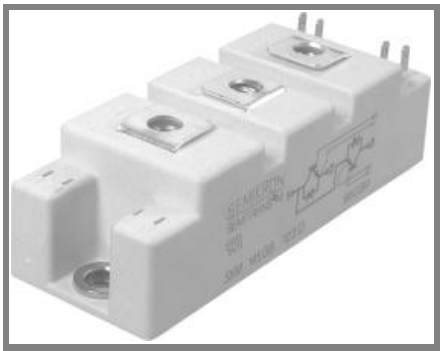
SKM 100GB063D



SEMITRANS® 2

Superfast NPT-IGBT Module

SKM 100GB063D

Features

- N channel, homogeneous Silicon structure (NPT- Non punch through IGBT)
- Low tail current with low temperature dependence
- High short circuit capability, self limiting if term. G is clamped to E
- Pos. temp.-coeff. of V_{CEsat}
- Very low C_{ies}, C_{oes}, C_{res}
- Latch-up free
- Fast & soft inverse CAL diodes
- Isolated copper Bonding Technology without hard mould
- Large clearance (10 mm) and creepage distances (20 mm)

Typical Applications

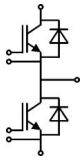
- Switching (not for linear use)
- Switched mode power supplies
- UPS
- Three phase inverters for servo / AC motor speed control
- Pulse frequencies also above 10 kHz

Absolute Maximum Ratings T_c = 25 °C, unless otherwise specified

Symbol	Conditions		Values	Units
IGBT				
V_{CES}	T_j = 25 °C		600	V
I_C	T_j = 150 °C	T_{case} = 25 °C	130	A
		T_{case} = 70 °C	100	A
I_{CRM}	I_{CRM}=2xI_{Cnom}		200	A
V_{GES}			± 20	V
t_{psc}	V_{CC} = 300 V; $V_{GE} \leq$ 20 V; V_{CES} < 600 V	T_j = 125 °C	10	µs
Inverse Diode				
I_F	T_j = 150 °C	T_{case} = 25 °C	100	A
		T_{case} = 80 °C	75	A
I_{FRM}	I_{FRM}=2xI_{Fnom}		200	A
I_{FSM}	t_p = 10 ms; sin.	T_j = 150 °C	720	A
Module				
$I_{t(RMS)}$			200	A
T_{vj}			- 40 ... + 150	°C
T_{stg}			- 40 ... + 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		0,1	0,3	mA
V_{CE0}		T_j = 25 °C		1,05		V
		T_j = 125 °C		1		V
r_{CE}	V_{GE} = 15 V	T_j = 25°C		10,5		mΩ
		T_j = 125°C		14		mΩ
$V_{CE(sat)}$	I_{Cnom} = 100 A, V_{GE} = 15 V	T_j = 25°C$_{chiplev.}$		2,1	2,5	V
		T_j = 125°C$_{chiplev.}$		2,4	2,8	V
C_{ies}	V_{CE} = 25, V_{GE} = 0 V	f = 1 MHz		5,6		nF
C_{oes}				0,6		nF
C_{res}				0,4		nF
Q_G	V_{GE} = 0V - +15V			240		nC
R_{Gint}	T_j = °C			0		Ω
$t_{d(on)}$	R_{Gon} = 10 Ω	V_{CC} = 300V		50		ns
t_r		I_C= 100A		40		ns
E_{on}		T_j = 125 °C		4		mJ
$t_{d(off)}$	R_{Goff} = 10 Ω	V_{GE} = ±15 V		300		ns
t_f				35		ns
E_{off}				3		mJ
$R_{th(j-c)}$	per IGBT				0,27	K/W



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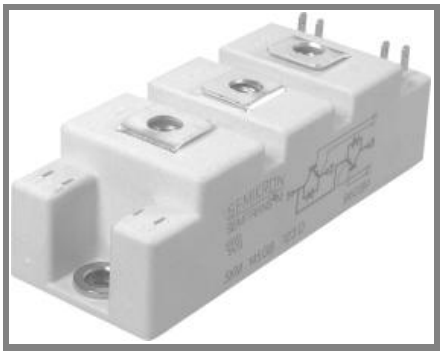

SEMITRANS® 2

Superfast NPT-IGBT Module

SKM 100GB063D

Characteristics						
Symbol	**Conditions**		**min.**	**typ.**	**max.**	**Units**
Inverse Diode						
$V_F = V_{EC}$	I_{Fnom} = 100 A; V_{GE} = 0 V	T_j = 25 °$C_{chiplev.}$		1,55	1,9	V
		T_j = 125 °$C_{chiplev.}$		1,55		V
V_{F0}		T_j = 125 °C			0,9	V
r_F		T_j = 125 °C		8	10	mΩ
I_{RRM}	I_F = 100 A	T_j = 125 °C		44		A
Q_{rr}				6		µC
E_{rr}	V_{GE} = -15 V; V_{CC} = 300 V					mJ
$R_{th(j-c)D}$	per diode				0,6	K/W
Module						
L_{CE}					30	nH
$R_{CC'+EE'}$	res., terminal-chip	T_{case}= 25 °C		0,75		mΩ
		T_{case}= 125 °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

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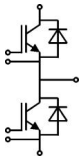
This is an electrostatic discharge sensitive device (ESDS), international standard IEC 60747-1, Chapter IX.

