



**SEMIPACK® 1**

## Thyristor Modules

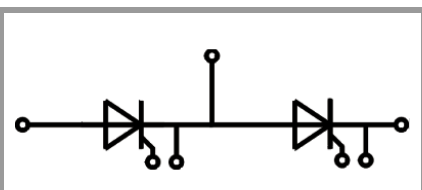
SKKT 57/12 E G6

### Features

- Heat transfer through aluminium oxide ceramic isolated metal baseplate
- Hard soldered joints for high reliability
- UL recognized, file no. E63532

### Typical Applications

- DC motor control (e. g. for machine tools)
- AC motor soft 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°	$T_c = 85\text{ °C}$	55	A
		$T_c = 100\text{ °C}$	41	A
$I_{TSM}$	10 ms	$T_j = 25\text{ °C}$	1500	A
		$T_j = 130\text{ °C}$	1200	A
$i^2t$	10 ms	$T_j = 25\text{ °C}$	11250	kA <sup>2</sup> s
$i^2t$		$T_j = 130\text{ °C}$	7200	kA <sup>2</sup> s
$V_{RSM}$			1300	V
$V_{RRM}$			1200	V
$V_{DRM}$			1200	V
$(di/dt)_{cr}$	$T_j = 130\text{ °C}$		140	A/μs
$(dv/dt)_{cr}$	$T_j = 130\text{ °C}$		1000	V/μs
$T_j$			-40 ... 130	°C
<b>Module</b>				
$T_{stg}$			-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
<b>Chip</b>						
$V_T$	$T_j = 25\text{ °C}, I_T = 180\text{ A}$			1.5	1.75	V
$V_{T(TO)}$	$T_j = 130\text{ °C}$			0.85	1	V
$r_T$	$T_j = 130\text{ °C}$			4.00	4.80	mΩ
$I_{DD}; I_{RD}$	$T_j = 130\text{ °C}, V_{DD} = V_{DRM}; V_{RD} = V_{RRM}$				20	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
$t_q$	$T_j = 130\text{ °C}$			170		μs
$I_H$	$T_j = 25\text{ °C}$			150	250	mA
$I_L$	$T_j = 25\text{ °C}, R_G = 33\text{ Ω}$			300	600	mA
$V_{GT}$	$T_j = 25\text{ °C}, \text{d.c.}$		2.5			V
$I_{GT}$	$T_j = 25\text{ °C}, \text{d.c.}$		100			mA
$V_{GD}$	$T_j = 130\text{ °C}, \text{d.c.}$				0.25	V
$I_{GD}$	$T_j = 130\text{ °C}, \text{d.c.}$				4	mA
$R_{th(j-c)}$	cont.	per chip			0.470	K/W
		per module			0.235	K/W
$R_{th(j-c)}$	sin. 180°	per chip			0.490	K/W
		per module			0.245	K/W
$R_{th(j-c)}$	rec. 120°	per chip			0.510	K/W
		per module			0.255	K/W
<b>Module</b>						
$R_{th(c-s)}$	chip			0.22		K/W
	module			0.11		K/W
$M_s$	to heatsink M5		4.25		5.75	Nm
$M_t$	to terminals M5		2.55		3.45	Nm
a					5 * 9,81	m/s <sup>2</sup>
w				75		g

