SEMIKRON

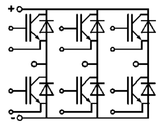
Absolute Maximum Ratings Symbol	Conditions [1]	Values	Units
V_{CES}		1200	V
V_{CGR}	R_{GE} = 20 kΩ	1200	V
I_C	T_{case} = 25/80 °C	25 / 15	A
I_{CM}	T_{case} = 25/80 °C; t_p = 1 ms	50 / 30	A
V_{GES}		± 20	V
P_{tot}	per IGBT, T_{case} = 25 °C	145	W
T_j, (T_{stg})		– 40 . . .+150 (125)	°C
V_{isol}	AC, 1 min.	2 500	V
humidity	DIN 40 040	Class F	
climate	DIN IEC 68 T.1	55/150/56	
Inverse Diode			
I_F= – I_C	T_{case} = 25/80 °C	25 / 15	A
I_{FM}= – I_{CM}	T_{case} = 25/80 °C; t_p = 1 ms	50 / 30	A
I_{FSM}	t_p = 10 ms; sin.; T_j = 150 °C	200	A
I^2t	t_p = 10 ms; T_j = 150 °C	200	A^2s

Characteristics Symbol	Conditions [1]	min.	typ.	max.	Units
$V_{(BR)GES}$	V_{GE} = 0, I_C = 0,5 mA	≥ V_{CES}	–	–	V
$V_{GE(th)}$	V_{GE} = V_{CE}, I_C = 1 mA	4,5	5,5	6,5	V
I_{CES}	V_{GE} = 0 } T_j = 25 °C	–	0,3	0,5	mA
	V_{CE} = V_{CES} } T_j = 125 °C	–	1,8	–	mA
I_{GES}	V_{GE} = 20 V, V_{CE} = 0	–	–	150	nA
V_{CEsat}	I_C = 15 A { V_{GE} = 15 V;	–	2,5(3,1)	3(3,7)	V
V_{CEsat}	I_C = 22 A { T_j = 25 (125) °C	–	3(3,7)	–	V
g_{fs}	V_{CE} = 20 V, I_C = 15 A		12	–	S
C_{CHC}	per IGBT	–	–	300	pF
C_{ies}	{ V_{GE} = 0	–	1000		pF
C_{oes}	{ V_{CE} = 25 V	–	150		pF
C_{res}	f = 1 MHz	–	70		pF
L_{CE}		–	–	60	nH
$t_{d(on)}$	V_{CC} = 600 V	–	40	–	ns
t_r	V_{GE} = + 15 V / - 15 V [3]	–	35	–	ns
$t_{d(off)}$	I_C = 15 A, ind. load	–	350	–	ns
t_f	R_{Gon} = R_{Goff} = 52 Ω	–	70	–	ns
E_{on} [5]	T_j = 125 °C	–	2	–	mWs
E_{off} [5]		–	1,4	–	mWs
Inverse Diode [8]					
V_F = V_{EC}	I_F = 15 A { V_{GE} = 0 V;	–	2,0(1,8)	2,5	V
V_F = V_{EC}	I_F = 25 A { T_j = 25 (125) °C	–	2,3(2,1)	–	V
V_{TO}	T_j = 125 °C	–	1,1	1,2	V
r_T	T_j = 125 °C	–	45	70	mΩ
I_{RR}	I_F = 15 A; T_j = 25 (125) °C [2]	–	12(16)	–	A
Q_{rr}	I_F = 15 A; T_j = 25 (125) °C [2]	–	1(2,7)	–	µC
Thermal Characteristics					
R_{thjc}	per IGBT	–	–	0,86	°C/W
R_{thjc}	per diode [8]	–	–	1,5	°C/W
R_{thch}	per module	–	–	0,05	°C/W

SEMITRANS® M IGBT Modules

SKM 22 GD 123 D
SKM 22 GD 123 D L*)

Sixpack



GD

Features

- MOS input (voltage controlled)
- N channel, homogeneous Si
- Low inductance case
- Very low tail current with low temperature dependence
- High short circuit capability, self limiting to 6 * I_{cnom}
- Latch-up free
- Fast & soft inverse CAL diodes[8]
- Isolated copper baseplate using DCB Direct Copper Bonding Technology
- Large clearance (9 mm) and creepage distances (13 mm).

