



SEMIPACK® 3

Thyristor / Diode Modules

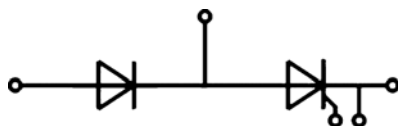
SKKH 280/20 E H4

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)



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Absolute Maximum Ratings

Symbol	Conditions		Values	Unit
Chip				
I _{T(AV)}	sinus 180°	T _c = 85 °C	252	A
		T _c = 79 °C	280	A
I _{TRMS}	continuous operation		440	A
I _{TSM}	10 ms	T _j = 25 °C	8500	A
		T _j = 125 °C	7500	A
i ² t	10 ms	T _j = 25 °C	361250	A ² s
		T _j = 125 °C	281250	A ² s
V _{RSM}			2100	V
V _{RRM}			2000	V
V _{DRM}			2000	V
(di/dt) _{cr}	T _j = 125 °C		250	A/μs
(dv/dt) _{cr}	T _j = 125 °C		1000	V/μs
T _j			-40 ... 125	°C
Module				
T _{stg}			-40 ... 125	°C
V _{isol}	a.c.; 50 Hz; r.m.s.	1 min	4000	V
		1 s	4800	V

Characteristics

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

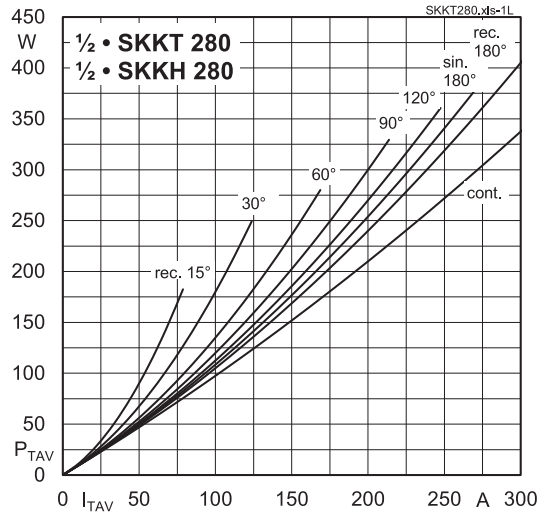


Fig. 1L: Power dissipation per thyristor vs. on-state current

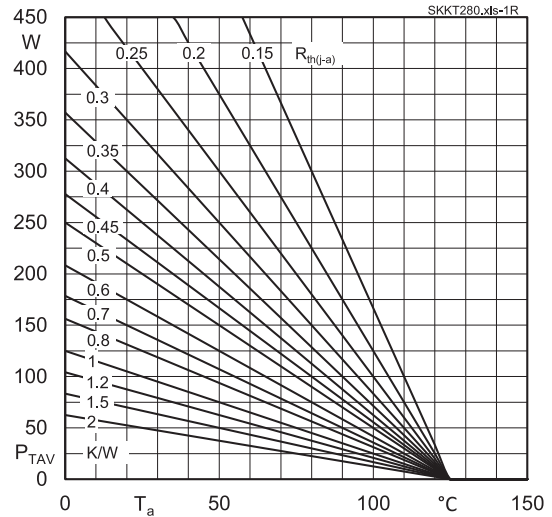


Fig. 1R: Power dissipation per thyristor vs. ambient temperature

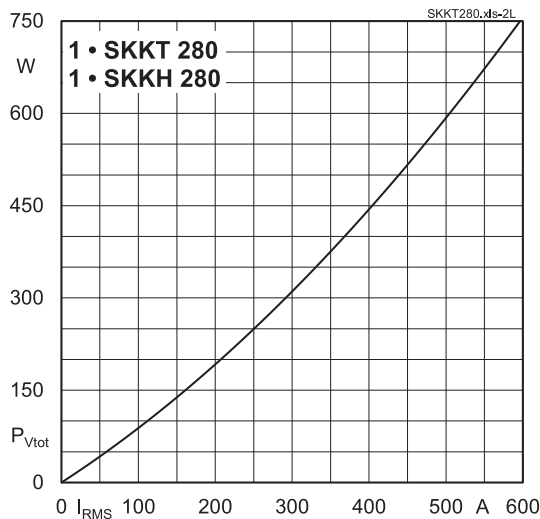


Fig. 2L: Power dissipation of one module vs. rms current

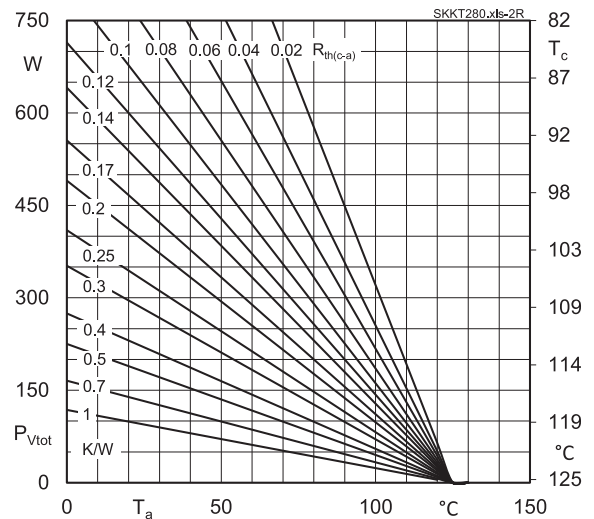


Fig. 2R: Max. power dissipation of one module vs. case temperature

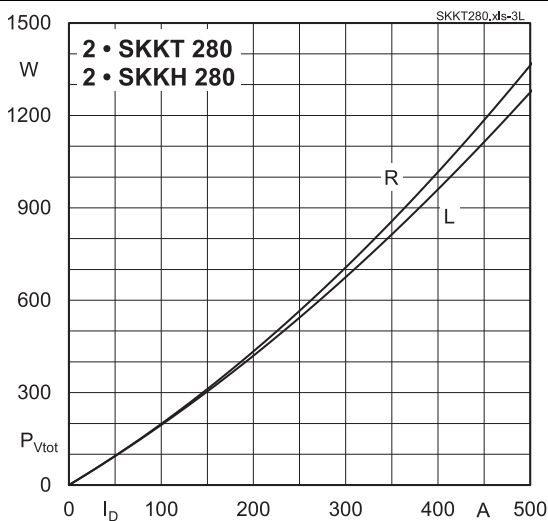


Fig. 3L: Power dissipation of two modules vs. direct current

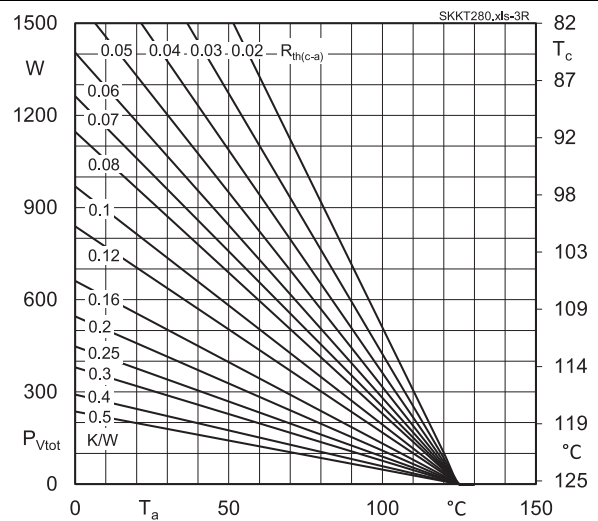


Fig. 3R: Power dissipation of two modules vs. case temperature

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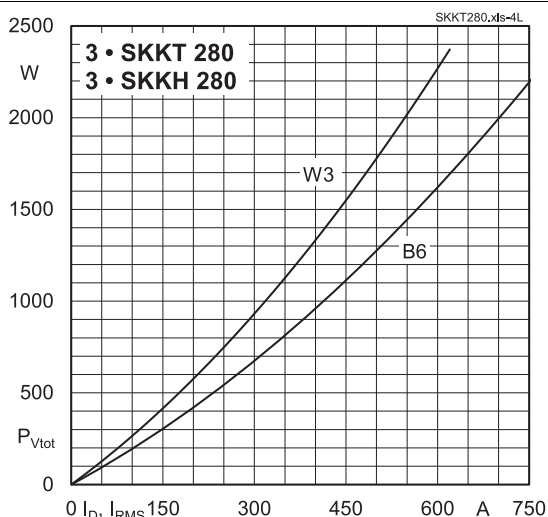


