

## SEMiSTART

### Antiparallel thyristors for softstart

#### SKKQ 3000

#### Preliminary Data

#### Features

- Compact design
- Thyristor with amplifying gate
- Pressure contact technology

#### Typical Applications

- Soft Starters

#### Remarks

- Please note: This module has no soft mold protection around the chip. It is therefore susceptible to environmental influences (dust, humidity, etc.). The humidity test according to IEC60068-2-67 is not passed by this product.
- Recommendation: The devices should be installed in control cabinets of IP54 degree of protection.

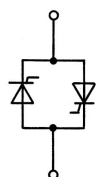
1)  $T_{vjmax}$  up to 150°C is allowable for overload conditions, max. time period for the overload condition is 20s.

#### Absolute Maximum Ratings

Symbol	Conditions	Values	Units
$I_{overload}$	W1C; sin. 180°; 20 sec.; $T_{vjmax} = 150\text{ °C}$ ; $T_{vjstart} = 40\text{ °C}$	3080	A
$I_{TSM}$	$T_{vj} = 25\text{ °C}$ ; 10 ms	30000	A
	$T_{vj} = 125\text{ °C}$ ; 10 ms	25500	A
$I^2t$	$T_{vj} = 25\text{ °C}$ ; 8,3 ... 10 ms	4500000	A <sup>2</sup> s
	$T_{vj} = 125\text{ °C}$ ; 8,3 ... 10 ms	3250000	A <sup>2</sup> s
SKKQ 3000/14			
$V_{RSM}$		1500	V
$V_{RRM}, V_{DRM}$		1400	V
SKKQ 3000/18			
$V_{RSM}$		1900	V
$V_{RRM}, V_{DRM}$		1800	V
$T_{vj}$		-40 ... +125 <sup>1)</sup>	°C
$T_{stg}$		-40 ... +125	°C

#### Characteristics

Symbol	Conditions	min.	typ.	max.	Units
$V_T$	$T_{vj} = 25\text{ °C}$ ; $I_T = 3600\text{ A}$			1,65	V
$V_{T(TO)}$	$T_{vj} = 125\text{ °C}$			0,95	V
$r_T$	$T_{vj} = 125\text{ °C}$			0,18	mΩ
$I_{DD}, I_{RD}$	$T_{vj} = 125\text{ °C}$ ; $V_{RD} = V_{RRM}$ ; per module			240	mA
$t_{gd}$	$T_{vj} = 25\text{ °C}$ ; $I_G = 1\text{ A}$ ; $di_G/dt = 1\text{ A}/\mu\text{s}$		1		μs
$t_{gr}$	$V_D = 0,67 * V_{DRM}$		2		μs
$(dv/dt)_{cr}$	$T_{vj} = 125\text{ °C}$		1000		V/μs
$(di/dt)_{cr}$	$T_{vj} = 125\text{ °C}$ ; $f = 50 \dots 60\text{ Hz}$		125		A/μs
$t_q$	$T_{vj} = 125\text{ °C}$		250		μs
$I_H$	$T_{vj} = 25\text{ °C}$		250	500	mA
$I_L$	$T_{vj} = 25\text{ °C}$ ; $R_G = 33\text{ Ω}$		500	2000	mA
$V_{GT}$	$T_{vj} = 25\text{ °C}$ ; d.c.	3			V
$I_{GT}$	$T_{vj} = 25\text{ °C}$ ; d.c.	250			mA
$V_{GD}$	$T_{vj} = 125\text{ °C}$ ; d.c.			0,25	V
$I_{GD}$	$T_{vj} = 125\text{ °C}$ ; d.c.			10	mA
$R_{th(j-s)}$	cont.; per thyristor			0,026	K/W
$M_t$			5 ±15%		Nm
m	approx.		3300		g
Case			C 13		



