



SEMIPACK® 1

Thyristor Modules

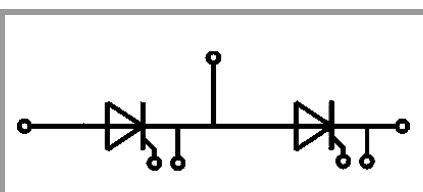
SKKT 140/16 E

Features*

- Heat transfer through aluminium oxide ceramic insulated metal baseplate
- 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
Chip				
$I_{T(AV)}$	sin. 180° $T_j = 130\text{ °C}$	$T_c = 85\text{ °C}$	145	A
		$T_c = 100\text{ °C}$	110	A
I_{TSM}	10 ms	$T_j = 25\text{ °C}$	2600	A
		$T_j = 130\text{ °C}$	2210	A
i^2t	10 ms	$T_j = 25\text{ °C}$	33800	A ² s
		$T_j = 130\text{ °C}$	24421	A ² s
V_{RSM}	$T_j = 25\text{ °C}$		1700	V
V_{RRM}	$T_j = 25\text{ °C}$		1600	V
V_{DRM}	$T_j = 25\text{ °C}$		1600	V
$(di/dt)_{cr}$	$T_j = 130\text{ °C}$		200	A/μs
$(dv/dt)_{cr}$	$T_j = 130\text{ °C}$		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	$T_j = 25\text{ °C}, I_T = 420\text{ A}$				1.85	V
$V_{T(TO)}$	$T_j = 130\text{ °C}$				0.90	V
r_T	$T_j = 130\text{ °C}$				2.6	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	$T_j = 130\text{ °C}$			200		μs
I_H	$T_j = 25\text{ °C}$				220	mA
I_L	$T_j = 25\text{ °C}, R_G = 33\text{ Ω}$				550	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			0.13	K/W
		per module			0.065	K/W
$R_{th(j-c)}$	sin. 180°	per chip			0.17	K/W
		per module			0.085	K/W
$R_{th(j-c)}$	rec. 120°	per chip			0.18	K/W
		per module			0.09	K/W
Module						
$R_{th(c-s)}$	chip			0.09		K/W
	module			0.05		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 ²
w				75		g

