SEMIPACK® 1

Thyristor Modules

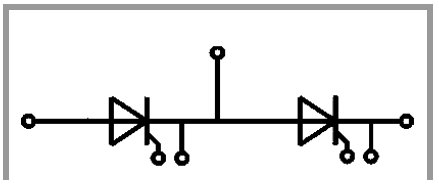
SKKT 140/16 E

Features*

- Heat transfer through aluminium oxide ceramic insulated metal baseplate
- UL recognized, file no. E63532

Typical Applications

- Fully controlled rectifiers
- AC motor soft starters
- AC power regulation
- AC switch



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Absolute Maximum Ratings

Symbol	Conditions		Values	Unit
Chip				
$I_{T(AV)}$	sin. 180°	T_c = 85 °C	145	A
	T_j = 130 °C	T_c = 100 °C	110	A
I_{TSM}	t_p = 10 ms	T_j = 25 °C	2600	A
		T_j = 130 °C	2210	A
i^2t	t_p = 10 ms	T_j = 25 °C	33800	A^2s
		T_j = 130 °C	24421	A^2s
V_{RSM}	T_j = 25 °C		1700	V
V_{RRM}	T_j = 25 °C		1600	V
V_{DRM}	T_j = 25 °C		1600	V
$(di/dt)_{cr}$	T_j = 130 °C		200	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 = 420 A				1.85	V
$V_{T(TO)}$	T_j = 130 °C				0.90	V
r_T	T_j = 130 °C				2.6	mΩ
I_{DD};I_{RD}	T_j = 130 °C, V_{DD} = V_{DRM}; V_{RD} = V_{RRM}				20	mA
t_{gd}	I_G = 1 A di_G/dt = 1 A/µs V_D = 0.67 * V_{DRM}	T_j = 25 °C		1		µs
t_{gr}		T_j = 25 °C		2		µs
t_q	T_j = 130 °C			200		µs
I_H	T_j = 25 °C				220	mA
I_L	T_j = 25 °C, R_G = 33 Ω				550	mA
V_{GT}	T_j = 25 °C, d.c.		2.5			V
I_{GT}	T_j = 25 °C, d.c.		100			mA
V_{GD}	T_j = 130 °C, d.c.				0.25	V
I_{GD}	T_j = 130 °C, 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, P12 (reference)			0.09		K/W
	module, P12 (reference)			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