This technical information specifies semiconductor devices but promises no characteristics. No warranty or guarantee expressed or implied is made regarding delivery, performance or suitability.



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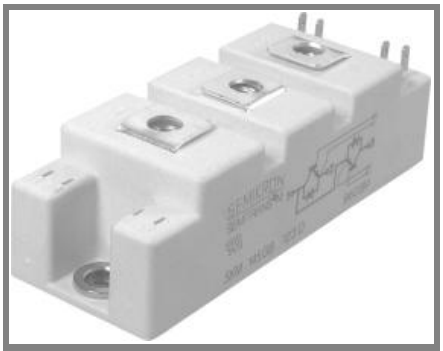

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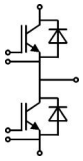

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Z_{th} Symbol	Conditions	Values	Units
$Z_{th(j-c)I}$			
R_i	i = 1	160	mk/W
R_i	i = 2	88	mk/W
R_i	i = 3	18	mk/W
R_i	i = 4	4	mk/W
tau_i	i = 1	0,0447	s
tau_i	i = 2	0,0087	s
tau_i	i = 3	0,0015	s
tau_i	i = 4	0,0002	s
$Z_{th(j-c)D}$			
R_i	i = 1	400	mk/W
R_i	i = 2	165	mk/W
R_i	i = 3	30,5	mk/W
R_i	i = 4	4,5	mk/W
tau_i	i = 1	0,0613	s
tau_i	i = 2	0,0085	s
tau_i	i = 3	0,0045	s
tau_i	i = 4	0,0003	s

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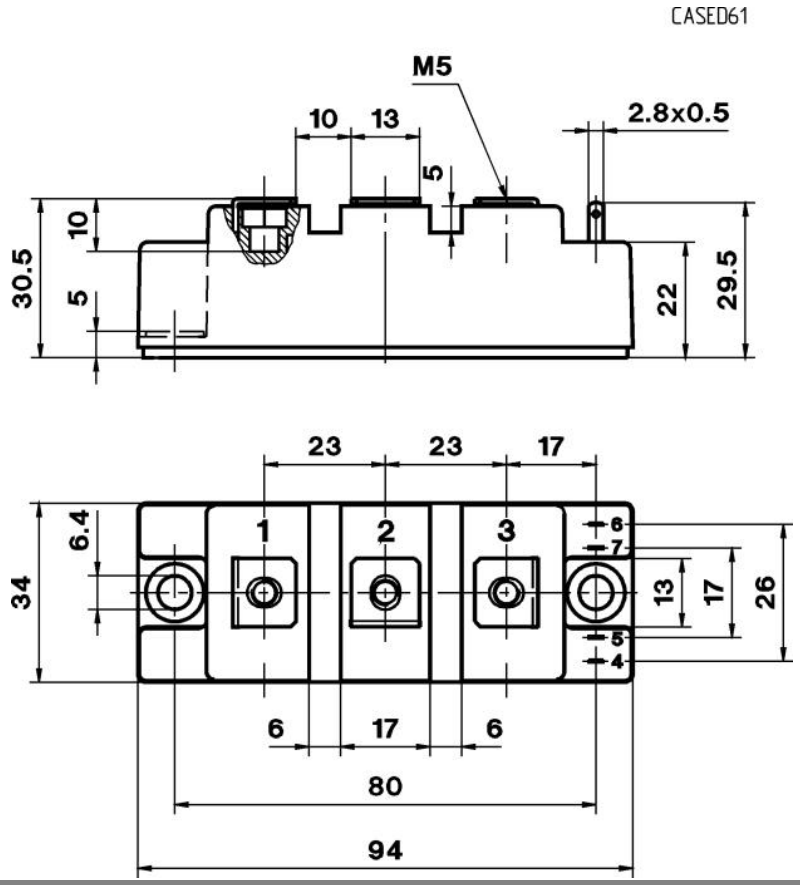

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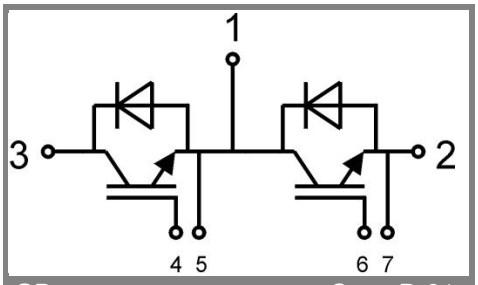

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