W1C

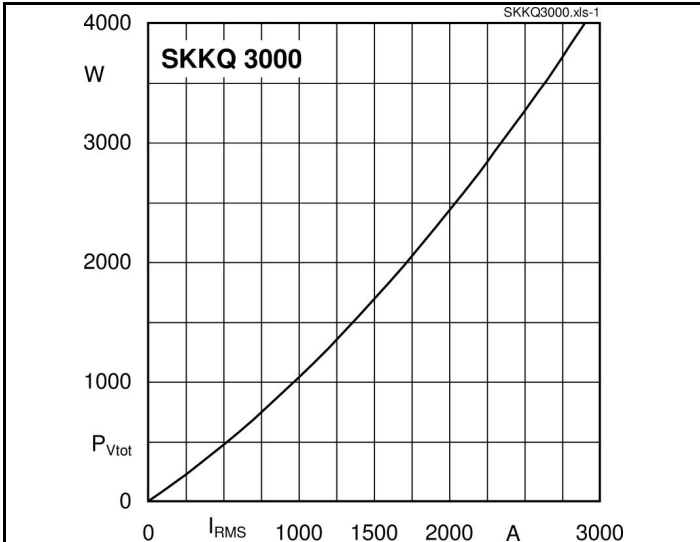


Fig. 1 Power dissipation per module vs. rms current

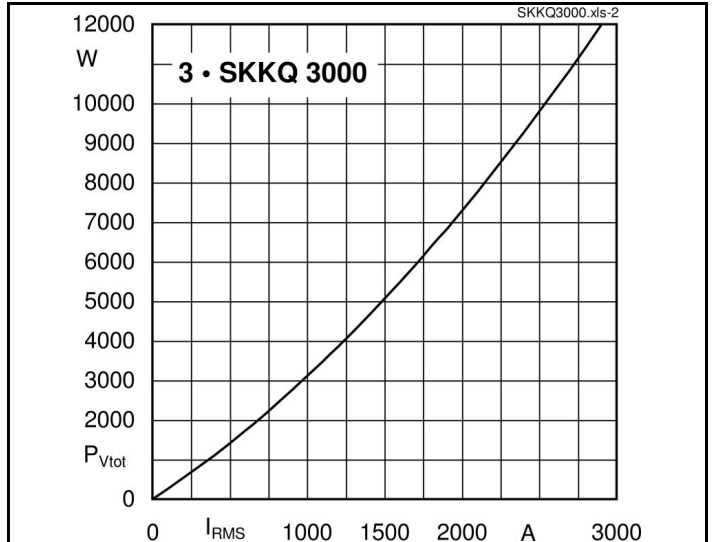


Fig. 2 Power dissipation of three modules vs. rms current

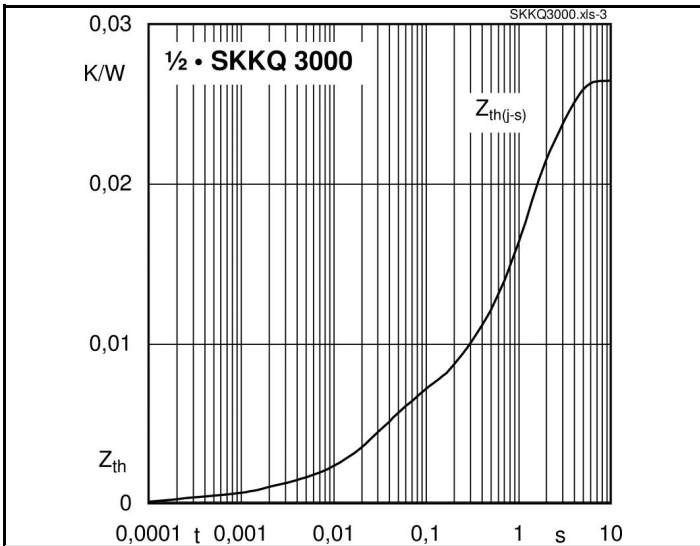


Fig. 3 Transient thermal impedance  $Z_{th(j-s)}$  vs. time

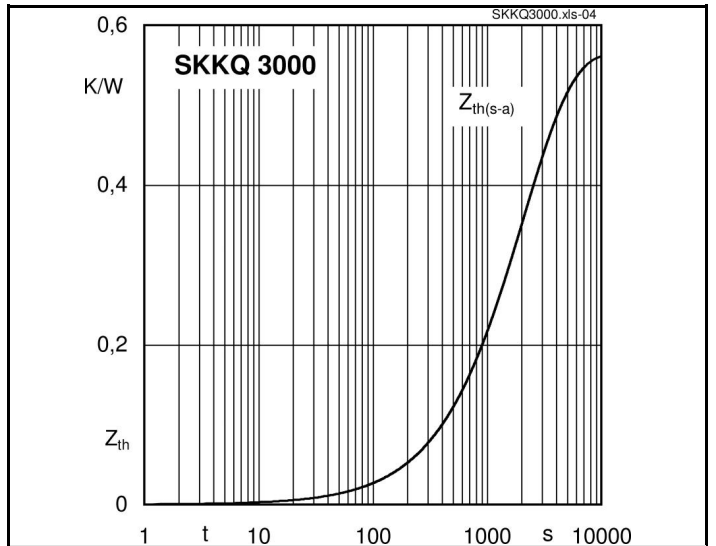


Fig. 4 Typ. transient thermal impedance  $Z_{th(s-a)}$  vs. time (natural cooling)

