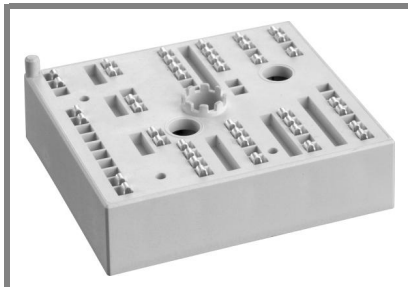


SKiIP 28AHB16V1



MiniSKiIP[®] 2

3-phase bridge rectifier +
brake chopper

SKiIP 28AHB16V1

Features

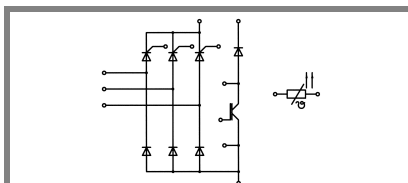
- Fast Trench IGBTs
- Robust and soft freewheeling diodes in CAL technology
- Highly reliable spring contacts for electrical connections
- UL recognised file no. E63532

Typical Applications

- Input bridge for inverter up to 39 kVA

Remarks

- V_{CEsat} , V_F = chip level value



AHB

Absolute Maximum Ratings		$T_s = 25^\circ\text{C}$, unless otherwise specified	
Symbol	Conditions	Values	Units
IGBT - Chopper			
V_{CES}		1200	V
I_C	$T_s = 25 (70)^\circ\text{C}$	118 (88)	A
I_{CRM}	$t_p \leq 1 \text{ ms}$	210	A
V_{GES}		± 20	V
T_j		- 40 ... + 150	$^\circ\text{C}$
Diode - Chopper			
I_F	$T_s = 25 (70)^\circ\text{C}$	118 (88)	A
I_{FRM}	$t_p \leq 1 \text{ ms}$	210	A
T_j		- 40 ... + 150	$^\circ\text{C}$
Diode / Thyristor - Rectifier			
V_{RRM}		1600	V
I_F / I_T	$T_s = 70$	82	A
I_{FSM} / I_{TSM}	$t_p = 10 \text{ ms}$, $\sin 180^\circ$, $T_j = 25^\circ\text{C}$	1000	A
i^2t	$t_p = 10 \text{ ms}$, $\sin 180^\circ$, $T_j = 25^\circ\text{C}$	5500	A^2s
T_j	Diode	- 40 ... + 150	$^\circ\text{C}$
T_j	Thyristor	- 40 ... + 125	$^\circ\text{C}$
I_{IRMS}	per power terminal (20 A / spring)	120	A
T_{stg}	$T_{op} \leq T_{stg}$	- 40 ... + 125	$^\circ\text{C}$
V_{isol}	AC, 1 min.	2500	V

Characteristics		$T_s = 25^\circ\text{C}$, unless otherwise specified			
Symbol	Conditions	min.	typ.	max.	Units
IGBT - Chopper					
V_{CEsat}	$I_{Cnom} = 105 \text{ A}$, $T_j = 25 (125)^\circ\text{C}$		1,7 (2)	2,1 (2,4)	V
$V_{GE(th)}$	$V_{GE} = V_{CE}$, $I_C = 3 \text{ mA}$	5	5,8	6,5	V
$V_{CE(TO)}$	$T_j = 25 (125)^\circ\text{C}$		1 (0,9)	1,2 (1,1)	V
r_T	$T_j = 25 (125)^\circ\text{C}$		6,7 (10)	8,6 (12)	$\text{m}\Omega$
C_{ies}	$V_{CE} = 25 \text{ V}$, $V_{GE} = 0 \text{ V}$, $f = 1 \text{ MHz}$		8,4		nF
C_{oes}	$V_{CE} = 25 \text{ V}$, $V_{GE} = 0 \text{ V}$, $f = 1 \text{ MHz}$		1,5		nF
C_{res}	$V_{CE} = 25 \text{ V}$, $V_{GE} = 0 \text{ V}$, $f = 1 \text{ MHz}$		1,1		nF
$R_{th(j-s)}$	per IGBT		0,4		K/W
$t_{d(on)}$	under following conditions		65		ns
t_r	$V_{CC} = 600 \text{ V}$, $V_{GE} = \pm 15 \text{ V}$		30		ns
$t_{d(off)}$	$I_{Cnom} = 105 \text{ A}$, $T_j = 125^\circ\text{C}$		410		ns
t_f	$R_{Gon} = R_{Goff} = 5,5 \Omega$		100		ns
E_{on}	inductive load		14,4		mJ
E_{off}			13,3		mJ
Diode - Chopper					
$V_F = V_{EC}$	$I_{Fnom} = 105 \text{ A}$, $T_j = 25 (125)^\circ\text{C}$		1,6 (1,6)	1,8 (1,8)	V
$V_{(TO)}$	$T_j = 25 (125)^\circ\text{C}$		1 (0,8)	1,1 (0,9)	V
r_T	$T_j = 25 (125)^\circ\text{C}$		5,7 (7,6)	6,7 (8,6)	$\text{m}\Omega$
$R_{th(j-s)}$	per diode		0,55		K/W
I_{RRM}	under following conditions		160		A
Q_{rr}	$I_{Fnom} = 105 \text{ A}$, $V_R = 600 \text{ V}$		26		μC
E_{rr}	$V_{GE} = 0 \text{ V}$, $T_j = 125^\circ\text{C}$		10,8		mJ
	$di_F/dt = 5400 \text{ A}/\mu\text{s}$				

