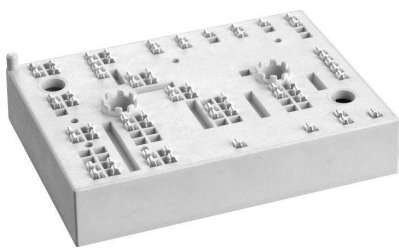


SKiiP 39AHB16V1



MiniSKiiP® 3

3-phase bridge rectifier + brake chopper

SKiiP 39AHB16V1

Features

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

Typical Applications*

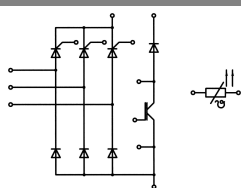
- Input bridge for inverter up to 45 kVA

Remarks

- V_{CEsat} , V_F = chip level value

Absolute Maximum Ratings		T _s = 25 °C, unless otherwise specified	
Symbol	Conditions	Values	Units
IGBT - Chopper			
V _{CES}	T _s = 25 (70) °C t _p ≤ 1 ms	1200	V
I _C		157 (118)	A
I _{CRM}		280	A
V _{GES}		± 20	V
T _j		- 40 ... + 150	°C
Diode - Chopper			
I _F	T _s = 25 (70) °C t _p ≤ 1 ms	167 (124)	A
I _{FRM}		280	A
T _j		- 40 ... + 150	°C
Diode / Thyristor - Rectifier			
V _{RRM}	T _s = 70 t _p = 10 ms, sin 180 °, T _j = 25 °C i ² t t _p = 10 ms, sin 180 °, T _j = 25 °C Diode Thyristor	1600	V
I _F / I _T		121	A
I _{FSM} / I _{TSM}		1250	A
i ² t		7800	A²s
T _j		- 40 ... + 150	°C
T _j		- 40 ... + 125	°C
I _{tRMS}	per power terminal (20 A / spring)	160	A
T _{stg}	T _{op} ≤ T _{stg}	- 40 ... + 125	°C
V _{isol}	AC, 1 min.	2500	V

Characteristics		$T_s = 25\text{ °C}$, unless otherwise specified			
Symbol	Conditions	min.	typ.	max.	Units
IGBT - Chopper					
V_{CEsat}	$I_{Cnom} = 140\text{ A}$, $T_j = 25\text{ (125) °C}$		1,7 (2)	2,1 (2,4)	V
$V_{GE(th)}$	$V_{GE} = V_{CE}$, $I_C = 6\text{ mA}$	5	5,8	6,5	V
$V_{CE(TO)}$	$T_j = 25\text{ (125) °C}$		1 (0,9)	1,2 (1,1)	V
r_T	$T_j = 25\text{ (125) °C}$		5 (7,9)	6,4 (9,3)	mΩ
C_{ies}	$V_{CE} = 25\text{ V}$, $V_{GE} = 0\text{ V}$, $f = 1\text{ MHz}$		11,2		nF
C_{oes}	$V_{CE} = 25\text{ V}$, $V_{GE} = 0\text{ V}$, $f = 1\text{ MHz}$		1,9		nF
C_{res}	$V_{CE} = 25\text{ V}$, $V_{GE} = 0\text{ V}$, $f = 1\text{ MHz}$		1,5		nF
$R_{th(j-s)}$	per IGBT		0,3		K/W
$t_{d(on)}$	under following conditions		80		ns
t_r	$V_{CC} = 600\text{ V}$, $V_{GE} = \pm 15\text{ V}$		40		ns
$t_{d(off)}$	$I_{Cnom} = 140\text{ A}$, $T_j = 125\text{ °C}$		500		ns
t_f	$R_{Gon} = R_{Goff} = 5\text{ Ω}$		100		ns
E_{on}	inductive load		19,9		mJ
E_{off}			17,3		mJ
Diode - Chopper					
$V_F = V_{EC}$	$I_{Fnom} = 140\text{ A}$, $T_j = 25\text{ (125) °C}$		1,5 (1,5)	1,7 (1,7)	V
$V_{(TO)}$	$T_j = 25\text{ (125) °C}$		1 (0,8)	1,1 (0,9)	V
r_T	$T_j = 25\text{ (125) °C}$		3,6 (5)	4,3 (5,7)	mΩ
$R_{th(j-s)}$	per diode		0,4		K/W
I_{RRM}	under following conditions		210		A
Q_{rr}	$I_{Fnom} = 140\text{ A}$, $V_R = 600\text{ V}$		38		μC
E_{rr}	$V_{GE} = 0\text{ V}$, $T_j = 125\text{ °C}$ $di_F/dt = 4300\text{ A/μs}$		16,2		mJ



