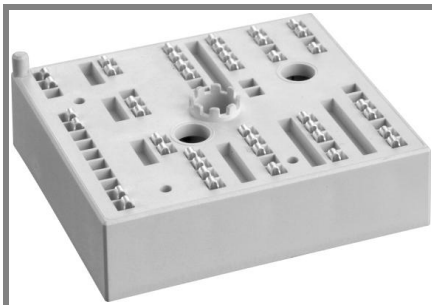


SKiiP 24AC12T4V1



MiniSKiiP[®]2

3-phase bridge inverter

SKiiP 24AC12T4V1

Features

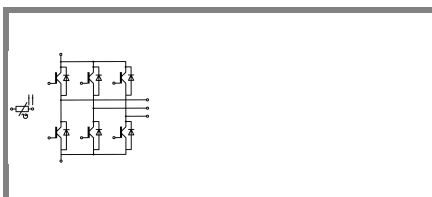
- Trench 4 IGBT's
- Robust and soft freewheeling diodes in CAL technology
- Highly reliable spring contacts for electrical connections
- UL recognised file no. E63532

Typical Applications*

- Inverter up to 22 kVA
- Typical motor power 11 kW

Remarks

- V_{CEsat} , V_F = chip level value
- Case temp. limited to $T_C = 125^\circ\text{C}$ max. (for baseplateless modules $T_C = T_S$)
- product rel. results valid for $T_j \leq 150$ (recomm. $T_{op} = -40 \dots +150^\circ\text{C}$)

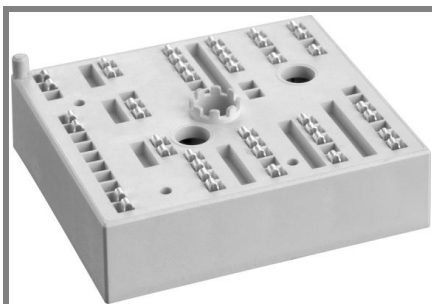


AC

Absolute Maximum Ratings		$T_C = 25^\circ\text{C}$, unless otherwise specified		
Symbol	Conditions	Values		Units
IGBT				
V_{CES}	$T_j = 25^\circ\text{C}$	1200		V
I_C	$T_j = 175^\circ\text{C}$	$T_C = 25^\circ\text{C}$	52	A
		$T_C = 70^\circ\text{C}$	43	A
I_{CRM}	$I_{CRM} = 3 \times I_{Cnom}$	105		A
V_{GES}		± 20		V
t_{psc}	$V_{CC} = 800\text{ V}; V_{GE} \leq 15\text{ V}; T_j = 150^\circ\text{C}$ $V_{CES} < 1200\text{ V}$	10		μs
Inverse Diode				
I_F	$T_j = 175^\circ\text{C}$	$T_C = 25^\circ\text{C}$	44	A
		$T_C = 70^\circ\text{C}$	35	A
I_{FRM}	$I_{CRM} = 3 \times I_{Cnom}$	105		A
I_{FSM}	$t_p = 10\text{ ms}; \text{sin.}$	$T_j = 150^\circ\text{C}$	165	A
Module				
$I_t(\text{RMS})$		100		A
T_{vj}		-40...+175		$^\circ\text{C}$
T_{stg}		-40...+125		$^\circ\text{C}$
V_{isol}	AC, 1 min.	2500		V

Characteristics		$T_C = 25^\circ\text{C}$, unless otherwise specified				
Symbol	Conditions	min.	typ.	max.	Units	
IGBT						
$V_{GE(th)}$	$V_{GE} = V_{CE}, I_C = 1\text{ mA}$	5	5,8	6,5	V	
I_{CES}	$V_{GE} = V, V_{CE} = V_{CES}$	$T_j = 25^\circ\text{C}$			mA	
		$T_j = 150^\circ\text{C}$	0,8	0,9	V	
V_{CE0}			0,7	0,8	V	
r_{CE}	$V_{GE} = 15\text{ V}$	$T_j = 25^\circ\text{C}$	30	33	$\text{m}\Omega$	
		$T_j = 150^\circ\text{C}$	44	47	$\text{m}\Omega$	
$V_{CE(sat)}$	$I_{Cnom} = 35\text{ A}, V_{GE} = 15\text{ V}$	$T_j = 25^\circ\text{C}_{chiplev.}$	1,85	2,05	V	
		$T_j = 150^\circ\text{C}_{chiplev.}$	2,25	2,45	V	
C_{ies}	$V_{CE} = 25, V_{GE} = 0\text{ V}$			1,95	nF	
C_{oes}				0,16	nF	
C_{res}				0,12	nF	
Q_G	$V_{GE} = -8\text{ V} \dots +15\text{ V}$			200	nC	
R_{Gint}	$T_j = 25^\circ\text{C}$			0	Ω	
$t_{d(on)}$	$R_{Gon} = 15\ \Omega$ $di/dt = 1300\text{ A}/\mu\text{s}$			21	ns	
t_r		$V_{CC} = 600\text{ V}$ $I_C = 35\text{ A}$			31	ns
E_{on}			$T_j = 150^\circ\text{C}$			3,7
$t_{d(off)}$	$R_{Goff} = 15\ \Omega$ $di/dt = 460\text{ A}/\mu\text{s}$			310	ns	
t_f		$V_{GE} = \pm 15\text{ V}$			63	ns
E_{off}					3	mJ
$R_{th(j-s)}$	per IGBT			0,85	K/W	

