

SKM 75GB12T4



SEMITRANS[®] 2

IGBT4 Modules

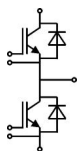
SKM 75GB12T4

Features

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

Typical Applications

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



GB

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	$T_j = 175^\circ\text{C}$	$T_{case} = 25^\circ\text{C}$	110	A
		$T_{case} = 80^\circ\text{C}$	90	A
I_{CRM}	$I_{CRM} = 3 \times I_{CNOM}$	225		A
V_{GES}		± 20		V
t_{psc}	$V_{CC} = 800\text{ V}; V_{GE} \leq 15\text{ V}; T_j = 150^\circ\text{C}$ $V_{CES} < 1200\text{ V}$	10		μs
Inverse Diode				
I_F	$T_j = 175^\circ\text{C}$	$T_{case} = 25^\circ\text{C}$	95	A
		$T_{case} = 80^\circ\text{C}$	75	A
I_{FRM}	$I_{FRM} = 3 \times I_{FNOM}$	225		A
I_{FSM}	$t_p = 10\text{ ms}; \sin.$	$T_j = 175^\circ\text{C}$	430	A
Module				
$I_{t(RMS)}$		200		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					
$V_{GE(th)}$	$V_{GE} = V_{CE}, I_C = 3\text{ mA}$	5	5,8	6,5	V
I_{CES}	$V_{GE} = V, V_{CE} = V_{CES}$				$^\circ\text{C}$
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}	$V_{GE} = 15\text{ V}$	$T_j = 25^\circ\text{C}$	14	15,3	$\text{m}\Omega$
		$T_j = 150^\circ\text{C}$	20,7	22	$\text{m}\Omega$
$V_{CE(sat)}$	$I_{Cnom} = 75\text{ A}, V_{GE} = 15\text{ V}$	$T_j = 25^\circ\text{C}_{chiplev.}$	1,85	2,05	V
		$T_j = 150^\circ\text{C}_{chiplev.}$	2,25	2,45	V
C_{res}	$V_{CE} = 25, V_{GE} = 0\text{ V}$	$f = 1\text{ MHz}$	4,4		nF
C_{oes}			0,29		nF
C_{res}			0,24		nF
Q_G	$V_{GE} = -8\text{V}/15\text{V}$	425		nC	
R_{Gint}	$T_j = 25^\circ\text{C}$	10		Ω	
$t_{d(on)}$	$R_{Gon} = 1\ \Omega$ $di/dt = 1600\text{ A}/\mu\text{s}$	$V_{CC} = 600\text{V}$ $I_C = 75\text{A}$	150		ns
t_r			39		ns
E_{on}			11		mJ
$t_{d(off)}$	$R_{Goff} = 1\ \Omega$ $di/dt = 950\text{ A}/\mu\text{s}$	$T_j = 150^\circ\text{C}$	370		ns
t_f			66		ns
E_{off}			6,9		mJ
$R_{th(j-c)}$	per IGBT	0,38		K/W	

SKM 75GB12T4



SEMITRANS[®] 2

IGBT4 Modules

SKM 75GB12T4

Features

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

Typical Applications

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



GB

Characteristics					
Symbol	Conditions	min.	typ.	max.	Units
Inverse Diode					
$V_F = V_{EC}$	$I_{Fnom} = 75 \text{ A}; V_{GE} = 0 \text{ V}$				
			$T_j = 25 \text{ }^\circ\text{C}_{chiplev.}$	2,2	2,5
			$T_j = 150 \text{ }^\circ\text{C}_{chiplev.}$	2,1	2,45
V_{F0}			$T_j = 25 \text{ }^\circ\text{C}$	1,3	1,5
			$T_j = 150 \text{ }^\circ\text{C}$	0,9	1,1
r_F			$T_j = 25 \text{ }^\circ\text{C}$	12	13,3
			$T_j = 150 \text{ }^\circ\text{C}$	16	18
I_{RRM}	$I_F = 75 \text{ A}$		$T_j = 150 \text{ }^\circ\text{C}$	37	A
Q_{rr}	$di/dt = 990 \text{ A}/\mu\text{s}$			12,6	μC
E_{rr}				4,7	mJ
$R_{th(j-c)}$	per diode			0,58	K/W
Freewheeling Diode					
$V_F = V_{EC}$	$I_{Fnom} = \text{A}; V_{GE} = \text{V}$		$T_j = \text{ }^\circ\text{C}_{chiplev.}$		V
V_{F0}			$T_j = \text{ }^\circ\text{C}$		V
r_F			$T_j = \text{ }^\circ\text{C}$		V
I_{RRM}	$I_F = \text{A}$		$T_j = \text{ }^\circ\text{C}$		A
Q_{rr}					μC
E_{rr}					mJ
	per diode				K/W
Module					
L_{CE}				20	30
					nH
$R_{CC'+EE'}$	res., terminal-chip		$T_{case} = 25 \text{ }^\circ\text{C}$		0,75
			$T_{case} = 125 \text{ }^\circ\text{C}$		1
					m Ω
$R_{th(c-s)}$	per module				0,05
					K/W
M_s	to heat sink M6			3	5
					Nm
M_t	to terminals M5			2,5	5
					Nm
w					160
					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.