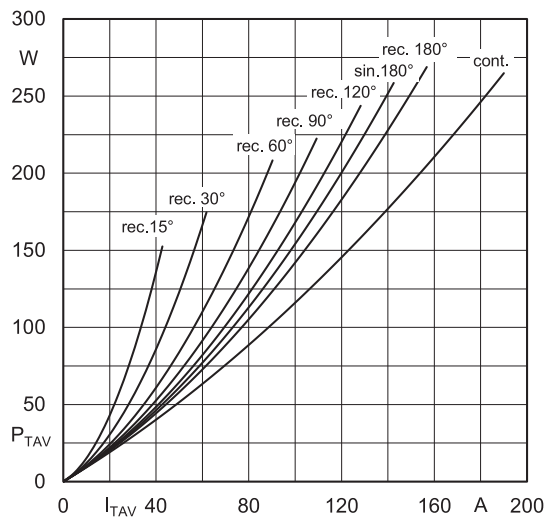


Fig. 1L: Power dissipation per thyristor/diode vs. on-state current

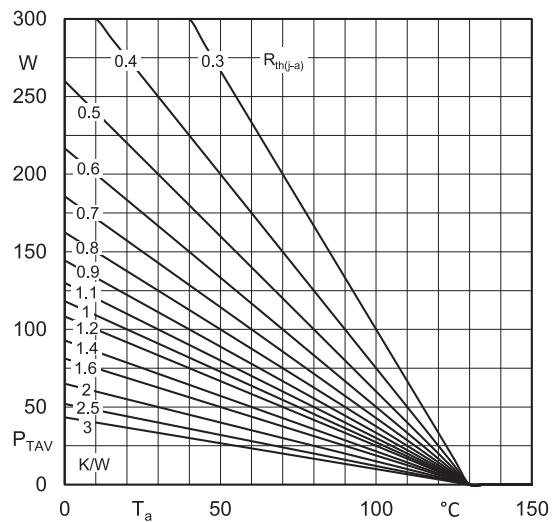


Fig. 1R: Max. power dissipation per chip vs. ambient temperature

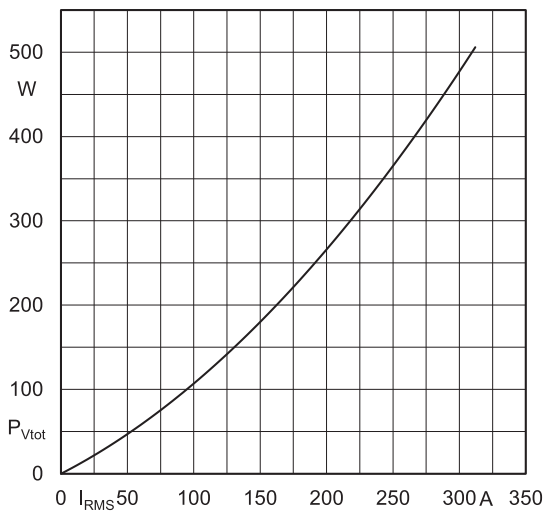


Fig. 2L: Max. power dissipation of one module vs. rms current

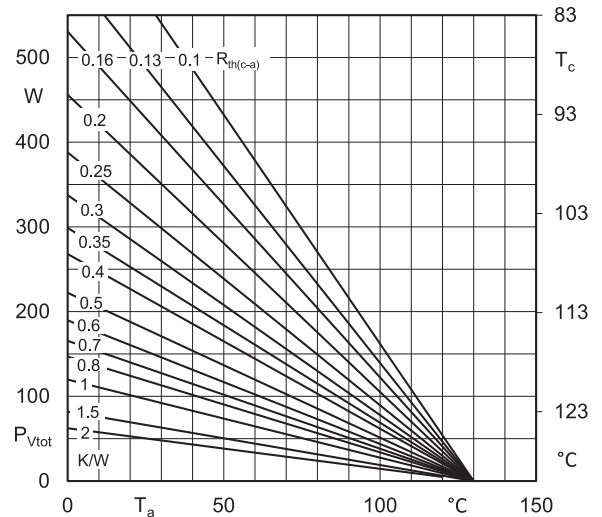


