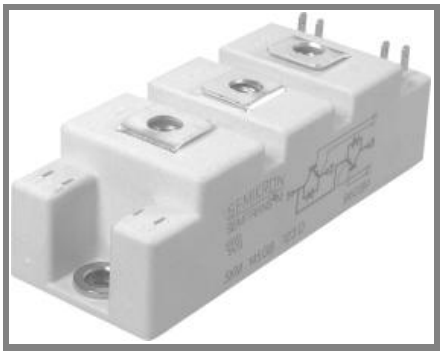
SKM 195GB066D



SEMITRANS® 2

Trench IGBT Modules

SKM195GB066D

Preliminary Data

Features

- Homogeneous Si
- Trench = Trenchgate technology
- $V_{CE(sat)}$ with positive temperature coefficient
- High short circuit capability, self limiting to 6 x I_C

Typical Applications

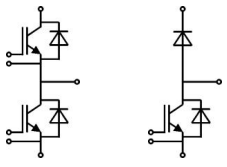
- AC inverter drives
- UPS
- Electronic welders

Remarks

- Case temperature limited to T_c = 125°C max., product rel. results valid for $T_j \leq 150°C$
- SC data: Use of soft R_G necessary!
- Take care of over-voltage caused by stray induct.

Absolute Maximum Ratings	T_{case} = 25°C, unless otherwise specified			
Symbol	**Conditions**		**Values**	**Units**
IGBT				
V_{CES}	T_j = 25 °C		600	V
I_C	T_j = 175 °C	T_c = 25 °C	265	A
		T_c = 80 °C	200	A
I_{CRM}	I_{CRM}=2xI_{Cnom}		400	A
V_{GES}			± 20	V
t_{psc}	V_{CC} = 360 V; $V_{GE} \leq$ 15 V; V_{CES} < 600 V	T_j = 150 °C	6	µs
Inverse Diode				
I_F	T_j = 175 °C	T_c = 25 °C	200	A
		T_c = 80 °C	130	A
I_{FRM}	I_{FRM}=2xI_{Fnom}		400	A
I_{FSM}	t_p = 10 ms; sin.	T_j = 175 °C	1400	A
Module				
$I_{t(RMS)}$			200	A
T_{vj}			- 40 ... + 175	°C
T_{stg}			- 40 ... + 125	°C
V_{isol}	AC, 1 min.		4000	V

Characteristics	T_{case} = 25°C, unless otherwise specified					
Symbol	**Conditions**		**min.**	**typ.**	**max.**	**Units**
IGBT						
$V_{GE(th)}$	V_{GE} = V_{CE}, I_C = 3,2 mA		5	5,8	6,5	V
I_{CES}	V_{GE} = 0 V, V_{CE} = V_{CES}	T_j = 25 °C		0,13	0,38	mA
V_{CE0}		T_j = 25 °C		0,9	1	V
		T_j = 150 °C		0,85	0,9	V
r_{CE}	V_{GE} = 15 V	T_j = 25°C		2,8	4,5	mΩ
		T_j = 150°C		4,3	6	mΩ
$V_{CE(sat)}$	I_{Cnom} = 200 A, V_{GE} = 15 V	T_j = 25°C$_{chiplev.}$		1,45	1,9	V
		T_j = 150°C$_{chiplev.}$		1,7	2,1	V
C_{ies}	V_{CE} = 25, V_{GE} = 0 V	f = 1 MHz		12,3		nF
C_{oes}				0,77		nF
C_{res}				0,37		nF
Q_G	V_{GE} = -8V...+15V			1500		nC
R_{Gint}	T_j = °C			2		Ω
$t_{d(on)}$	R_{Gon} = 3 Ω	V_{CC} = 300V		160		ns
t_r		I_C= 200A		68		ns
E_{on}		T_j = 150 °C		14		mJ
$t_{d(off)}$	R_{Goff} = 3 Ω	V_{GE} = -8V/+15V		520		ns
t_f				49		ns
E_{off}				8		mJ
$R_{th(j-c)}$	per IGBT				0,22	K/W



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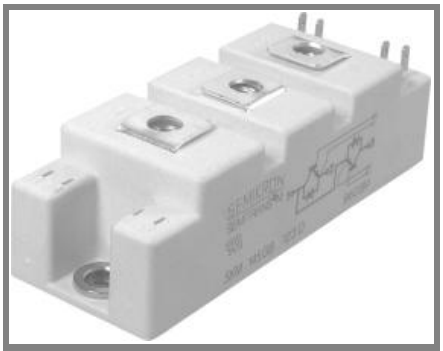

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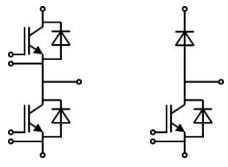

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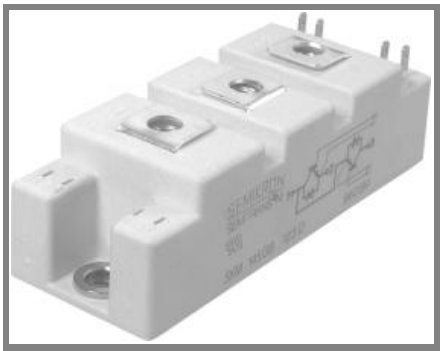
Characteristics

