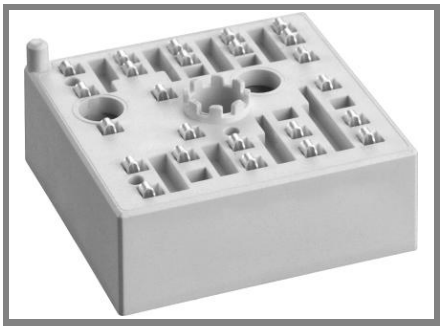
SKiiP 14NAB065V1

CONVERTER, INVERTER, BRAKE



MiniSKiiP® 1

3-phase bridge rectifier + brake chopper + 3-phase bridge inverter

SKiiP 14NAB065V1

Features

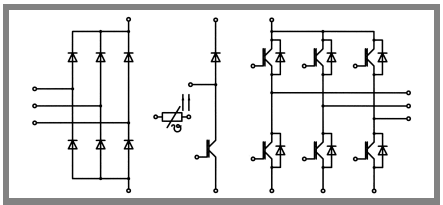
- Ultrafast NPT IGBTs
- Robust and soft freewheeling diodes in CAL technology
- Highly reliable spring contacts for electrical connections
- UL recognised file no. E63532

Typical Applications

- Inverter up to 6,3 kVA
- Typical motor power 4,0 kW

Remarks

- V_{CEsat} , V_F = chip level value



NAB

Absolute Maximum Ratings		T_s = 25 °C, unless otherwise specified	
Symbol	**Conditions**	**Values**	**Units**
IGBT - Inverter, Chopper			
V_{CES}		600	V
I_C	T_s = 25 (70) °C	29 (22)	A
I_{CRM}	$t_p \leq$ 1 ms	40	A
V_{GES}		± 20	V
T_j		- 40 ... + 150	°C
Diode - Inverter, Chopper			
I_F	T_s = 25 (70) °C	26 (19)	A
I_{FRM}	$t_p \leq$ 1 ms	40	A
T_j		- 40 ... + 150	°C
Diode - Rectifier			
V_{RRM}		800	V
I_F	T_s = 70 °C	46	A
I_{FSM}	t_p = 10 ms, sin 180 °, T_j = 25 °C	370	A
i^2t	t_p = 10 ms, sin 180 °, T_j = 25 °C	680	A^2s
T_j		- 40 ... + 150	°C
I_{tRMS}	per power terminal (20 A / spring)	20	A
T_{stg}	$T_{op} \leq T_{stg}$	- 40 ... + 125	°C
V_{isol}	AC, 1 min.	2500	V

Characteristics		T_s= 25 °C, unless otherwise specified			
Symbol	**Conditions**	**min.**	**typ.**	**max.**	**Units**
IGBT - Inverter, Chopper					
V_{CEsat}	I_{Cnom} = 20 A, T_j = 25 (125) °C		2 (2,2)	2,5 (2,7)	V
$V_{GE(th)}$	$V_{GE} = V_{CE}$, I_C = 0,5 mA	3	4	5	V
$V_{CE(TO)}$	T_j = 25 (125) °C		1,2 (1,1)	1,3 (1,2)	V
r_T	T_j = 25 (125) °C		40 (55)	60 (75)	mΩ
C_{ies}	V_{CE} = 25 V, V_{GE} = 0 V, f = 1 MHz		1,1		nF
C_{oes}	V_{CE} = 25 V, V_{GE} = 0 V, f = 1 MHz		0,2		nF
C_{res}	V_{CE} = 25 V, V_{GE} = 0 V, f = 1 MHz		0,1		nF
$R_{th(j-s)}$	per IGBT		1,25		K/W
$t_{d(on)}$	under following conditions		25		ns
t_r	V_{CC} = 300 V, V_{GE} = ± 15 V		30		ns
$t_{d(off)}$	I_{Cnom} = 20 A, T_j = 125°C		170		ns
t_f	$R_{Gon} = R_{Goff}$ = 30 Ω		20		ns
E_{on}	inductive load		0,7		mJ
E_{off}			0,4		mJ
Diode - Inverter, Chopper					
$V_F = V_{EC}$	I_{Fnom} = 20 A, T_j = 25 (125) °C		1,6 (1,6)	1,9 (1,9)	V
$V_{(TO)}$	T_j = 25 (125) °C		1 (0,9)	1,1 (1)	V
r_T	T_j = 25 (125) °C		30 (33)	40 (47)	mΩ
$R_{th(j-s)}$	per diode		2,2		K/W
I_{RRM}	under following conditions		27		A
Q_{rr}	I_{Fnom} = 20 A, V_R = 300 V		2,3		µC
E_{rr}	V_{GE} = 0 V, T_j = 125 °C		0,4		mJ
	di_F/dt = 1350 A/µs				
Diode - Rectifier					
V_F	I_{Fnom} = 25 A, T_j = 25 °C		1,1		V
$V_{(TO)}$	T_j = 150 °C		0,8		V
r_T	T_j = 150 °C		13		mΩ
$R_{th(j-s)}$	per diode		1,25		K/W
Temperature Sensor					
R_{ts}	3 %, T_r = 25 (100) °C		1000(1670)		Ω
Mechanical Data					
w			35		g
M_s	Mounting torque	2		2,5	Nm