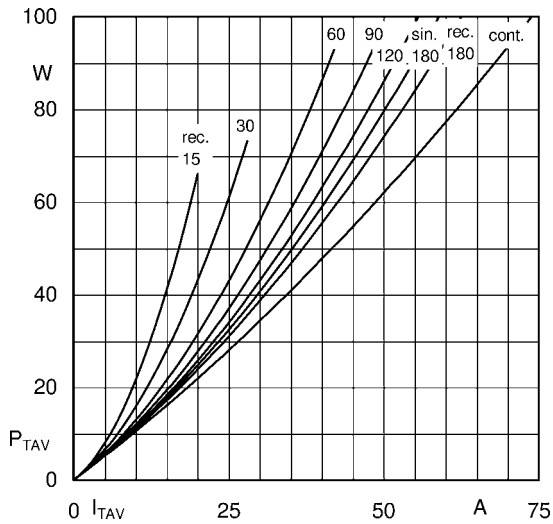


Fig. 1L: Max. power dissipation per chip vs. on-state current

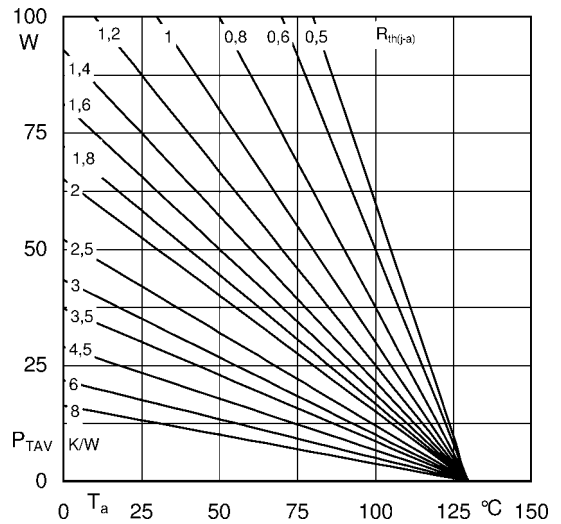


Fig. 1R: Max. power dissipation per chip vs. ambient temperature

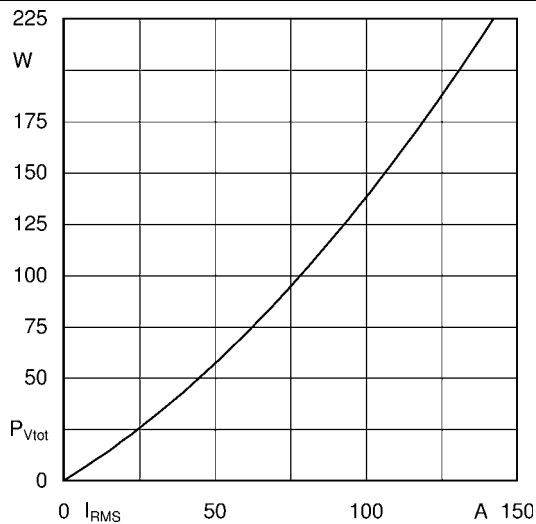


Fig. 2L: Max. power dissipation of one module vs. rms current

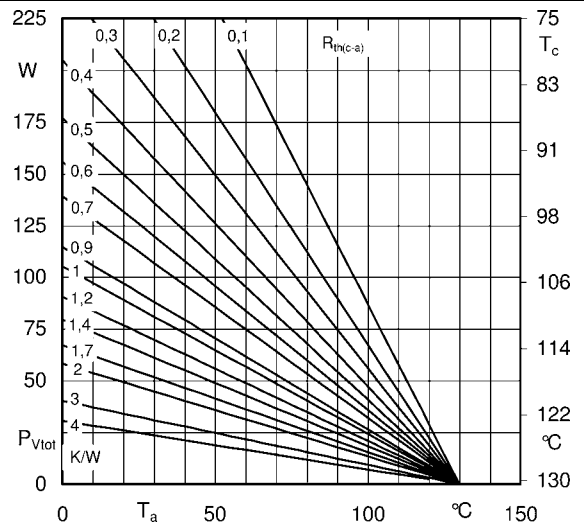


