SEMIPACK® 5

Thyristor Modules

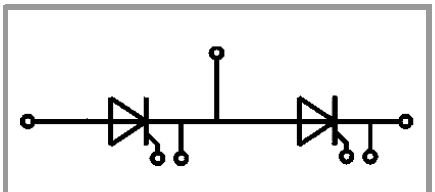
SKKT 570/18 E

Features

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

Typical Applications*

- AC motor softstarters
- Input converters for AC inverter drives
- DC motor control (e.g. for machine tools)
- Temperature control (e.g. for ovens, chemical, processes)
- Professionals 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	570	A
		T_c = 100 °C	435	A
I_{TRMS}	continuous operation		1000	A
I_{TSM}	10 ms	T_j = 25 °C	19000	A
		T_j = 135 °C	15500	A
i^2t	10 ms	T_j = 25 °C	1805000	A^2s
		T_j = 135 °C	1201250	A^2s
V_{RSM}			1900	V
V_{RRM}			1800	V
V_{DRM}			1800	V
$(di/dt)_{cr}$	T_j = 135 °C		250	A/µs
$(dv/dt)_{cr}$	T_j = 135 °C		1000	V/µs
T_j			-40 ... 135	°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 = 1700 A				1.44	V
$V_{T(TO)}$	T_j = 135 °C				0.78	V
r_T	T_j = 135 °C				0.32	mΩ
I_{DD};I_{RD}	T_j = 135 °C, $V_{DD} = V_{DRM}$; $V_{RD} = V_{RRM}$				225	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 = 135 °C			200		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 = 135 °C, d.c.				0.25	V
I_{GD}	T_j = 135 °C, d.c.				10	mA
$R_{th(j-c)}$	continuous DC	per chip			0.069	K/W
		per module			0.034	K/W
$R_{th(j-c)}$	sin. 180°	per chip			0.072	K/W
		per module			0.036	K/W
$R_{th(j-c)}$	rec. 120°	per chip			0.077	K/W
		per module			0.038	K/W
Module						
$R_{th(c-s)}$	chip				0.02	K/W
	module				0.01	K/W
M_s	to heatsink M6		4.25		5.75	Nm
M_t	to heatsink M10		10.2		13.8	Nm
a					5 * 9,81	m/s^2
w				1400		g

