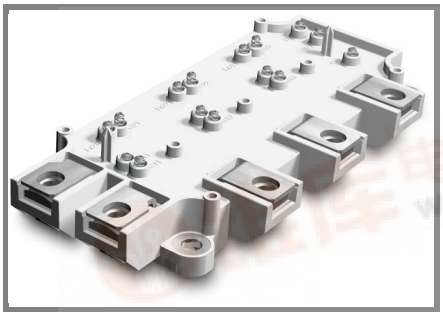
SEMiX 151GD066HDs



SEMiX®13s

Trench IGBT Modules

SEMiX 151GD066HDs

Target Data

Features

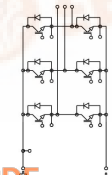
- Homogeneous Si
- Trench = Trenchgate technology
- $V_{CE(sat)}$ with positive temperature coefficient

Typical Applications

- Matrix Converter
- Resonant Inverter
- Current Source Inverter

Remarks

- Case temperatur limited to T_C=125°C max.
- Product reliability results are valid for T_j=150°C
- SC data: $t_p \leq 6$ µs; $V_{GE} \leq 15$ V; T_j = 150°C; V_{CC} = 360 V



SD

Absolute Maximum Ratings T_{case} = 25°C, unless otherwise specified

Symbol	Conditions	Values	Units
IGBT			
V_{CES}		600	V
I_C	T_c = 25 (80) °C, T_j = 150 °C	180 (130)	A
I_C	T_c = 25 (80) °C, T_j = 175 °C	200 (150)	A
I_{CRM}	t_p = 1 ms	300	A
V_{GES}		± 20	V
T_j, (T_{stg})		- 40 ... + 175 (125)	°C
V_{isol}	AC, 1 min.	4000	V
Inverse diode			
I_F	T_c = 25 (80) °C, T_j = 150 °C	150 (100)	A
I_F	T_c = 25 (80) °C, T_j = 175 °C	170 (120)	A
I_{FRM}	t_p = 1 ms	300	A
I_{FSM}	t_p = 10 ms; sin.; T_j = 25 °C	980	A

Characteristics T_{case} = 25°C, unless otherwise specified

Symbol	Conditions	min.	typ.	max.	Units
IGBT					
$V_{GE(th)}$	V_{GE} = V_{CE}, I_C = 4,8 mA		5,8		V
I_{CES}	V_{GE} = 0, V_{CE} = V_{CES}, T_j = 25 () °C			0,25	mA
$V_{CE(TO)}$	T_j = 25 (150) °C		0,9 (0,85)	1 (0,9)	V
r_{CE}	V_{GE} = 15 V, T_j = 25 (150) °C		3,7 (5,7)	6 (8)	mΩ
$V_{CE(sat)}$	I_{Cnom} = 150 A, V_{GE} = 15 V, T_j = 25 (150) °C, chip level		1,45 (1,7)	1,9 (2,1)	V
C_{ies}	under following conditions				nF
C_{oes}	V_{GE} = 0, V_{CE} = 25 V, f = 1 MHz				nF
C_{res}					nF
L_{CE}					nH
$R_{CC'+EE'}$	terminal-chip, T_c= 25 (125) °C		0,7 (1)		mΩ
$t_{d(on)}$/t_r	V_{CC} = 300 V, I_{Cnom} = 150 A				ns
$t_{d(off)}$/t_f	V_{GE} = ±15V				ns
E_{on} (E_{off})	R_{Gon} = R_{Goff} = 4 Ω, T_j = 150 °C		4 (6)		mJ
Inverse diode					
V_F = V_{EC}	I_{Fnom} = 150 A; V_{GE} = 0 V; T_j = 25 (150) °C, chip level		1,4 (1,4)	1,6	V
$V_{(TO)}$	T_j = 25 (150) °C		1 (0,85)	1,1	V
r_T	T_j = 25 (150) °C		2,7 (3,7)	3,3	mΩ
I_{RRM}	I_{Fnom} = 150 A; T_j = 25 (150) °C				A
Q_{rr}	di/dt = A/µs				µC
E_{rr}	V_{GE} = -15 V				mJ
Thermal characteristics					
$R_{th(j-c)}$	per IGBT			0,3	K/W
$R_{th(j-c)D}$	per Inverse Diode			0,5	K/W
$R_{th(j-c)FD}$	per FWD				K/W
$R_{th(c-s)}$	per module		0,04		K/W
Temperature sensor					
R_{25}	T_c = 25 °C		5 ±5%		kΩ
$B_{25/85}$	R_2=R_1exp[B(1/T_2-1/T_1)] ; T[K];B		3420		K
Mechanical data					
M_s/M_t	to heatsink (M5) / for terminals (M6)	3/2,5		5 /5	Nm
w			290		g