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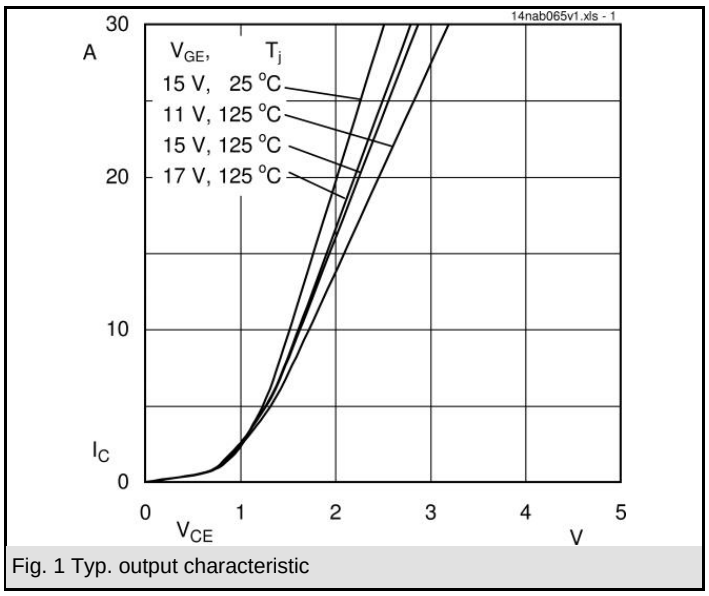