Symbol	Conditions		min.	typ.	max.	Units
Inverse Diode						
$V_F = V_{EC}$	I_{Fnom} = 200 A; V_{GE} = 0 V	T_j = 25 °C$_{chiplev.}$		1,4	1,6	V
V_{F0}		T_j = 25 °C		0,95	1	V
r_F		T_j = 25 °C		2,3	3	mΩ
I_{RRM}	I_F = 200 A	T_j = 150 °C		100		A
Q_{rr}	di/dt = 2000 A/µs			30		µC
E_{rr}	V_{GE} = -8 V; V_{CC} = 300 V			5,6		mJ
$R_{th(j-c)D}$	per diode				0,4	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					150	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.



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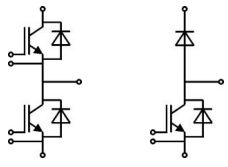

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Z_{th} Symbol	Conditions	Values	Units
$Z_{th(j-c)I}$			
R_i	i = 1	160	mk/W
R_i	i = 2	41	mk/W
R_i	i = 3	16	mk/W
R_i	i = 4	3	mk/W
tau_i	i = 1	0,0276	s
tau_i	i = 2	0,0406	s
tau_i	i = 3	0,001	s
tau_i	i = 4	0,0011	s
$Z_{th(j-c)D}$			
R_i	i = 1	250	mk/W
R_i	i = 2	110	mk/W
R_i	i = 3	35	mk/W
R_i	i = 4	5	mk/W
tau_i	i = 1	0,054	s
tau_i	i = 2	0,012	s
tau_i	i = 3	0,0015	s
tau_i	i = 4	0,0007	s

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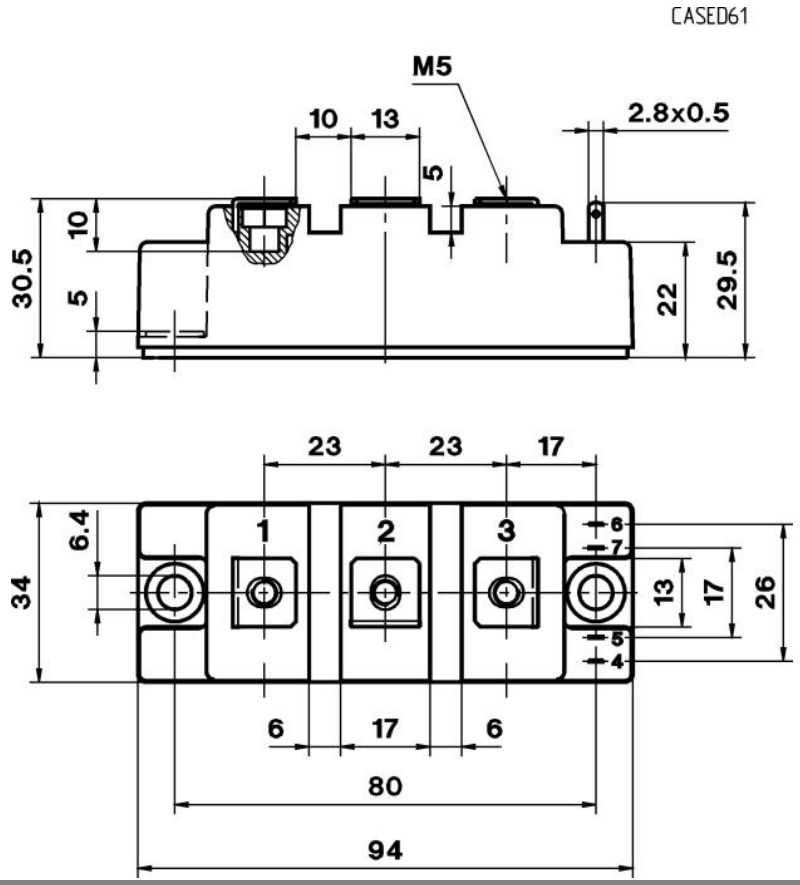
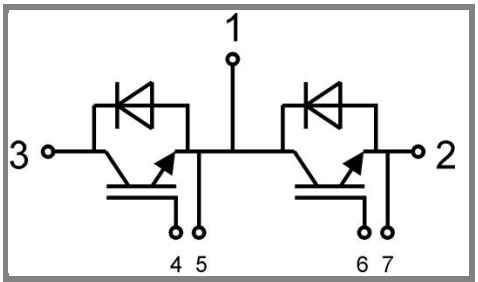
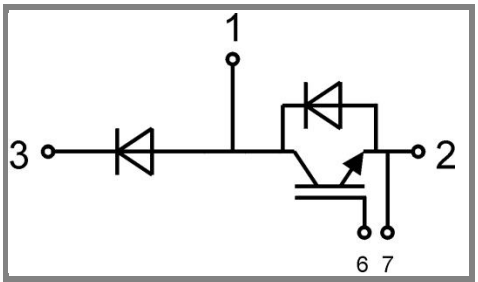


Case D 61



GB Case D 61



GAL Case D 62