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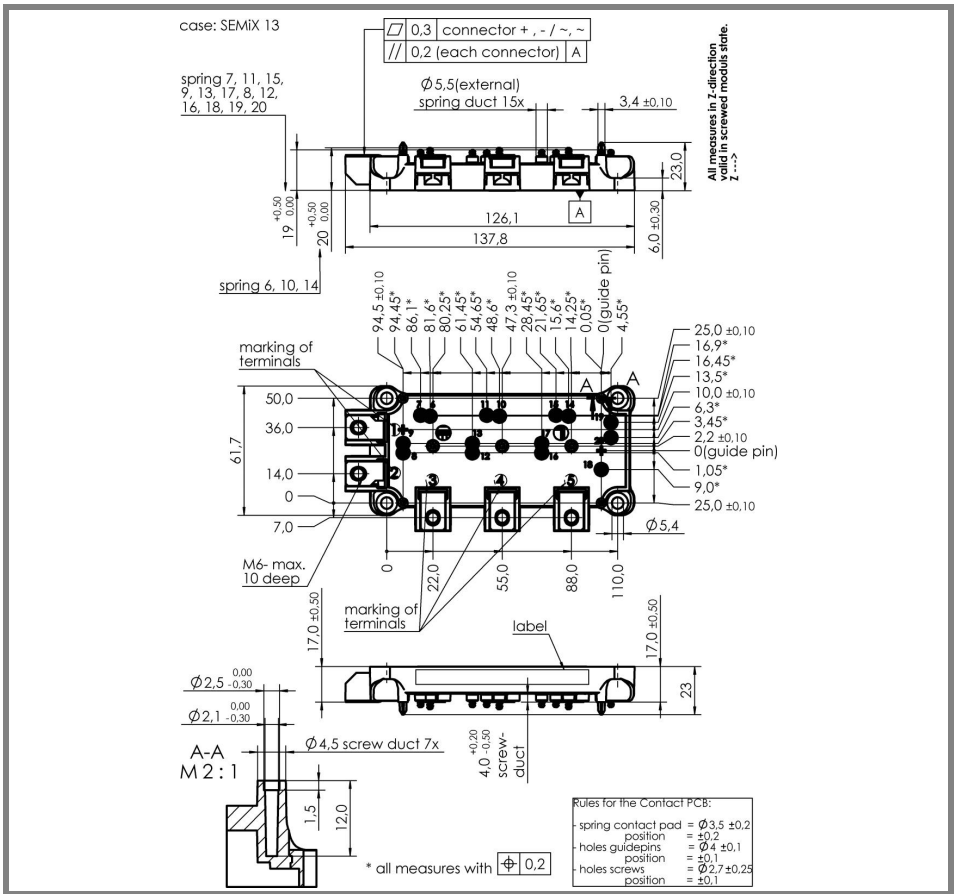
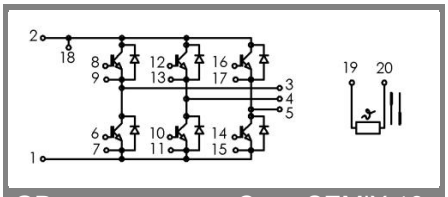


Case SEMiX 13



GD Case SEMiX 13

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

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