Fig. 2R: Max. power dissipation of one module vs. case temperature

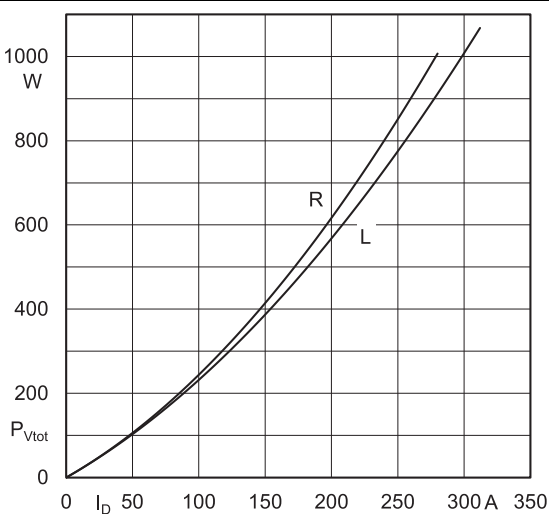


Fig. 3L: Max. power dissipation of two modules vs. direct current

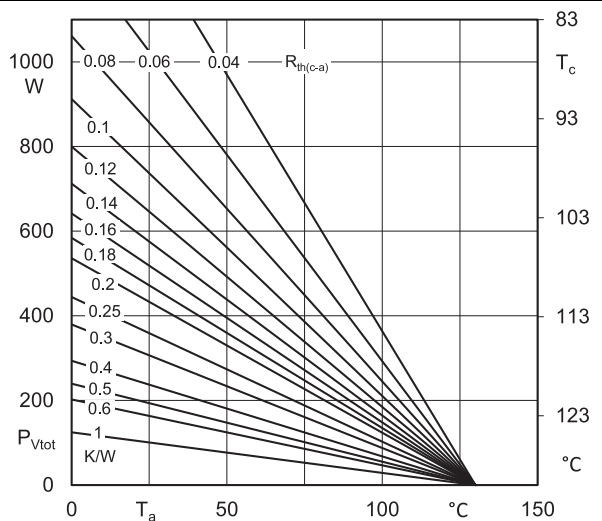


Fig. 3R: Max. power dissipation of two modules vs. case temperature

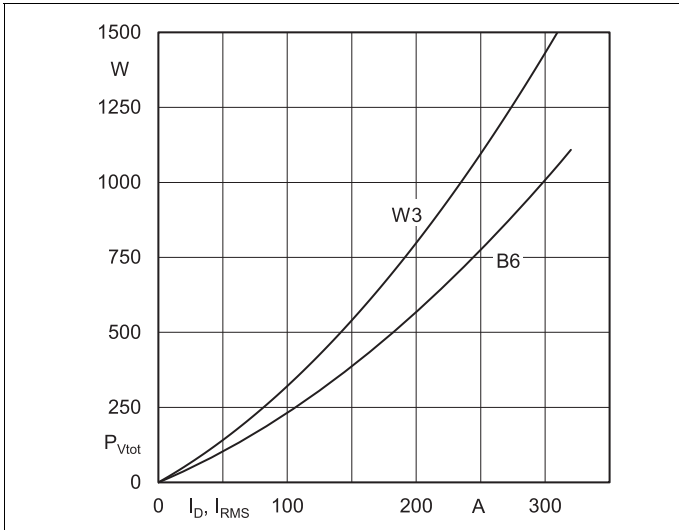


Fig. 4L: Max. power dissipation of three modules vs. direct current

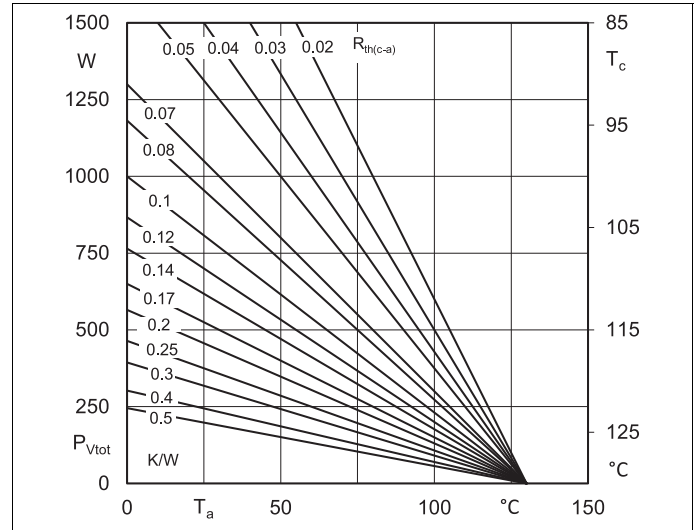