SKiiP 24AC12T4V1



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3-phase bridge inverter

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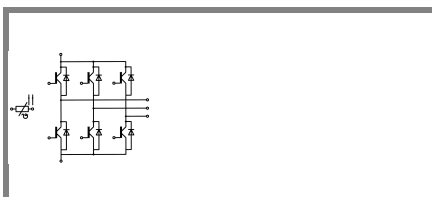
Remarks

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- product rel. results valid for $T_j \leq 150$ (recomm. $T_{op} = -40 \dots +150^\circ\text{C}$)

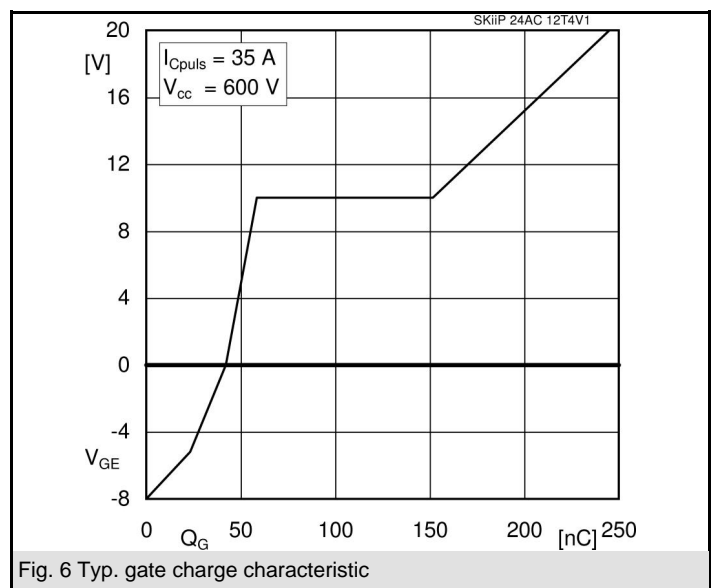
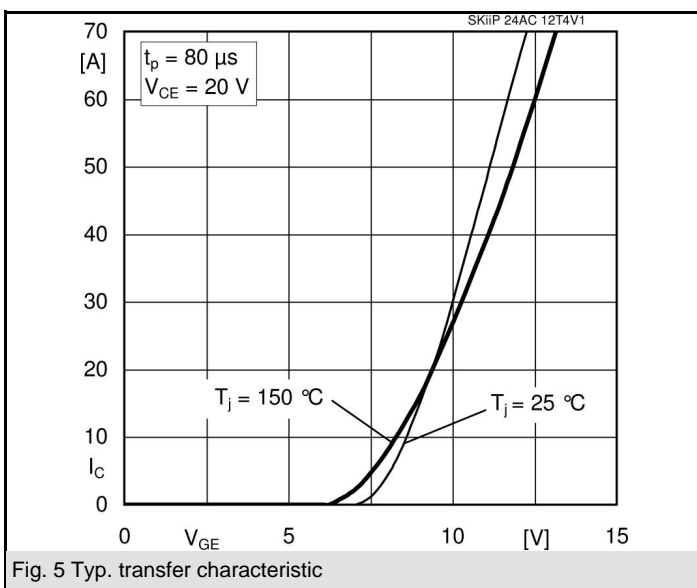
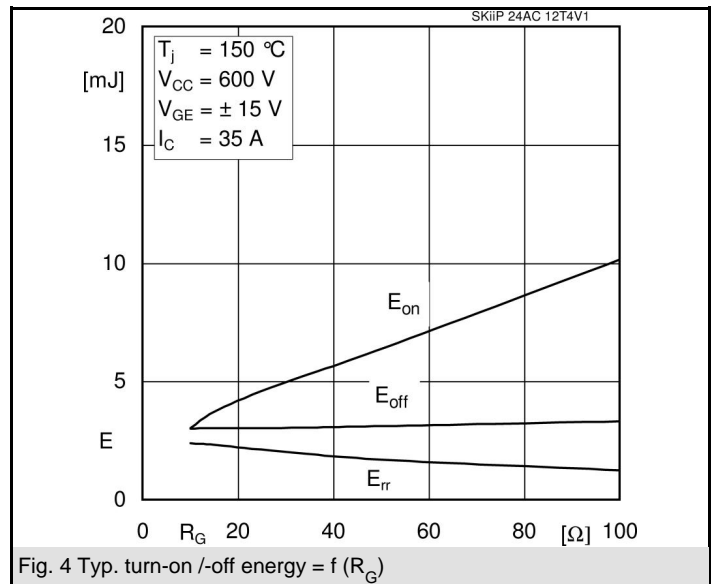
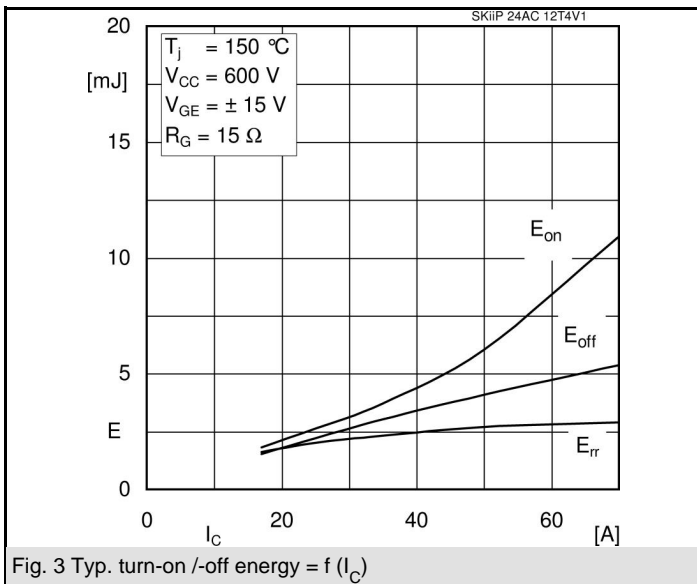
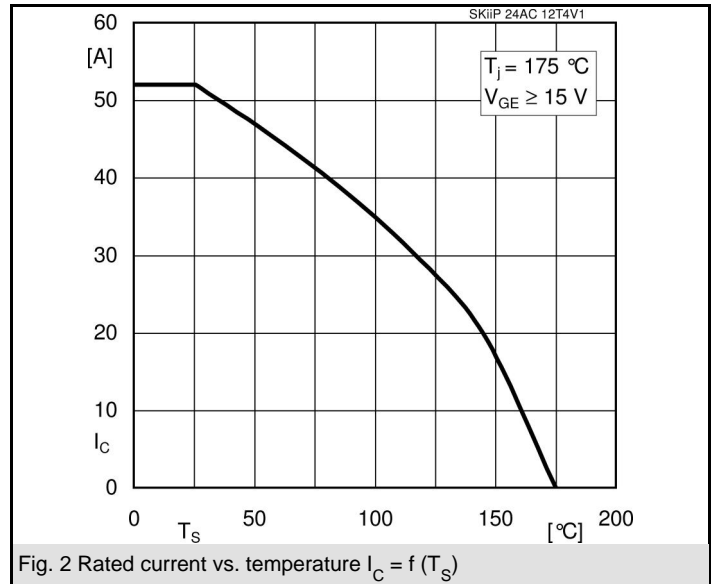
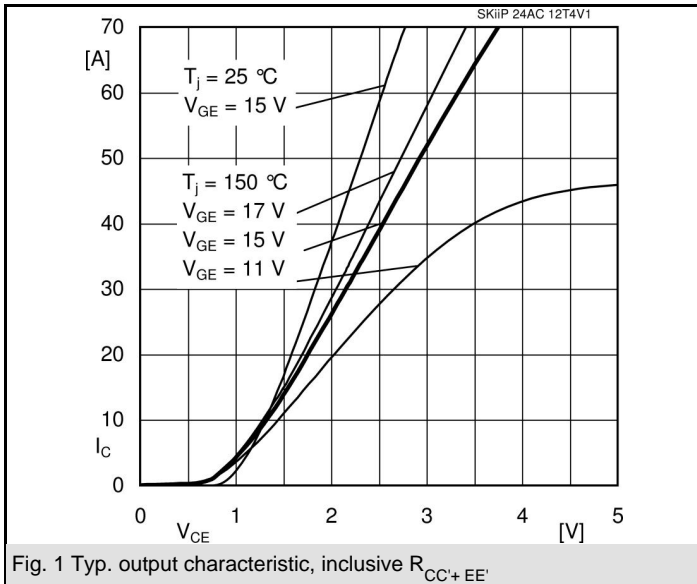
Characteristics			min.	typ.	max.	Units
Symbol	Conditions					
Inverse Diode						
$V_F = V_{EC}$	$I_{Fnom} = 35 \text{ A}; V_{GE} = 0 \text{ V}$	$T_j = 25^\circ\text{C}_{\text{chiplev.}}$		2,3	2,6	V
		$T_j = 150^\circ\text{C}_{\text{chiplev.}}$		2,3	2,6	V
V_{F0}		$T_j = 25^\circ\text{C}$		1,3	1,5	V
		$T_j = 150^\circ\text{C}$		0,9	1,1	V
r_F		$T_j = 25^\circ\text{C}$		29	31	mΩ
		$T_j = 150^\circ\text{C}$		40	43	mΩ
I_{RRM}	$I_F = 35 \text{ A}$	$T_j = 150^\circ\text{C}$		38		A
Q_{rr}	$di/dt = 1400 \text{ A}/\mu\text{s}$			6,2		μC
E_{rr}	$V_{GE} = \pm 15 \text{ V}$			2,3		mJ
$R_{th(j-s)}$	per diode			1,2		K/W
M_s	to heat sink		2		2,5	Nm
w				65		g
Temperature sensor						
R_{ts}	3%, $T_r = 25^\circ\text{C}$			1000		Ω
R_{ts}	3%, $T_r = 100^\circ\text{C}$			1670		Ω