Fig. 1 Typ. output characteristic

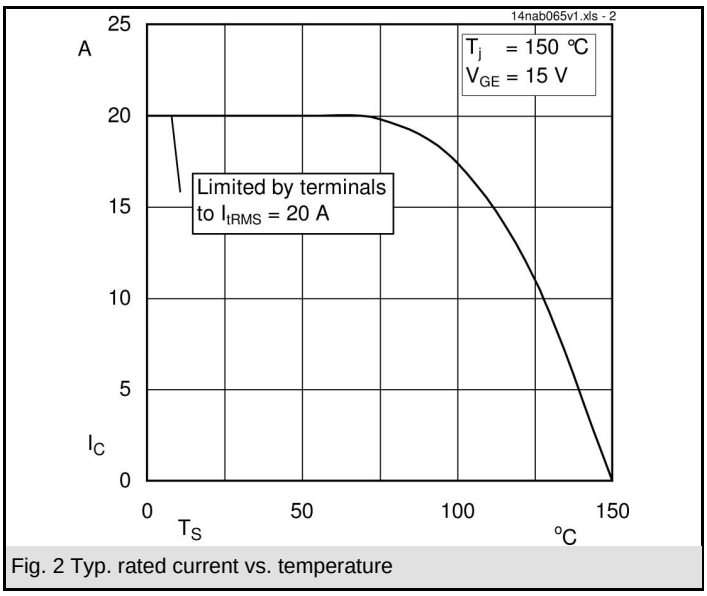


Fig. 2 Typ. rated current vs. temperature

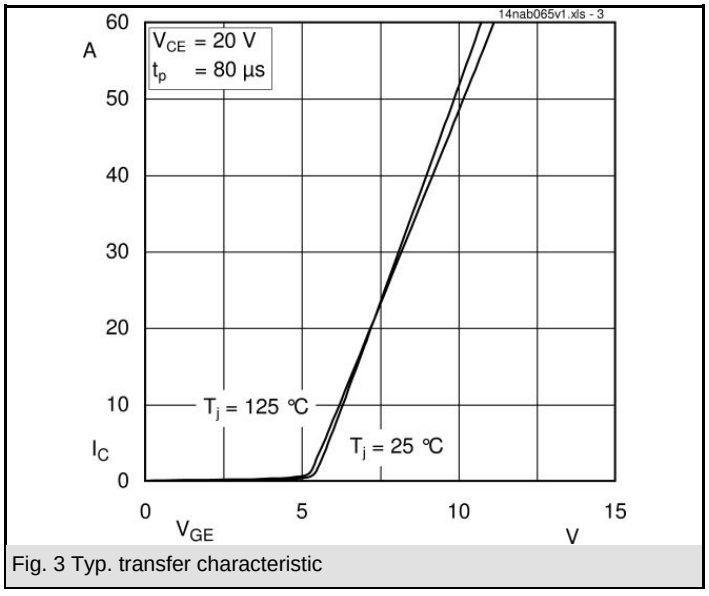


Fig. 3 Typ. transfer characteristic

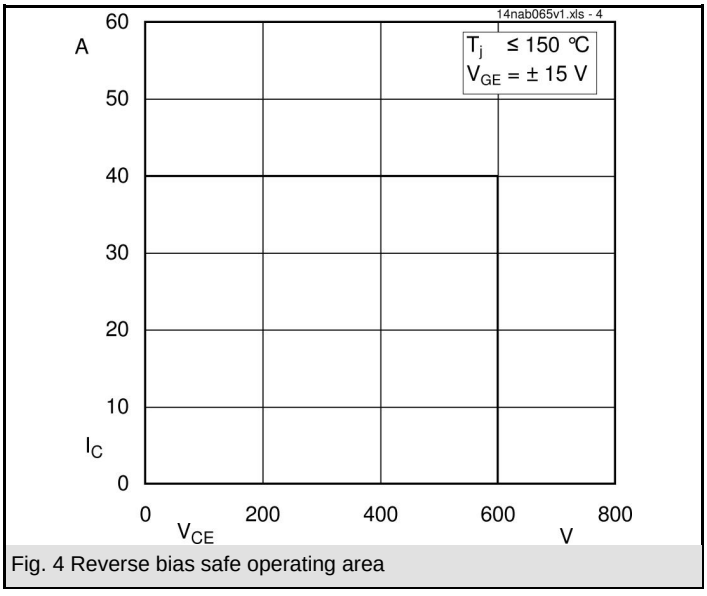


Fig. 4 Reverse bias safe operating area

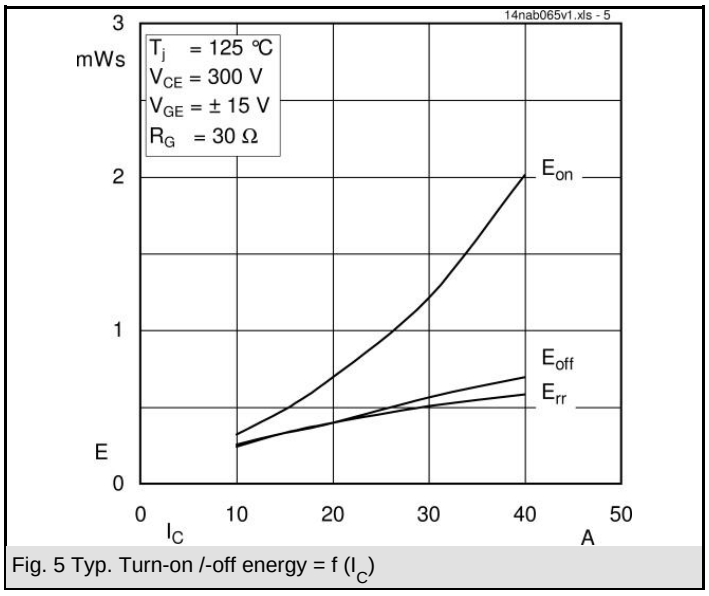


Fig. 5 Typ. Turn-on /-off energy = f (I_C)