Typical Applications

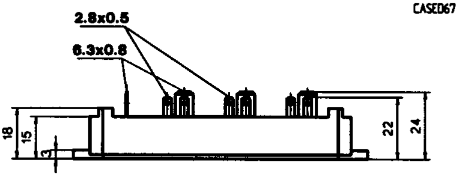
- Switched mode power supplies
- Three phase inverters for AC motor speed control
- General power switching applications
- Pulse frequencies also above 15 kHz

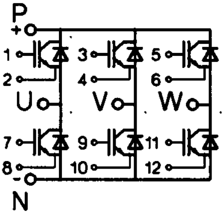
1) T_{case} = 25 °C, unless otherwise specified
2) I_F = – I_C, V_R = 600 V, – dI_F/dt = 400 A/µs, V_{GE} = 0 V
3) Use: V_{GEoff} = -5 ... -15 V
5) See fig. 2 + 3; R_{Goff} = 52 Ω
8) CAL = Controlled Axial Lifetime Technology.

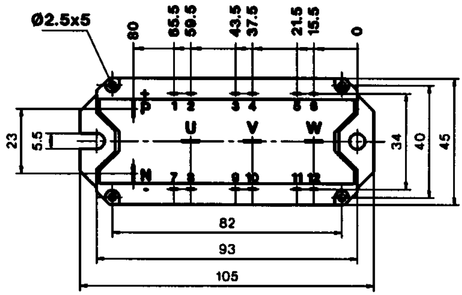
***) Main terminals = 2 mm dia.**

Cases and mech. data → B6 - 10 Sixpack

SEMITRANS Sixpack
Case D 67
UL Recognized
File no. E 63 532
SKM 22 GD 123 D

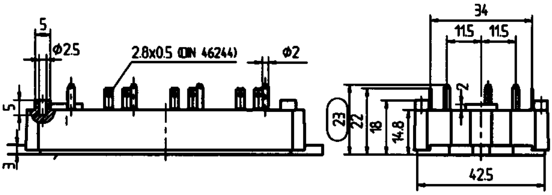


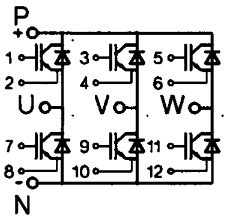


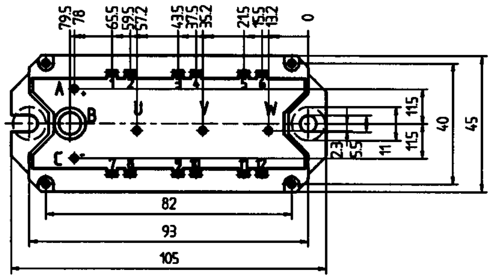


SEMITRANS Sixpack
Case D 68
UL Recognized
Special version on request
SKM 22 GD 123 DL
SKM 40 GD 123 DL
SKM 75 GD 123 DL

Remark: The pin height of 23,2 mm will be changed into 24,5 ± 0,2 mm during 1996







Dimensions in mm

Case outlines and circuit diagrams

Mechanical Data					
Symbol	**Conditions**	**Values min.**	**typ.**	**max.**	**Units**
M_1	to heatsink, SI Units (M5)	4	–	5	Nm
	to heatsink, US Units	35	–	44	lb.in.
a		–	–	5x9,81	m/s^2
w		–	–	190	g

This is an electrostatic discharge sensitive device (ESD). Please observe the international standard IEC 747-1, Chapter IX.

Two devices are supplied in one SEMIBOX A.
Larger packing units (10 and 20 pieces) are used if suitable.
SEMIBOX → page C - 1.