Fig. 4R: Max. power dissipation of three modules vs. case temperature

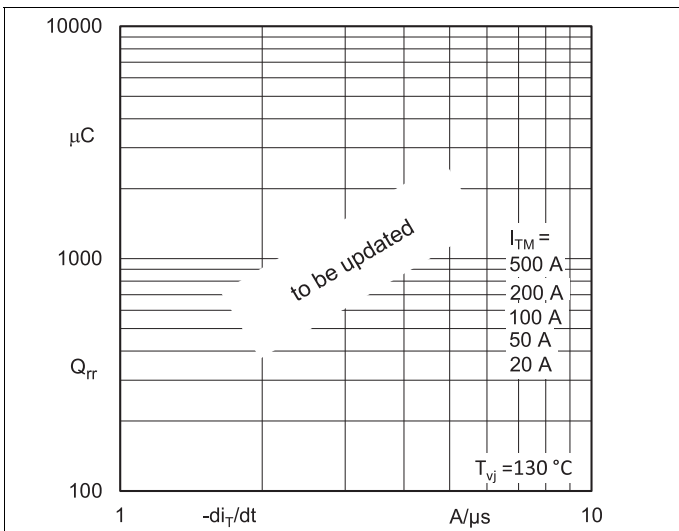


Fig. 5: Recovered charge vs. current decrease

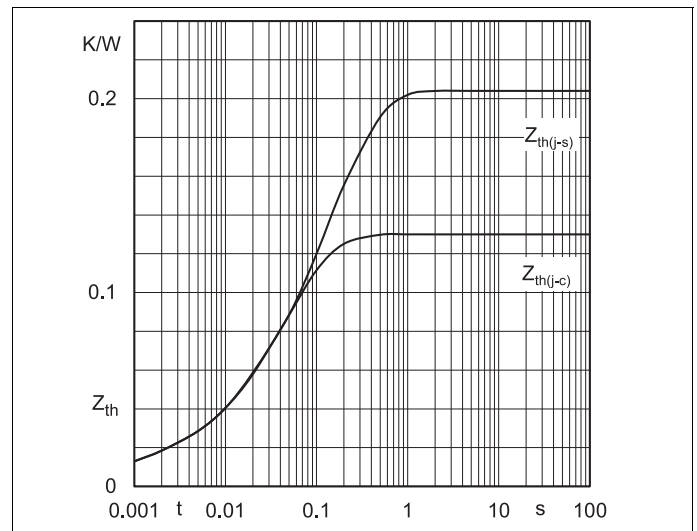


Fig. 6: Transient thermal impedance vs. time

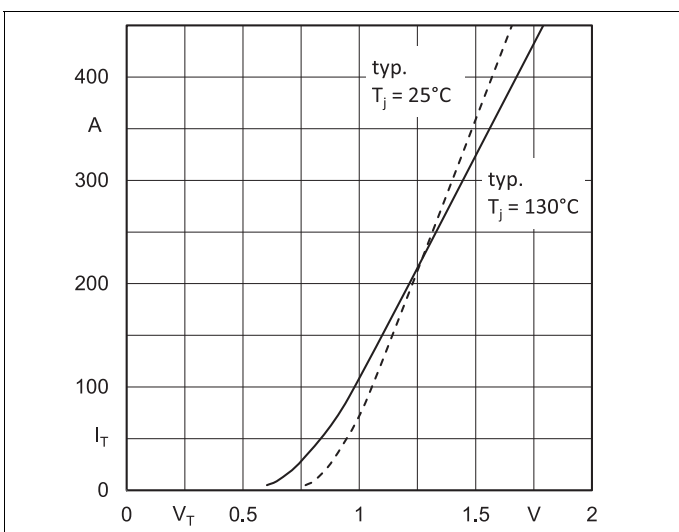


Fig. 7: On-state characteristics

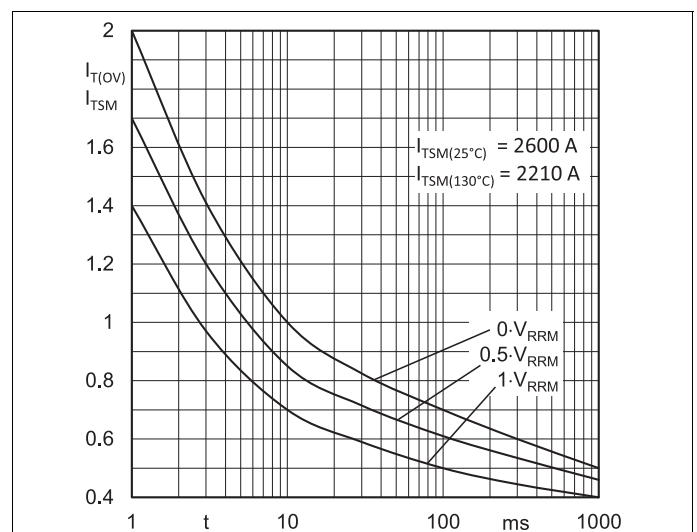


