



SEMIPACK® 3

## Thyristor / Diode Modules

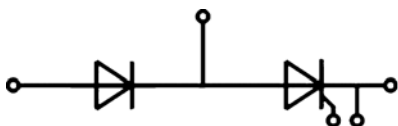
## SKKH 280/22 E H4

## Features\*

- Heat transfer through aluminum nitride ceramic insulated metal baseplate
- Precious metal pressure contacts for high reliability
- Thyristor with amplifying gate
- UL recognized, file no. E 63 532

## Typical Applications

- DC motor control (e. g. for machine tools)
- AC motor starters
- Temperature control (e. g. for ovens, chemical processes)
- Professional light dimming (studios, theaters)



SKKH

Absolute Maximum Ratings				
Symbol	Conditions		Values	Unit
Chip				
I <sub>T(AV)</sub>	sinus 180°	T <sub>c</sub> = 85 °C	252	A
		T <sub>c</sub> = 79 °C	280	A
I <sub>TRMS</sub>	continuous operation		440	A
I <sub>TSM</sub>	10 ms	T <sub>j</sub> = 25 °C	8500	A
		T <sub>j</sub> = 125 °C	7500	A
i <sup>2</sup> t	10 ms	T <sub>j</sub> = 25 °C	361250	A <sup>2</sup> s
		T <sub>j</sub> = 125 °C	281250	A <sup>2</sup> s
V <sub>RSM</sub>			2300	V
V <sub>RRM</sub>			2200	V
V <sub>DRM</sub>			2200	V
(di/dt) <sub>cr</sub>	T <sub>j</sub> = 125 °C		250	A/μs
(dv/dt) <sub>cr</sub>	T <sub>j</sub> = 125 °C		1000	V/μs
T <sub>j</sub>			-40 ... 125	°C
Module				
T <sub>stg</sub>			-40 ... 125	°C
V <sub>isol</sub>	a.c.; 50 Hz; r.m.s.	1 min	4000	V
		1 s	4800	V

Characteristics						
Symbol	Conditions		min.	typ.	max.	Unit
Chip						
V <sub>T</sub>	T <sub>j</sub> = 25 °C, I <sub>T</sub> = 750 A				1.55	V
V <sub>T(TO)</sub>	T <sub>j</sub> = 125 °C				0.90	V
r <sub>T</sub>	T <sub>j</sub> = 125 °C				0.75	mΩ
I <sub>DD</sub> ; I <sub>RD</sub>	T <sub>j</sub> = 125 °C, V <sub>DD</sub> = V <sub>DRM</sub> ; V <sub>RD</sub> = V <sub>RRM</sub>				90	mA
t <sub>gd</sub>	T <sub>j</sub> = 25 °C, I <sub>G</sub> = 1 A, di <sub>G</sub> /dt = 1 A/μs			1		μs
t <sub>gr</sub>	V <sub>D</sub> = 0.67 * V <sub>DRM</sub>			2		μs
t <sub>q</sub>	T <sub>j</sub> = 125 °C		50	150	150	μs
I <sub>H</sub>	T <sub>j</sub> = 25 °C			150	500	mA
I <sub>L</sub>	T <sub>j</sub> = 25 °C, R <sub>G</sub> = 33 Ω			300	2000	mA
V <sub>GT</sub>	T <sub>j</sub> = 25 °C, d.c.		3			V
I <sub>GT</sub>	T <sub>j</sub> = 25 °C, d.c.		200			mA
V <sub>GD</sub>	T <sub>j</sub> = 125 °C, d.c.				0.25	V
I <sub>GD</sub>	T <sub>j</sub> = 125 °C, d.c.				10	mA
R <sub>th(j-c)</sub>	cont.	per chip			0.11	K/W
		per module			0.055	K/W
R <sub>th(j-c)</sub>	sin. 180°	per chip			0.116	K/W
		per module			0.058	K/W
R <sub>th(j-c)</sub>	rec. 120°	per chip			0.13	K/W
		per module			0.065	K/W
Module						
R <sub>th(c-s)</sub>	chip			0.04		K/W
	module			0.02		K/W
M <sub>s</sub>	to heatsink M5		4.25		5.75	Nm
M <sub>t</sub>	to terminals M8		7.65		10.34	Nm
a					5 * 9.81	m/s <sup>2</sup>
w				600		g