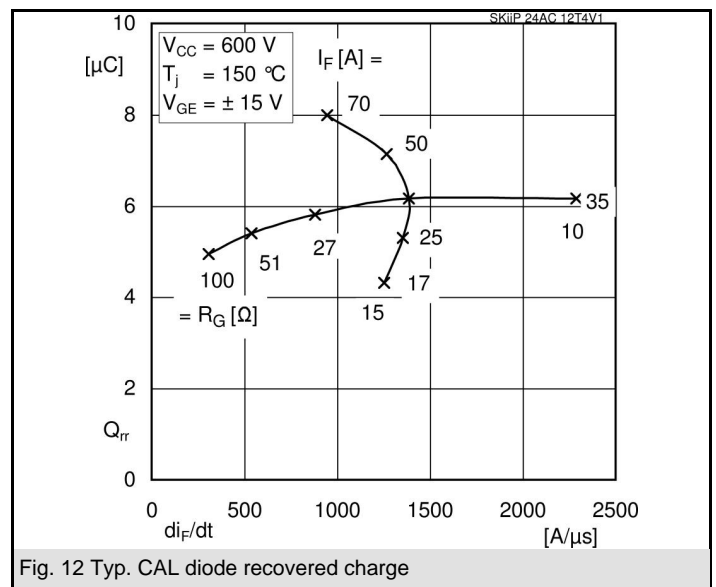
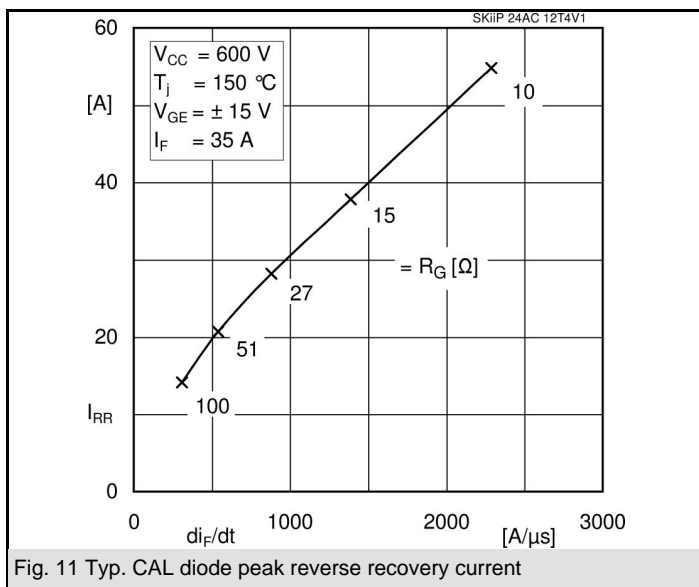
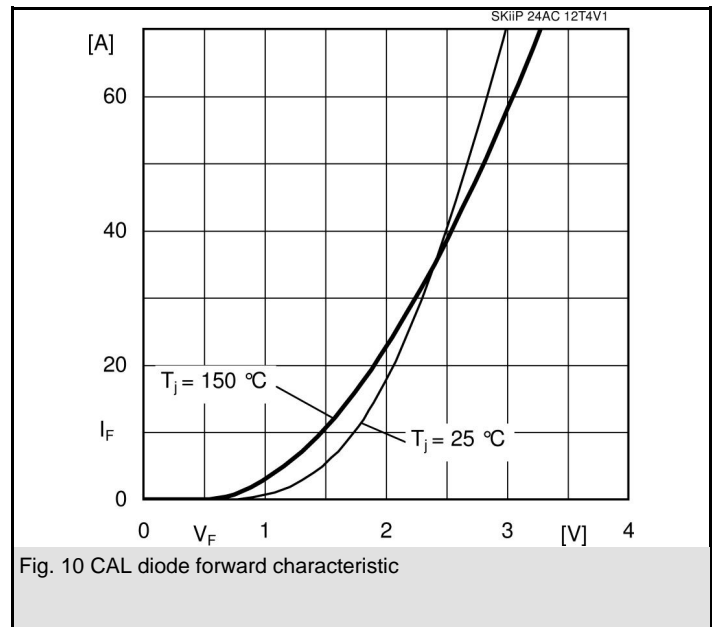
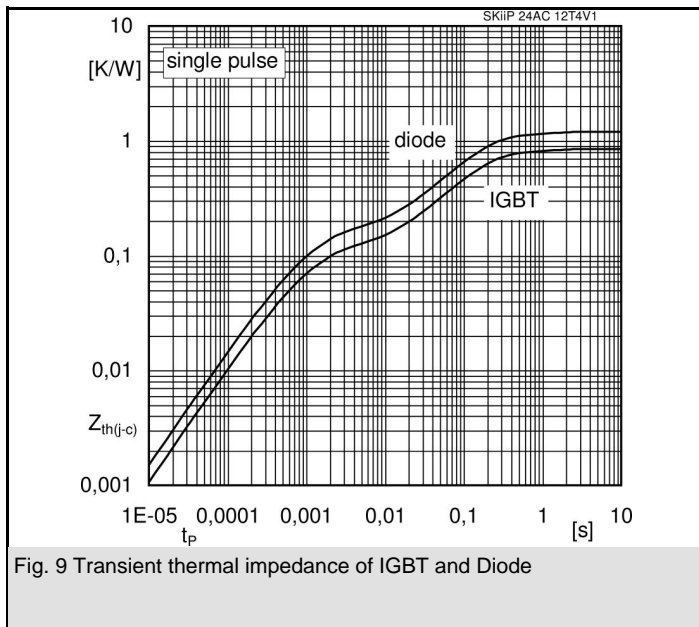
