

# SKKT 280/20 E H4



SEMIPACK® 3

## Thyristor Modules

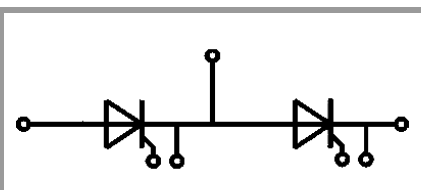
### SKKT 280/20 E H4

#### 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
<b>Chip</b>				
$I_{T(AV)}$	sinus 180°	$T_c = 85\text{ °C}$	252	A
		$T_c = 79\text{ °C}$	280	A
$I_{TRMS}$	continuous operation		440	A
$I_{TSM}$	10 ms	$T_j = 25\text{ °C}$	8500	A
		$T_j = 125\text{ °C}$	7500	A
$i^2t$	10 ms	$T_j = 25\text{ °C}$	361250	A <sup>2</sup> s
		$T_j = 125\text{ °C}$	281250	A <sup>2</sup> s
$V_{RSM}$			2100	V
$V_{RRM}$			2000	V
$V_{DRM}$			2000	V
$(di/dt)_{cr}$	$T_j = 125\text{ °C}$		250	A/μs
$(dv/dt)_{cr}$	$T_j = 125\text{ °C}$		1000	V/μs
$T_j$			-40 ... 125	°C
<b>Module</b>				
$T_{stg}$			-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
<b>Chip</b>						
$V_T$	$T_j = 25\text{ °C}$ , $I_T = 750\text{ A}$				1.55	V
$V_{T(TO)}$	$T_j = 125\text{ °C}$				0.90	V
$r_T$	$T_j = 125\text{ °C}$				0.75	mΩ
$I_{DD}; I_{RD}$	$T_j = 125\text{ °C}$ , $V_{DD} = V_{DRM}$ ; $V_{RD} = V_{RRM}$				90	mA
$t_{gd}$	$T_j = 25\text{ °C}$ , $I_G = 1\text{ A}$ , $di_G/dt = 1\text{ A/μs}$			1		μs
$t_{gr}$	$V_D = 0.67 * V_{DRM}$			2		μs
$t_q$	$T_j = 125\text{ °C}$		50	150	150	μs
$I_H$	$T_j = 25\text{ °C}$			150	500	mA
$I_L$	$T_j = 25\text{ °C}$ , $R_G = 33\text{ Ω}$			300	2000	mA
$V_{GT}$	$T_j = 25\text{ °C}$ , d.c.		3			V
$I_{GT}$	$T_j = 25\text{ °C}$ , d.c.		200			mA
$V_{GD}$	$T_j = 125\text{ °C}$ , d.c.				0.25	V
$I_{GD}$	$T_j = 125\text{ °C}$ , d.c.				10	mA
$R_{th(j-c)}$	continuous DC	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
<b>Module</b>						
$R_{th(c-s)}$	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 <sup>2</sup>
w				600		g

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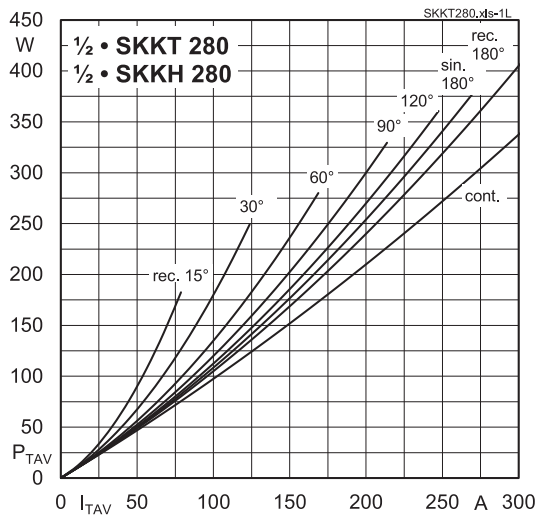