AHB

Characteristics		$T_s = 25\text{ °C}$, unless otherwise specified			
Symbol	Conditions	min.	typ.	max.	Units
Diode - Rectifier					
V_F	$I_{Fnom} = 90\text{ A}$, $T_j = 25\text{ °C}$		1,2		V
$V_{(TO)}$	$T_j = 150\text{ °C}$		0,8		V
r_T	$T_j = 150\text{ °C}$		4		mΩ
$R_{th(j-s)}$	per diode		0,5		K/W
Thyristor - Rectifier					
V_T	$I_{Fnom} = 200\text{ A}$, $T_j = 25\text{ (125) °C}$			1,65 (1,6)	V
$V_{T(TO)}$	$T_j = 125\text{ °C}$			0,9	V
r_T	$T_j = 125\text{ °C}$			3,5	mΩ
V_{GT}	$T_j = 25\text{ °C}$			3	V
I_{GT}	$T_j = 25\text{ °C}$	150			mA
I_H	$T_j = 25\text{ °C}$		150		mA
I_L	$T_j = 25\text{ °C}$		300		mA
$dv/dt_{(cr)}$	$T_j = 125\text{ °C}$			1000	V/μs
$di/dt_{(cr)}$	$T_j = 125\text{ °C}$			100	A/μs
$R_{th(j-s)}$	per thyristor		0,5		K/W
Temperature Sensor					
R_{ts}	3 %, $T_r = 25\text{ (100) °C}$		1000(1670)		Ω
Mechanical Data					
w			95		g
M_s	Mounting torque	2		2,5	Nm

