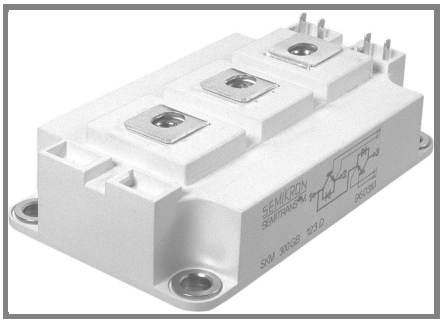
SKM 200GB124D



SEMITRANS^{TM} 3

Low Loss IGBT Modules

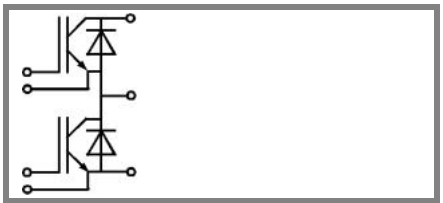
SKM 200GB124D

Features

- MOS input (voltage controlled)
- N channel, homogeneous Silicon structure NPT-IGBT (Non punch-through)
- Low saturation voltage
- Low inductance case
- Low tail current with low temperature dependence
- High short circuit capability, self limiting to 6 x I_{cnom}
- Latch-up free
- Fast & soft inverse CAL diodes
- Isolated copper baseplate using DCB Direct Copper Bonding Technology without hard mould
- Large clearance (12 mm) and creepage distances (20 mm)

Typical Applications

- Switching (not for linear use)
- Inverter drives
- UPS



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Absolute Maximum Ratings		T_c = 25 °C, unless otherwise specified	
Symbol	**Conditions**	**Values**	**Units**
IGBT			
V_{CES}		1200	V
I_C	T_c = 25 (85) °C	290 (200)	A
I_{CRM}	t_p = 1 ms	300	A
V_{GES}		± 20	V
T_{vj}, (T_{stg})	$T_{OPERATION} \leq T_{stg}$	- 40 ... + 150 (125)	°C
V_{isol}	AC, 1 min.	2500	V
Inverse diode			
I_F	T_c = 25 (80) °C	195 (130)	A
I_{FRM}	t_p = 1 ms	300	A
I_{FSM}	t_p = 10 ms; sin.; T_j = 150 °C	1450	A

Characteristics		T_c = 25 °C, unless otherwise specified			
Symbol	**Conditions**	**min.**	**typ.**	**max.**	**Units**
IGBT					
$V_{GE(th)}$	V_{GE} = V_{CE}, I_C = 6 mA	4,5	5,5	6,5	V
I_{CES}	V_{GE} = 0, V_{CE} = V_{CES}, T_j = 25 (125) °C		0,1	0,3	mA
$V_{CE(TO)}$	T_j = 25 (125) °C		1,1 (1,1)	1,25 (1,25)	V
r_{CE}	V_{GE} = 15 V, T_j = 25 (125) °C		6,7 (8,7)	8 (10,7)	mΩ
$V_{CE(sat)}$	I_{Cnom} = 150 A, V_{GE} = 15 V, chip level		2,1 (2,4)	2,45 (2,85)	V
C_{ies}	under following conditions		11	15	nF
C_{oes}	V_{GE} = 0, V_{CE} = 25 V, f = 1 MHz		1,6	2	nF
C_{res}			0,8	1	nF
L_{CE}				20	nH
$R_{CC'+EE'}$	res., terminal-chip T_c= 25 (125) °C		0,35 (0,5)		mΩ
$t_{d(on)}$	V_{CC} = 600 V, I_{Cnom} = 150 A		75		ns
t_r	R_{Gon} = R_{Goff} = 7 Ω, T_j = 125 °C		50		ns
$t_{d(off)}$	V_{GE} = ± 15 V		520		ns
t_f			50		ns
E_{on} (E_{off})			21 (19)		mJ
Inverse diode					
V_F = V_{EC}	I_{Fnom} = 150 A; V_{GE} = 0 V; T_j = 25 (125) °C		2 (1,8)	2,5	V
$V_{(TO)}$	T_j = 125 () °C		1,1	1,2	V
r_T	T_j = 125 () °C			7	mΩ
I_{RRM}	I_{Fnom} = 150 A; T_j = 125 ( ) °C		78		A
Q_{rr}	di/dt = A/µs		19,5		µC
E_{rr}	V_{GE} = V				mJ
Thermal characteristics					
$R_{th(j-c)}$	per IGBT			0,09	K/W
$R_{th(j-c)D}$	per Inverse Diode			0,25	K/W
$R_{th(c-s)}$	per module			0,038	K/W
Mechanical data					
M_s	to heatsink M6	3		5	Nm
M_t	to terminals M6	2,5		5	Nm
w				325	g