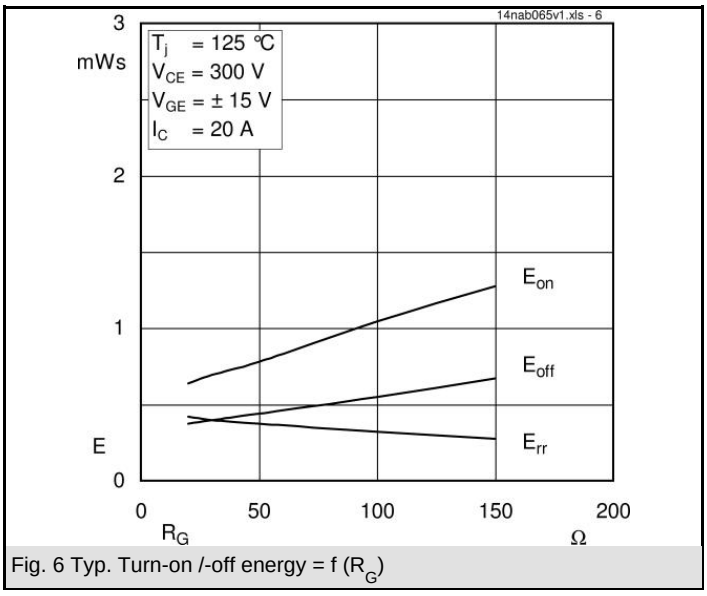


Fig. 6 Typ. Turn-on /-off energy = f (R_G)

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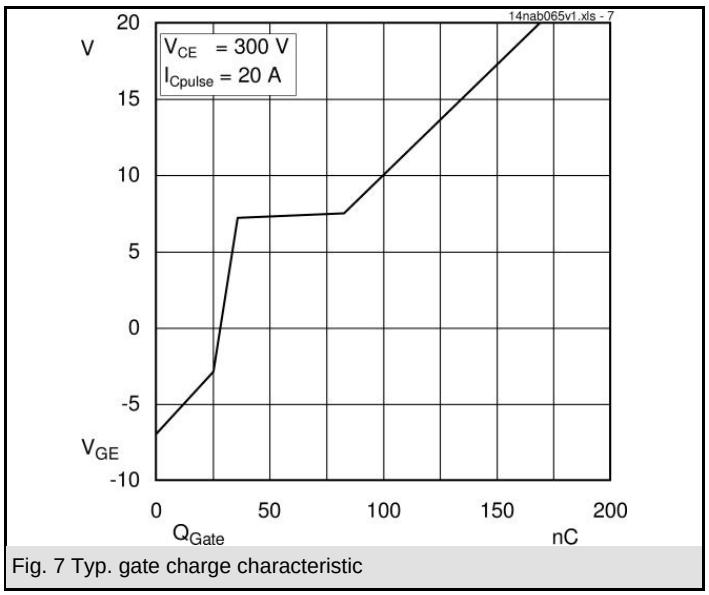