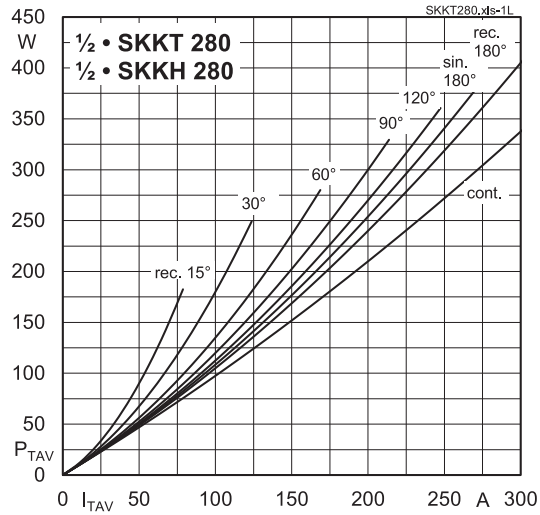


Fig. 1L: Power dissipation per thyristor vs. on-state current

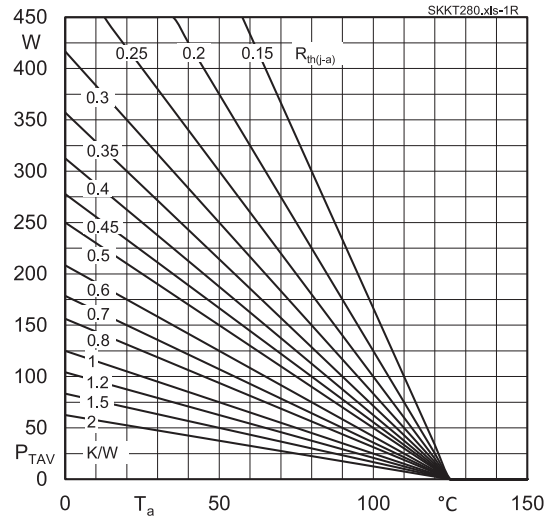


Fig. 1R: Power dissipation per thyristor vs. ambient temperature

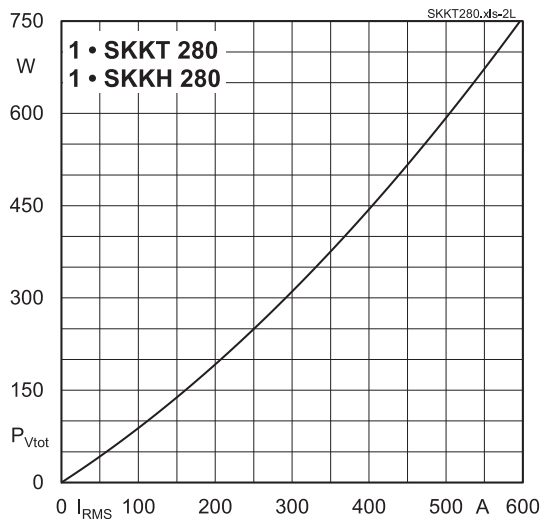


Fig. 2L: Power dissipation of one module vs. rms current

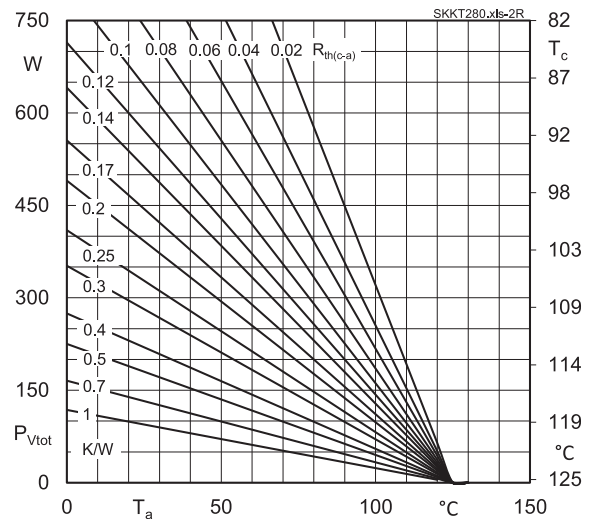