Fig. 1L: Power dissipation per thyristor vs. on-state current

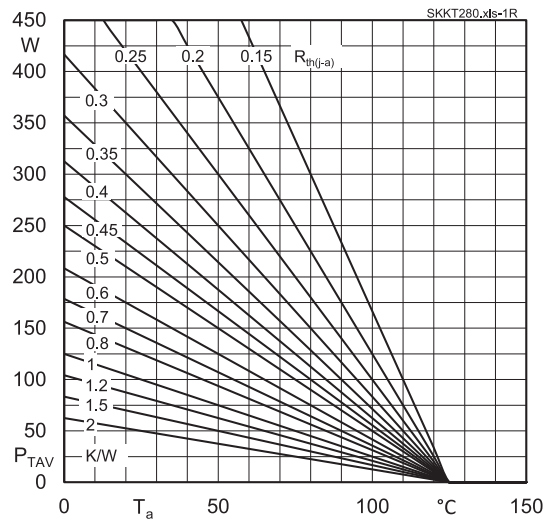


Fig. 1R: Power dissipation per thyristor vs. ambient temperature

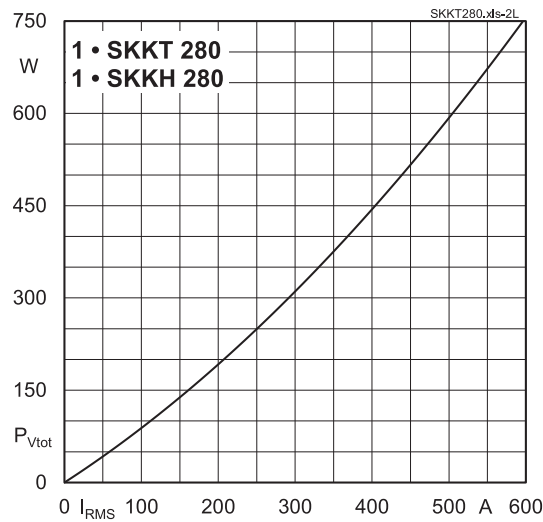


Fig. 2L: Power dissipation of one module vs. rms current

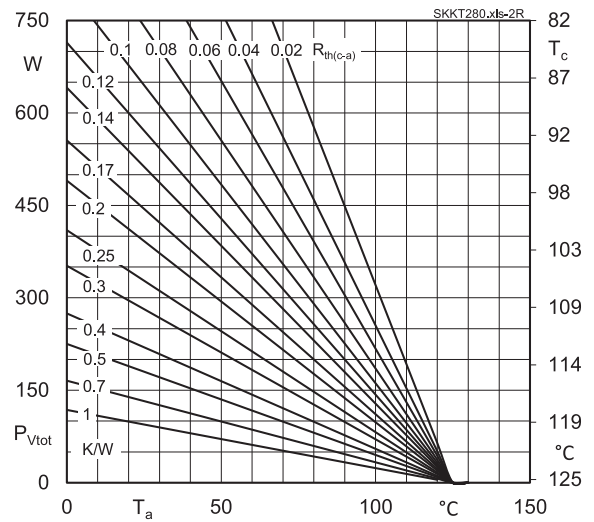


Fig. 2R: Max. power dissipation of one module vs. case temperature