Fig. 7 Typ. gate charge characteristic

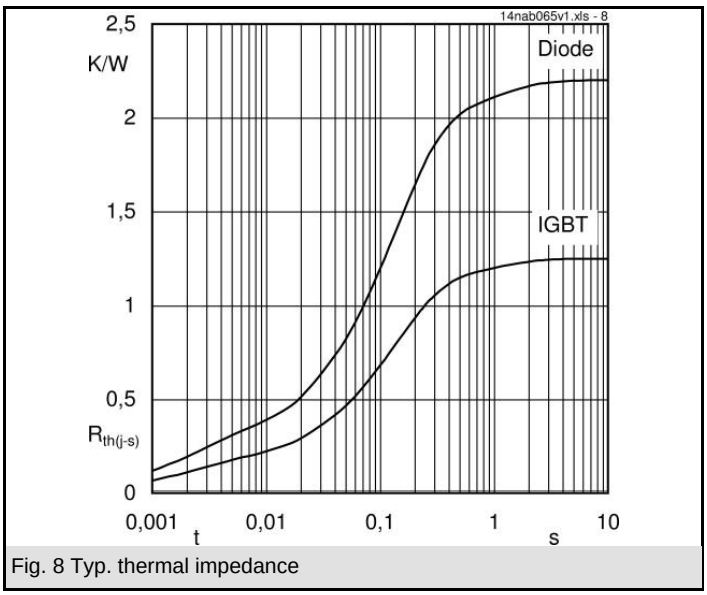


Fig. 8 Typ. thermal impedance

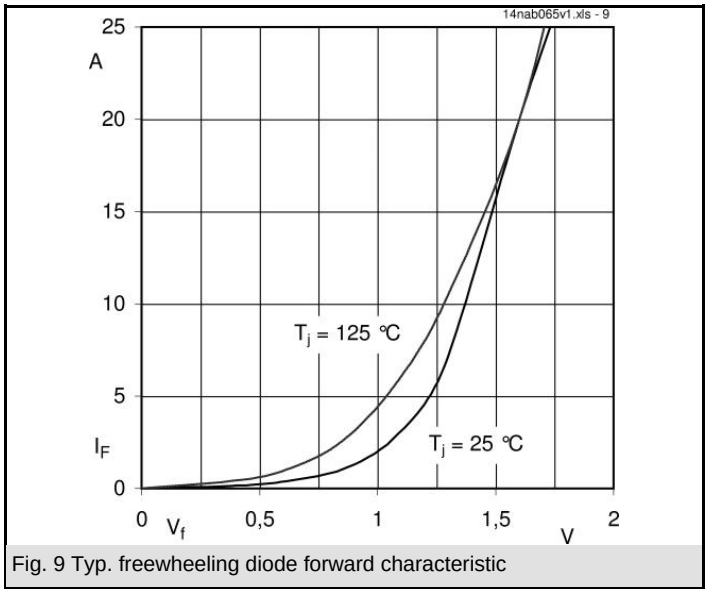


Fig. 9 Typ. freewheeling diode forward characteristic

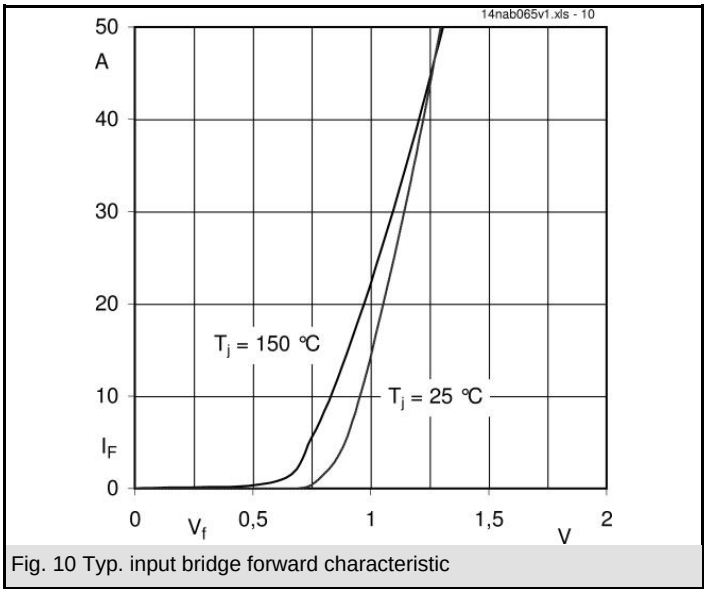
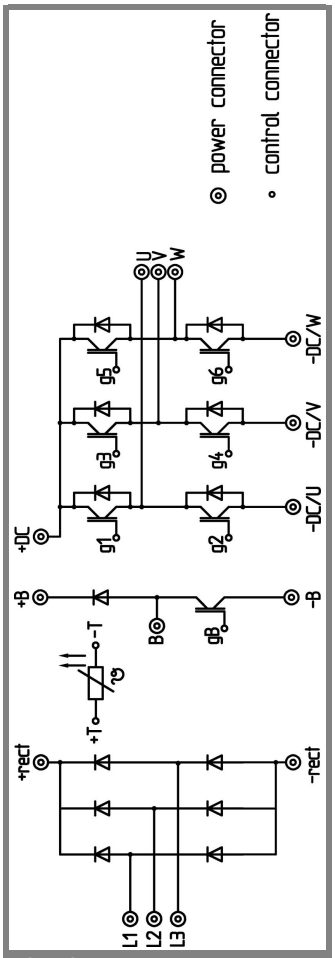