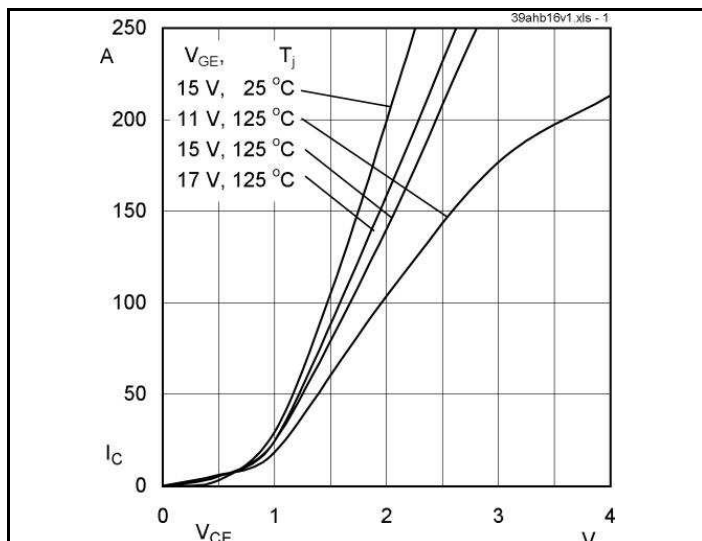


Fig. 1 Typ. output characteristic

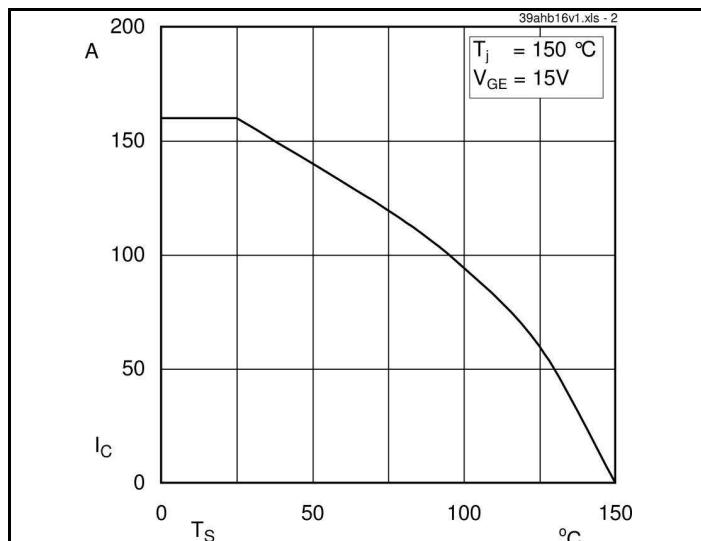


Fig. 2 Typ. rated current vs. temperature

