

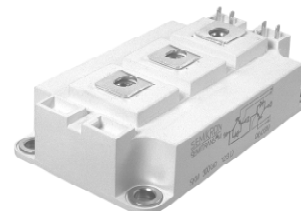
Absolute Maximum Ratings		Values	Units
Symbol	Conditions ¹⁾		
V _{CES}		1700	V
V _{CGR}	R _{GE} = 20 kΩ	1700	V
I _C ; I _{CN}	T _{case} = 25/75 °C	270/ 200	A
I _{CM}	T _{case} = 25/75 °C; t _p = 1 ms	540/ 400	A
V _{GES}		± 20	V
P _{tot}	per IGBT, T _{case} = 25 °C	1400	W
T _j , (T _{stg})		-40 ... +150 (125)	°C
V _{isol}	AC, 1 min. ⁴⁾	3400	V
humidity	DIN 40 040	Class F	
climate	DIN IEC 68 T.1	40/125/56	
Inverse Diode ⁸⁾			
I _F = -I _C	T _{case} = 25/75 °C	190 / 136	A
I _{FM} = -I _{CM}	T _{case} = 25/75 °C; t _p = 1 ms	540/ 400	A
I _{FSM}	t _p = 10 ms; sin.; T _j = 150 °C	1450	A
I ² t	t _p = 10 ms; T _j = 150 °C	10500	A ² s

Characteristics		min.	typ.	max.	Units
Symbol	Conditions ¹⁾				
V _{(BR)CES}	V _{GE} = 0, I _C = 6 mA	≥ V _{CES}	-	-	V
V _{GE(th)}	V _{GE} = V _{CE} , I _C = 10 mA	4,8	5,5	6,2	V
I _{CES}	V _{GE} = 0 } T _j = 25 °C	-	0,1	0,4	mA
		V _{CE} = V _{CES} } T _j = 125 °C	-	4	-
I _{GES}	V _{GE} = 20 V, V _{CE} = 0	-	-	100	nA
V _{CEsat}	I _C = 150 A } V _{GE} = 15 V;	-	2,8(3,25)	3,2(3,6)	V
		I _C = 200 A } T _j = 25 (125) °C }	-	3,1(3,6)	-
g _{fs}	V _{CE} = 20 V, I _C = 150 A	54	75	-	S
C _{CHC}	per IGBT	-	-	0,7	nF
C _{ies}	V _{GE} = 0 } V _{CE} = 25 V } f = 1 MHz }	-	11	-	nF
C _{oes}		-	1,5	-	nF
C _{res}		-	0,5	-	nF
L _{CE}		-	-	20	nH
t _{d(on)}	V _{CC} = 1200 V } V _{GE} = -15 V / +15 V ³⁾ }	-	120	-	ns
t _r		-	110	-	ns
t _{d(off)}	I _C = 150 A, ind. load } R _{Gon} = R _{Goff} = 10 Ω }	-	900	-	ns
t _f		-	110	-	ns
E _{on}	T _j = 125 °C	-	120	-	mWs
E _{off}	L _S = 60 nH	-	75	-	mWs
Inverse Diode ⁸⁾					
V _F = V _{EC}	I _F = 150 A } V _{GE} = 0 V;	-	2,0(1,8)	2,4	V
V _F = V _{EC}		I _F = 200 A } T _j = 25 (125) °C }	-	2,2(2,0)	-
V _{TO}	T _j = 125 °C	-	1,3	1,5	V
r _t	T _j = 125 °C	-	4	5	mΩ
I _{RRM}	I _F = 150 A; T _j = 25 (125) °C ²⁾	-	75(110)	-	A
Q _{rr}	I _F = 150 A; T _j = 25 (125) °C ²⁾	-	20(50)	-	μC
Thermal characteristics					
R _{thjc}	per IGBT	-	-	0,09	°C/W
R _{thjc}	per diode D	-	-	0,25	°C/W
R _{thch}	per module	-	-	0,038	°C/W

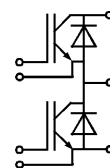
SEMITRANS® M Low Loss IGBT Modules

SKM 200 GB 174 D

Preliminary Data



SEMITRANS 3



GB

Features

- MOS input (voltage controlled)
- N channel, homogeneous Silicon structure (NPT- Non punch-through IGBT)
- Low inductance case
- Low tail current with low temperature dependence
- High short circuit capability, self limiting to 4 * I_{cnom}
- Latch-up free
- Fast & soft inverse CAL diodes ⁸⁾
- Isolated copper baseplate using DCB Direct Copper Bonding
- Large clearance (13 mm) and creepage distances (20 mm)

Typical Applications

- AC inverter drives on mains 575 - 750 V_{AC}
- DC bus voltage 750 - 1200 V_{DC}
- Public transport (auxiliary syst.)
- Switching (not for linear use)