Characteristics		$T_s = 25\text{ °C}$, unless otherwise specified			
Symbol	Conditions	min.	typ.	max.	Units
Diode - Rectifier					
V_F	$I_{Fnom} = 75\text{ A}$, $T_j = 25\text{ °C}$		1,2		V
$V_{(TO)}$	$T_j = 150\text{ °C}$		0,8		V
r_T	$T_j = 150\text{ °C}$		7		mΩ
$R_{th(j-s)}$	per diode		0,7		K/W
Thyristor - Rectifier					
V_T	$I_{Fnom} = 120\text{ A}$, $T_j = 25\text{ (125) °C}$			1,8 (1,7)	V
$V_{T(TO)}$	$T_j = 125\text{ °C}$			1,1	V
r_T	$T_j = 125\text{ °C}$			5	mΩ
V_{GT}	$T_j = 25\text{ °C}$			3	V
I_{GT}	$T_j = 25\text{ °C}$	150			mA
I_H	$T_j = 25\text{ °C}$		200		mA
I_L	$T_j = 25\text{ °C}$		400		mA
$dv/dt_{(cr)}$	$T_j = 125\text{ °C}$			1000	V/μs
$di/dt_{(cr)}$	$T_j = 125\text{ °C}$			50	A/μs
$R_{th(j-s)}$	per thyristor		0,65		K/W
Temperature Sensor					
R_{ts}	3 %, $T_r = 25\text{ (100) °C}$		1000(1670)		Ω
Mechanical Data					
w			65		g
M_s	Mounting torque	2		2,5	Nm