Fig. 2R: Max. power dissipation of one module vs. case temperature

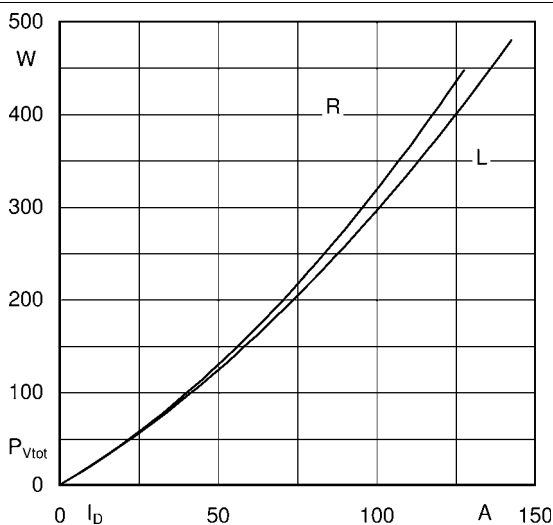


Fig. 3L: Max. power dissipation of two modules vs. direct current

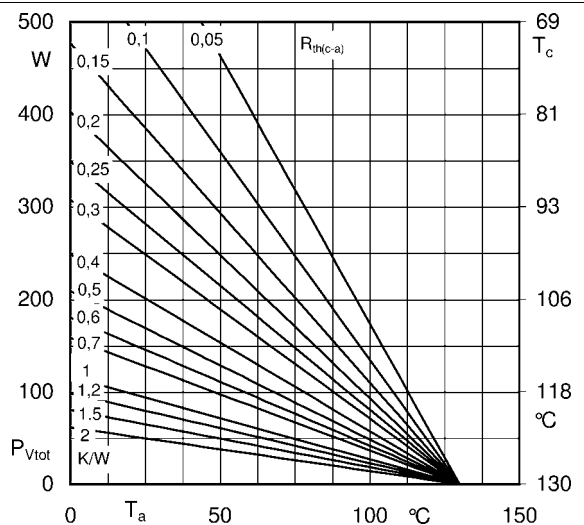


Fig. 3R: Max. power dissipation of two modules vs. case temperature

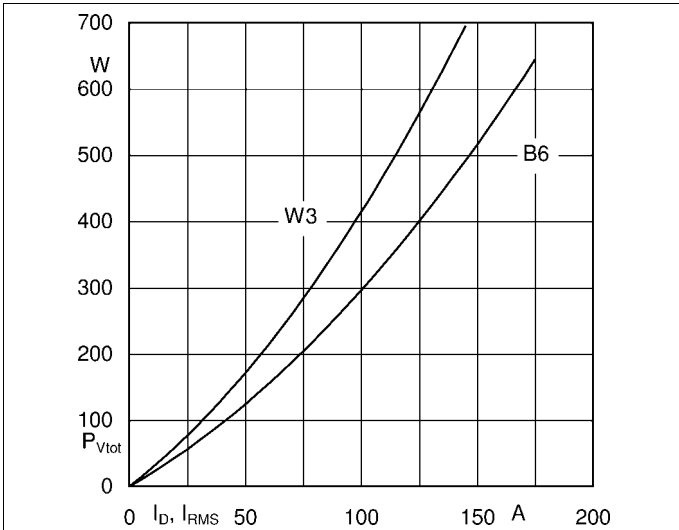