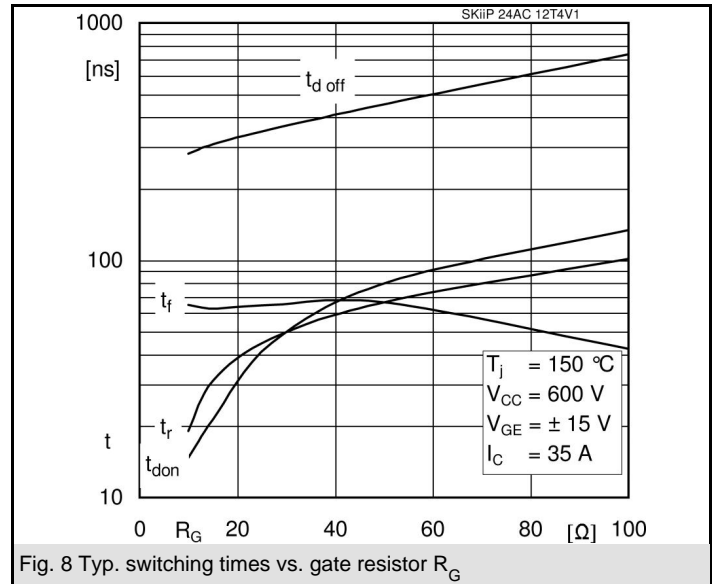
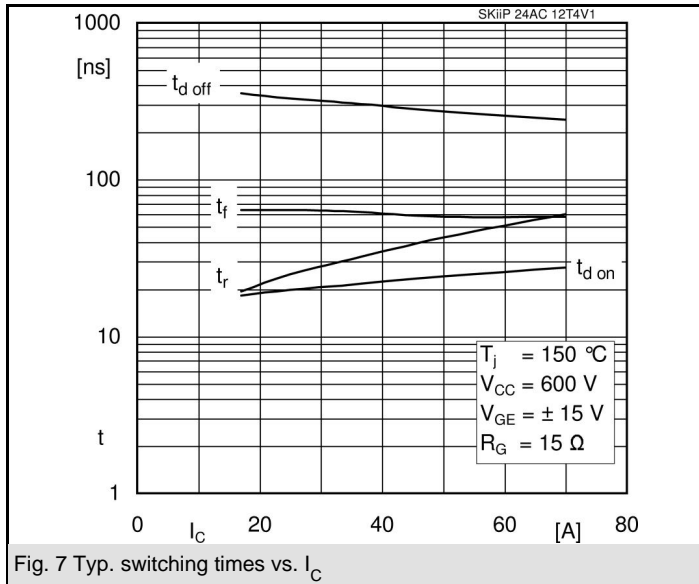
This is an electrostatic discharge sensitive device (ESDS), international standard IEC 60747-1, Chapter IX.