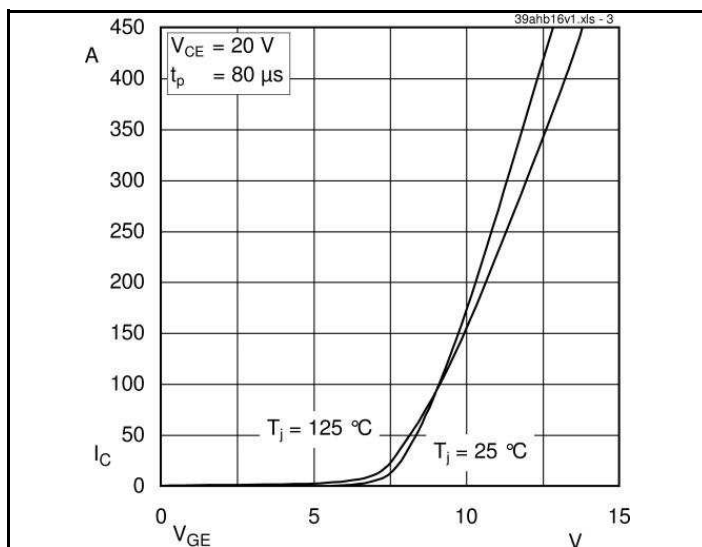


Fig. 3 Typ. transfer characteristic

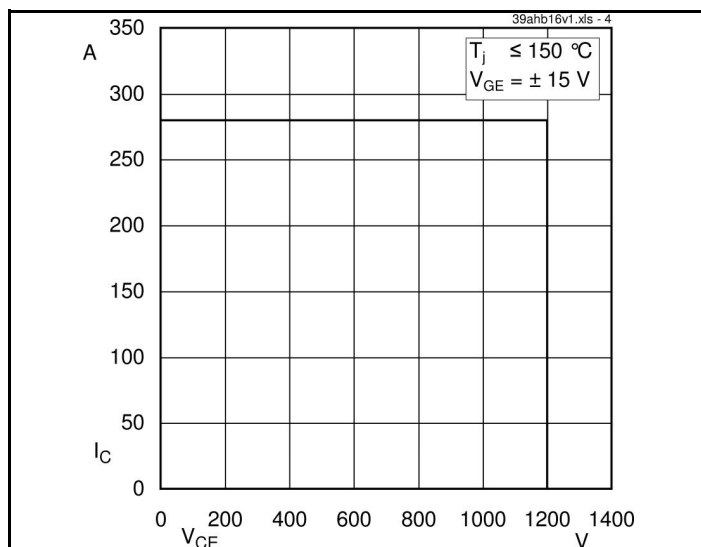


Fig. 4 Reverse bias safe operating area