Fig. 2R: Max. power dissipation of one module vs. case temperature

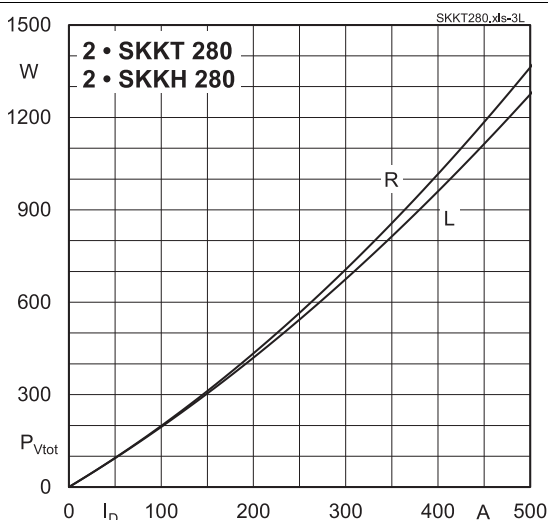


Fig. 3L: Power dissipation of two modules vs. direct current

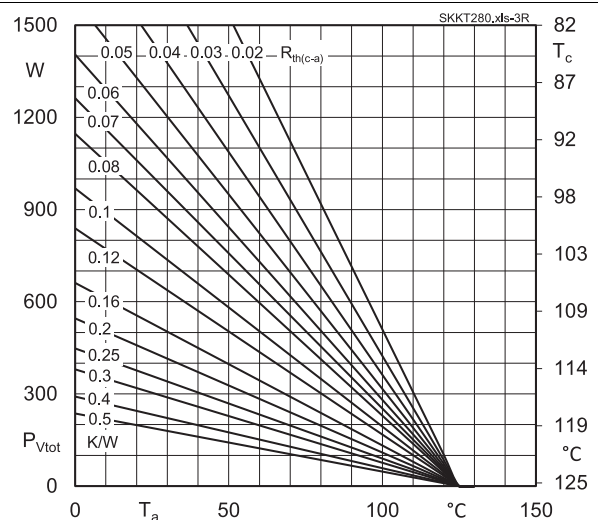


Fig. 3R: Power dissipation of two modules vs. case temperature

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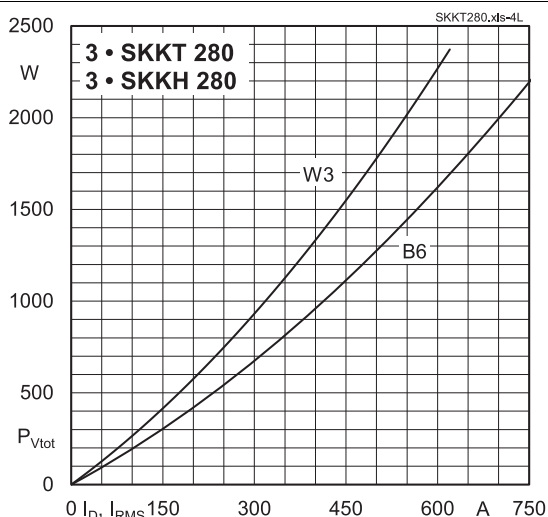