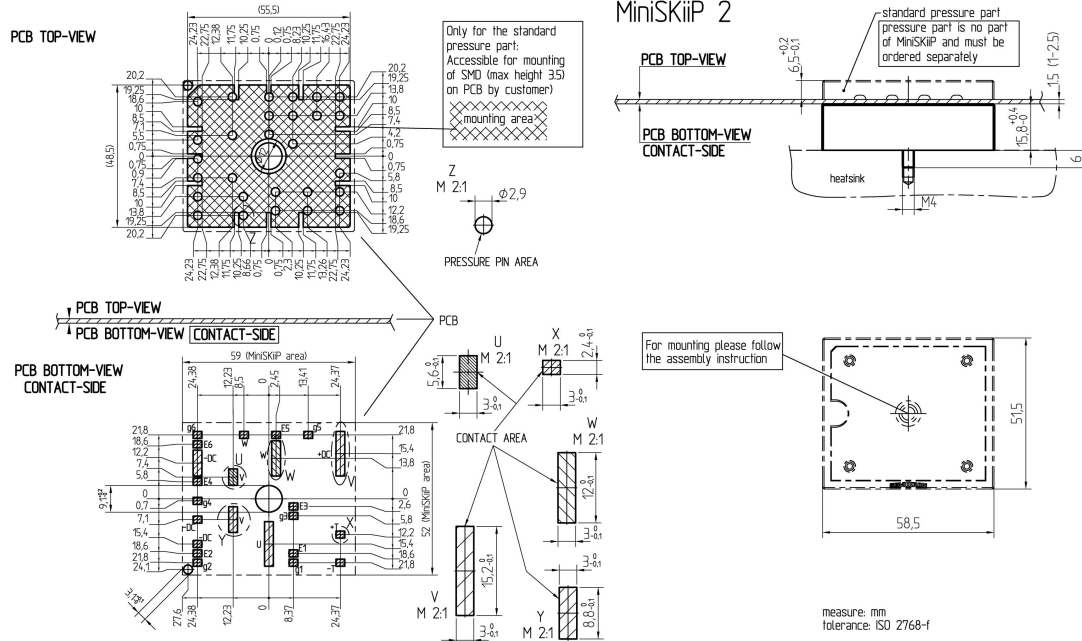
* The specifications of our components may not be considered as an assurance of component characteristics. Components have to be tested for the respective application. Adjustments may be necessary. The use of SEMIKRON products in life support appliances and systems is subject to prior specification and written approval by SEMIKRON. We therefore strongly recommend prior consultation of our personal.



AC







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case

