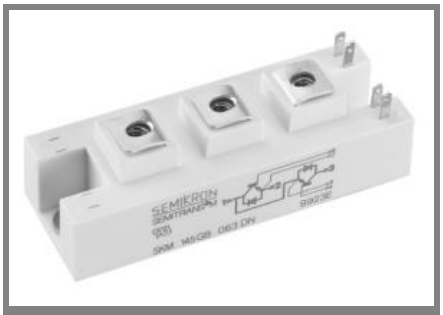
SKM 100GB125DN



SEMITRANS® 2N

Ultra Fast IGBT Module

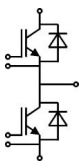
SKM 100GB125DN

Features

- N channel, homogeneous Si
- Low inductance case
- Short tail current with low temperature dependence
- High short circuit capability, self limiting to 6 x I_{cnom}
- Fast & soft inverse CAL diodes
- Isolated copper baseplate using DCB Direct Copper Bonding Technology
- Large clearance (10 mm) and creepage distances (20 mm)

Typical Applications

- Switched mode power supplies at f_{sw} > 20 kHz
- Resonant inverters up to 100 kHz
- Inductive heating
- Electronic welders at f_{sw} > 20 kHz



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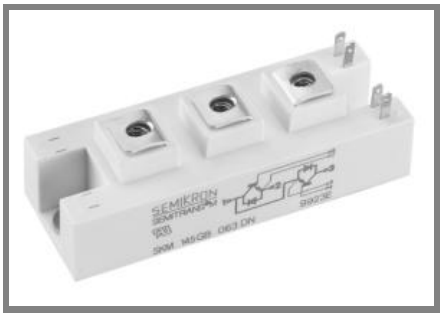
Absolute Maximum Ratings			T_c = 25 °C, unless otherwise specified	
Symbol	**Conditions**		**Values**	**Units**
IGBT				
V_{CES}	T_j = 25 °C		1200	V
I_C	T_j = 150 °C	T_{case} = 25 °C	100	A
		T_{case} = 85 °C	80	A
I_{CRM}	I_{CRM}=2xI_{Cnom}		150	A
V_{GES}			± 20	V
t_{psc}	V_{CC} = 600 V; $V_{GE} \leq$ 20 V; V_{CES} < 1200 V	T_j = 125 °C	10	µs
Inverse Diode				
I_F	T_j = 150 °C	T_{case} = 25 °C	95	A
		T_{case} = 80 °C	65	A
I_{FRM}	I_{FRM}=2xI_{Fnom}		150	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}			125	°C
V_{isol}	AC, 1 min.		4000	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		0,15	0,45	mA
		T_j = 125 °C				mA
V_{CE0}		T_j = 25 °C				V
		T_j = 125 °C				V
r_{CE}	V_{GE} = 15 V	T_j = 25°C				mΩ
		T_j = 125°C				mΩ
$V_{CE(sat)}$	I_{Cnom} = 75 A, V_{GE} = 15 V	T_j = °$C_{chiplev.}$		3,3	3,85	V
C_{ies}	V_{CE} = 25, V_{GE} = 0 V	f = 1 MHz		5	6,6	nF
C_{oes}				0,72	0,9	nF
C_{res}				0,38	0,5	nF
Q_G	V_{GE} = 0 - +20V			650		nC
R_{Gint}	T_j = °C			5		Ω
$t_{d(on)}$	R_{Gon} = 8 Ω	V_{CC} = 600V		80		ns
t_r		I_C= 75A		40		ns
E_{on}		T_j = 125 °C		9		mJ
$t_{d(off)}$	R_{Goff} = 8 Ω	V_{GE} = ± 15V		360		ns
t_f				20		ns
E_{off}				3,5		mJ
$R_{th(j-c)}$	per IGBT				0,18	K/W

SKM 100GB125DN



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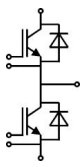

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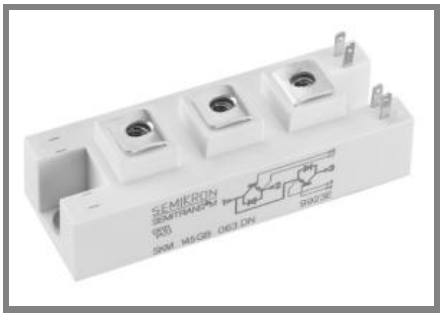
Characteristics						
Symbol	**Conditions**		**min.**	**typ.**	**max.**	**Units**
Inverse Diode						
$V_F = V_{EC}$	I_{Fnom} = 75 A; V_{GE} = 0 V	T_j = 25 °$C_{chiplev.}$		2	2,5	V
		T_j = 125 °$C_{chiplev.}$		1,8		V
V_{F0}		T_j = °C		1,1	1,2	V
r_F		T_j = °C		12	17,3	mΩ
I_{RRM}	I_F = 75 A	T_j = 125 °C		50		A
Q_{rr}	di/dt = 800 A/µs			11,5		µC
E_{rr}	V_{GE} = 0 V; V_{CC} = 600 V					mJ
$R_{th(j-c)D}$	per diode				0,5	K/W
Module						
L_{CE}				20	25	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