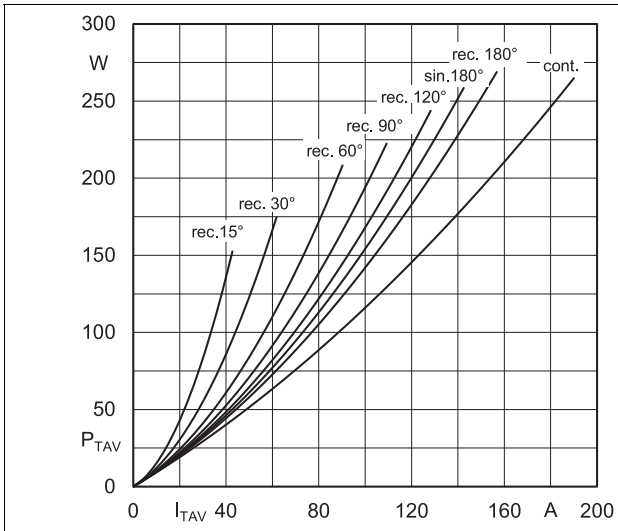


Fig. 1L: Max. power dissipation per chip vs. on-state current

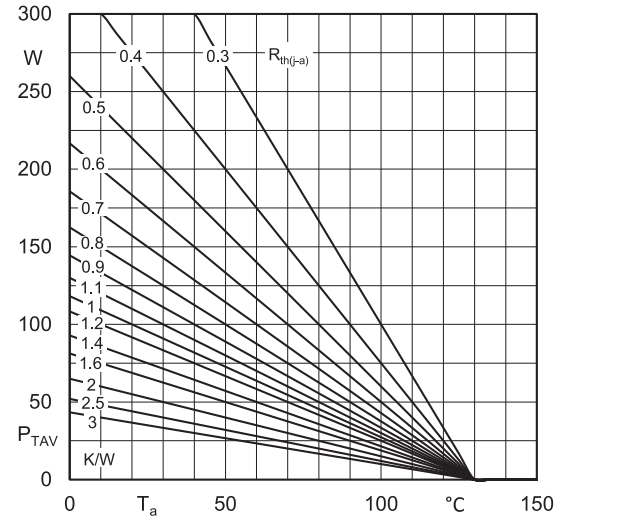


Fig. 1R: Max. power dissipation per chip vs. ambient temperature

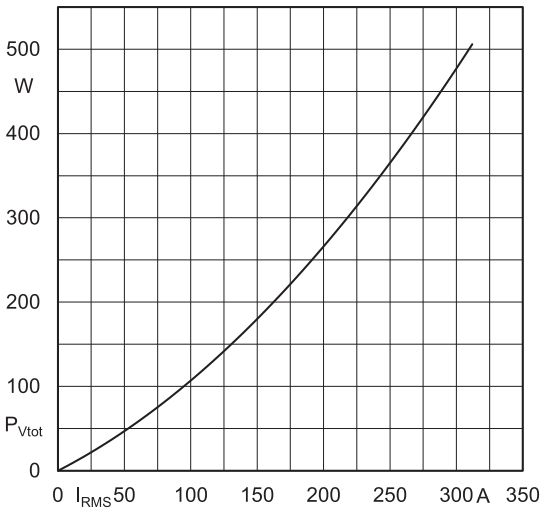


Fig. 2L: Max. power dissipation of one module vs. rms current

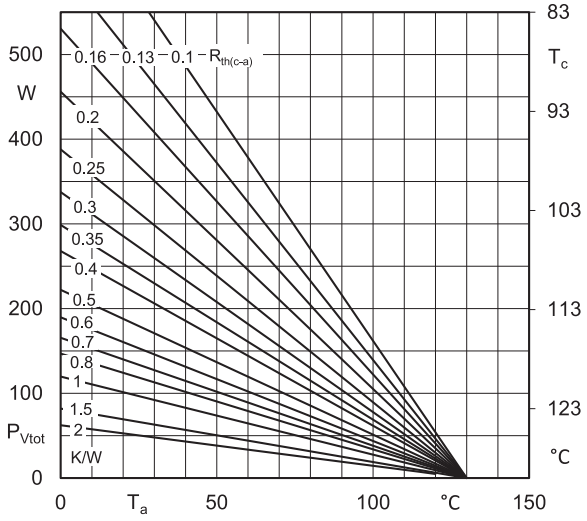