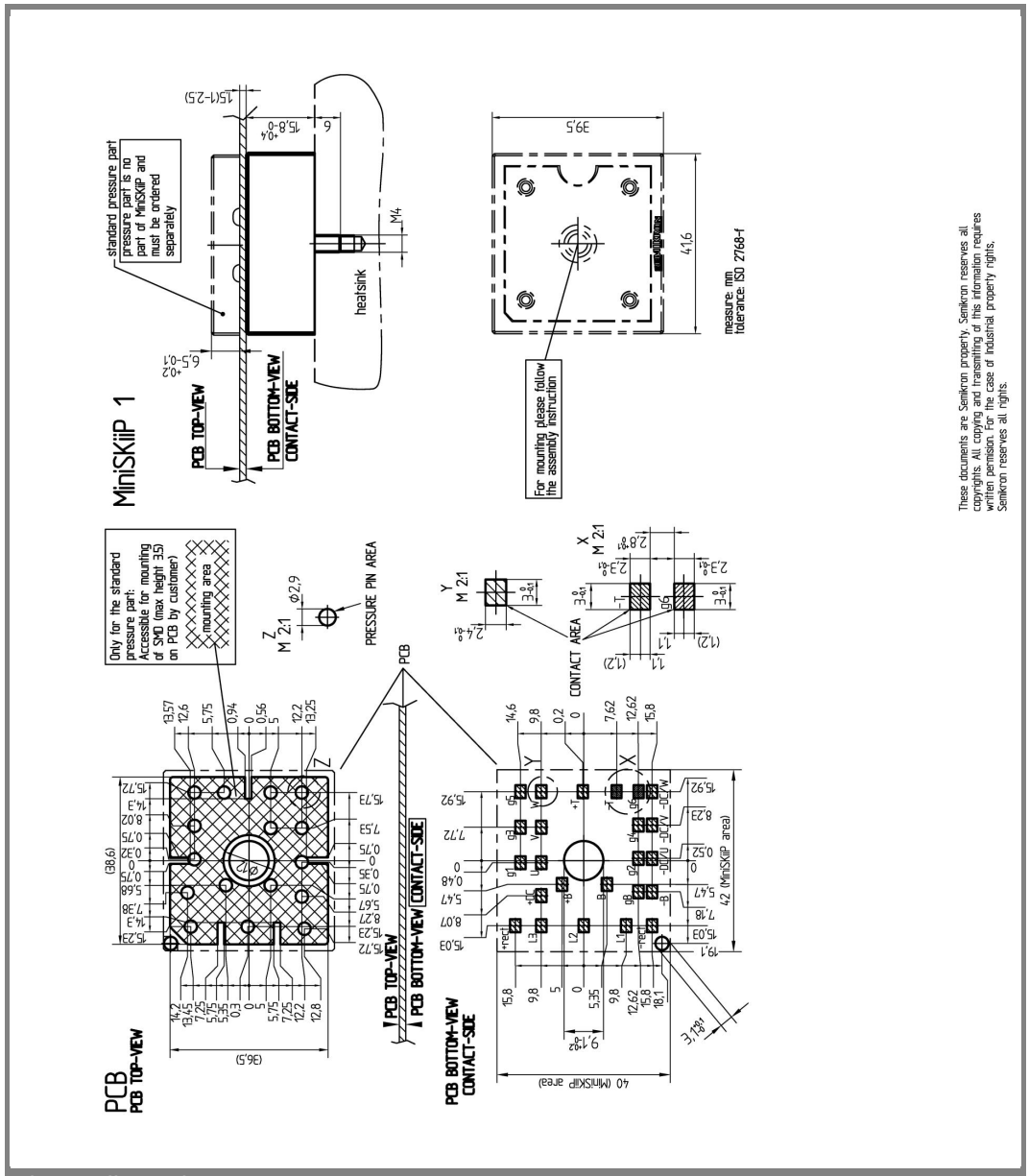


Fig. 10 Typ. input bridge forward characteristic

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circuit



pinout, dimensions

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

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