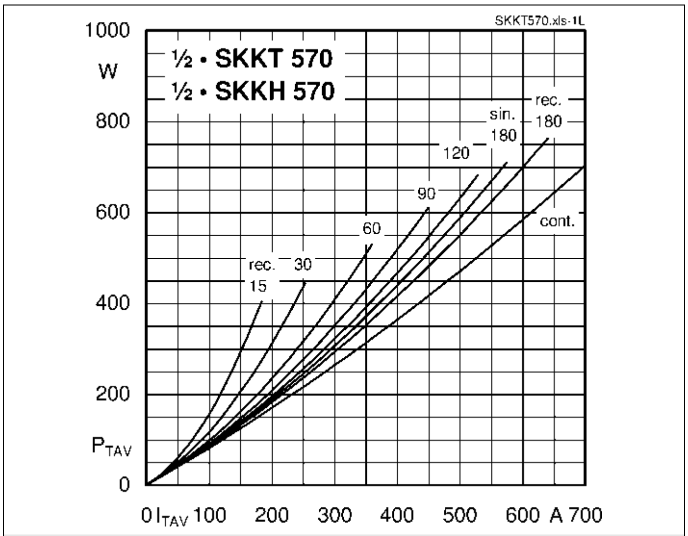


Fig. 1L: Power dissipation per thyristor vs. on-state current

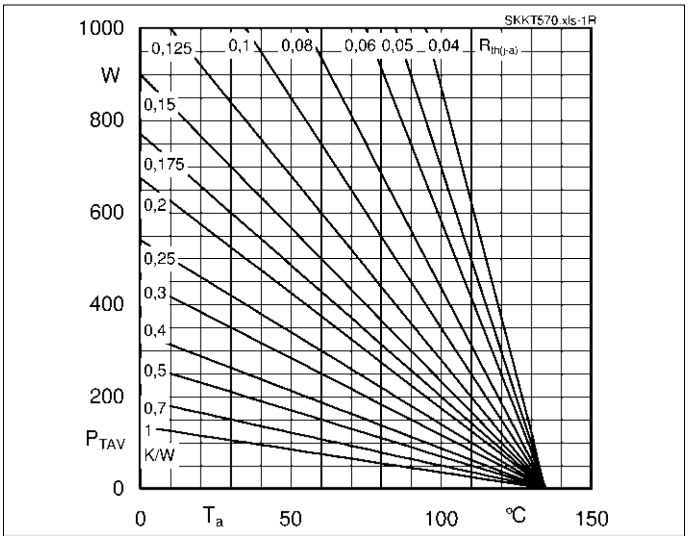


Fig. 1R: Power dissipation per thyristor vs. ambient temperature

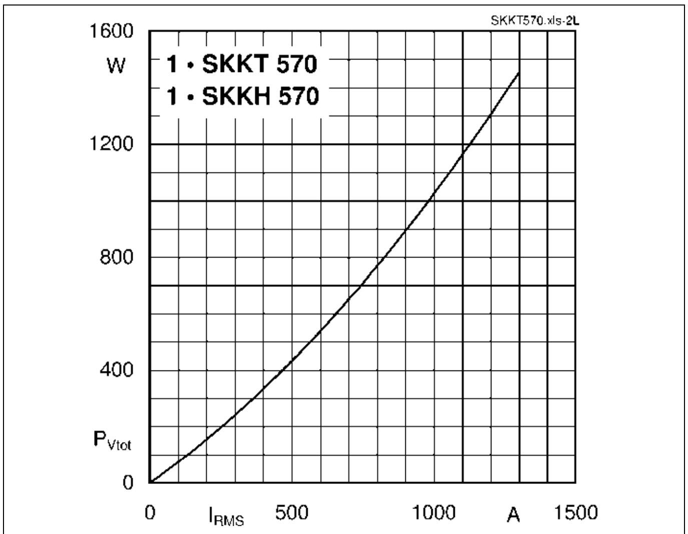


Fig. 2L: Power dissipation of one module vs. rms current

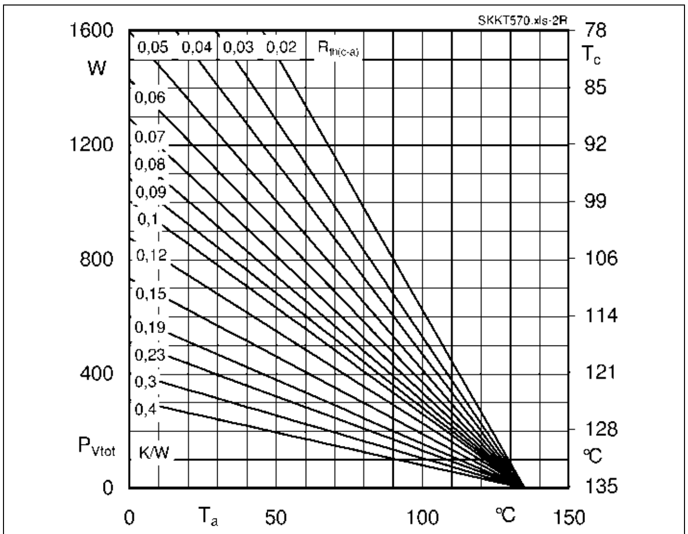


Fig. 2R: Max. power dissipation of one module vs. case temperature

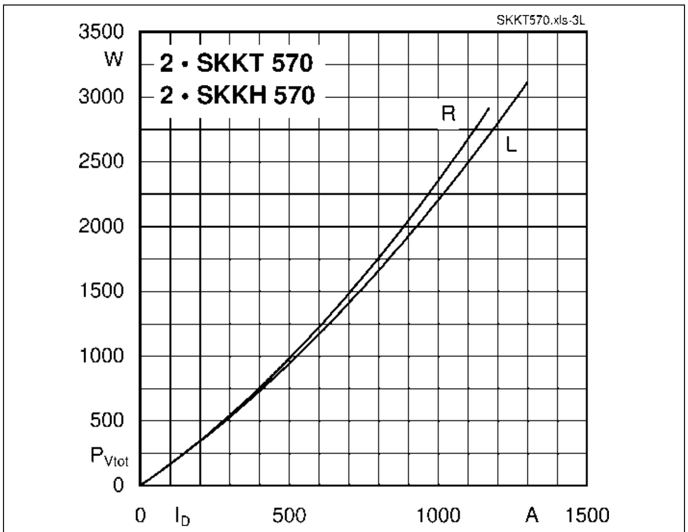