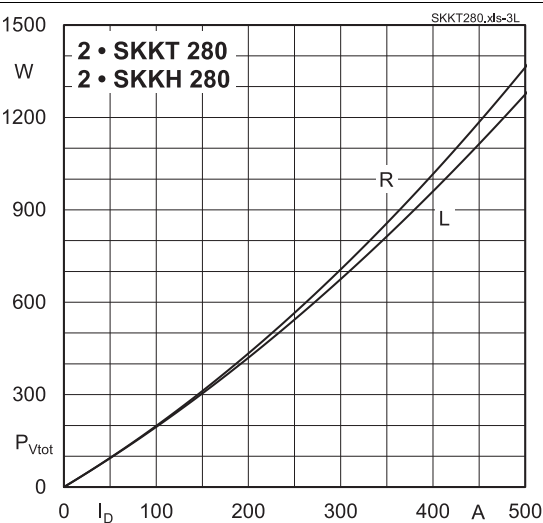


Fig. 3L: Power dissipation of two modules vs. direct current

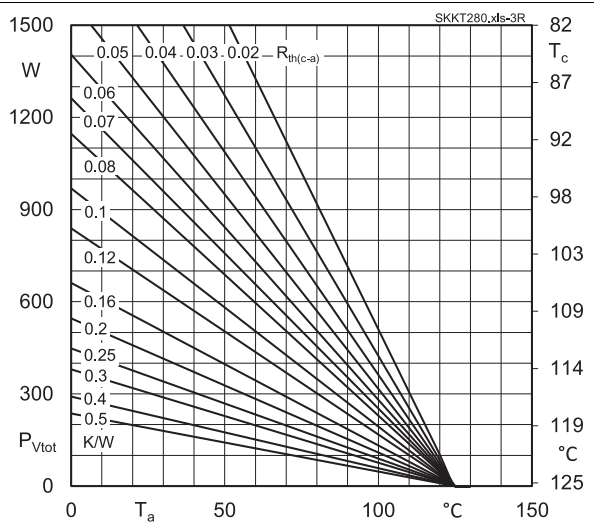


Fig. 3R: Power dissipation of two modules vs. case temperature

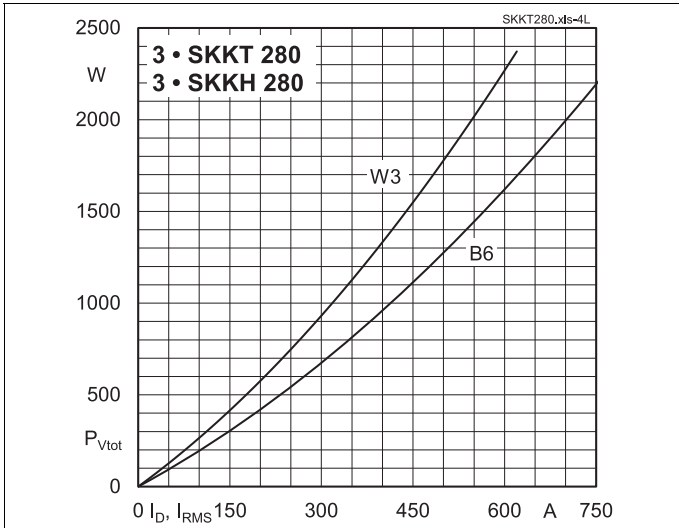


Fig. 4L: Power dissipation of three modules vs. direct and rms current

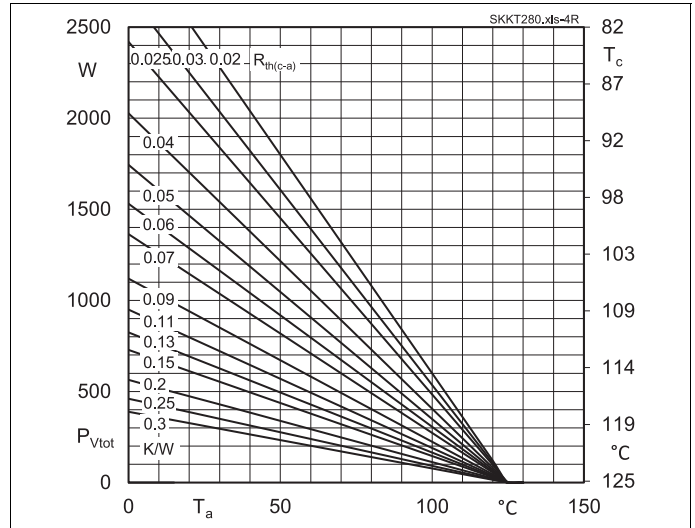