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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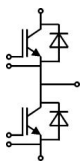

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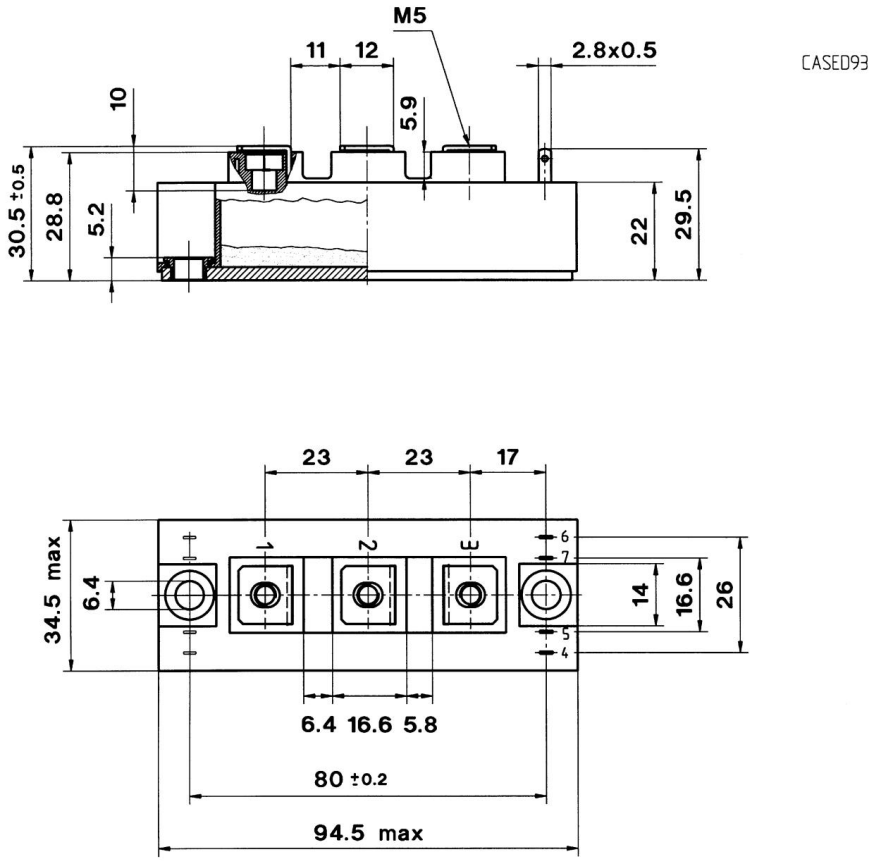
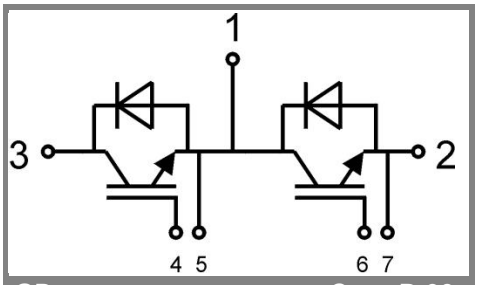
Z_{th} Symbol	Conditions	Values	Units
$Z_{th(j-c)I}$			
R_i	i = 1	95	mk/W
R_i	i = 2	65	mk/W
R_i	i = 3	17,5	mk/W
R_i	i = 4	2,5	mk/W
tau_i	i = 1	0,0327	s
tau_i	i = 2	0,008	s
tau_i	i = 3	0,0017	s
tau_i	i = 4	0,008	s
$Z_{th(j-c)D}$			
R_i	i = 1	300	mk/W
R_i	i = 2	160	mk/W
R_i	i = 3	36	mk/W
R_i	i = 4	4	mk/W
tau_i	i = 1	0,054	s
tau_i	i = 2	0,001	s
tau_i	i = 3	0,0015	s
tau_i	i = 4	0,1	s

UL Recognized File 63 532



Case D 93



GB Case D 93