Fig. 3L: Power dissipation of two modules vs. direct current

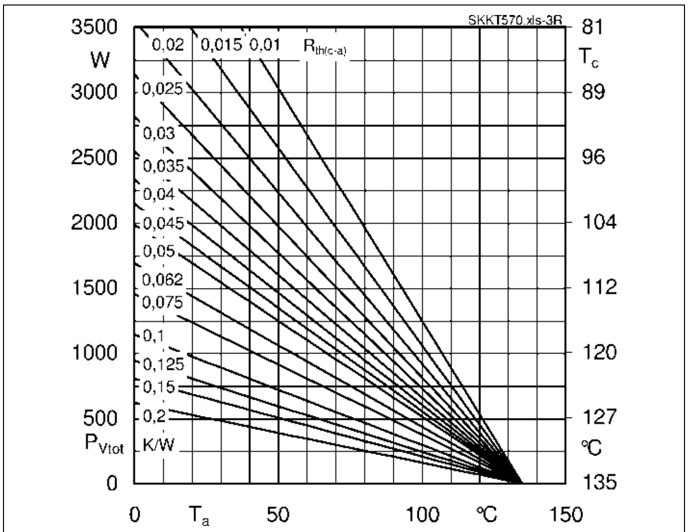


Fig. 3R: Power dissipation of two modules vs. case temperature

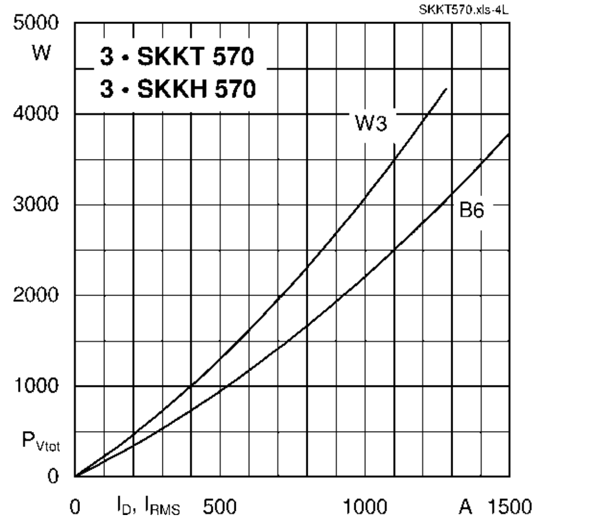


Fig. 4L: Power dissipation of three modules vs. direct and rms current

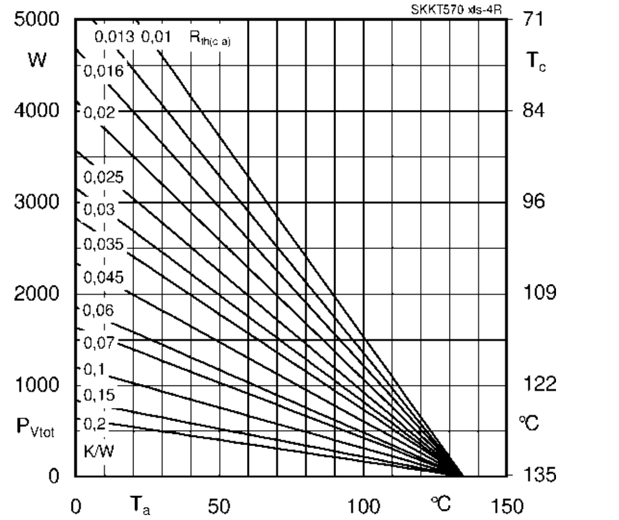


Fig. 4R: Power dissipation of three modules vs. case temperature

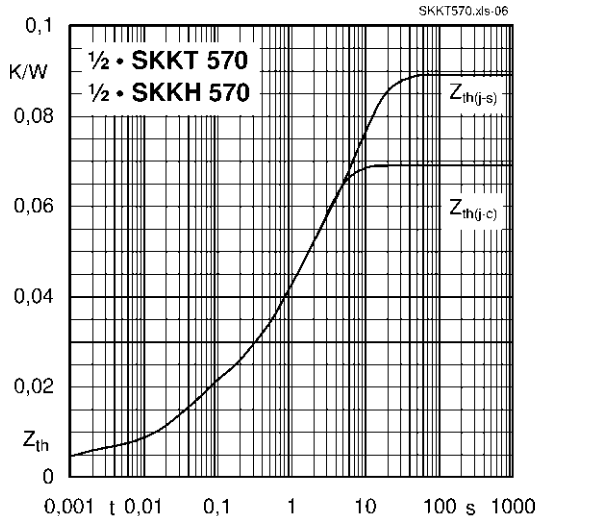


Fig. 6: Transient thermal impedance vs. time