Fig. 4L: Power dissipation of three modules vs. direct and rms current

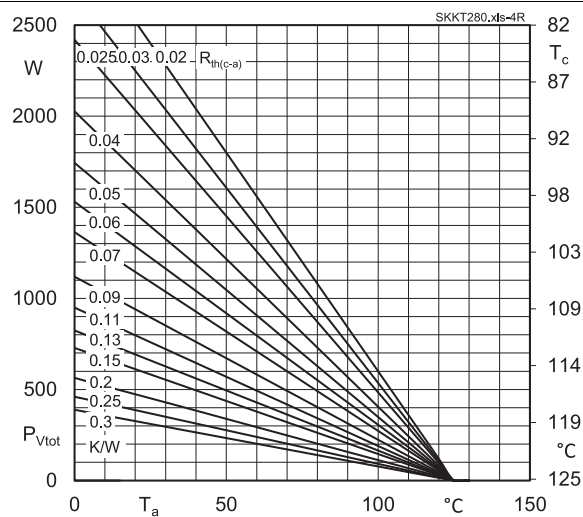


Fig. 4R: Power dissipation of three modules vs. case temperature

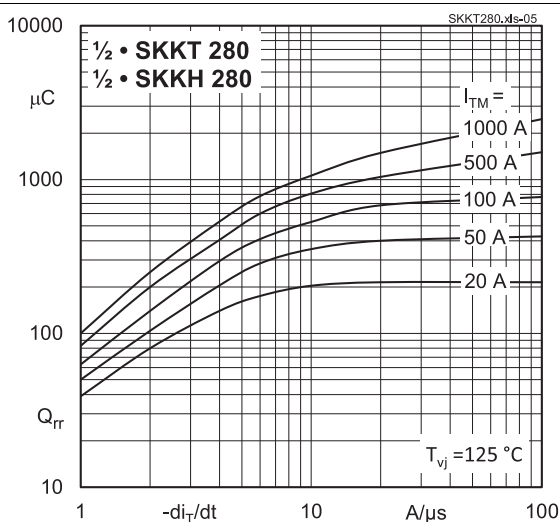


Fig. 5: Recovered charge vs. current decrease

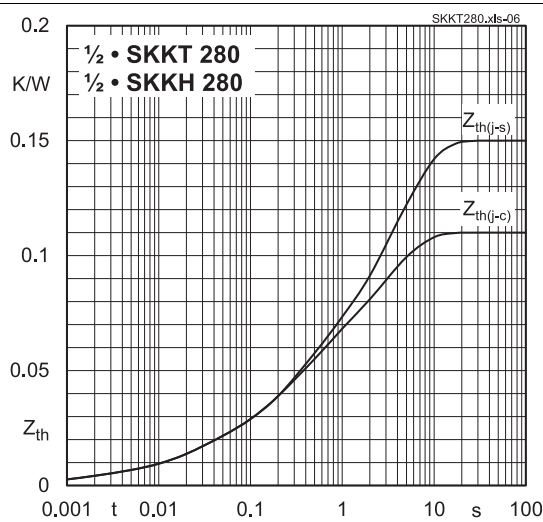


Fig. 6: Transient thermal impedance vs. time

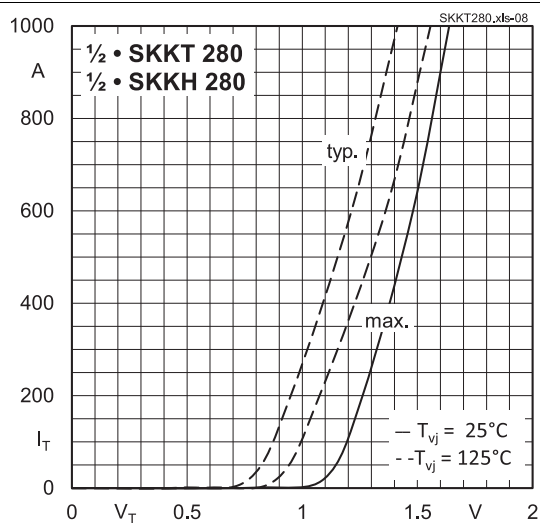


Fig. 7: On-state characteristics

