

SKKH 273/18 E



SEMIPACK® 3

Thyristor / Diode Modules

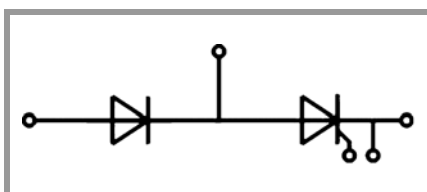
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Features*

- Industrial standard package
- Electrically insulated base plate
- Heat transfer through aluminum oxide ceramic insulated metal base plate
- Chip soldered on direct copper bonded Al_2O_3 ceramic
- UL recognition, file no. E63532

Typical Applications

- DC motor control (e. g. for machine tools)
- 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	274	A
		T _c = 100 °C	204	A
I _{TSM}	10 ms	T _j = 25 °C	9000	A
		T _j = 130 °C	8000	A
i ² t	10 ms	T _j = 25 °C	405000	A ² s
		T _j = 130 °C	320000	A ² s
V _{RSM}			1900	V
V _{RRM}			1800	V
V _{DRM}			1800	V
(di/dt) _{cr}	T _j = 130 °C		130	A/μs
(dv/dt) _{cr}	T _j = 130 °C		1000	V/μs
T _j			-40 ... 130	°C
Module				
T _{stg}			-40 ... 125	°C
V _{isol}	a.c.; 50 Hz; r.m.s.	1 min	3000	V
		1 s	3600	V

Characteristics						
Symbol	Conditions		min.	typ.	max.	Unit
Chip						
V _T	T _J = 25 °C, I _T = 750 A				1.6	V
V _{T(TO)}	T _J = 130 °C				0.90	V
r _T	T _J = 130 °C				0.92	mΩ
I _{DD} ; I _{RD}	T _J = 130 °C, V _{DD} = V _{DRM} ; V _{RD} = V _{RRM}				100	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 = 130 °C			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.		2			V
I _{GT}	T _J = 25 °C, d.c.		150			mA
V _{GD}	T _J = 130 °C, d.c.				0.25	V
I _{GD}	T _J = 130 °C, d.c.				10	mA
R _{th(j-c)}	cont.	per chip			0.104	K/W
		per module			0.052	K/W
R _{th(j-c)}	sin. 180°	per chip			0.108	K/W
		per module			0.054	K/W
R _{th(j-c)}	rec. 120°	per chip			0.122	K/W
		per module			0.061	K/W
Module						
R _{th(c-s)}	chip			0.08		K/W
	module			0.04		K/W
M _s	to heatsink M5		4.25		5.75	Nm
M _t	to terminals M8		7.65		10.35	Nm
a					5 * 9.81	m/s ²
w				410		g

