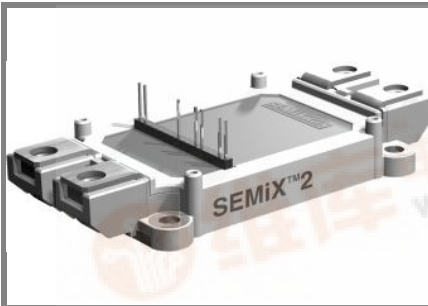


SEMIX 452GB176HD



SEMIX[®] 2

Trench IGBT Modules

SEMIX 452GB176HD

Target Data

Features

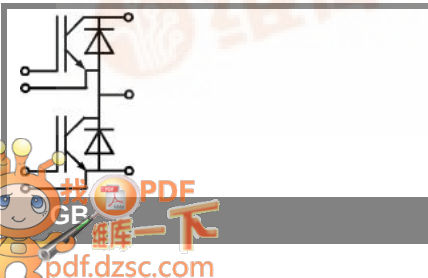
- Homogeneous Si
- Trench = Trenchgate technology
- $V_{CE(sat)}$ with positive temperature coefficient
- High short circuit capability

Typical Applications

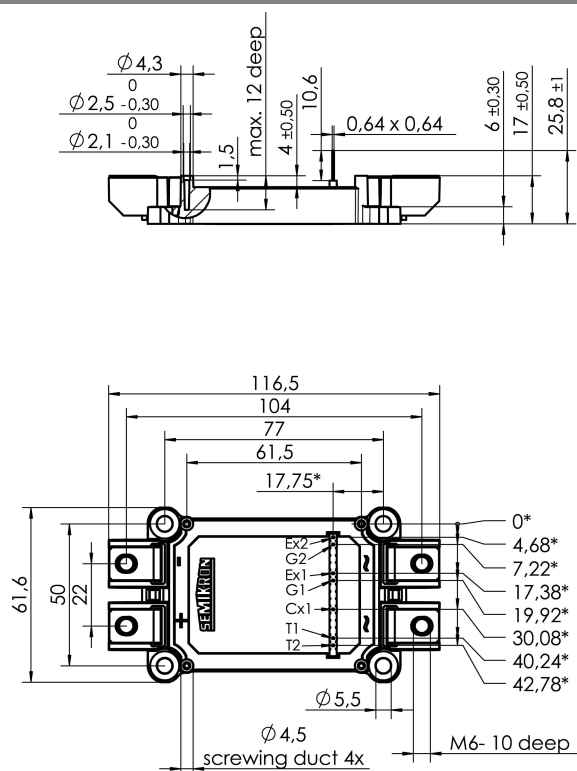
- AC inverter drives
- UPS
- Electronic welders

Absolute Maximum Ratings		$T_{case} = 25^{\circ}C$, unless otherwise specified	
Symbol	Conditions	Values	Units
IGBT			
V_{CES}		1700	V
I_C	$T_c = 25 (80)^{\circ}C$	450 (290)	A
I_{CRM}	$t_p = 1 ms$	600	A
V_{GES}		± 20	V
T_{vj} , (T_{stg})	$T_{OPERATION} \leq T_{stg}$	- 40 ... + 150 (125)	$^{\circ}C$
V_{isol}	AC, 1 min.	4000	V
Inverse diode			
I_F	$T_c = 25 (80)^{\circ}C$	300 (200)	A
I_{FRM}	$t_p = 1 ms$	600	A
I_{FSM}	$t_p = 10 ms$; sin.; $T_j = 25^{\circ}C$	2000	A

Characteristics		$T_{case} = 25^{\circ}C$, unless otherwise specified		
Symbol	Conditions	min.	typ.	max.
IGBT				
$V_{GE(th)}$	$V_{GE} = V_{CE}$, $I_C = 12 mA$	5,2	5,8	6,4
I_{CES}	$V_{GE} = 0$, $V_{CE} = V_{CES}$, $T_j = 25 (125)^{\circ}C$			2,4
$V_{CE(TO)}$	$T_j = 25 (125)^{\circ}C$		1 (0,9)	1,2 (1,1)
r_{CE}	$V_{GE} = 15 V$, $T_j = 25 (125)^{\circ}C$		3,3 (5,2)	4,2 (6)
$V_{CE(sat)}$	$I_{Cnom} = 300 A$, $V_{GE} = 15 V$, $T_j = 25 (125)^{\circ}C$, chip level		2 (2,45)	2,45 (2,9)
C_{ies}	under following conditions		20	nF
C_{oes}	$V_{GE} = 0$, $V_{CE} = 25 V$, $f = 1 MHz$		1,1	nF
C_{res}			0,9	nF
L_{CE}			18	nH
R_{CC+EE}	terminal-chip, $T_c = 25 (125)^{\circ}C$			m Ω
$t_{d(on)}/t_r$	$V_{CC} = 1200 V$, $I_{Cnom} = 300 A$			ns
$t_{d(off)}/t_f$	$V_{GE} = \pm 15 V$			ns
$E_{on} (E_{off})$	$R_{Gon} = R_{Goff} = \Omega$, $T_j = 125^{\circ}C$		200 (100)	mJ
Inverse diode				
$V_F = V_{EC}$	$I_{Fnom} = 300 A$; $V_{GE} = 0 V$; $T_j = 25 (125)^{\circ}C$, chip level		2 (2,1)	2,2 (2,3)
$V_{(TO)}$	$T_j = 25 (125)^{\circ}C$		1,1 (0,9)	1,3 (1,1)
r_T	$T_j = 25 (125)^{\circ}C$		3 (4)	3 (4)
I_{RRM}	$I_{Fnom} = 300 A$; $T_j = 25 (125)^{\circ}C$			A
Q_{rr}	$di/dt = A/\mu s$			μC
E_{rr}	$V_{GE} = 0 V$			mJ
Thermal characteristics				
$R_{th(j-c)}$	per IGBT			0,07
$R_{th(j-c)D}$	per Inverse Diode			0,17
$R_{th(j-c)FD}$	per FWD			K/W
$R_{th(c-s)}$	per module		0,045	K/W
Temperature sensor				
R_{25}	$T_c = 25^{\circ}C$		5 $\pm$ 5%	k Ω
$B_{25/85}$	$R_2 = R_1 \exp[B(1/T_2 - 1/T_1)]$; $T[K]$; B		3420	K
Mechanical data				
M_s/M_t	to heatsink (M5) / for terminals (M6)	3/2,5		5 / 5
w			236	Nm g

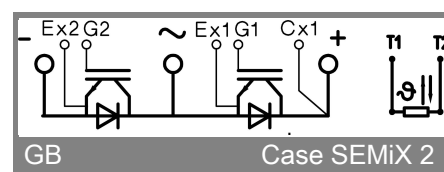


SEMiX 452GB176HD



*= all measures with $\pm 0,5$

Case SEMiX 2



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

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