Fig. 4R: Power dissipation of three modules vs. case temperature

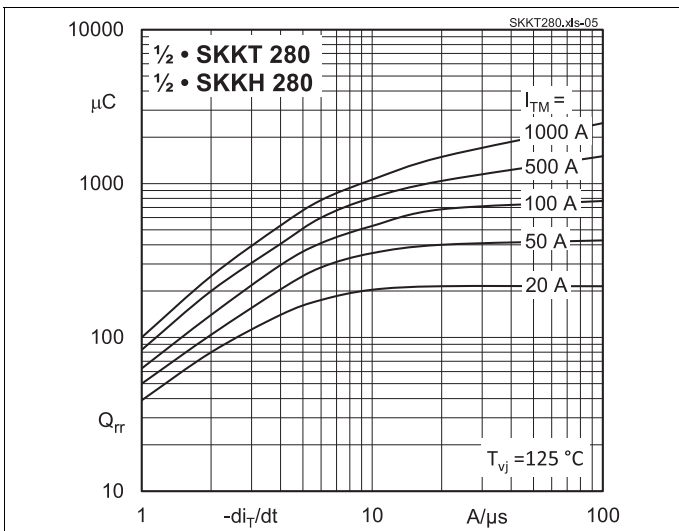


Fig. 5: Recovered charge vs. current decrease

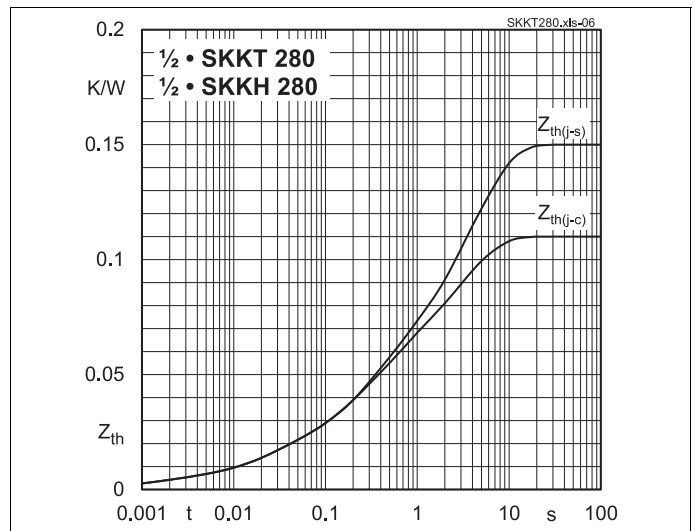


Fig. 6: Transient thermal impedance vs. time

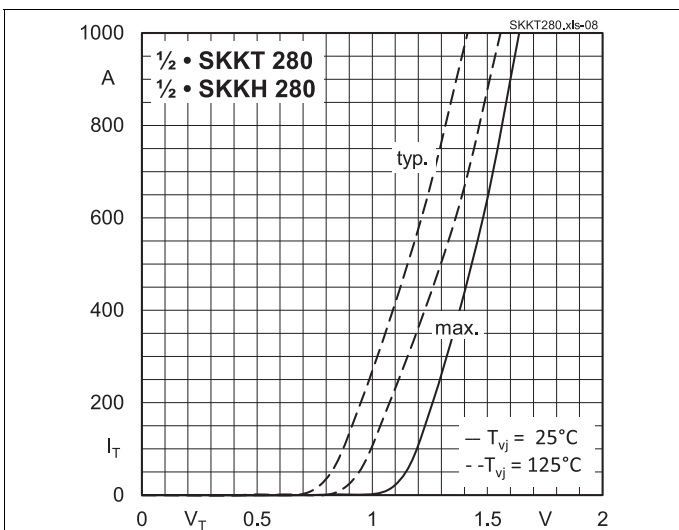


Fig. 7: On-state characteristics

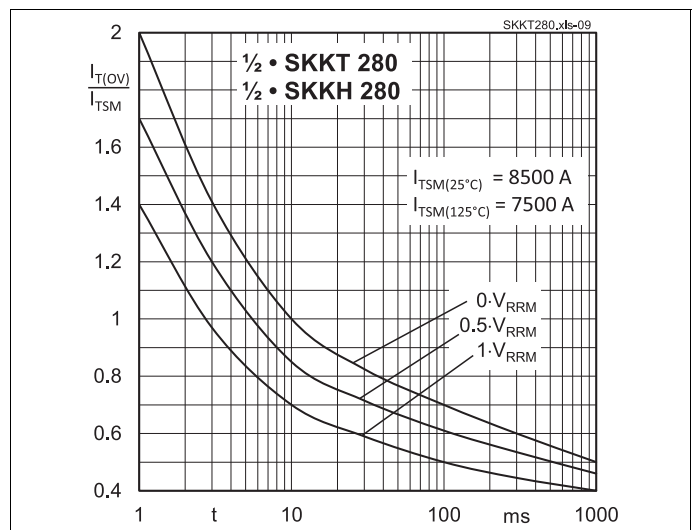


Fig. 8: Surge overload current vs. time