Fig. 2R: Max. power dissipation of one module vs. ambient temperature

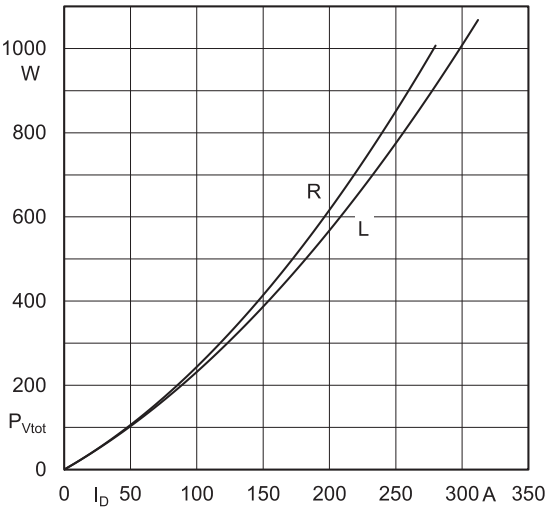


Fig. 3L: Max. power dissipation of two modules vs. direct current

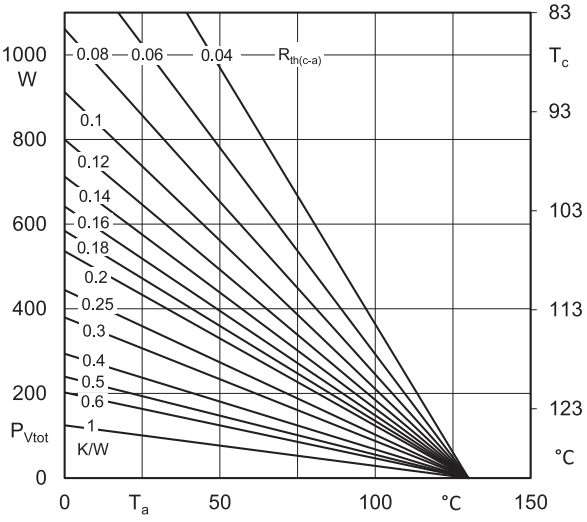


Fig. 3R: Max. power dissipation of two modules vs. ambient temperature

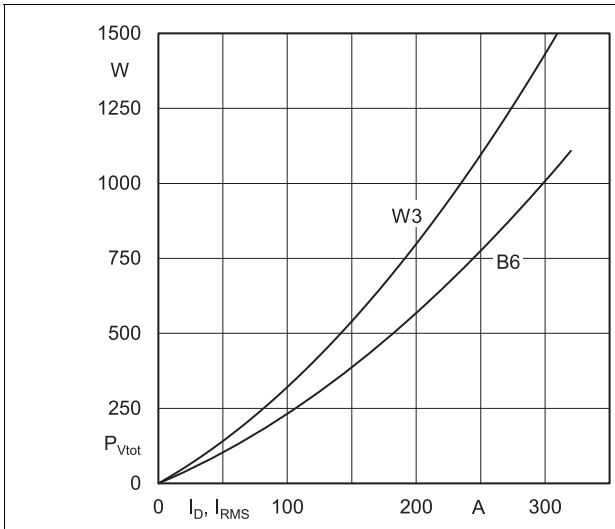


Fig. 4L: Max. power dissipation of three modules vs. direct current

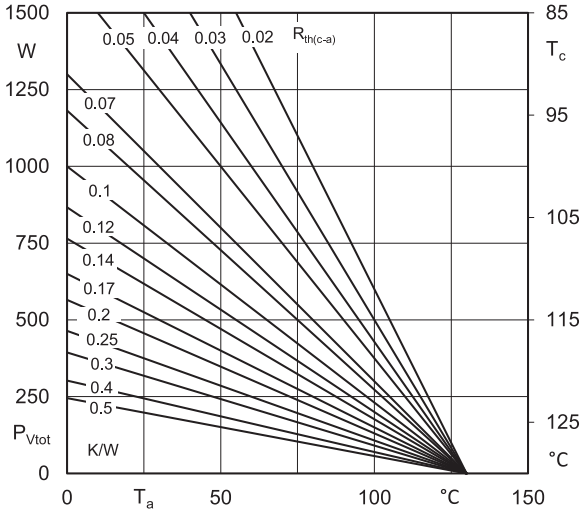