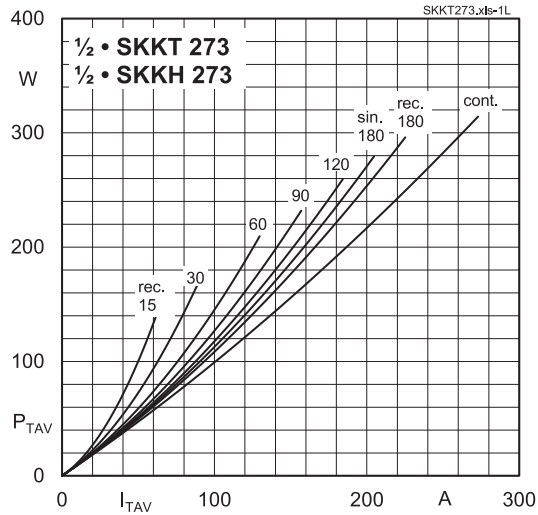


Fig. 1L: Power dissipation per thyristor/diode vs. on-state current

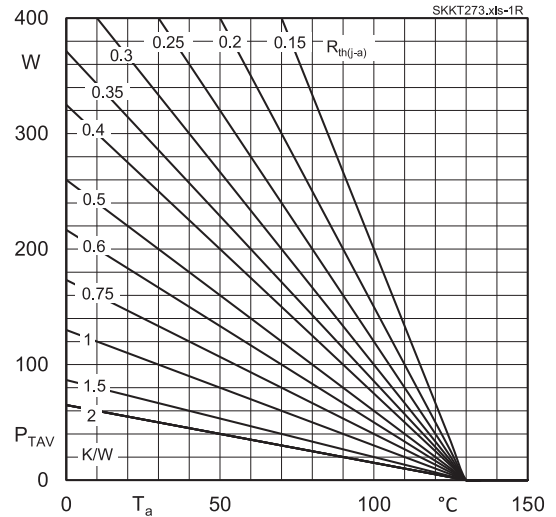


Fig. 1R: Power dissipation per thyristor/diode vs. ambient temperature

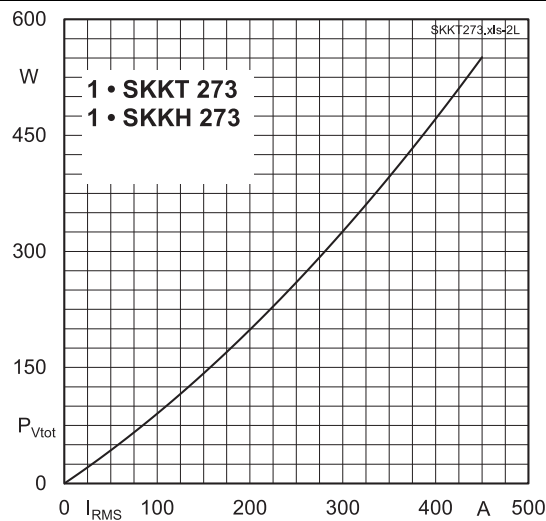


Fig. 2L: Power dissipation of one module vs. rms current

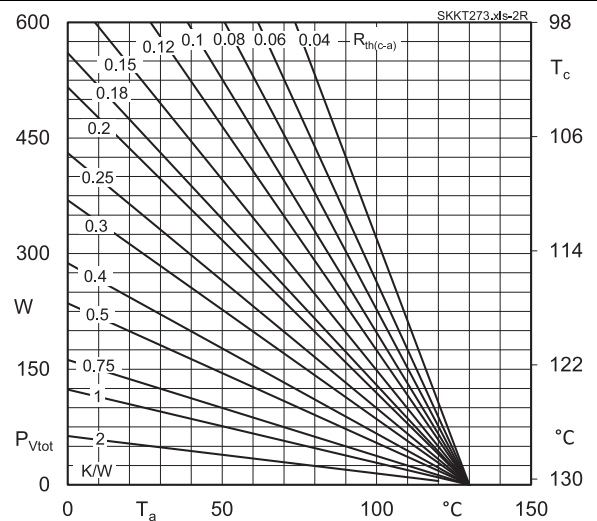