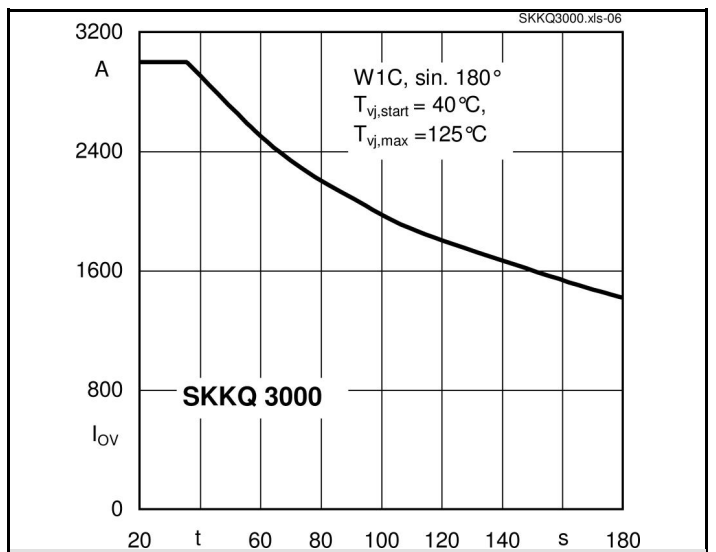
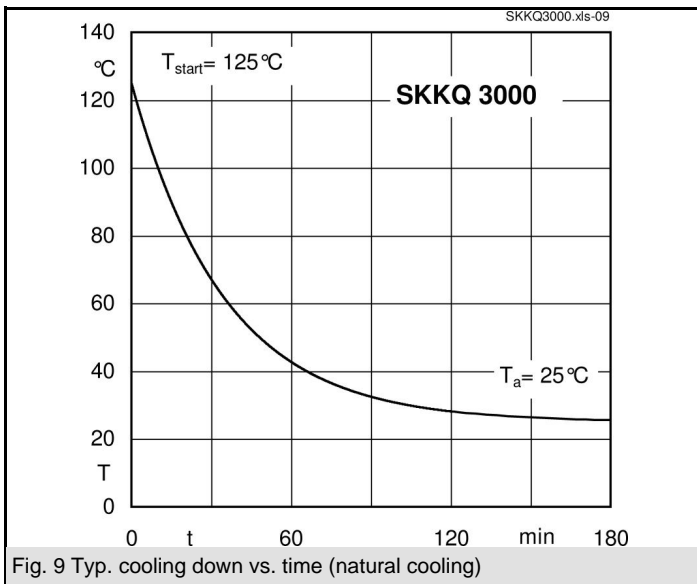
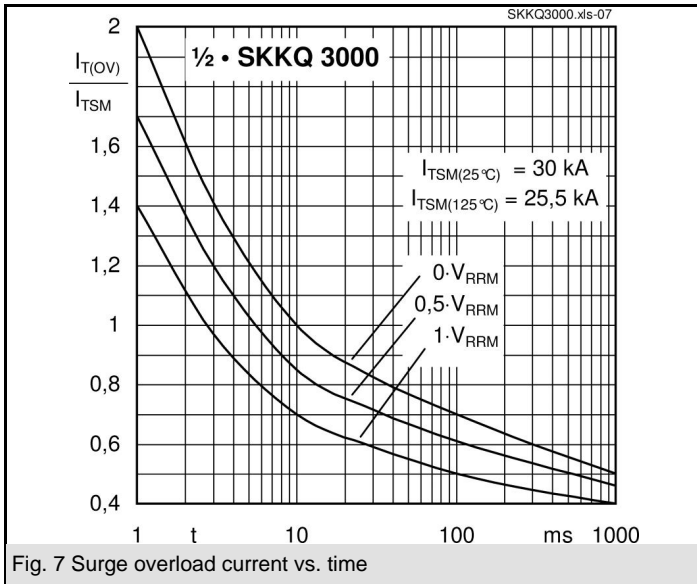
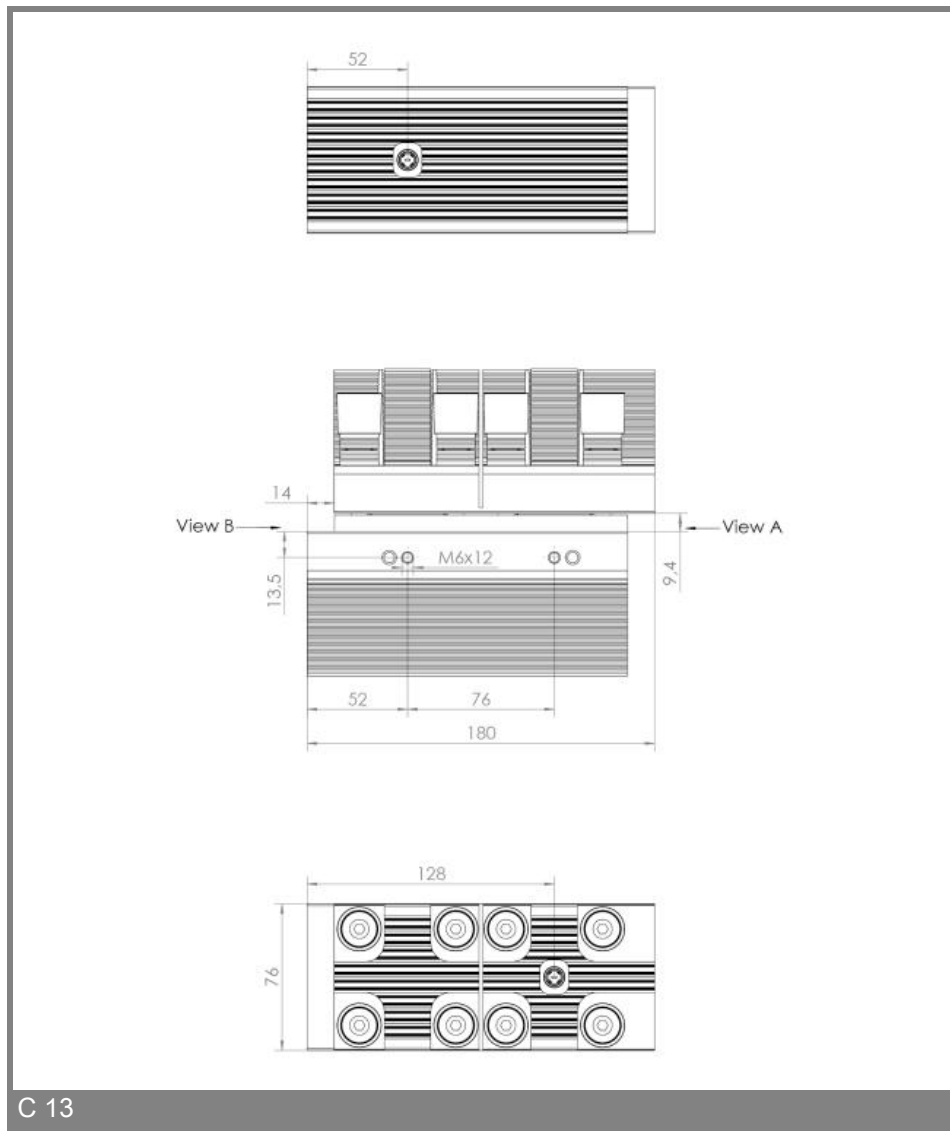
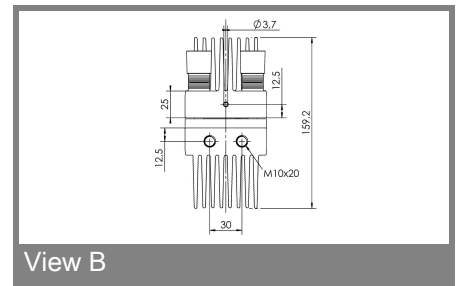
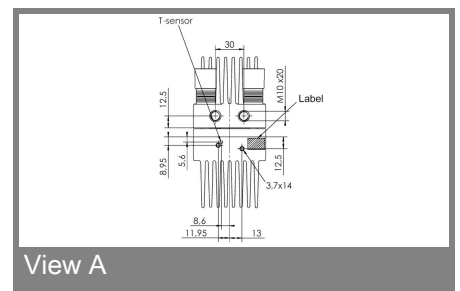


Fig. 6 Typ. overload current vs. time (natural cooling)





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