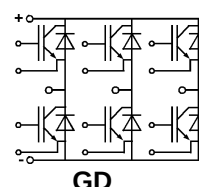


SKiM 125 GD 127 D

SKiM® 3 IGBT Modules

SKiM 125 GD 127 D

Preliminary Data



Features

- N channel, homogeneous Si
- Low inductance case
- No baseplate
- Allows extreme compact converter design
- Fast & soft inverse CAL diodes ⁸⁾
- DCB (Direct Copper Bonded) Technology
- solderable pins

Typical Applications

- Switched mode power supplies
- Three phase inverters for AC motor speed control
- Switching (not for linear use)

¹⁾ $T_{HS} = 25^\circ\text{C}$, unless otherwise specified

²⁾ $I_F = -I_C$, $V_R = 600\text{ V}$, $-di_F/dt = 800\text{ A}/\mu\text{s}$, $V_{GE} = 0\text{ V}$

³⁾ Use $V_{GEoff} = -5\text{...} -15\text{ V}$

⁸⁾ CAL = Controlled Axial Lifetime Technology

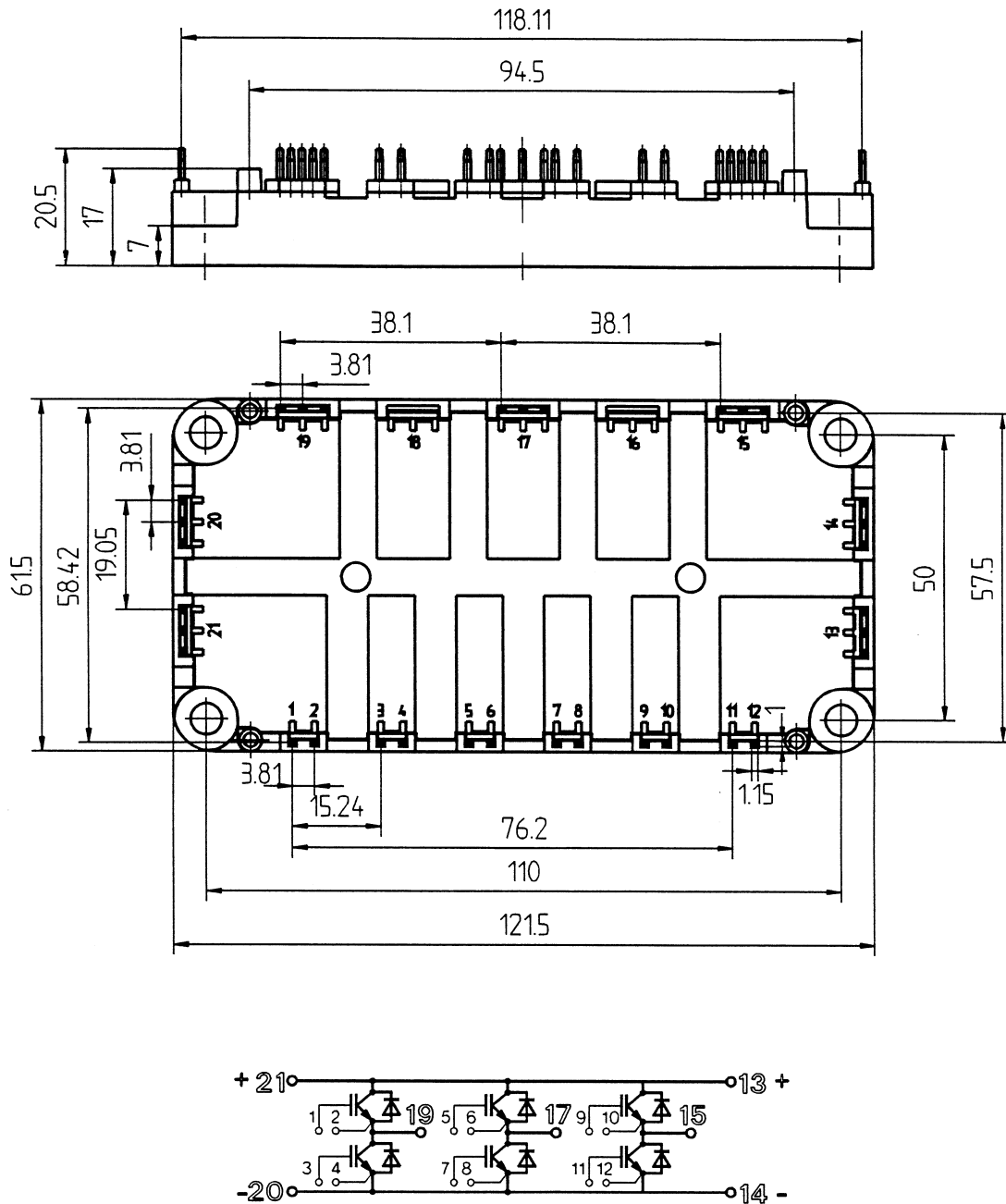
Absolute Maximum Ratings		Values	Units
Symbol	Conditions ¹⁾		
V_{CES}		1200	V
V_{CGR}	$R_{GE} = 20\text{ k}\Omega$	1200	V
I_C	$T_{HS} = 25/70^\circ\text{C}$	125 / 100	A
I_{CM}	$T_{HS} = 25/70^\circ\text{C}$; $t_p = 1\text{ ms}$	250 / 200	A
V_{GES}		± 20	V
P_{tot}	per IGBT, $T_{HS} = 25^\circ\text{C}$	446	W
$T_j, (T_{stg})$		$-40 \dots +150 (125)$	$^\circ\text{C}$
T_{cop}	max. case operating temperature	125	$^\circ\text{C}$
V_{isol}	AC, 1 min.	2500	V
humidity	IEC-EN 60721-3-3	Class F	
climate	IEC 68 T.1		
Inverse Diode			
$I_F = -I_C$	$T_{HS} = 25/70^\circ\text{C}$	120 / 90	A
$I_{FM} = -I_{CM}$	$T_{HS} = 25/70^\circ\text{C}$; $t_p = 1\text{ ms}$	240 / 180	A
I_{FSM}	$t_p = 10\text{ ms}$; sin.; $T_j = 150^\circ\text{C}$	1100	A
I^2t	$t_p = 10\text{ ms}$; $T_j = 150^\circ\text{C}$	6 000	A^2s