Fig. 2R: Power dissipation of one module vs. case temperature

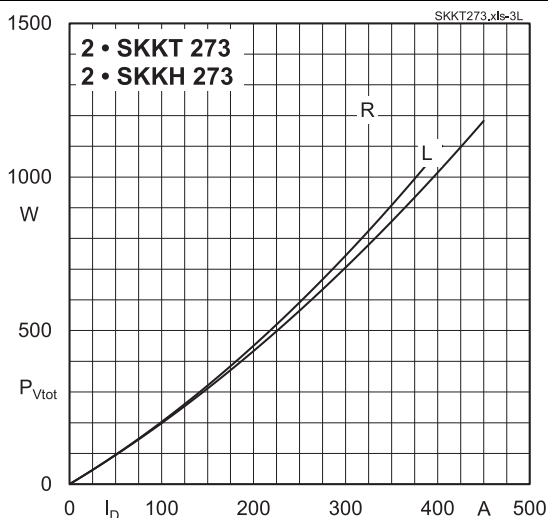


Fig. 3L: Power dissipation of two modules vs. direct current

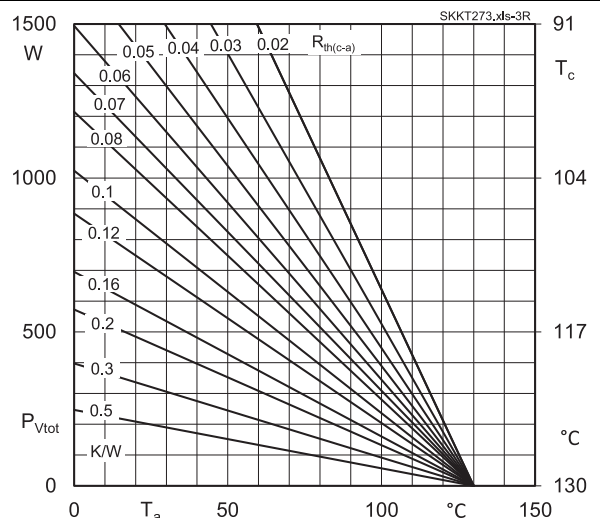


Fig. 3R: Power dissipation of two modules vs. case temperature

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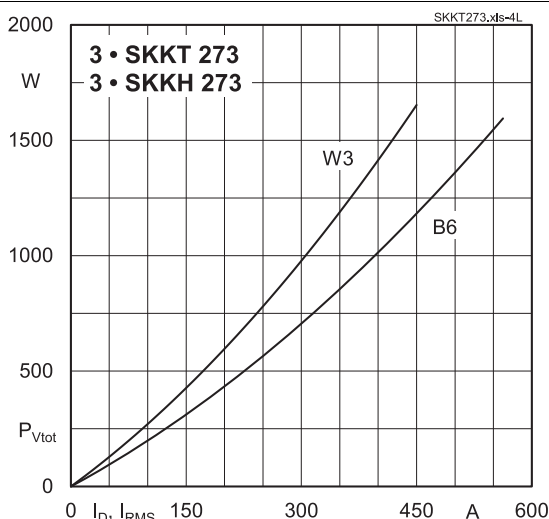


