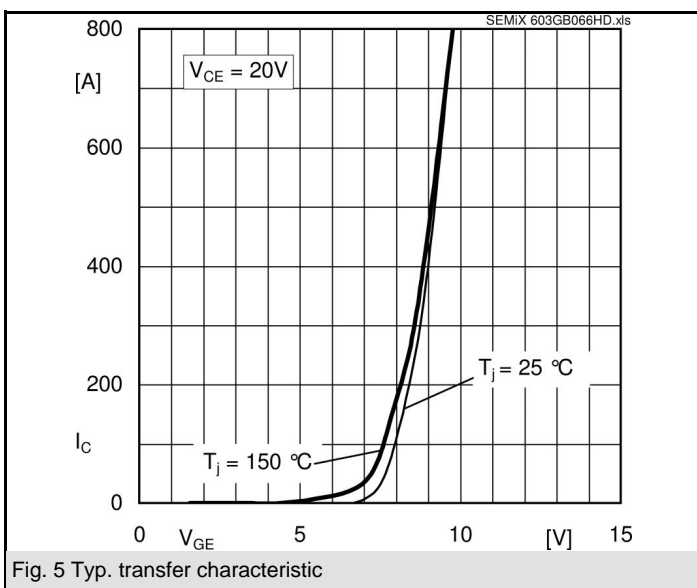
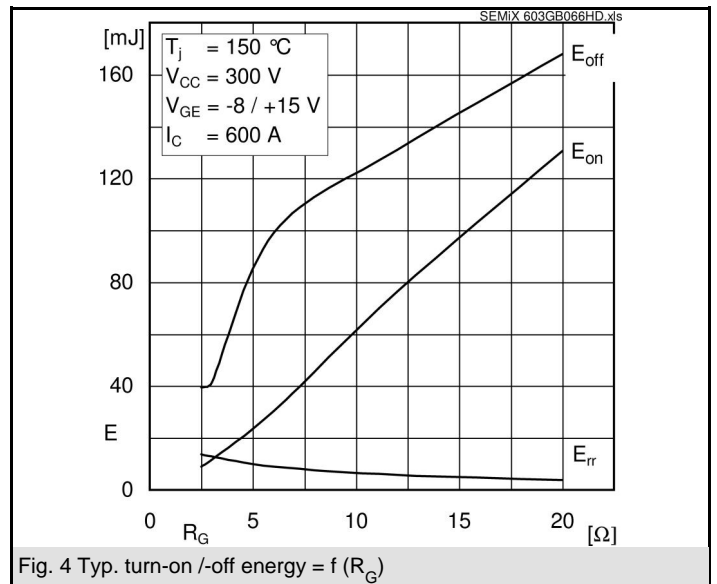
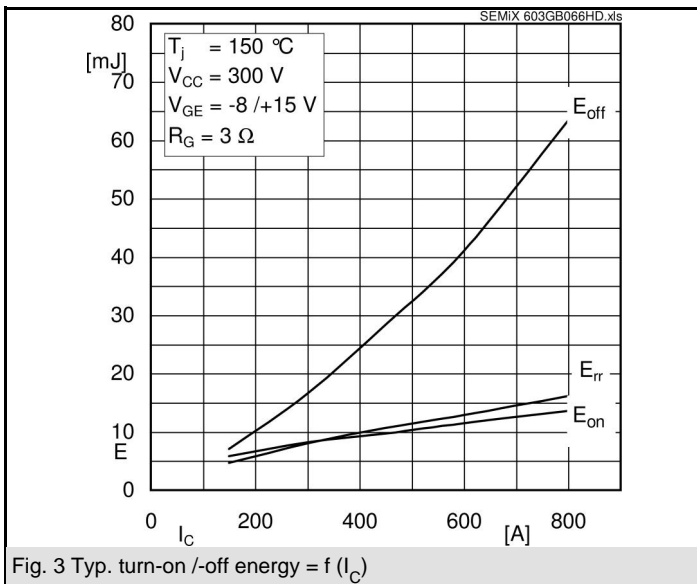
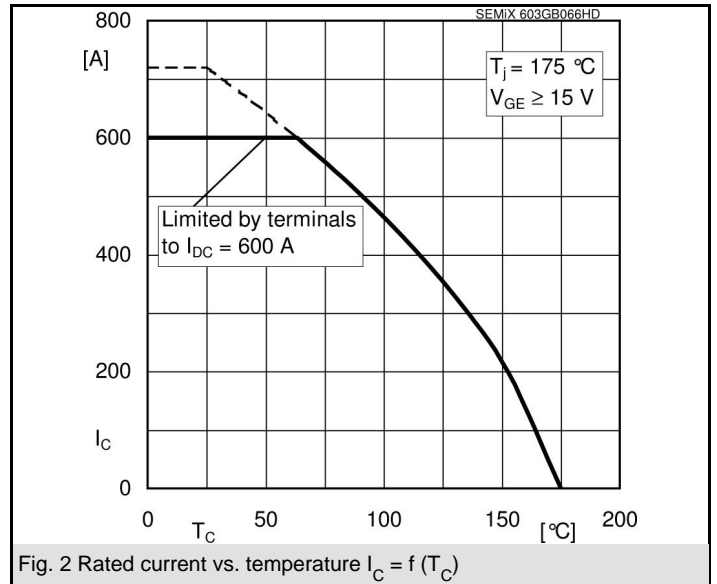
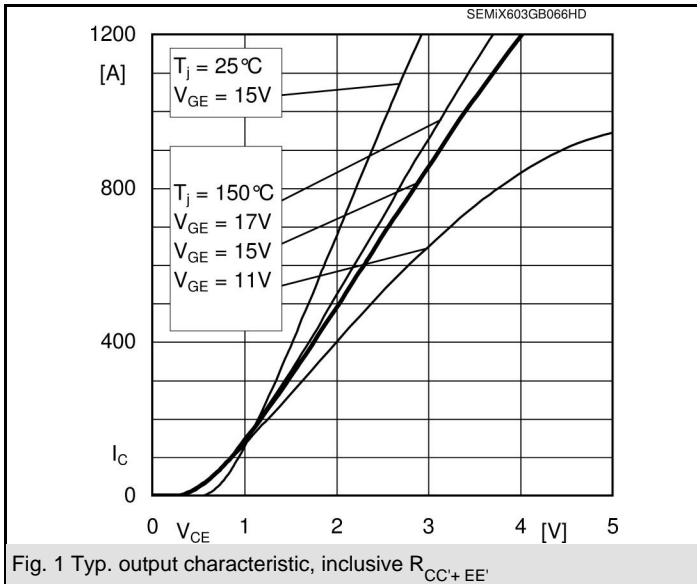
GAR

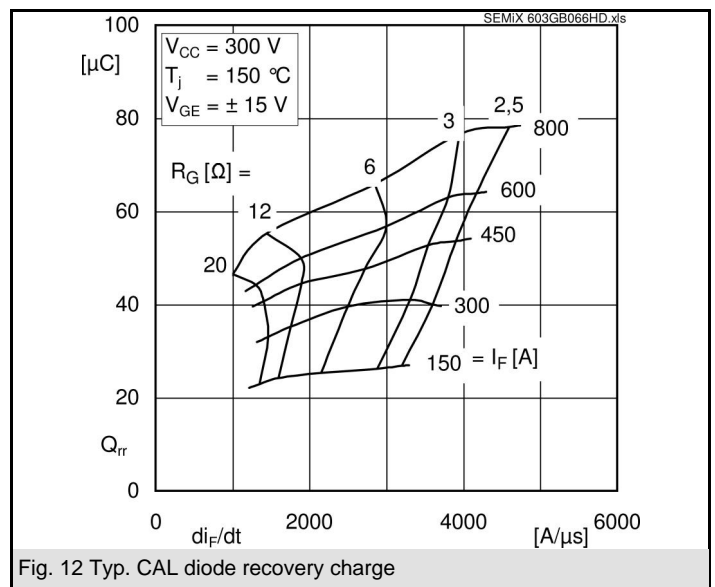
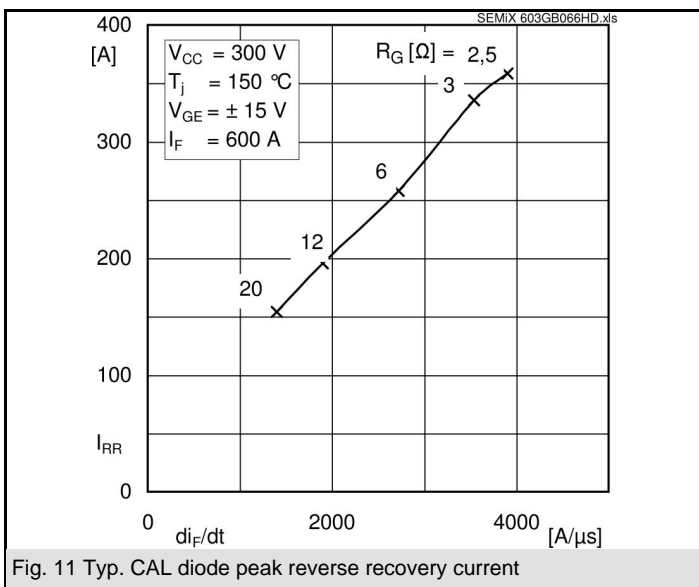
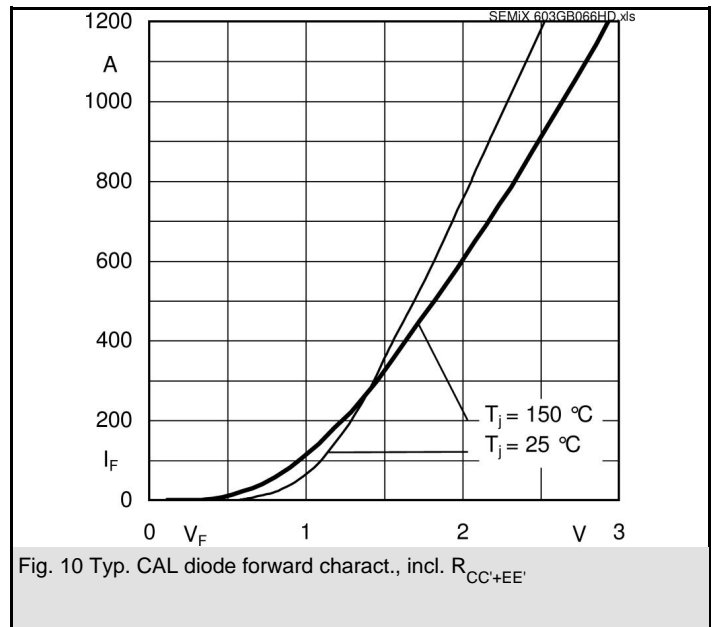
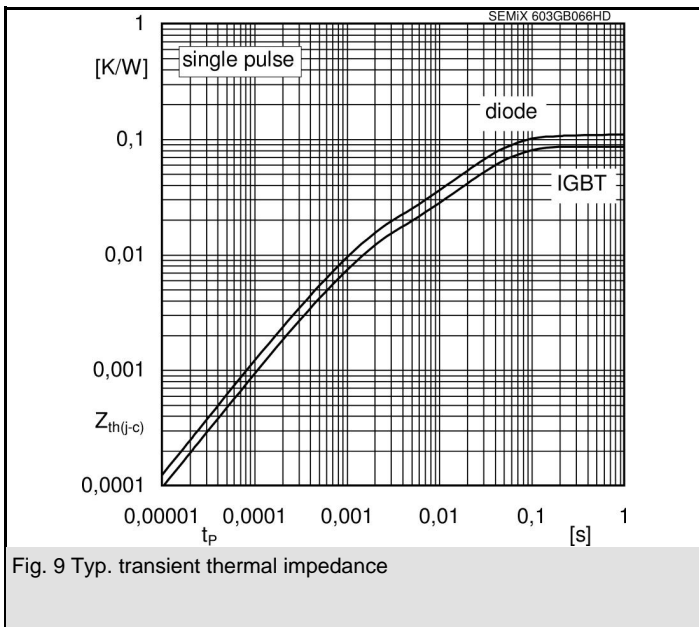