Characteristics		min.	typ.	max.	Units
Symbol	Conditions ¹⁾				
$V_{(BR)CES}$	$V_{GE} = 0$, $I_C = 1\text{ mA}$	$\geq V_{CES}$	—	—	V
$V_{GE(th)}$	$V_{GE} = V_{CE}$, $I_C = 4\text{ mA}$		5		V
I_{CES}	$V_{GE} = 0$ $V_{CE} = V_{CES}$, $T_j = 125^\circ\text{C}$	—		8	mA
I_{GES}	$V_{GE} = 20\text{ V}$, $V_{CE} = 0$	—	—	500	nA
V_{CESat}	$I_C = 100\text{ A}$ $\left\{ \begin{array}{l} V_{GE} = 15\text{ V}; \\ T_j = 25 (125)^\circ\text{C} \end{array} \right\}$	—	2,35(2,65)	2,85	V
C_{ies}	$V_{GE} = 0$	—	8,0	—	nF
C_{oes}	$V_{CE} = 25\text{ V}$	—	1,1	—	nF
C_{res}	$f = 1\text{ MHz}$	—	0,7	—	nF
L_{CE}		—	—	25	nH
$R_{CC'+EE'}$	resistance, terminal-chip	—	1,25	—	$\text{m}\Omega$
$t_{d(on)}$	$V_{CC} = 600\text{ V}$	—	70	—	ns
t_r	$V_{GE} = +15\text{ V} / -15\text{ V}^{3)}$	—	50	—	ns
$t_{d(off)}$	$I_C = 100\text{ A}$, ind. load	—	450	—	ns
t_f	$R_{Gon} = R_{Goff} = 9\text{ }\Omega$	—	45	—	ns
E_{on}	$T_j = 125^\circ\text{C}$	—	14	—	mJ
E_{off}		—	11	—	mJ
Inverse Diode ⁸⁾					
$V_F = V_{EC}$	$I_F = 100\text{ A}$ $\left\{ \begin{array}{l} V_{GE} = 0\text{ V}; \\ T_j = 25 (125)^\circ\text{C} \end{array} \right\}$	—	2,0(1,8)	2,5	V
$V_F = V_{EC}$	$I_F = 50\text{ A}$	—	1,8(1,6)		V
V_{TO}	$T_j = 125^\circ\text{C}$	—	1,1	1,2	V
r_T	$T_j = 125^\circ\text{C}$	—		11	$\text{m}\Omega$
Thermal Characteristics					
R_{thjh}	per IGBT	—	—	0,28	$^\circ\text{C}/\text{W}$
R_{thjD}	per diode	—	—	0,56	$^\circ\text{C}/\text{W}$

Mechanical Data		Values			Units
Symbol	Conditions	min.	typ.	max.	
M_1	to heatsink, SI Units (M5)	4,5	—	5,5	Nm
	to heatsink, US Units	39	—	48	lb.in.
a		—	—	5x9,81	m/s^2
w		—	—	215	g

SKiM 3

SKiM 125 GD 127 D



Dimensions in mm

Case outline and circuit diagram

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

The information presented here is to the best knowledge true and accurate. No warranty or guarantee, expressed or implied is made regarding capacity, performance or suitability. We reserve the right to change specifications without notice.