

SKM 100GB12T4G



SEMITRANS® 3

IGBT4 Modules

SKM 100GB12T4G

Target Data

Features

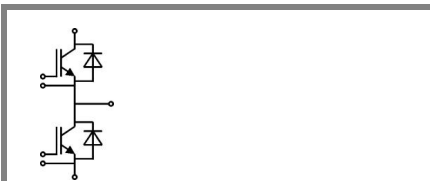
- IGBT4 = 4. Generation (Trench) IGBT
- V_{CEsat} with positive temperature coefficient
- High short circuit capability, self limiting to $6 \times I_{CNOM}$
- Soft switching 4. Generation CAL diode (CAL4)

Typical Applications

- AC inverter drives
- UPS
- Electronic welders at f_{sw} up to 20 kHz

Remarks

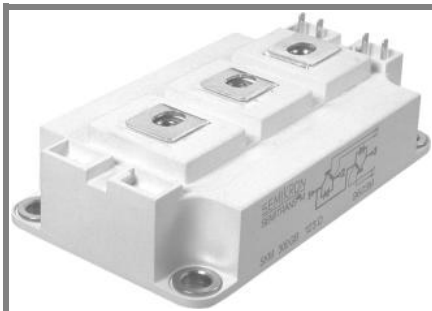
- Case temperature limited to $T_c = 125^\circ\text{C}$ max, recomm. $T_{op} = -40 \dots +150^\circ\text{C}$, product rel. results valid for $T_j \leq 150^\circ$



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Absolute Maximum Ratings		$T_c = 25^\circ\text{C}$, unless otherwise specified		
Symbol	Conditions	Values	Units	
IGBT				
V_{CES}	$T_j = 25^\circ\text{C}$	1200	V	
I_C	$T_j = 175^\circ\text{C}$	$T_{case} = 25^\circ\text{C}$	150	A
		$T_{case} = 80^\circ\text{C}$	115	A
I_{CRM}	$I_{CRM} = 3 \times I_{CNOM}$	300	A	
V_{GES}		± 20	V	
t_{psc}	$V_{CC} = 600\text{ V}; V_{GE} \leq 15\text{ V}; T_j = 150^\circ\text{C}$ $V_{CES} < 1200\text{ V}$	10	μs	
Inverse Diode				
I_F	$T_j = 175^\circ\text{C}$	$T_{case} = 25^\circ\text{C}$	120	A
		$T_{case} = 80^\circ\text{C}$	90	A
I_{FRM}	$I_{FRM} = 3 \times I_{FNOM}$	300	A	
I_{FSM}	$t_p = 10\text{ ms}; \text{sin.}$	$T_j = 175^\circ\text{C}$	860	A
Module				
$I_{t(RMS)}$		500	A	
T_{vj}		-40 ... +175	$^\circ\text{C}$	
T_{stg}		-40 ... +125	$^\circ\text{C}$	
V_{isol}	AC, 1 min.	4000	V	

Characteristics		$T_c = 25^\circ\text{C}$, unless otherwise specified			
Symbol	Conditions	min.	typ.	max.	Units
IGBT					
$V_{GE(th)}$	$V_{GE} = V_{CE}, I_C = 4\text{ mA}$	5	5,8	6,5	V
I_{CES}	$V_{GE} = 0\text{ V}, V_{CE} = V_{CES}$	$T_j = 25^\circ\text{C}$			mA
		$T_j = 150^\circ\text{C}$			
V_{CE0}		$T_j = 25^\circ\text{C}$	0,8	0,9	V
		$T_j = 150^\circ\text{C}$	0,7	0,8	V
r_{CE}	$V_{GE} = 15\text{ V}$	$T_j = 25^\circ\text{C}$	10,5	11,5	$\text{m}\Omega$
		$T_j = 150^\circ\text{C}$	15,5	16,5	$\text{m}\Omega$
$V_{CE(sat)}$	$I_{Cnom} = 100\text{ A}, V_{GE} = 15\text{ V}$	$T_j = 25^\circ\text{C}_{chiplev.}$	1,85	2,05	V
		$T_j = 150^\circ\text{C}_{chiplev.}$	2,25	2,45	V
C_{res}	$V_{CE} = 25, V_{GE} = 0\text{ V}$	$f = 1\text{ MHz}$	6,2		nF
C_{oes}			0,41		nF
C_{res}			0,35		nF
Q_G	$V_{GE} = -8\text{V}/+15\text{V}$		570		nC
R_{Gint}	$T_j = 25^\circ\text{C}$		2		Ω
$t_{d(on)}$	$R_{Gon} = \Omega$	$V_{CC} = 600\text{V}$ $I_{Cnom} = 100\text{A}$ $T_j = 150^\circ\text{C}$ $V_{GE} \leq -8\text{V}$	11		ns
t_r					ns
E_{on}	$R_{Goff} = \Omega$		11		mJ
$t_{d(off)}$					ns
t_f					ns
E_{off}					mJ
$R_{th(j-c)}$	per IGBT			0,29	K/W



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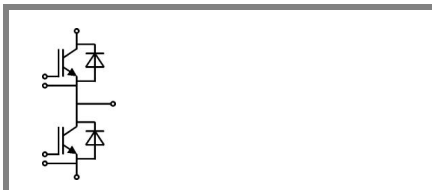
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Characteristics				min.	typ.	max.	Units
Symbol	Conditions						
Inverse Diode							
$V_F = V_{EC}$	$I_{Fnom} = 100 \text{ A}$; $V_{GE} = 0 \text{ V}$	$T_j = 25^\circ\text{C}_{chiplev.}$		2,25	2,55		V
		$T_j = 150^\circ\text{C}_{chiplev.}$		2,2	2,5		V
V_{F0}		$T_j = 25^\circ\text{C}$		1,3	1,5		V
		$T_j = 150^\circ\text{C}$		0,9	1,1		V
r_F		$T_j = 25^\circ\text{C}$		9,5	10,5		mΩ
		$T_j = 150^\circ\text{C}$		13	14		mΩ
I_{RRM}	$I_{Fnom} = 100 \text{ A}$	$T_j = 150^\circ\text{C}$					A
Q_{rr}							μC
E_{rr}	$V_{GE} \leq -8\text{V}$			7,5			mJ
$R_{th(j-c)}$	per diode				0,49		K/W
Freewheeling Diode							
$V_F = V_{EC}$	$I_{Fnom} = \text{A}$; $V_{GE} = \text{V}$	$T_j = ^\circ\text{C}_{chiplev.}$					V
V_{F0}		$T_j = ^\circ\text{C}$					V
r_F		$T_j = ^\circ\text{C}$					V
I_{RRM}	$I_{Fnom} = \text{A}$	$T_j = ^\circ\text{C}$					A
Q_{rr}							μC
E_{rr}							mJ
	per diode						K/W
Module							
L_{CE}				15	20		nH
$R_{CC'+EE'}$	res., terminal-chip	$T_{case} = 25^\circ\text{C}$			0,35		mΩ
		$T_{case} = 125^\circ\text{C}$			0,5		mΩ
$R_{th(c-s)}$	per module			0,02	0,038		K/W
M_s	to heat sink M6			3	5		Nm
M_t	to terminals M6			2,5	5		Nm
w					325		g

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.