¹⁾ T_{case} = 25 °C, unless otherwise specified

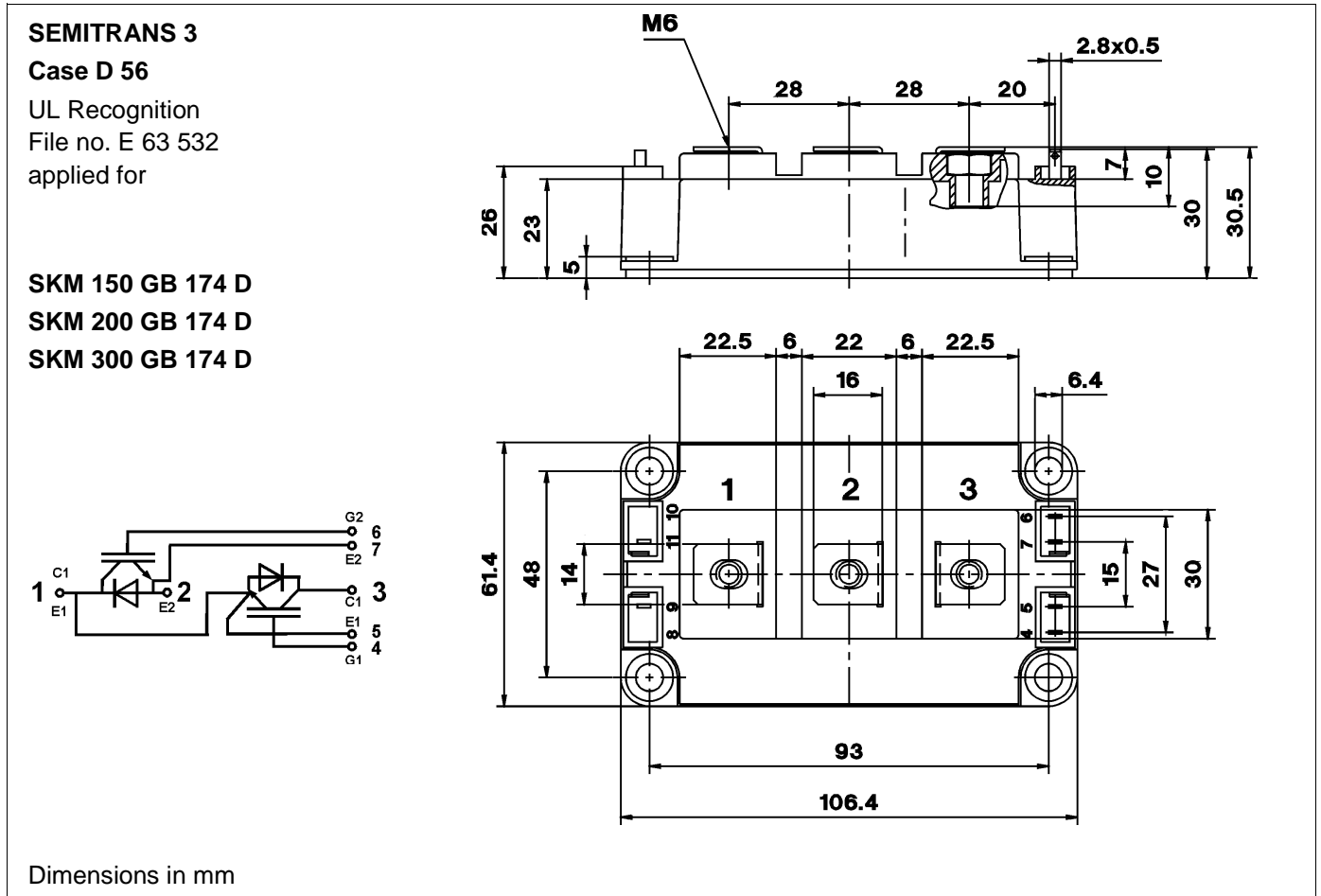
²⁾ I_F = - I_C, V_R = 1200 V, -di_F/dt = 1500 A/μs, V_{GE} = 0 V

⁴⁾ Option V_{isol} = 4000V/1 min add suffix „H4“ - on request

⁸⁾ CAL = Controlled Axial Lifetime Technology

Cases and mech. data → B6-270

SKM 300 GB 174 D



Case outline and circuit diagram

Mechanical Data		Values			Units	
Symbol	Conditions	min.	typ.	max.		
M ₁	to heatsink, SI Units	(M6)	3	–	5	Nm
	to heatsink, US Units		27	–	44	lb.in.
M ₂	for terminals, SI Units	(M6)	2,5	–	5	Nm
	for terminals, US Units		22	–	44	lb.in.
a					5x9,81	m/s ²
w					325	g

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

Three devices are supplied in one SEMIBOX A without mounting hardware, which can be ordered separately under Ident No. 33321100 (for 10 SEMITRANS 3)

Larger packing units of 12 or 20 pieces are used if suitable
 Accessories → B 6 – 4
 SEMIBOX → C – 1.