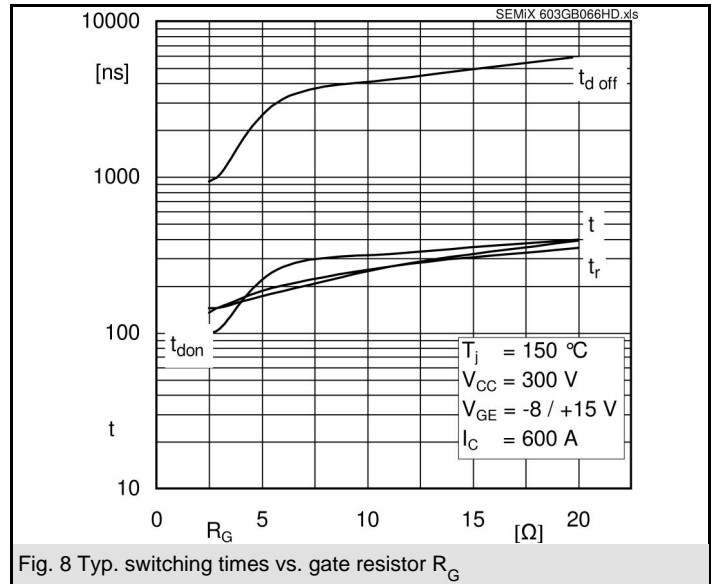
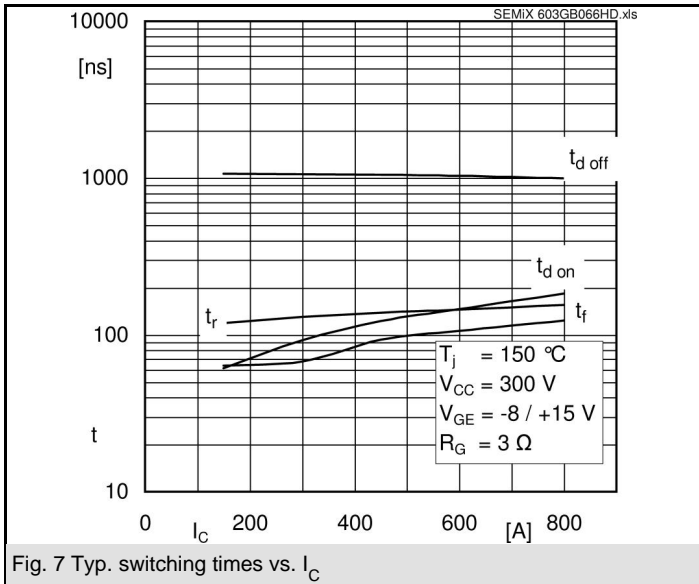
Characteristics

Symbol	Conditions	min.	typ.	max.	Units
Inverse Diode					
$V_F = V_{EC}$	$I_{Fnom} = 600 \text{ A}$; $V_{GE} = 0 \text{ V}$	$T_J = 25^\circ\text{C}_{chiplev.}$	1,4	1,6	V
		$T_J = 150^\circ\text{C}_{chiplev.}$	1,4	1,6	V
V_{F0}		$T_J = 25^\circ\text{C}$	1	1,1	V
		$T_J = 150^\circ\text{C}$	0,85	0,95	V