Fig. 4R: Max. power dissipation of three modules vs. ambient temperature

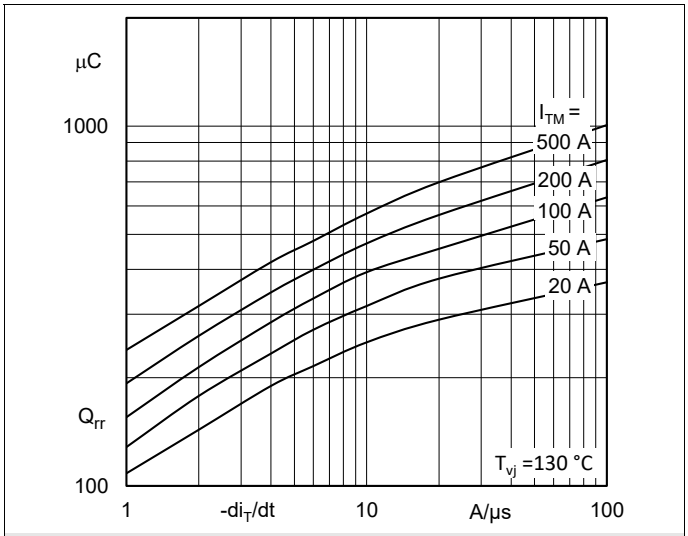


Fig. 5: Recovered charge vs. current decrease

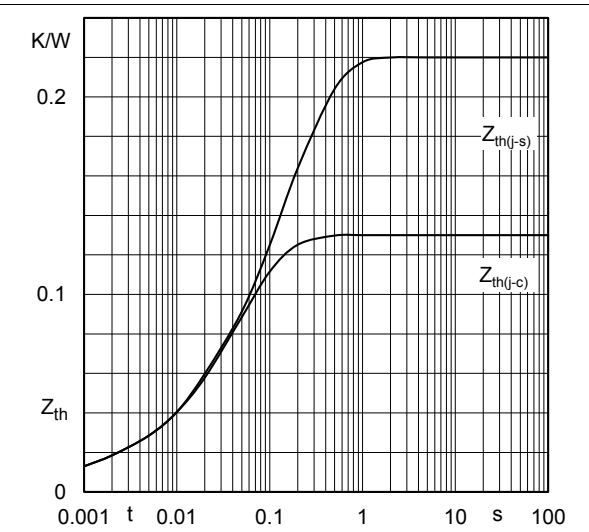


Fig. 6: Transient thermal impedance vs. time

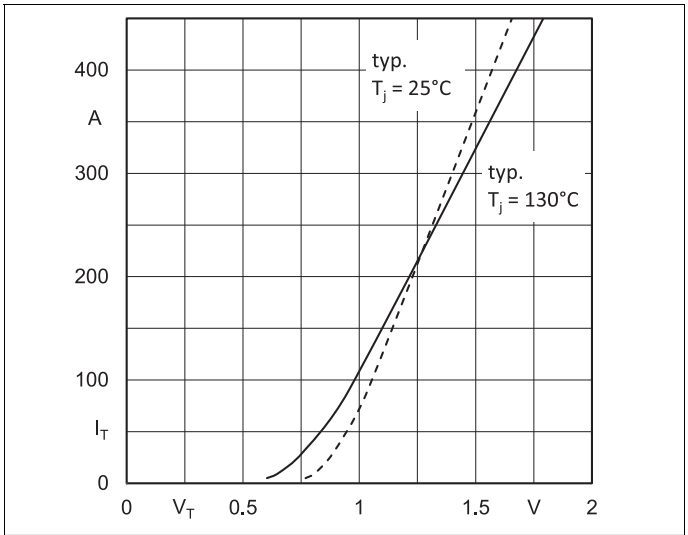


Fig. 7: On-state characteristics

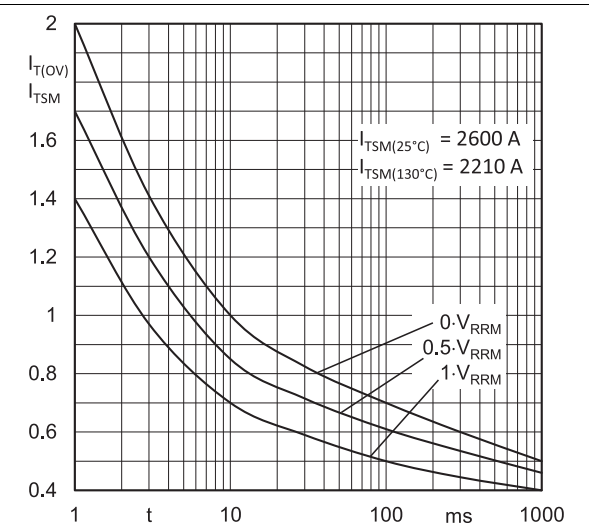