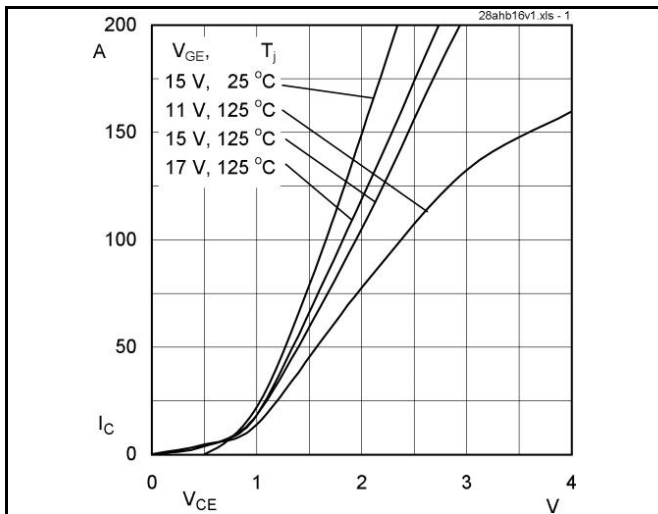


Fig. 1 Typ. output characteristic

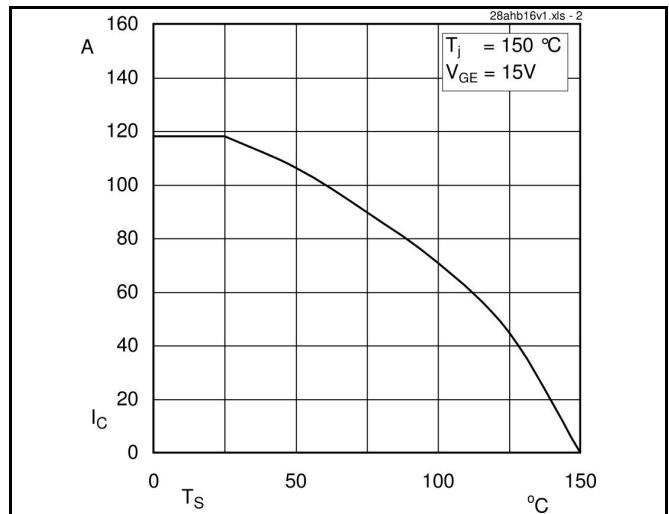


Fig. 2 Typ. rated current vs. temperature

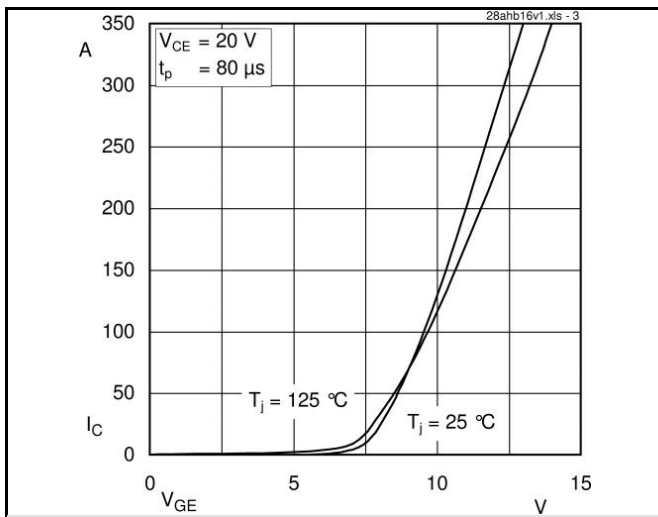


Fig. 3 Typ. transfer characteristic

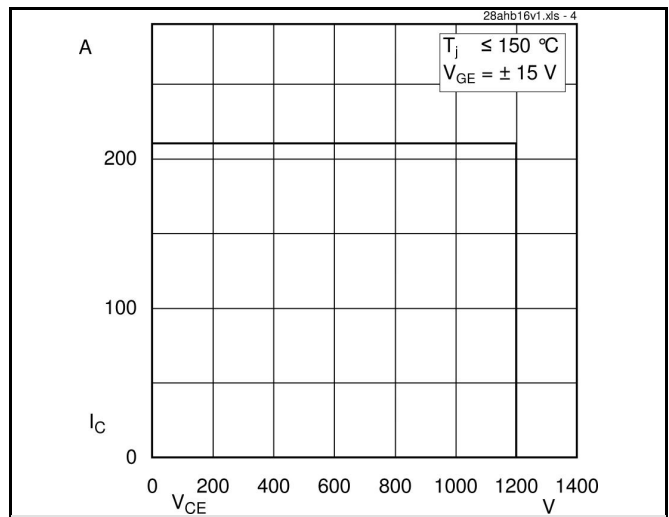