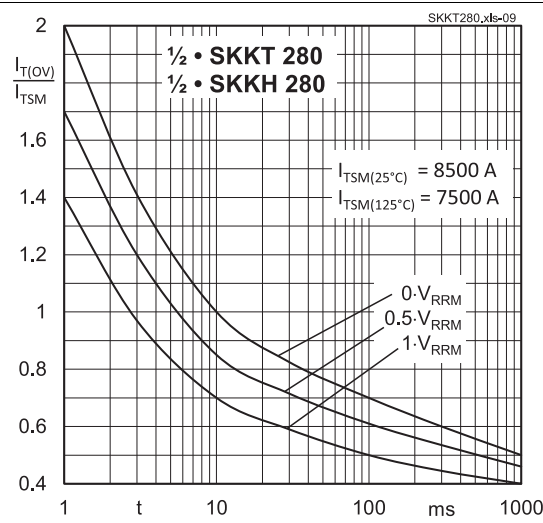


Fig. 8: Surge overload current vs. time

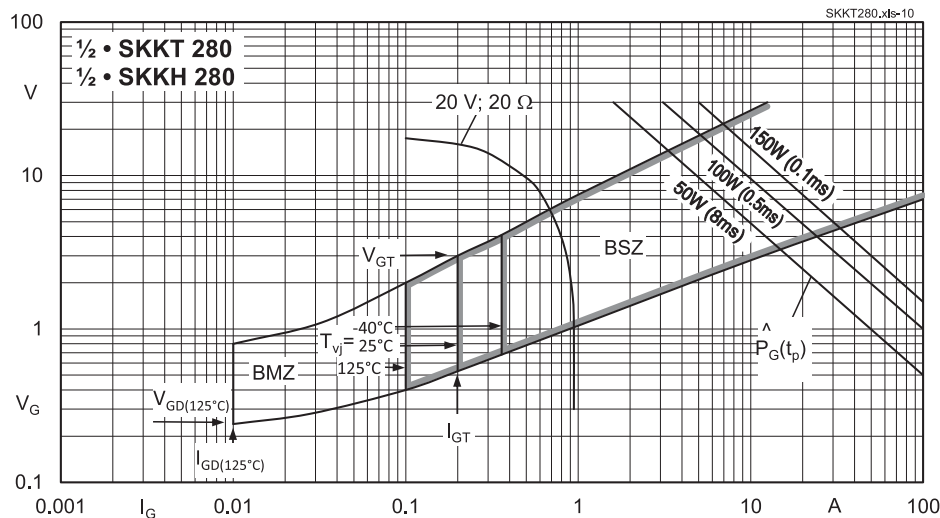
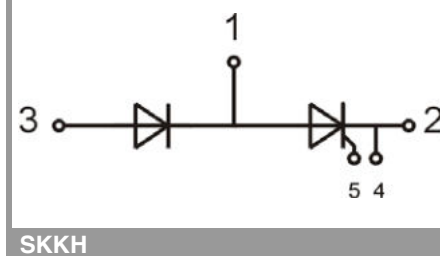
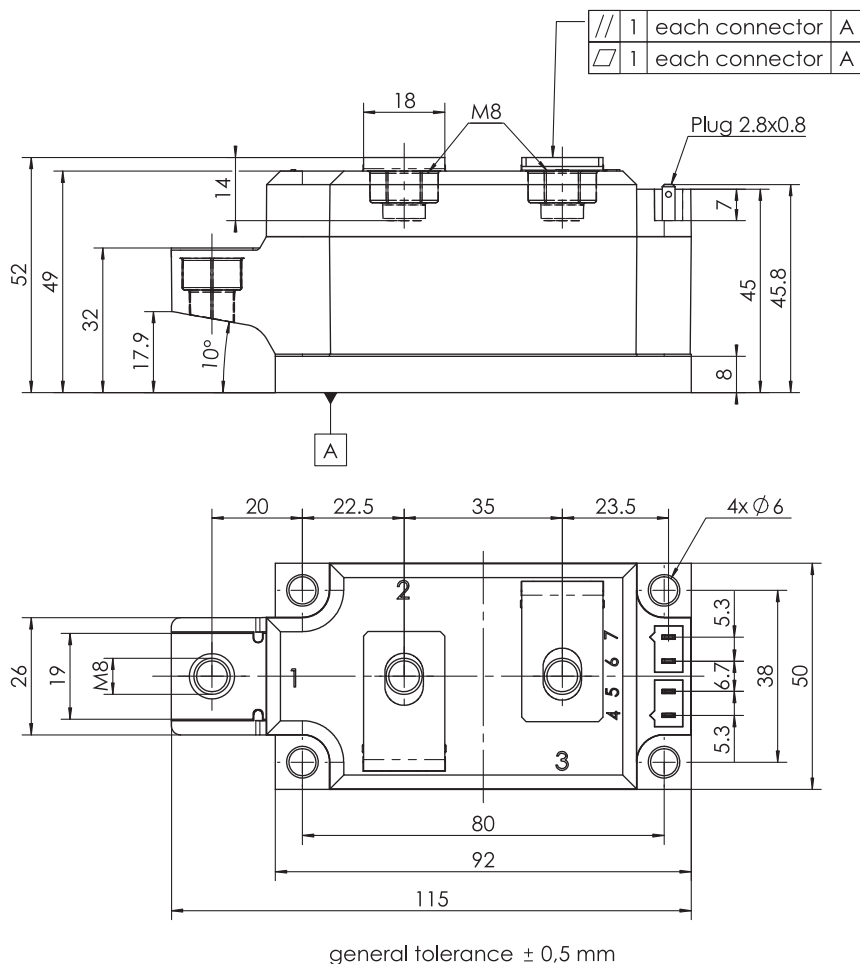


Fig. 9: Gate trigger characteristics



## SEMPACK 3

This is an electrostatic discharge sensitive device (ESDS) due to international standard IEC 61340.

### \*IMPORTANT INFORMATION AND WARNINGS

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