Fig. 4L: Max. power dissipation of three modules vs. direct current

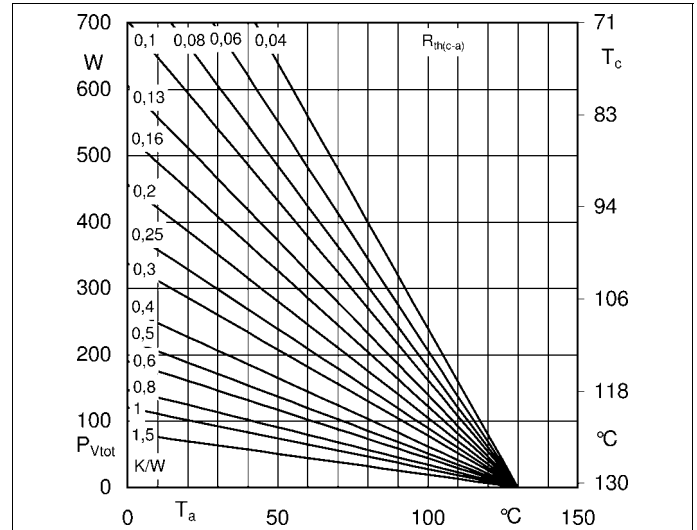


Fig. 4R: Max. power dissipation of three modules vs. case temperature

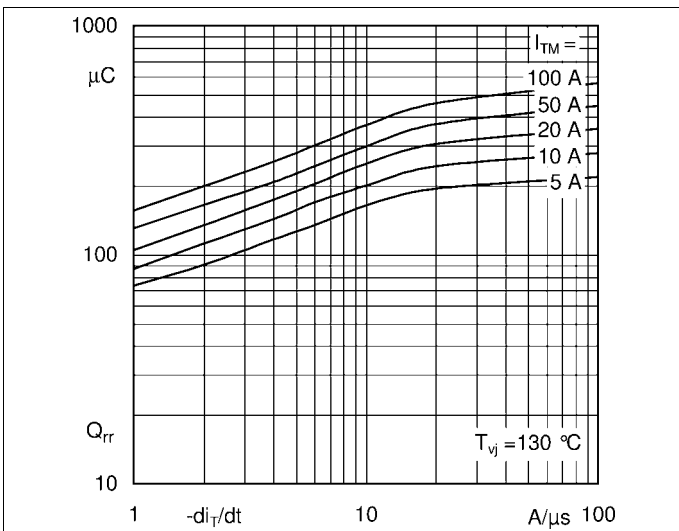


Fig. 5: Recovered charge vs. current decrease

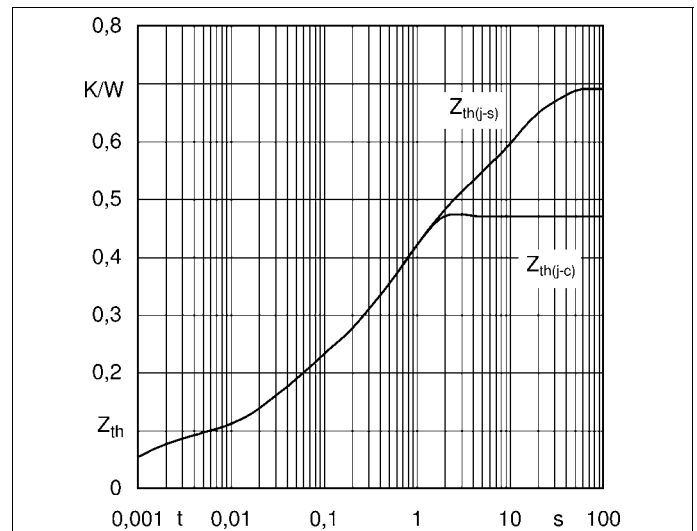


Fig. 6: Transient thermal impedance vs. time