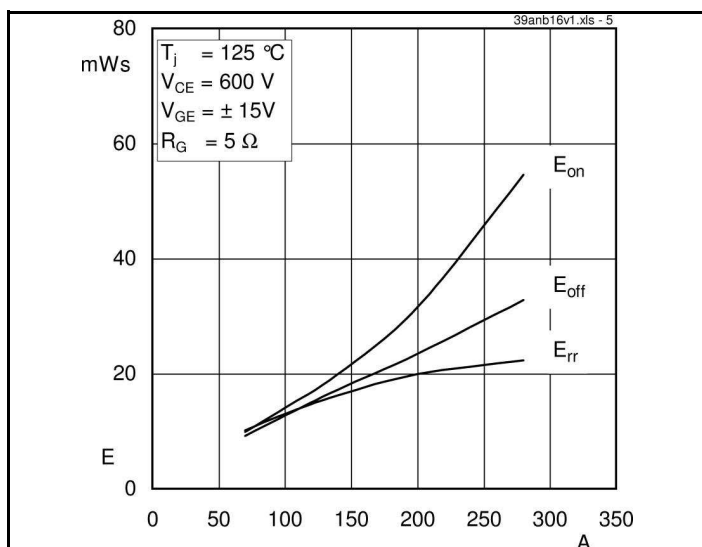


Fig. 5 Typ. Turn-on /-off energy = $f(I_C)$

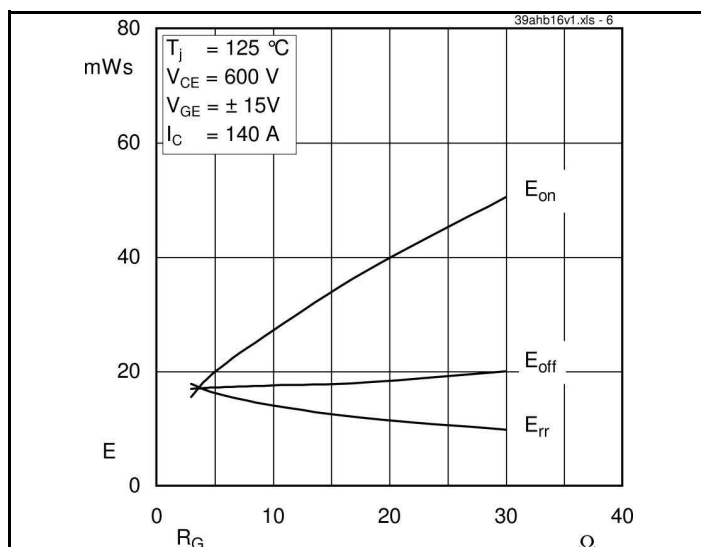
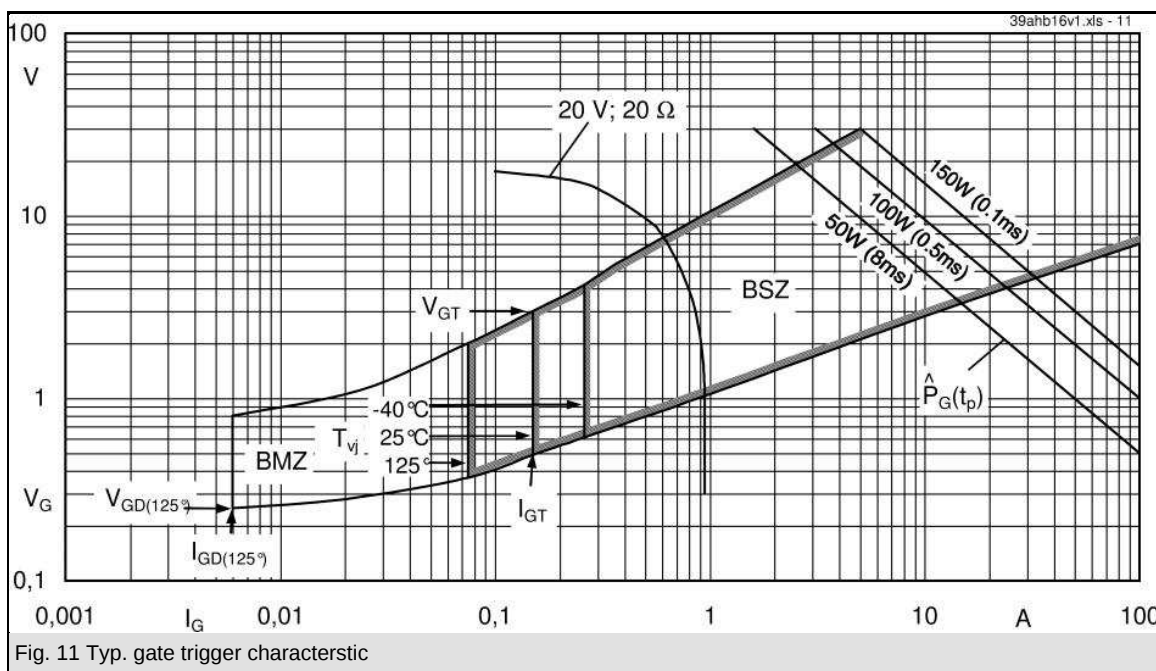