Fig. 4L: Power dissipation of three modules vs. direct and rms current

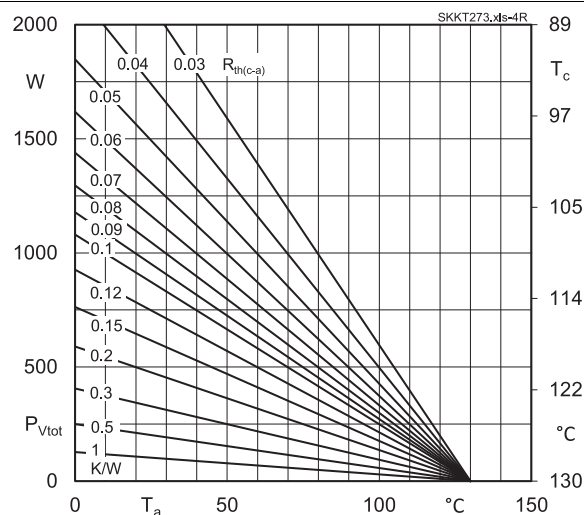


Fig. 4R: Power dissipation of three modules vs. case temperature

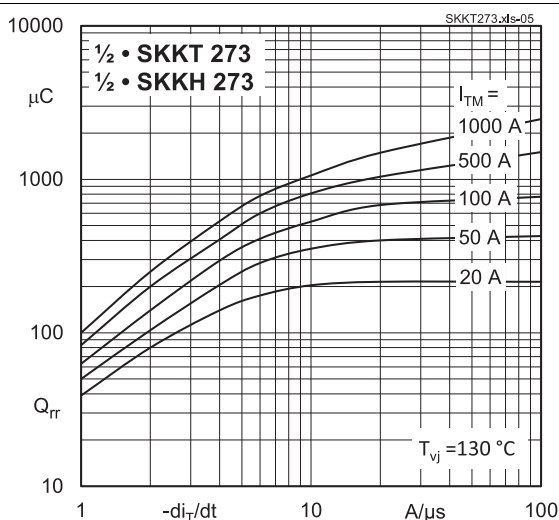


Fig. 5: Recovered charge vs. current decrease

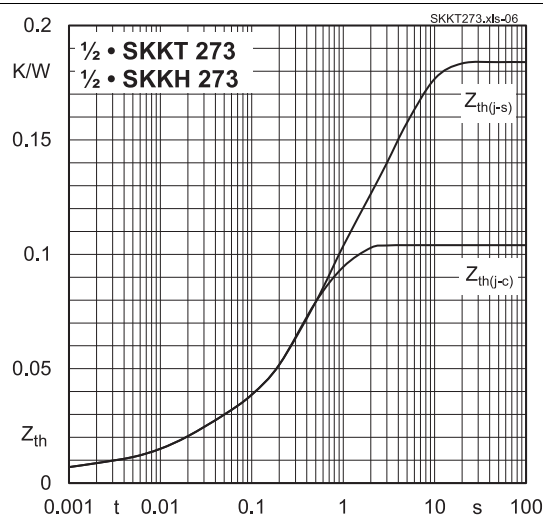


Fig. 6: Transient thermal impedance vs. time

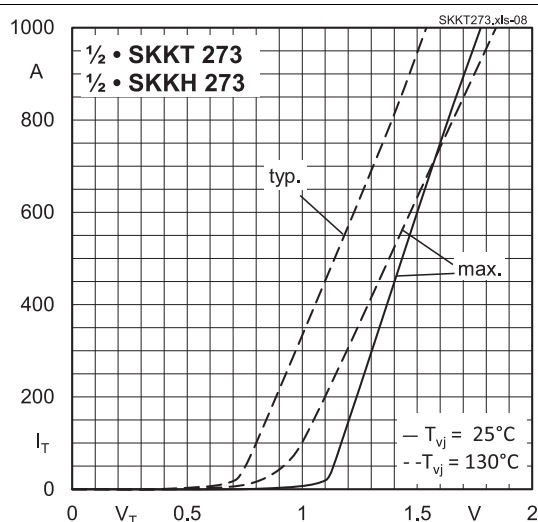


Fig. 7: On-state characteristics

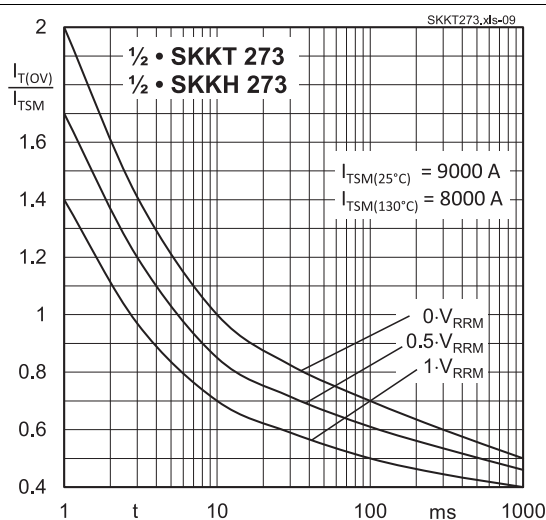


Fig. 8: Surge overload current vs. time