r_F		$T_J = 25^\circ\text{C}$	0,65	0,85	mΩ
		$T_J = 150^\circ\text{C}$	0,9	1,1	mΩ
I_{RRM}	$I_{Fnom} = 600 \text{ A}$		350		A
Q_{rr}	$di/dt = 3800 \text{ A}/\mu\text{s}$		63		μC
E_{rr}	$V_{GE} = -8 \text{ V}$; $V_{CC} = 300 \text{ V}$		13		mJ
$R_{th(j-c)D}$	per diode			0,11	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				300	g
Temperature sensor					
R_{100}	$T_c = 100^\circ\text{C}$ ($R_{25} = 5 \text{ k}\Omega$)		0,493±5%		kΩ
$B_{100/125}$	$R(T) = R_{100} \exp[B_{100/125} (1/T - 1/T_{100})]$; $T[\text{K}]; B$		3550±2%		K

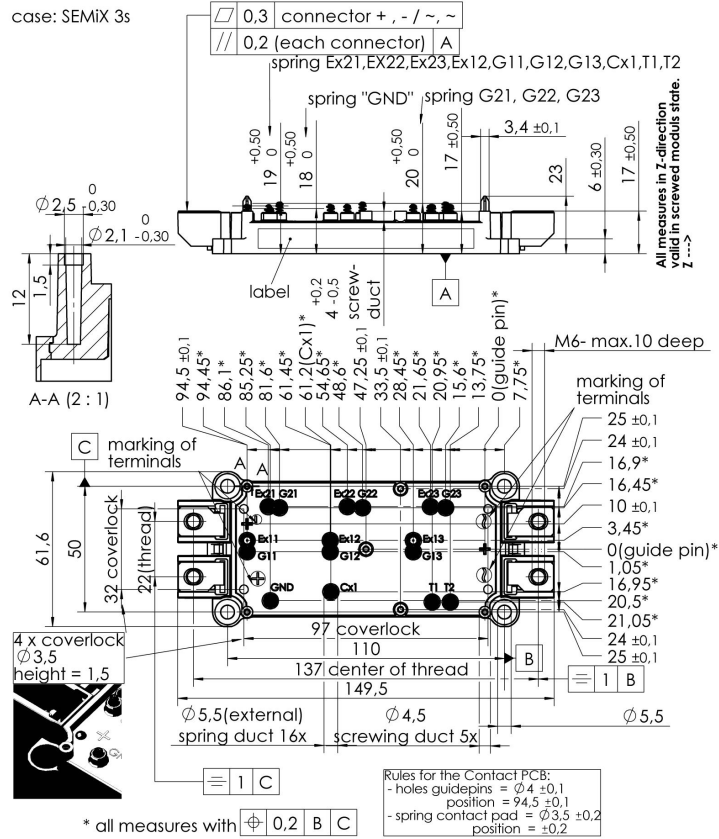
This is an electrostatic discharge sensitive device (ESDS), international standard IEC 60747-1, Chapter IX.

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 603GB066HDs



Case SEMiX 3s

