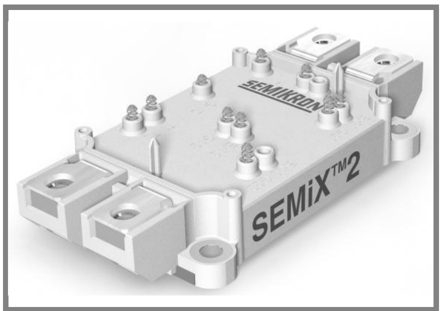


SEMiX® 2s

Trench IGBT Modules

SEMiX 402GB066HDs

Target Data

Features

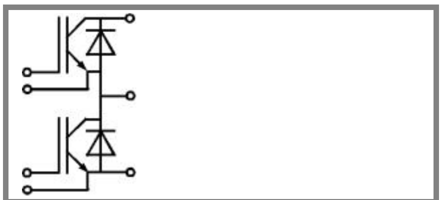
- Homogeneous Si
- Trench = Trenchgate technology
- $V_{CE(sat)}$ with positive temperature coefficient

Typical Applications

- Matrix Converter
- Resonant Inverter
- Current Source Inverter

Remarks

- Case temperature 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



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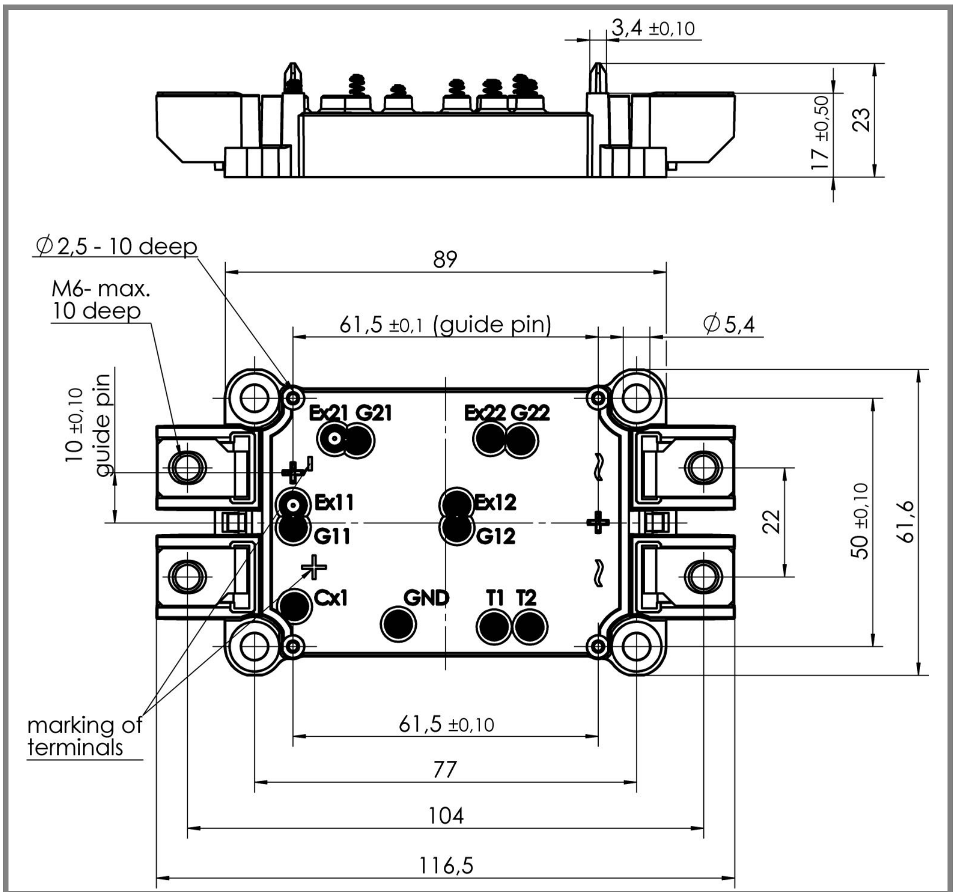
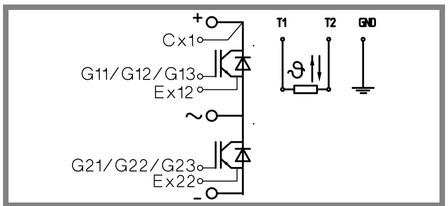
Absolute Maximum Ratings	T_{case} = 25°C, unless otherwise specified		
Symbol	**Conditions**	**Values**	**Units**
IGBT			
V_{CES}		600	V
I_C	T_c = 25 (80) °C, T_j = 150 °C	490 (340)	A
I_C	T_c = 25 (80) °C, T_j = 175 °C	530 (410)	A
I_{CRM}	t_p = 1 ms	800	A
V_{GES}		± 20	V
T_j, (T_{stg})		- 40 ... + 175 (125)	°C
V_{isol}	AC, 1 min.	4000	V
Inverse diode			
I_F	T_c = 25 (80) °C, T_j = 150 °C	380 (250)	A
I_F	T_c = 25 (80) °C, T_j = 175 °C	420 (310)	A
I_{FRM}	t_p = 1 ms	800	A
I_{FSM}	t_p = 10 ms; sin.; T_j = 25 °C	1800	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 = 3,2 mA		5,8		V
I_{CES}	V_{GE} = 0, $V_{CE} = V_{CES}$, T_j = 25 () °C			0,1	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		1,4 (2,15)	2,25 (3)	mΩ
$V_{CE(sat)}$	I_{Cnom} = 400 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				mΩ
$t_{d(on)}/t_r$	V_{CC} = 300 V, I_{Cnom} = 400 A				ns
$t_{d(off)}/t_f$	V_{GE} = ±15V				ns
E_{on} (E_{off})	$R_{Gon} = R_{Goff}$ = 8 Ω, T_j = 150 °C		11 (17)		mJ
Inverse Diode					
$V_F = V_{EC}$	I_{Fnom} = 400 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		1 (1,4)	1,25	mΩ
I_{RRM}	I_{Fnom} = 400 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			0,11	K/W
$R_{th(j-c)D}$	per Inverse Diode			0,2	K/W
$R_{th(j-c)FD}$	per FWD				K/W
$R_{th(c-s)}$	per module		0,045		K/W
Temperature sensor					
R_{25}	T_c = 25 °C		5 ±5%		kΩ
$B_{25/85}$	$R_2=R_1\exp[B(1/T_2-1/T_1)]$; T[K];B		3420		K
Mechanical data					
M_s/M_t	to heatsink (M5) / for terminals (M6)	3/2,5		5 /5	Nm
w			250		g



Case SEMiX 2s



GB Case SEMiX 2s

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

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