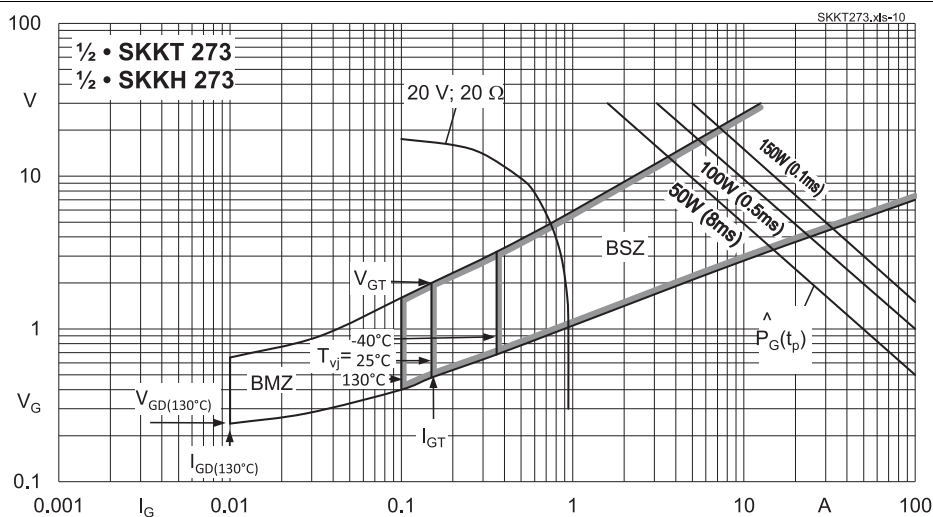
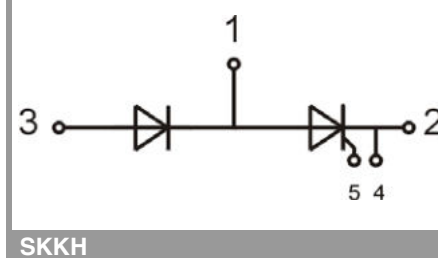
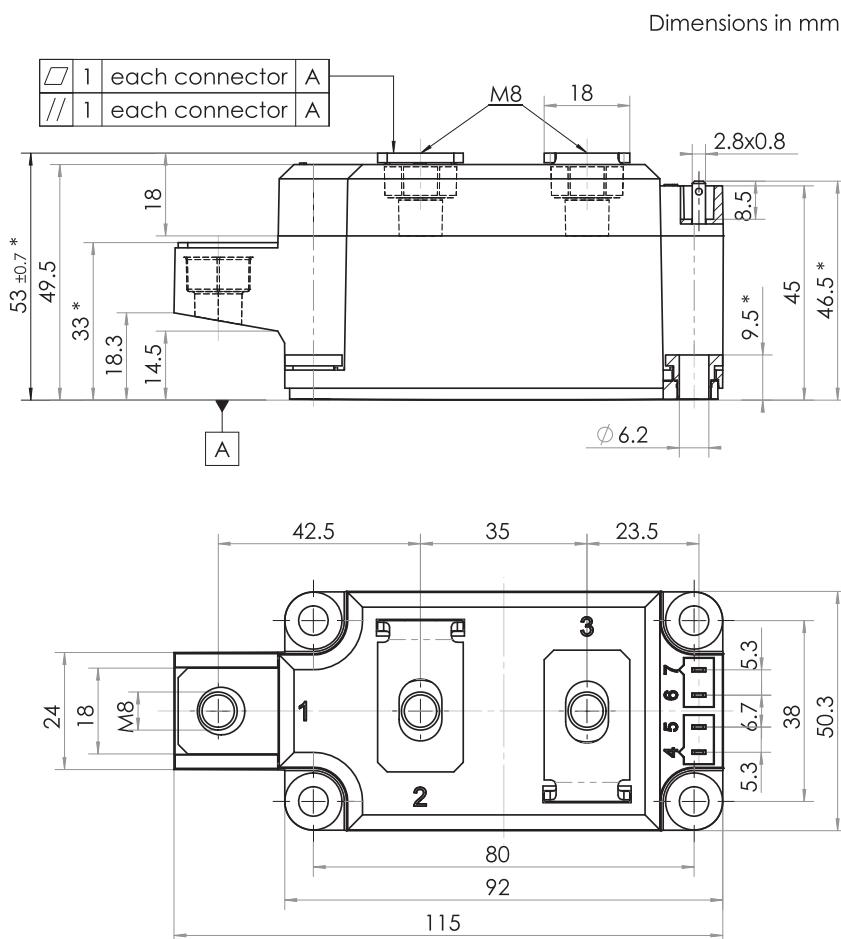


Fig. 9: Gate trigger characteristics



General tolerance $\pm 0.5\text{ mm}$
* dimensions valid in assembled condition

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This is an electrostatic discharge sensitive device (ESDS), international standard IEC 60747-1, chapter IX.

*IMPORTANT INFORMATION AND WARNINGS

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