Fig. 4L: Power dissipation of three modules vs. direct and rms current

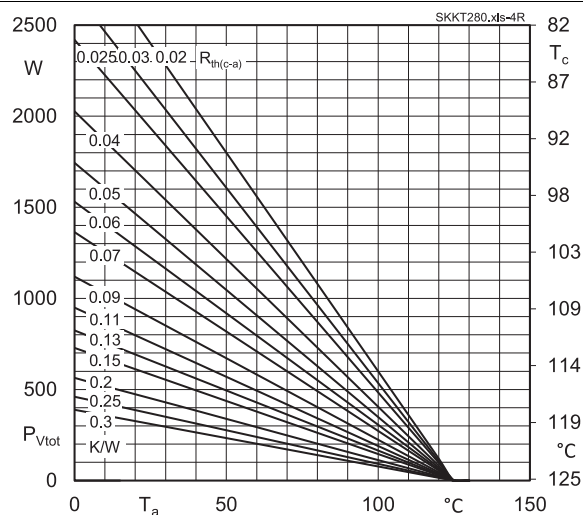


Fig. 4R: Power dissipation of three modules vs. case temperature

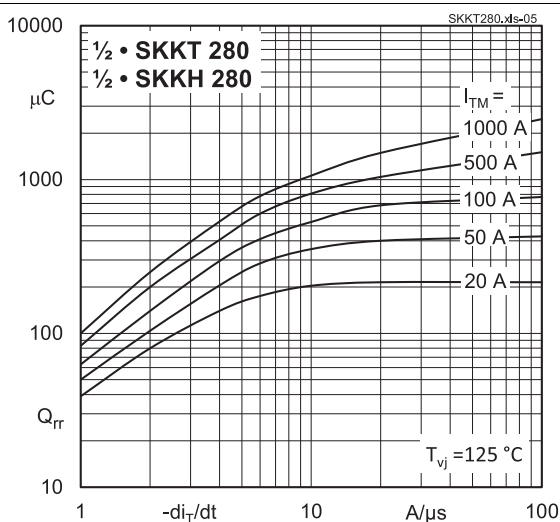


Fig. 5: Recovered charge vs. current decrease

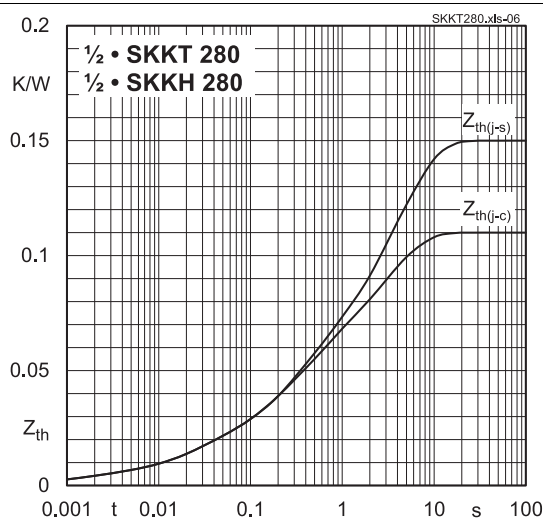


Fig. 6: Transient thermal impedance vs. time

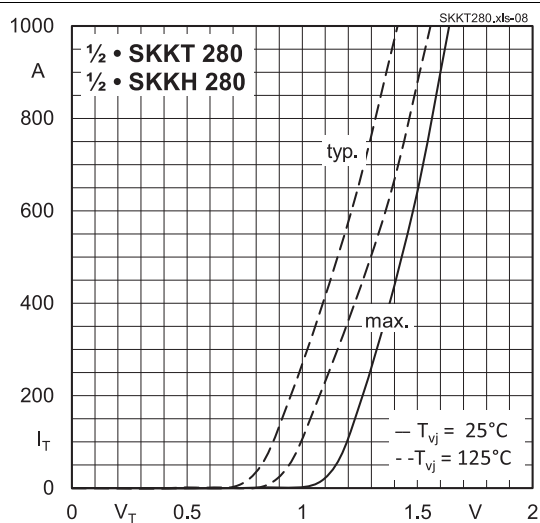