Fig. 4 Reverse bias safe operating area

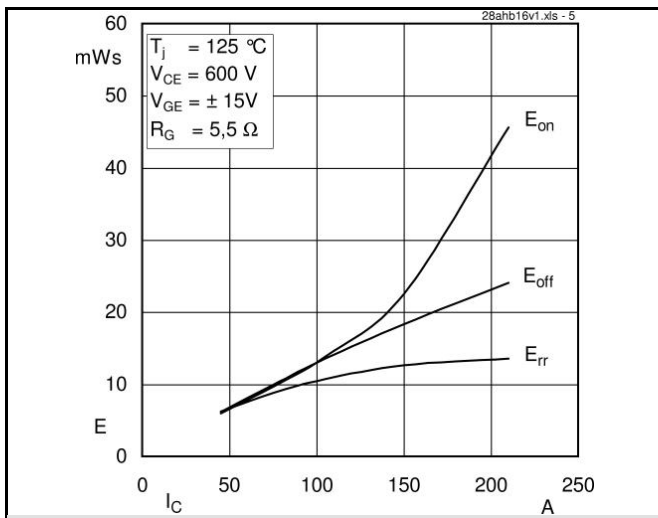


Fig. 5 Typ. Turn-on /-off energy = $f(I_C)$

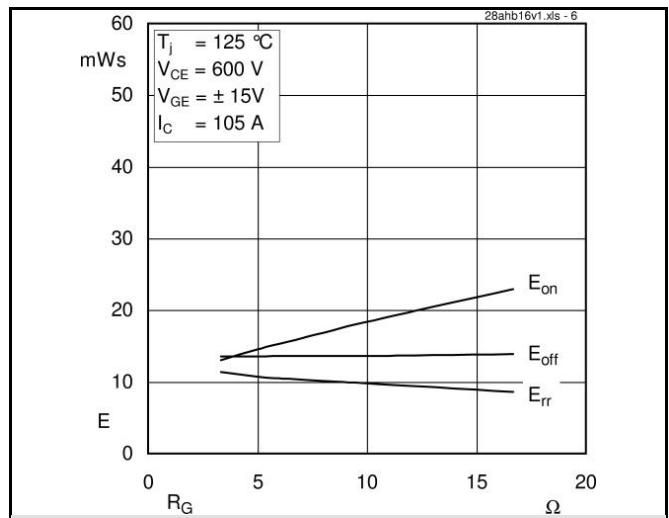


Fig. 6 Typ. Turn-on /-off energy = $f(R_G)$

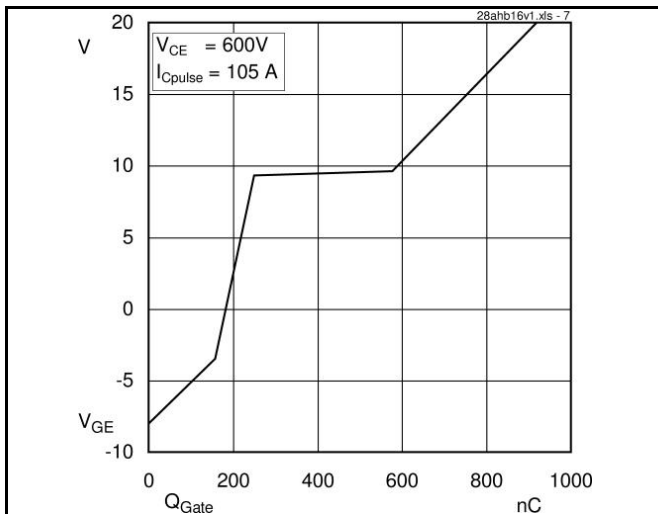