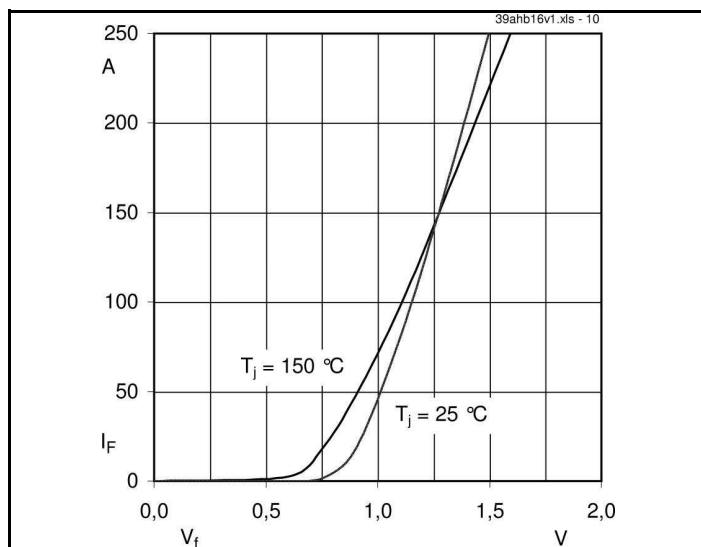
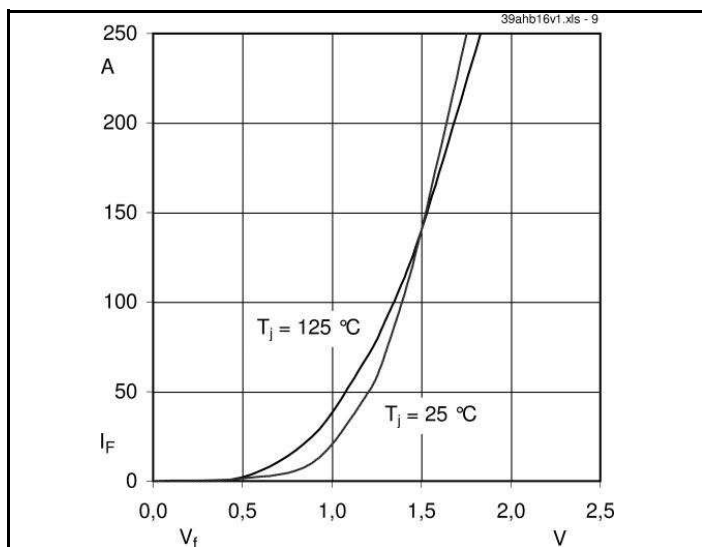
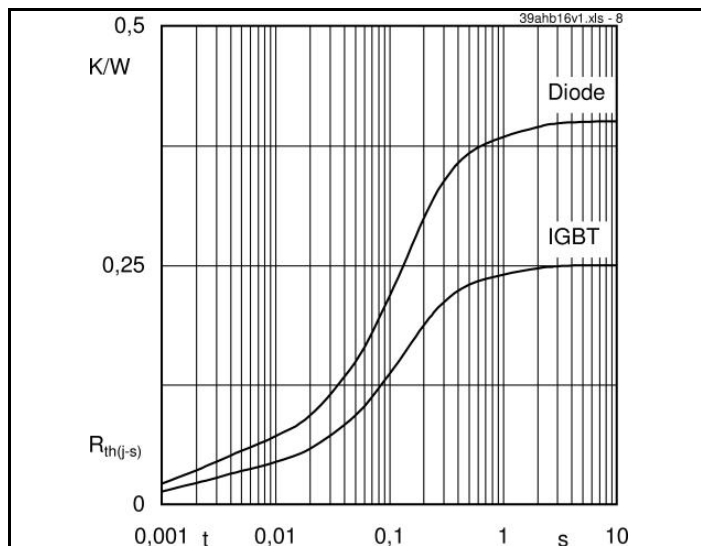
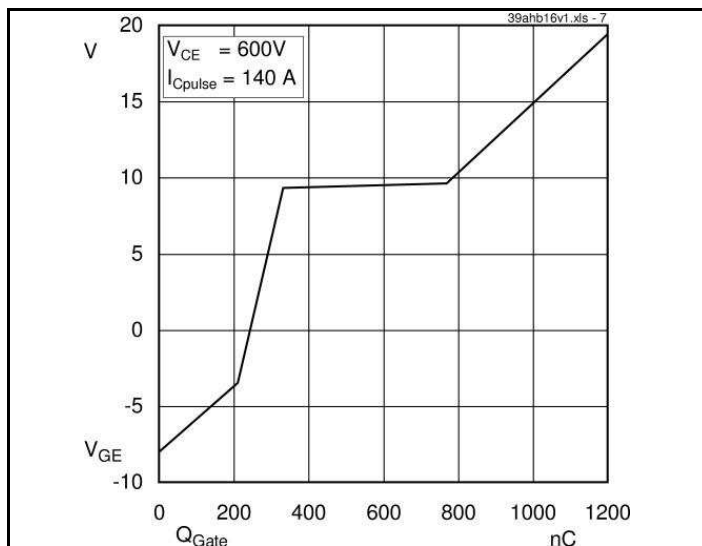