Fig. 7: On-state characteristics

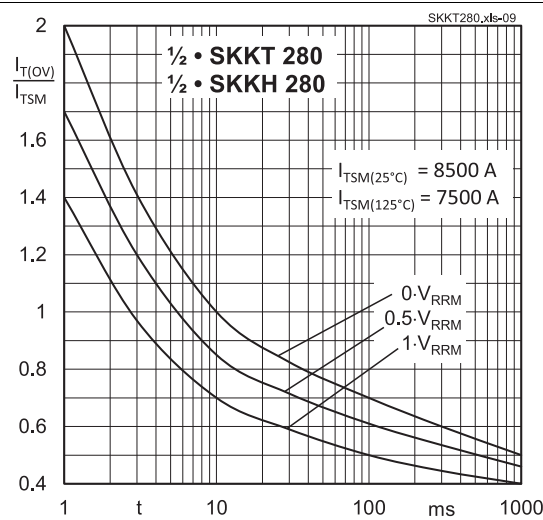


Fig. 8: Surge overload current vs. time

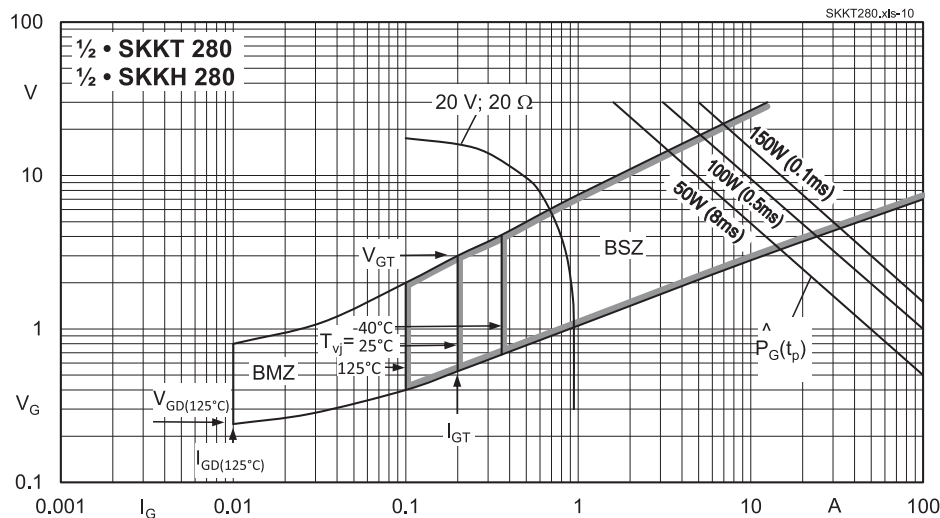
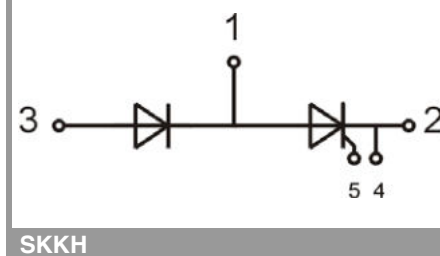
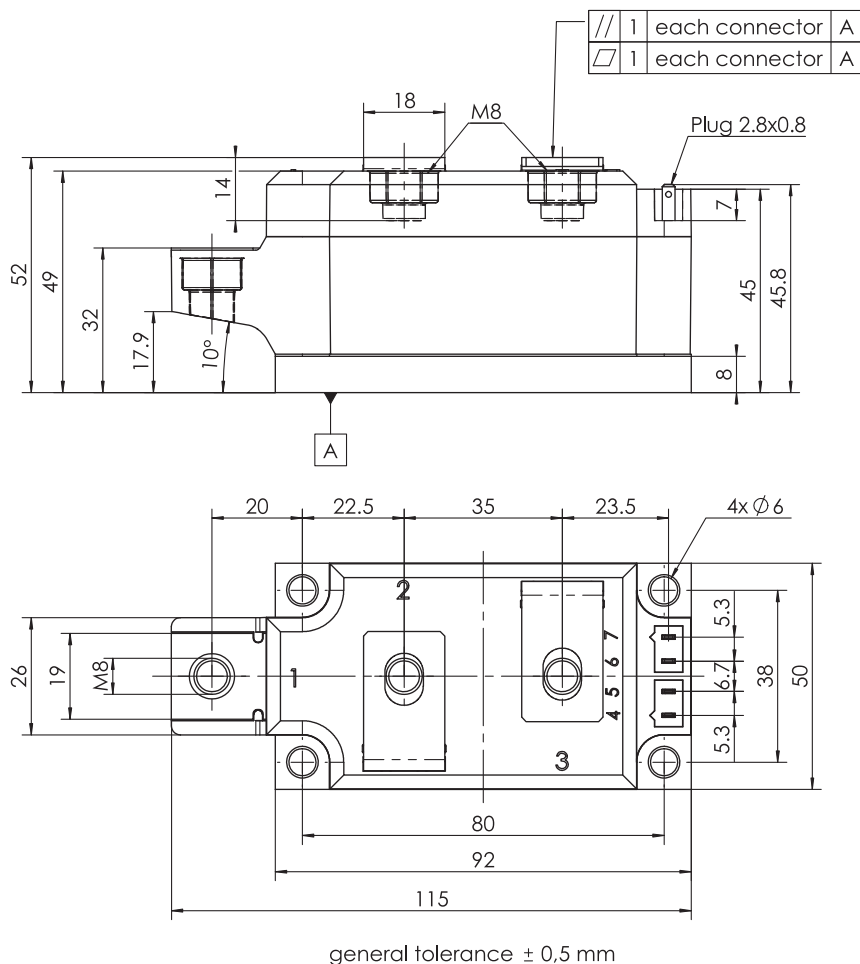


Fig. 9: Gate trigger characteristics



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

*IMPORTANT INFORMATION AND WARNINGS

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