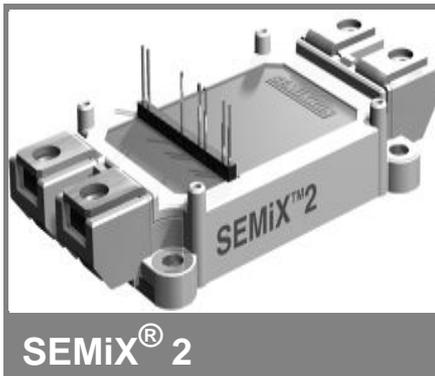


SEMiX 252GB176HD



Trench IGBT Modules

SEMiX 252GB176HD

Preliminary Data

Features

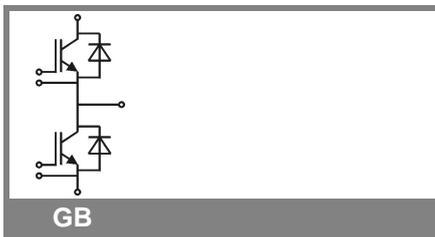
- Homogeneous Si
- Trench = Trenchgate technology
- $V_{CE(sat)}$ with positive temperature coefficient
- High short circuit capability

Typical Applications

- AC inverter drives
- UPS
- Electronic welders

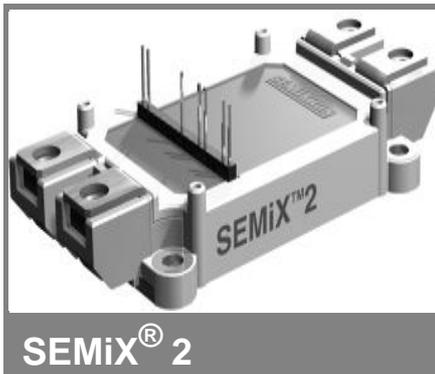
Remarks

- short circuit capability is tested @ $V_{CC}=1000V$ (all other static parameters are tested @ $V_{CC}=1200V$)
- Not for new design



Absolute Maximum Ratings		$T_{case} = 25^{\circ}C$, unless otherwise specified			
Symbol	Conditions	Values		Units	
IGBT					
V_{CES}	$T_j = 25^{\circ}C$	1700		V	
I_C	$T_j = 150^{\circ}C$	$T_c = 25^{\circ}C$	260		A
		$T_c = 80^{\circ}C$	190		A
I_{CRM}	$I_{CRM} = 2 \times I_{Cnom}$, $t_p = 1\text{ ms}$	300		A	
V_{GES}		± 20		V	
t_{psc}	$V_{CC} = 600\text{ V}$; $V_{GE} \leq 20\text{ V}$; $T_j = 125^{\circ}C$ $V_{CES} < 1200\text{ V}$	10		μs	
Inverse Diode					
I_F	$T_j = 150^{\circ}C$	$T_c = 25^{\circ}C$	210		A
		$T_c = 80^{\circ}C$	140		A
I_{FRM}	$I_{FRM} = 2 \times I_{Fnom}$, $t_p = 1\text{ ms}$	300		A	
I_{FSM}	$t_p = 10\text{ ms}$; sin.	$T_j = 25^{\circ}C$	1200		A
Module					
$I_{t(RMS)}$		600		A	
T_{vj}		- 40 ... + 150		$^{\circ}C$	
T_{stg}	$T_{OPERATION} \leq T_{stg}$	- 40 ... + 125		$^{\circ}C$	
V_{isol}	AC, 1 min.	4000		V	

Characteristics		$T_{case} = 25^{\circ}C$, unless otherwise specified			
Symbol	Conditions	min.	typ.	max.	Units
IGBT					
$V_{GE(th)}$	$V_{GE} = V_{CE}$, $I_C = 6\text{ mA}$	5,2	5,8	6,4	V
I_{CES}	$V_{GE} = 0\text{ V}$, $V_{CE} = V_{CES}$	$T_j = 25^{\circ}C$	1,2		mA
		$T_j = 125^{\circ}C$			mA
V_{CE0}		$T_j = 25^{\circ}C$	1	1,2	V
		$T_j = 125^{\circ}C$	0,9	1,1	V
r_{CE}	$V_{GE} = 15\text{ V}$	$T_j = 25^{\circ}C$	6,7	8,3	m Ω
		$T_j = 125^{\circ}C$	10,3	12	m Ω
$V_{CE(sat)}$	$I_{Cnom} = 150\text{ A}$, $V_{GE} = 15\text{ V}$	$T_j = 25^{\circ}C_{chiplev.}$	2	2,45	V
		$T_j = 125^{\circ}C_{chiplev.}$	2,45	2,9	V
C_{ies}	$V_{CE} = 25$, $V_{GE} = 0\text{ V}$	$f = 1\text{ MHz}$	11,5		nF
C_{oes}			0,6		nF
C_{res}			0,5		nF
Q_G	$V_{GE} = -8\text{ V} \dots +15\text{ V}$	1200		nC	
$t_{d(on)}$	$R_{Gon} = 9\ \Omega$	$V_{CC} = 1200V$ $I_{Cnom} = 150A$ $T_j = 125^{\circ}C$	265		ns
t_r			55		ns
E_{on}			90		mJ
$t_{d(off)}$	$R_{Goff} = 9\ \Omega$	$T_j = 125^{\circ}C$	875		ns
t_f			125		ns
E_{off}			55		mJ
$R_{th(j-c)}$	per IGBT	0,13		K/W	



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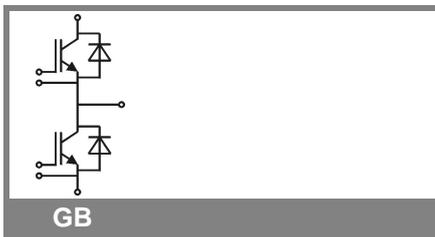
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GB

Characteristics		min.	typ.	max.	Units
Symbol	Conditions				
Inverse Diode					
$V_F = V_{EC}$	$I_{Fnom} = 150 A; V_{GE} = 0 V$		1,7	1,9	V
					$T_j = 25 ^\circ C$
			1,7	1,9	V
					$T_j = 125 ^\circ C$
V_{F0}			1,1	1,3	V
					$T_j = 25 ^\circ C$
			0,9	1,1	V
					$T_j = 125 ^\circ C$
r_F					V
					$T_j = 25 ^\circ C$
					V
					$T_j = 125 ^\circ C$
I_{RRM}	$I_{Fnom} = 150 A$		205		A
Q_{rr}	$di/dt = 3300 A/\mu s$		55		μC
E_{off}	$V_{GE} = -15 V; V_{CC} = 1200 V$		32		mJ
$R_{th(j-c)D}$	per diode			0,2	K/W
Module					
L_{CE}			18		nH
$R_{CC'+EE'}$	res., terminal-chip	$T_{case} = 25 ^\circ C$	0,7		m Ω
		$T_{case} = 125 ^\circ C$	1,05		m Ω
$R_{th(c-s)}$	per module		0,045		K/W
M_s	to heat sink M5		3	5	Nm
M_t	to terminals M6		2,5	5	Nm
w				250	g
Temperature sensor					
R_{100}	$T_c = 100 ^\circ C (R_{25} = 5 k\Omega)$		0,493 \pm 5%		k Ω
$B_{100/125}$	$R(T) = R_{100} \exp[B_{100/125} (1/T - 1/T_{100})]$; $T[K]; B$		3550 \pm 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.