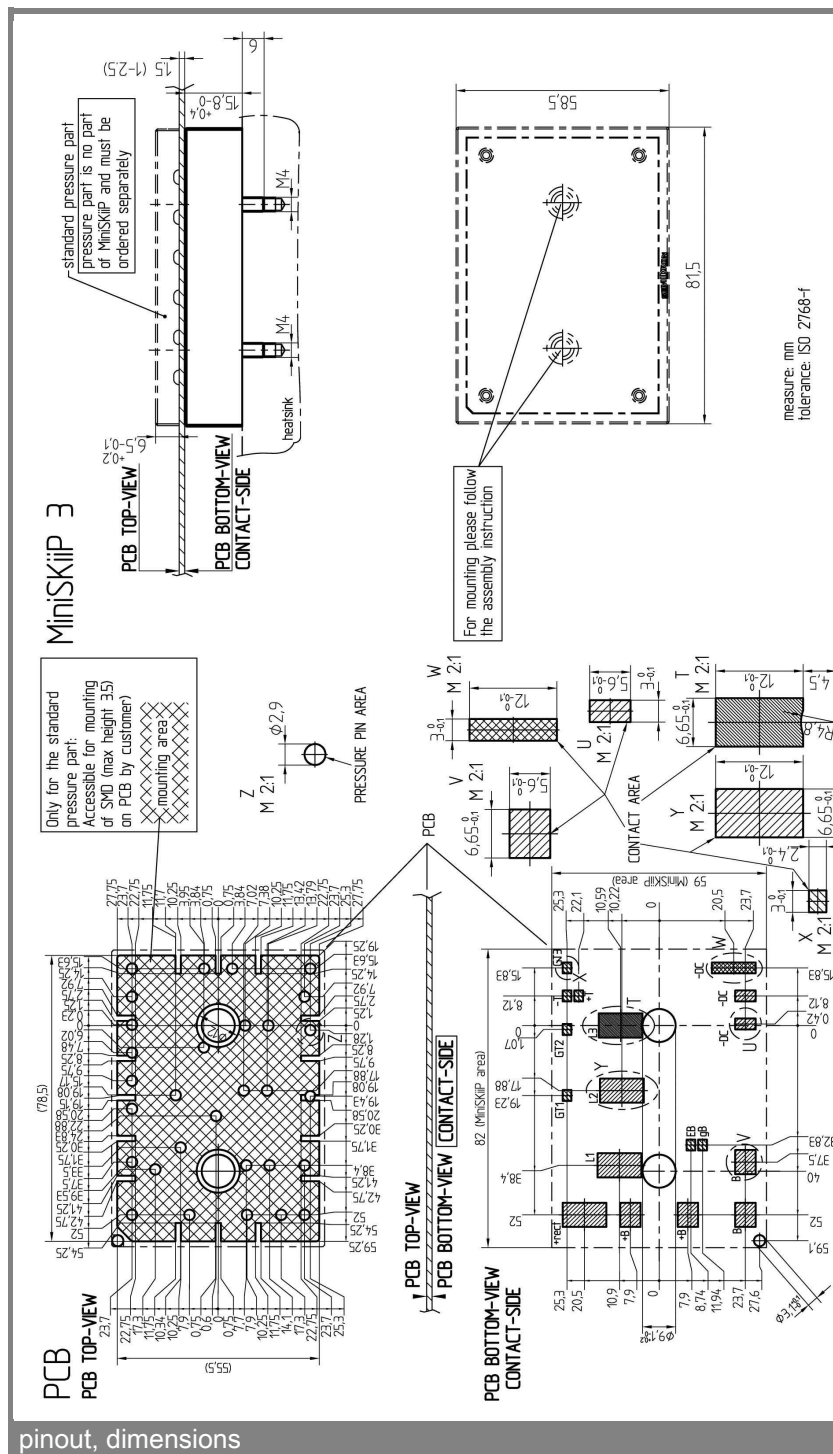
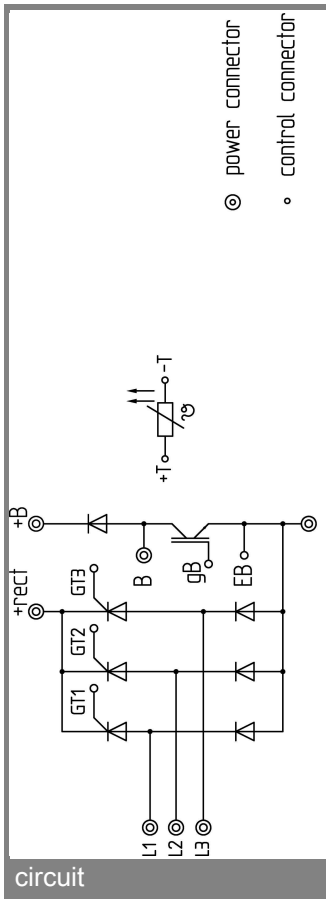


Fig. 6 Typ. Turn-on /-off energy = $f(R_G)$





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