Fig. 7 Typ. gate charge characteristic

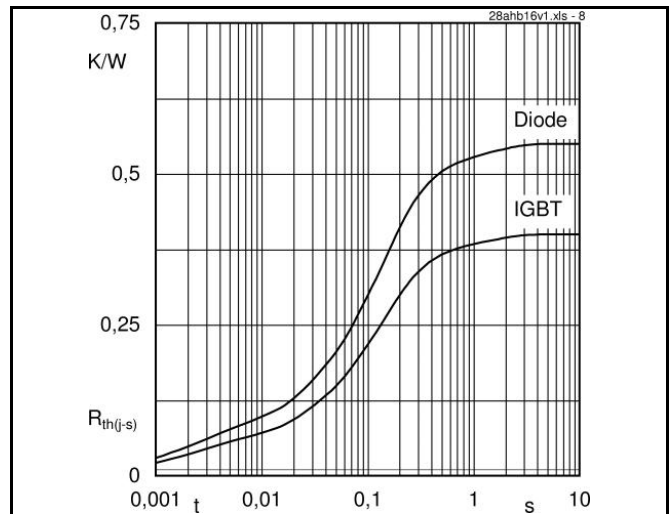


Fig. 8 Typ. thermal impedance

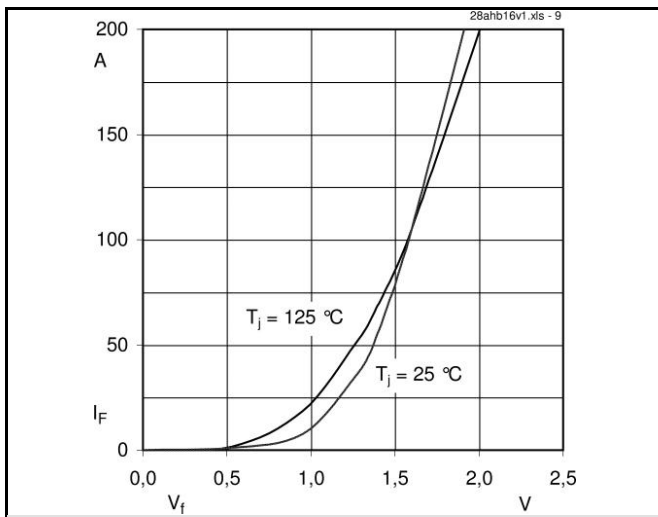


Fig. 9 Typ. freewheeling diode forward characteristic

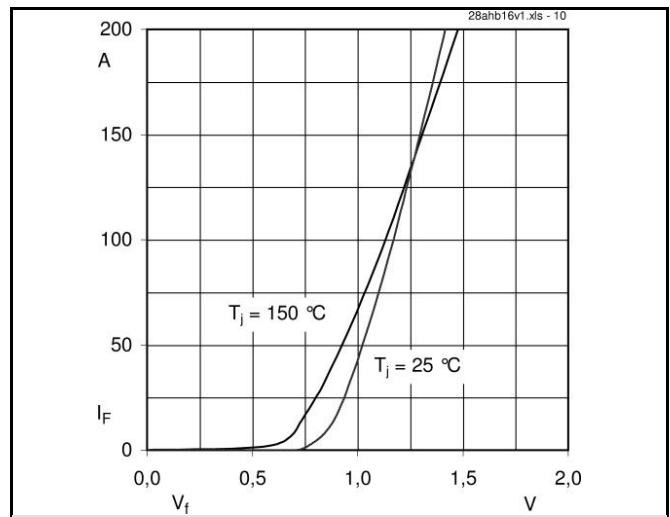


