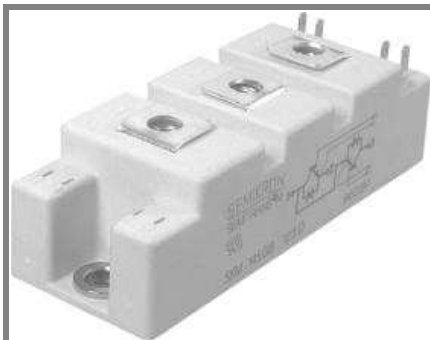




SEMITRANS® 2

IGBT Modules

SKM 50GB123D

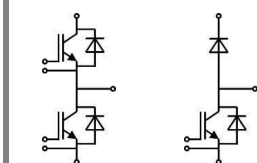
SKM 50GAL123D

Features

- MOS input (voltage controlled)
- Low inductance case
- Low tail current with low temperature dependence
- High short circuit capability, self limiting to $6 \times I_{C_{NOM}}$
- Fast and soft CAL diodes
- Isolated copper base plate using DCB (Direct Copper Bonding Technology)

Typical Applications*

- AC inverter drives
- Power supplies



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Absolute Maximum Ratings			T _c = 25 °C, unless otherwise specified	
Symbol	Conditions		Values	Units
IGBT				
V _{CES}	T _j = 25 °C		1200	V
I _C	T _j = 150 °C	T _{case} = 25 °C	50	A
		T _{case} = 80 °C	40	A
I _{CRM}	I _{CRM} =2xI _{Cnom}		100	A
V _{GES}			± 20	V
t _{psc}	V _{CC} = 600 V; V _{GE} ≤ 20 V; T _j = 125 °C V _{CES} < 1200 V		10	μs
Inverse Diode				
I _F	T _j = 150 °C	T _{case} = 25 °C	50	A
		T _{case} = 80 °C	40	A
I _{FRM}	I _{FRM} = 2xI _{Fnom}		100	A
I _{FSM}	t _p = 10 ms; sin. T _j = 150 °C		550	A
Freewheeling Diode				
I _F	T _j = 150 °C	T _{case} = 25 °C	50	A
		T _{case} = 80 °C	40	A
I _{FRM}	IFRM = 2xIFnom		100	A
I _{FSM}	t _p = 10 ms; sin. T _j = 150 °C		550	A
Module				
I _{t(RMS)}			200	A
T _{vj}			- 40 ...+150	°C
T _{stg}			125	°C
V _{isol}	AC, 1 min.		2500	V

Characteristics				T _c = 25 °C, unless otherwise specified		
Symbol	Conditions		min.	typ.	max.	Units
IGBT						
V _{GE(th)}	V _{GE} = V _{CE} , I _C = 2 mA		4,5	5,5	6,5	V
I _{CES}	V _{GE} = 0 V, V _{CE} = V _{CES}	T _j = 25 °C T _j = 125 °C		0,1	0,3	mA mA
V _{CE0}		T _j = 25 °C T _j = 125 °C		1 0,9	1,15 1,05	V V
r _{CE}	V _{GE} = 15 V	T _j = 25°C T _j = 125°C		30 44	37 53	mΩ mΩ
V _{CE(sat)}	I _{Cnom} = 50 A, V _{GE} = 15 V	T _j = 25°C _{chiplev.} T _j = 125°C _{chiplev.}		2,5 3,1	3 3,7	V V
C _{ies} C _{oes} C _{res}	V _{CE} = 25, V _{GE} = 0 V	f = 1 MHz		3,3 0,5 0,2		nF nF nF
Q _G	V _{GE} = -8V - +20V			500		nC
R _{Gint}	T _j = °C			2,5		Ω
t _{d(on)} t _r E _{on}	R _{Gon} = 27 Ω	V _{CC} = 600V I _C = 40A		70 60 7		ns ns mJ
t _{d(off)} t _f E _{off}	R _{Goff} = 27 Ω	T _j = 125 °C		400 45 4,5		ns ns mJ
R _{th(j-c)}	per IGBT				0,4	K/W



SEMITRANS® 2

IGBT Modules

SKM 50GB123D

SKM 50GAL123D

Features

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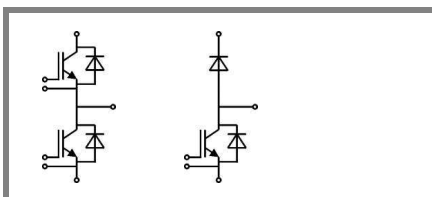
Typical Applications*

- AC inverter drives
- Power supplies

Characteristics					
Symbol	Conditions	min.	typ.	max.	Units
Inverse Diode					
$V_F = V_{EC}$	$I_{Fnom} = 50 \text{ A}; V_{GE} = 0 \text{ V}$	$T_j = 25 \text{ }^\circ\text{C}_{chiplev.}$	2	2,5	V
		$T_j = 125 \text{ }^\circ\text{C}_{chiplev.}$	1,8		V
V_{F0}		$T_j = 25 \text{ }^\circ\text{C}$	1,1	1,2	V
		$T_j = 125 \text{ }^\circ\text{C}$			V
r_F		$T_j = 25 \text{ }^\circ\text{C}$	18	26	mΩ
		$T_j = 125 \text{ }^\circ\text{C}$		22	mΩ
I_{RRM}	$I_F = 40 \text{ A}$	$T_j = 125 \text{ }^\circ\text{C}$	35		A
Q_{rr}	$di/dt = 800 \text{ A}/\mu\text{s}$		7		μC
E_{rr}	$V_{cc} = 600\text{V}$		2		mJ
$R_{th(j-c)}$	per diode			0,7	K/W
Freewheeling Diode					
$V_F = V_{EC}$	$I_{Fnom} = 50 \text{ A}; V_{GE} = 0 \text{ V}$	$T_j = 25 \text{ }^\circ\text{C}_{chiplev.}$	2	2,5	V
		$T_j = 125 \text{ }^\circ\text{C}_{chiplev.}$	1,8		V
V_{F0}		$T_j = 25 \text{ }^\circ\text{C}$	1,1	1,2	V
		$T_j = 125 \text{ }^\circ\text{C}$			V
r_F		$T_j = 25 \text{ }^\circ\text{C}$	18	26	V
		$T_j = 125 \text{ }^\circ\text{C}$			V
I_{RRM}	$I_F = 40 \text{ A}$	$T_j = 125 \text{ }^\circ\text{C}$	35		A
Q_{rr}	$di/dt = 800 \text{ A}/\mu\text{s}$		7		μC
E_{rr}	$V_{cc} = 600\text{V}$		2		mJ
$R_{th(j-c)}$	per diode			0,7	K/W
Module					
L_{CE}				30	nH
$R_{CC'+EE'}$	res., terminal-chip	$T_{case} = 25 \text{ }^\circ\text{C}$	0,75		mΩ
		$T_{case} = 125 \text{ }^\circ\text{C}$	1		mΩ
$R_{th(c-s)}$	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.

* The specifications of our components may not be considered as an assurance of component characteristics. Components have to be tested for the respective application. Adjustments may be necessary. The use of SEMIKRON products in life support appliances and systems is subject to prior specification and written approval by SEMIKRON. We therefore strongly recommend prior consultation of our personal.



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