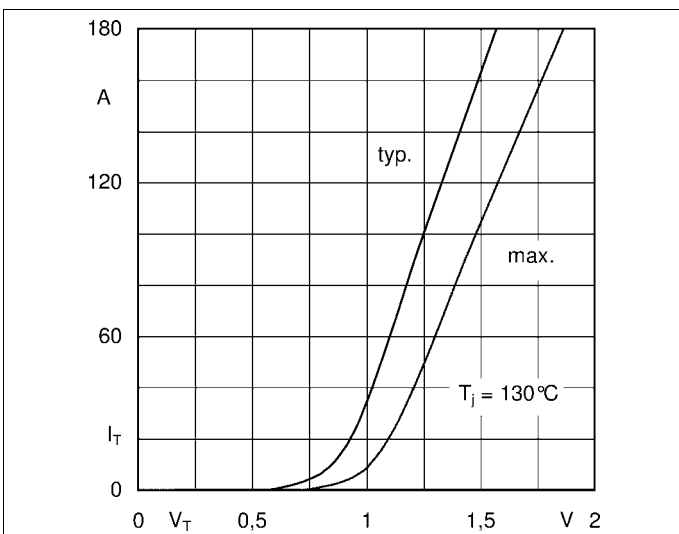


Fig. 7: On-state characteristics

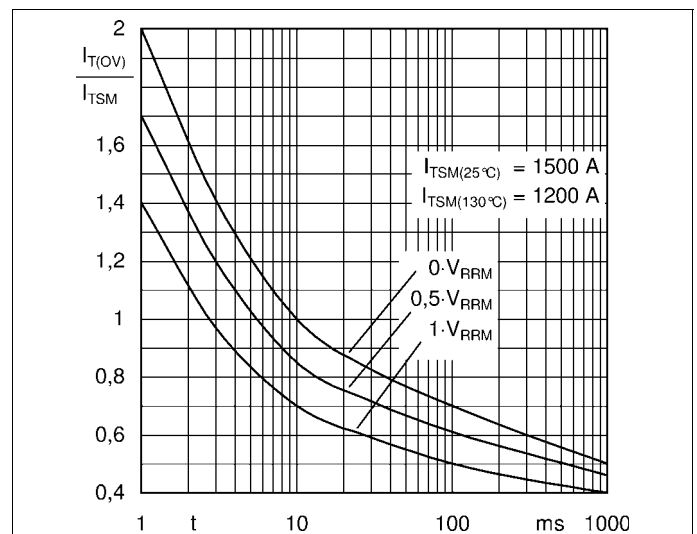


Fig. 8: Surge overload current vs. time

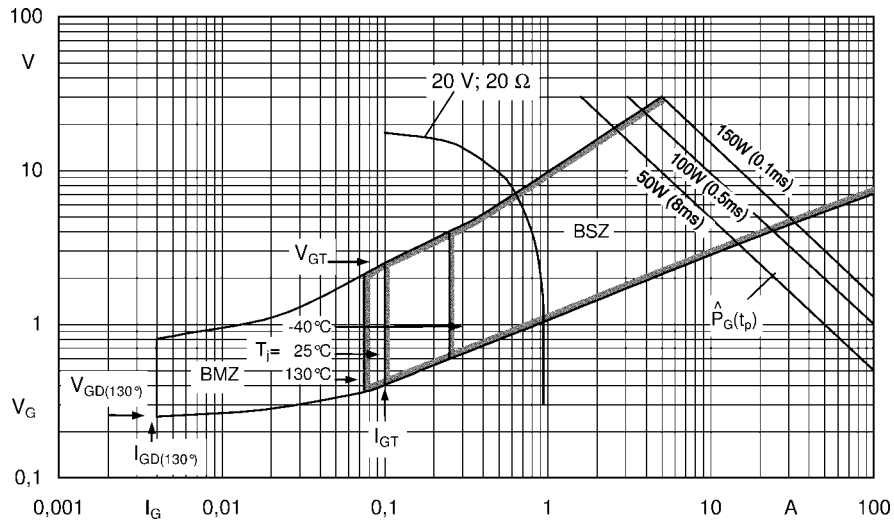
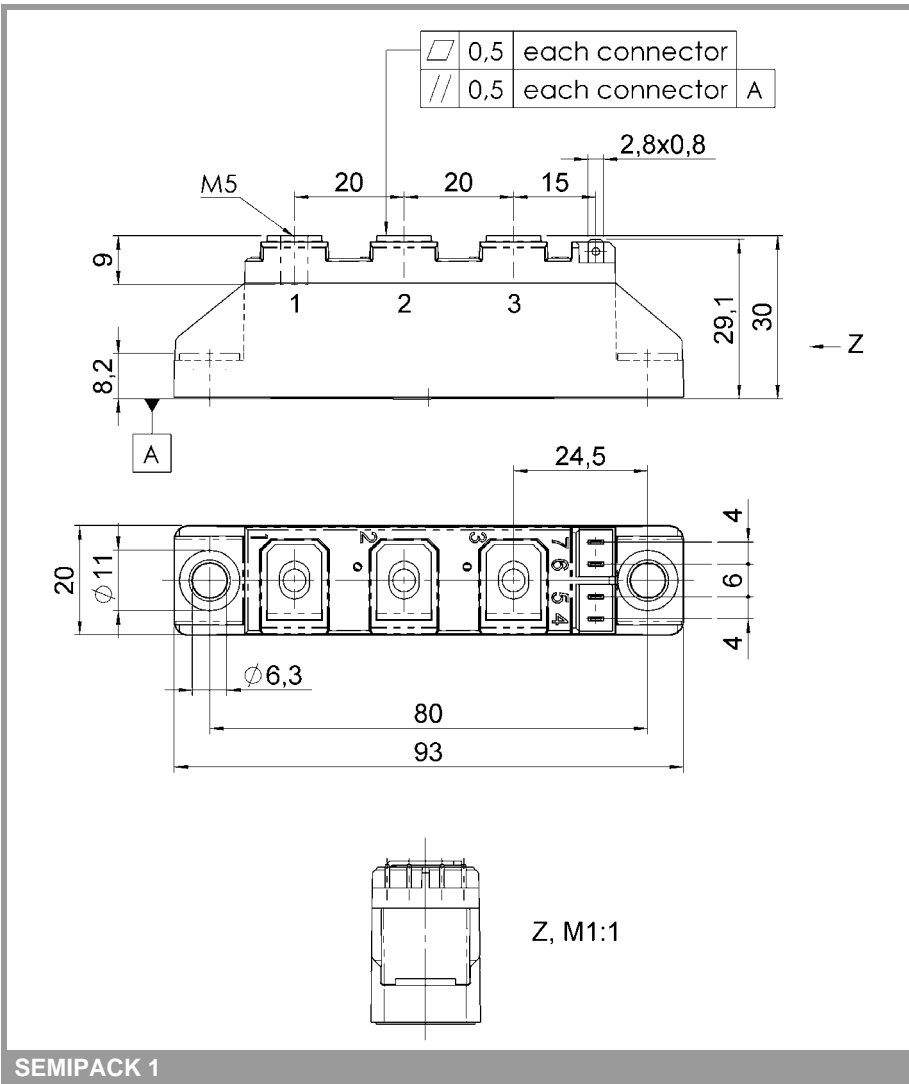
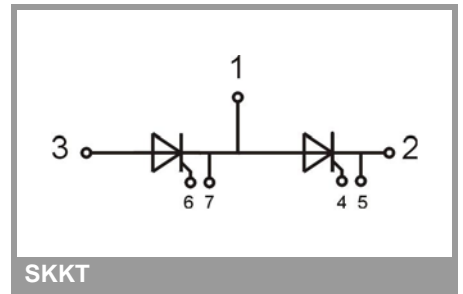


Fig. 9: Gate trigger characteristics



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