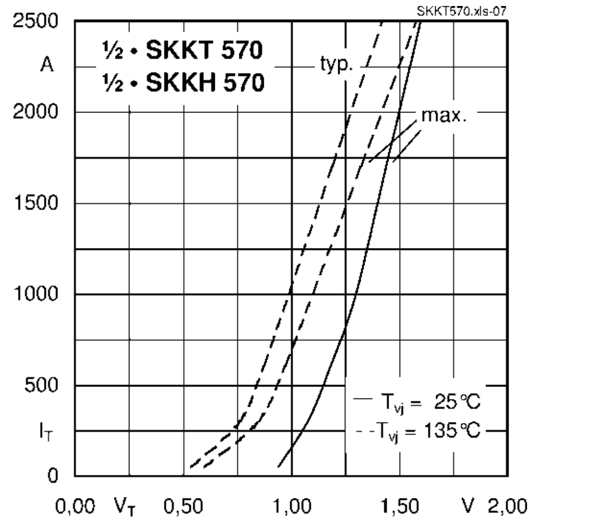


Fig. 7: On-state characteristics

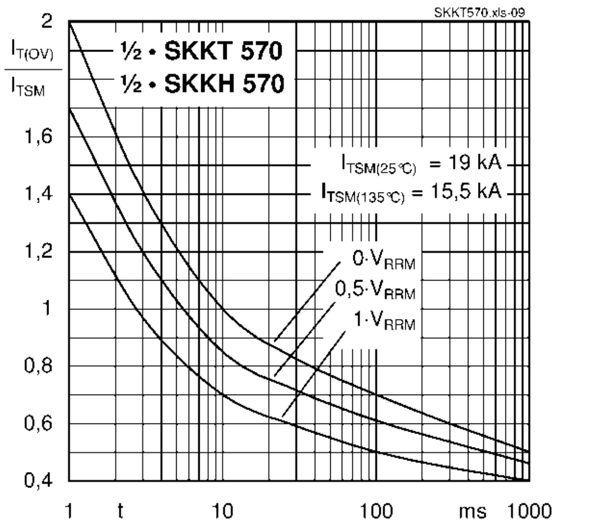


Fig. 8: Surge overload current vs. time

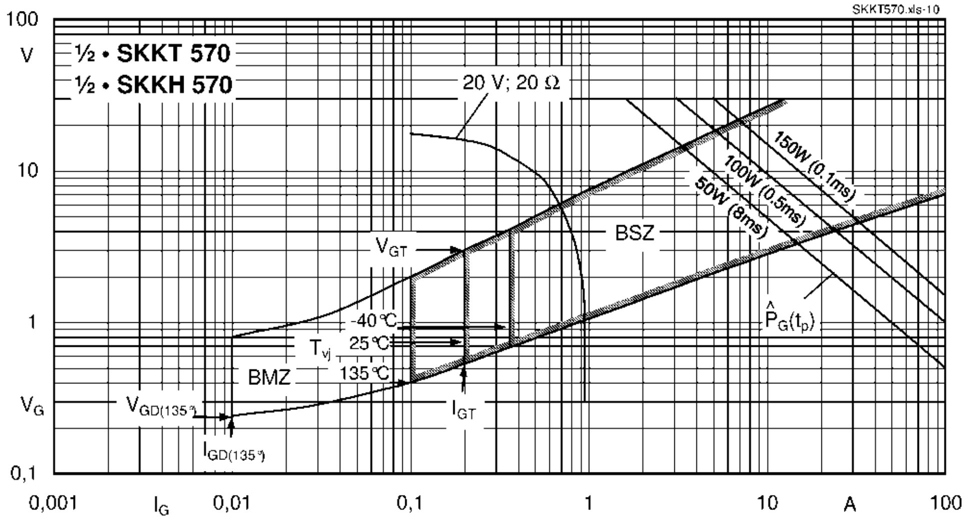
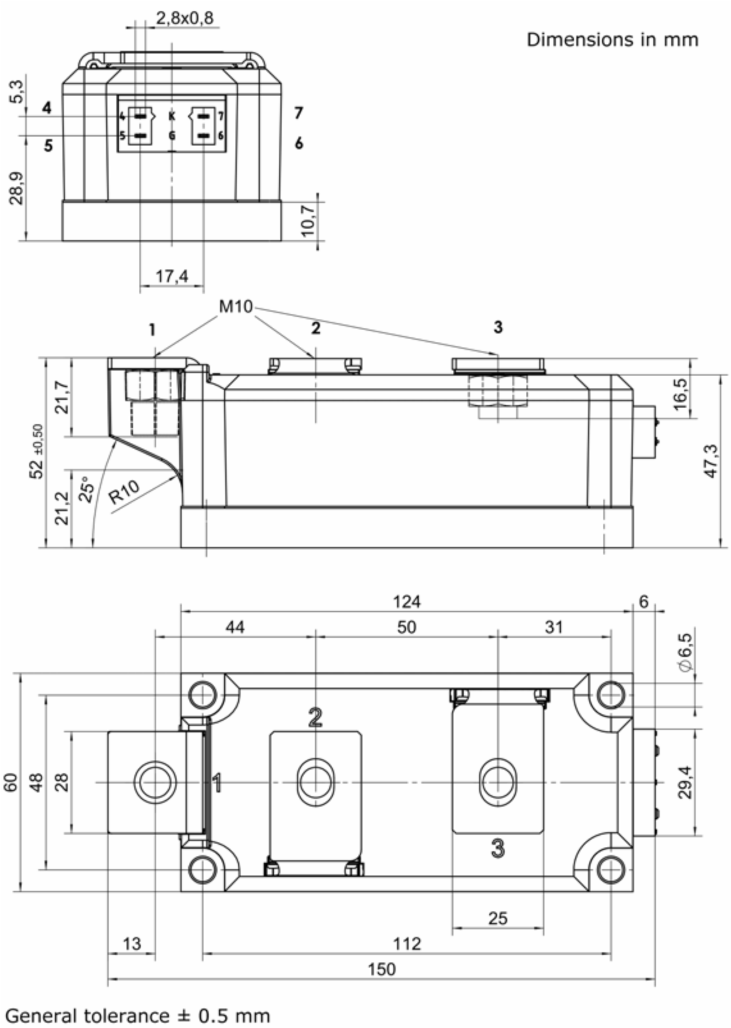


Fig. 9: Gate trigger characteristics



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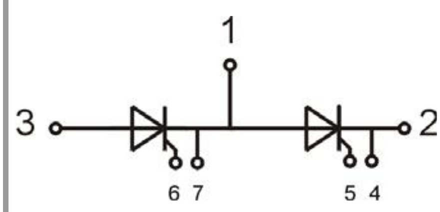

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This is an electrostatic discharge sensitive device (ESDS), international standard IEC 60747-1, Chapter IX

* The specifications of our components may not be considered as an assurance of component characteristics. Components have to be tested for the respective application. Adjustments may be necessary. The use of SEMIKRON products in life support appliances and systems is subject to prior specification and written approval by SEMIKRON. We therefore strongly recommend prior consultation of our staff.