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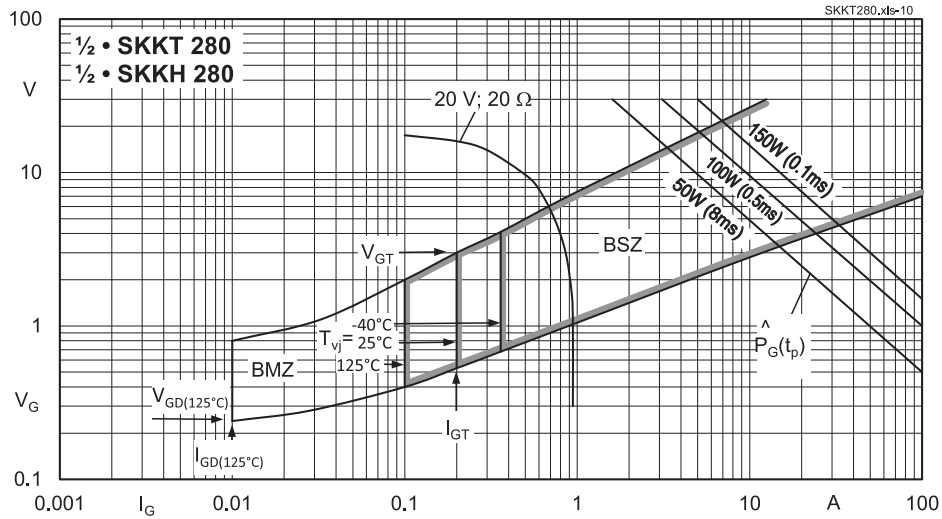
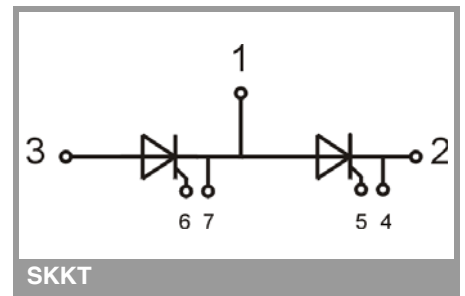
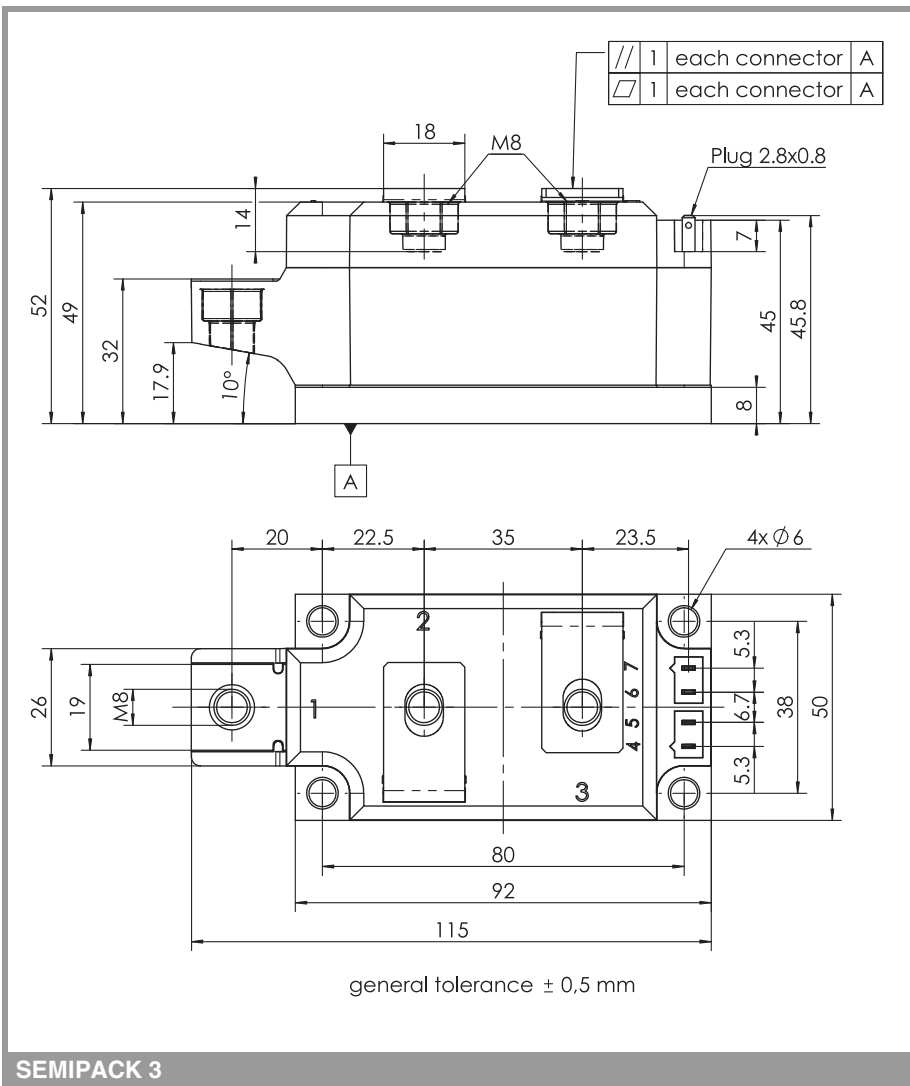


Fig. 9: Gate trigger characteristics



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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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