Fig. 10 Typ. input bridge forward characteristic

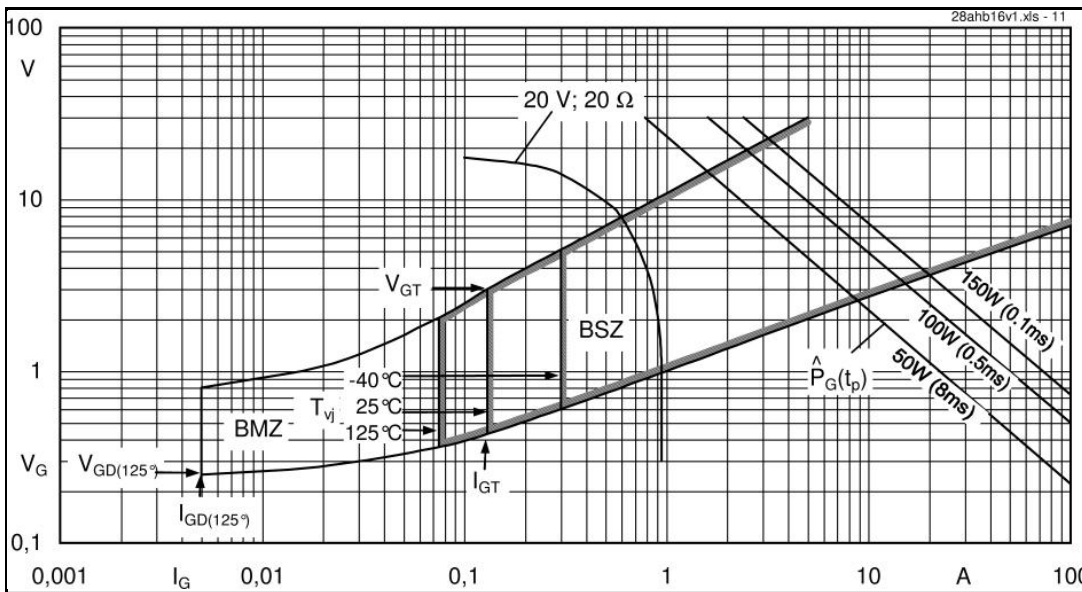
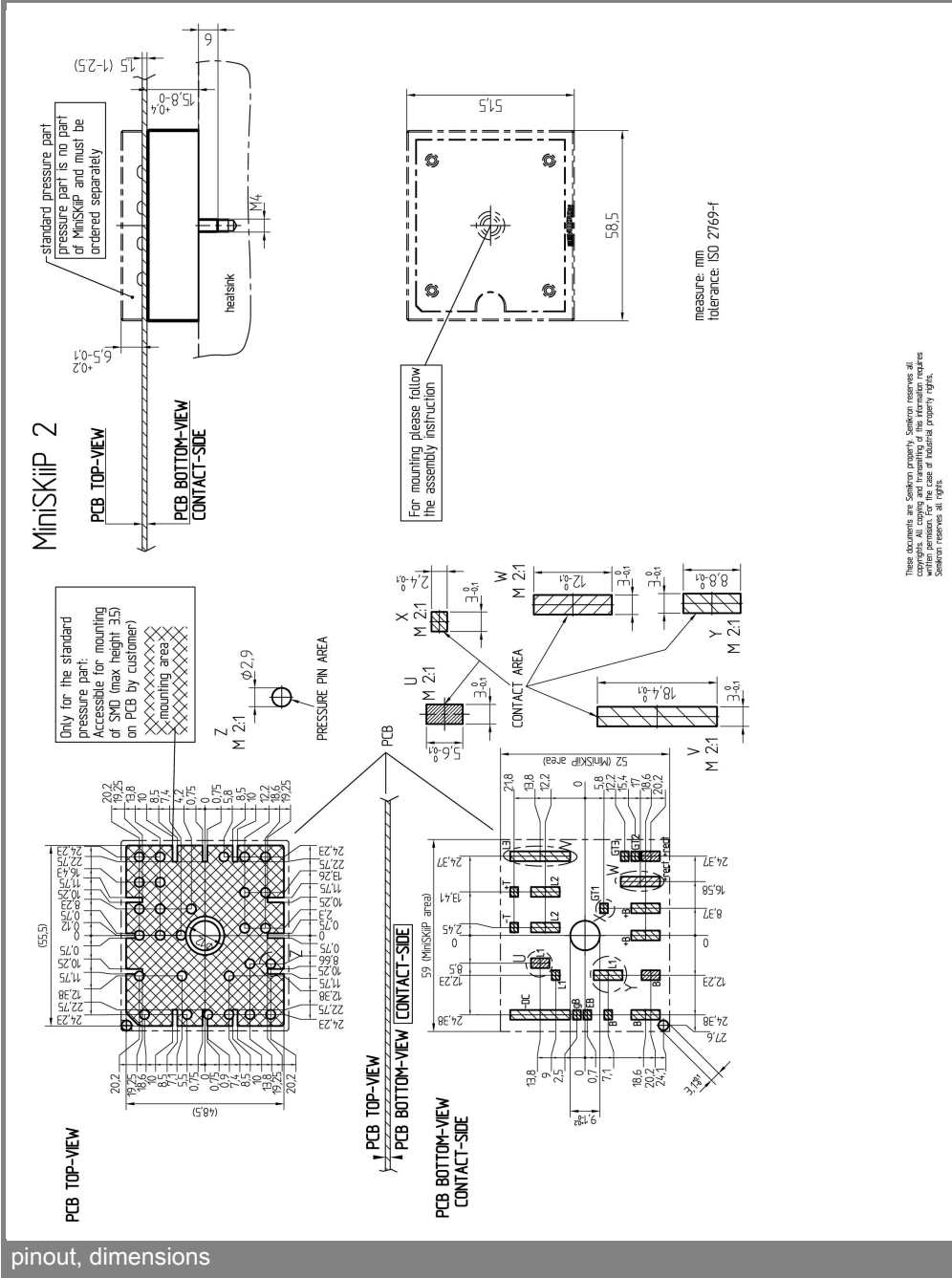
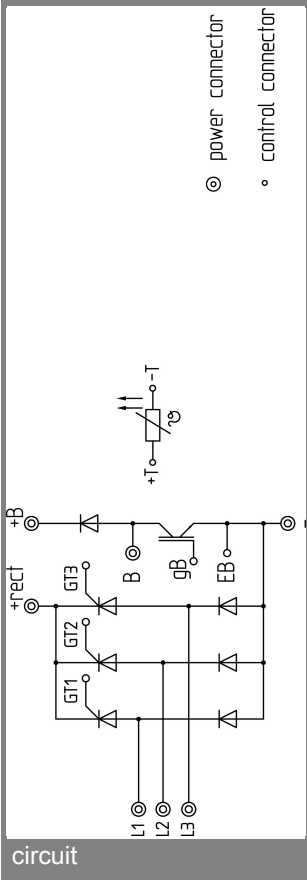


Fig. 11 Typ. gate trigger characteristic



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