Fig. 8: Surge overload current vs. time

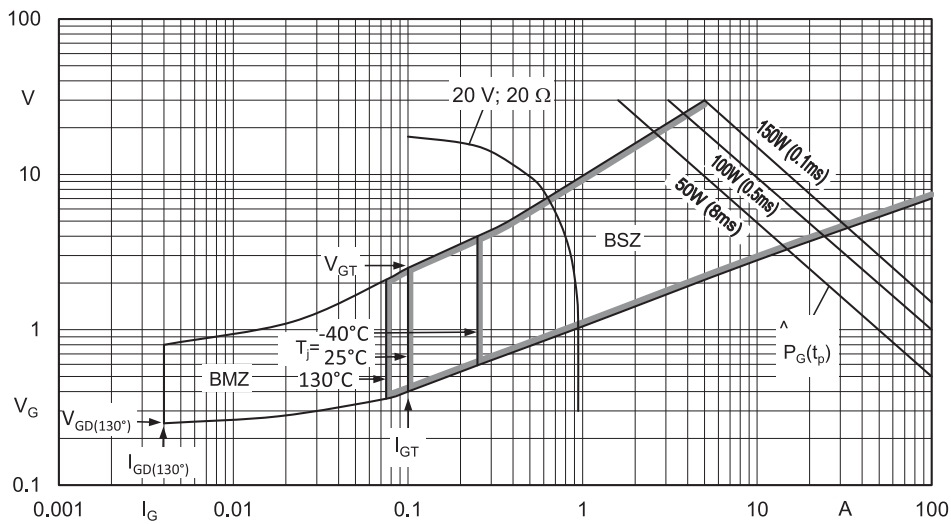
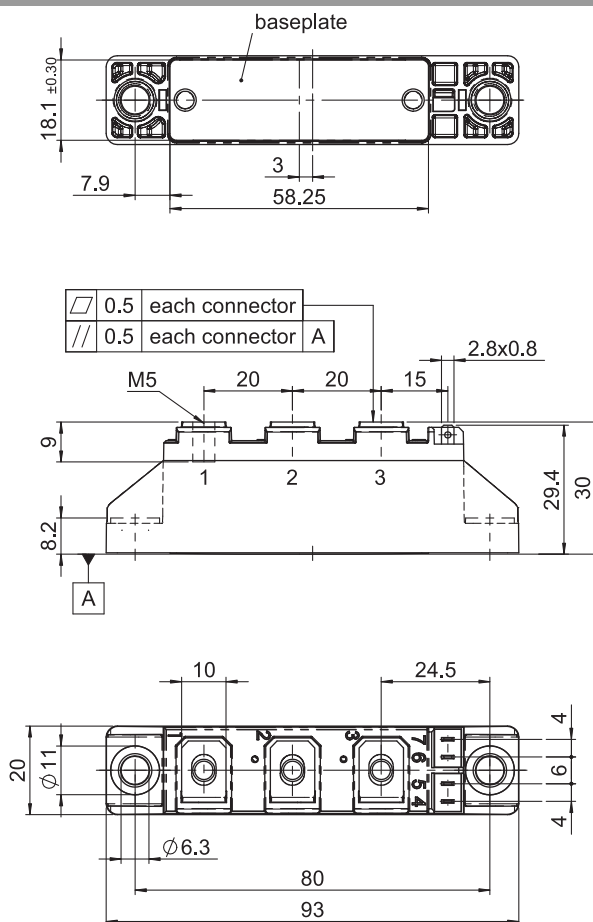
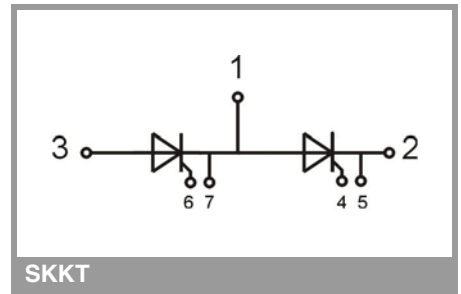


Fig. 9: Gate trigger characteristics



general tolerance $\pm 0.5\text{mm}$

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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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