Fig. 8: Surge overload current vs. time

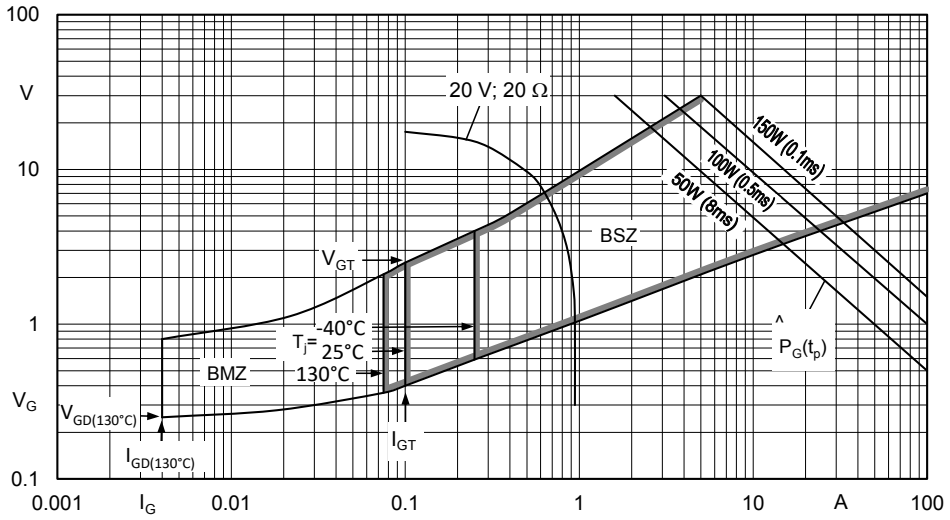
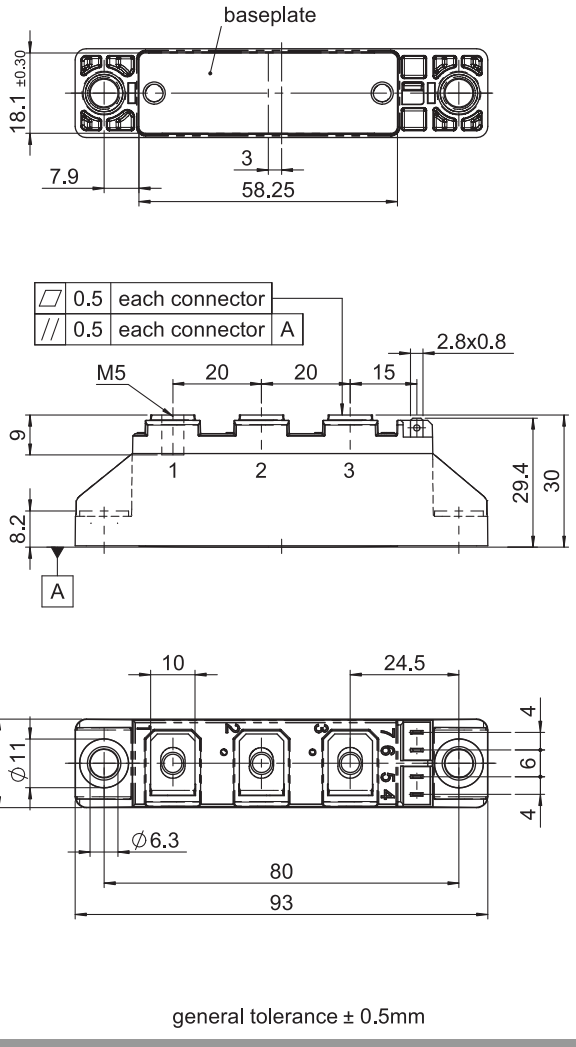


Fig. 9: Gate trigger characteristics



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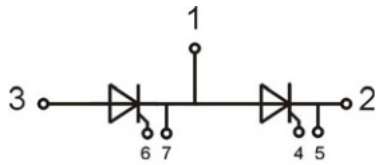

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IMPORTANT INFORMATION AND WARNINGS

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