



SEMIPACK® 1

Thyristor Modules

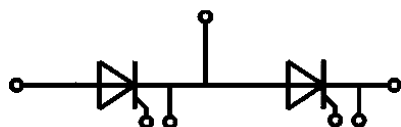
SKKT 58/16 E

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 _c = 85 °C	55	A
	T _j = 130 °C	T _c = 100 °C	41	A
I _{TSM}	10 ms	T _j = 25 °C	1500	A
		T _j = 130 °C	1200	A
i ² t	10 ms	T _j = 25 °C	11250	A ² s
		T _j = 130 °C	7200	A ² s
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		140	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	$T_j = 25\text{ °C}$, $I_T = 180\text{ A}$		1.5	1.75	V
$V_{T(TO)}$	$T_j = 130\text{ °C}$		0.85	1.00	V
r_T	$T_j = 130\text{ °C}$		4.00	4.8	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}	$V_D = 0.67 \cdot V_{DRM}$		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}	$T_j = 25\text{ °C}$, d.c.	2.5			V
I_{GT}	$T_j = 25\text{ °C}$, d.c.	100			mA
V_{GD}	$T_j = 130\text{ °C}$, d.c.			0.25	V
I_{GD}	$T_j = 130\text{ °C}$, d.c.			4	mA
$R_{th(j-c)}$	continuous DC			0.42	K/W
				0.21	K/W
$R_{th(j-c)}$	sin. 180°			0.49	K/W
				0.245	K/W
$R_{th(j-c)}$	rec. 120°			0.51	K/W
				0.255	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

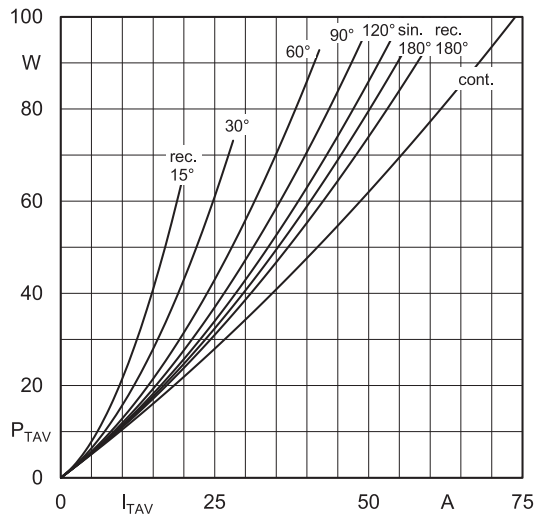


Fig. 1L: Power dissipation per thyristor/diode vs. on-state current

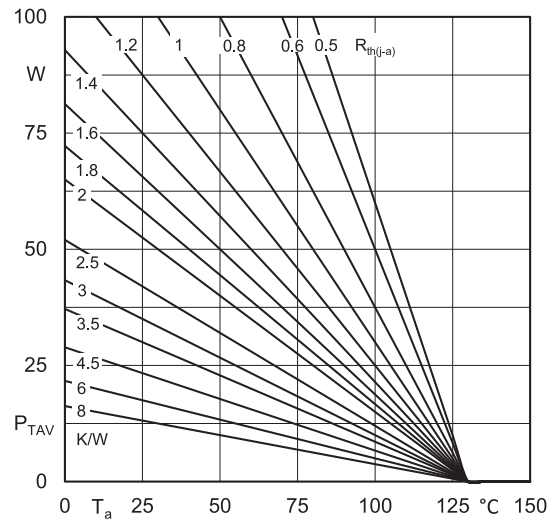


Fig. 1R: Max. power dissipation per chip vs. ambient temperature

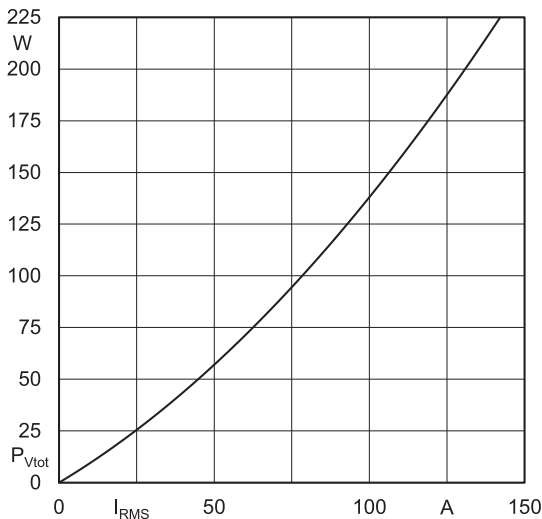


Fig. 2L: Max. power dissipation of one module vs. rms current

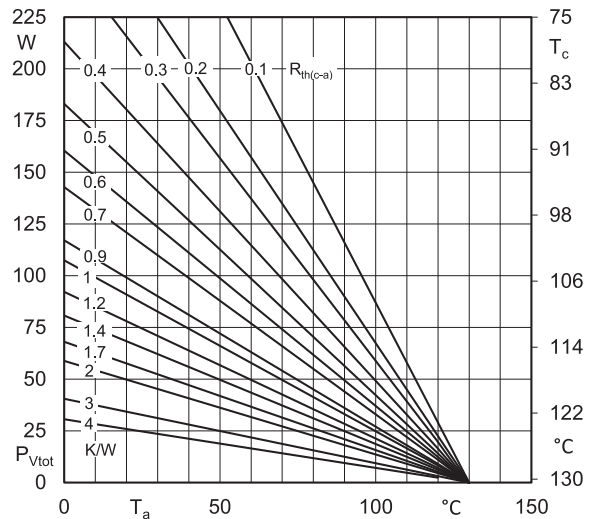


Fig. 2R: Max. power dissipation of one module vs. case temperature

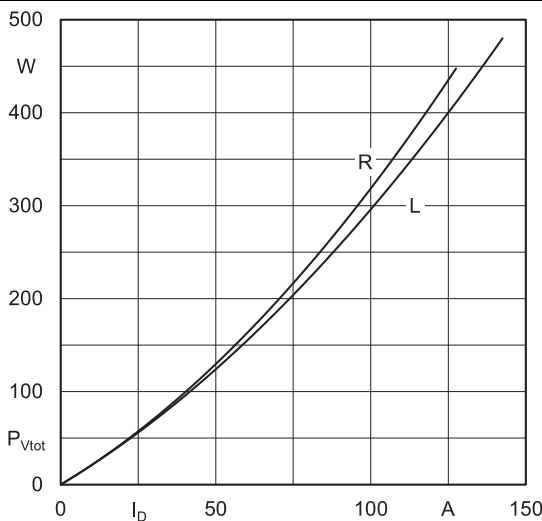


Fig. 3L: Max. power dissipation of two modules vs. direct current

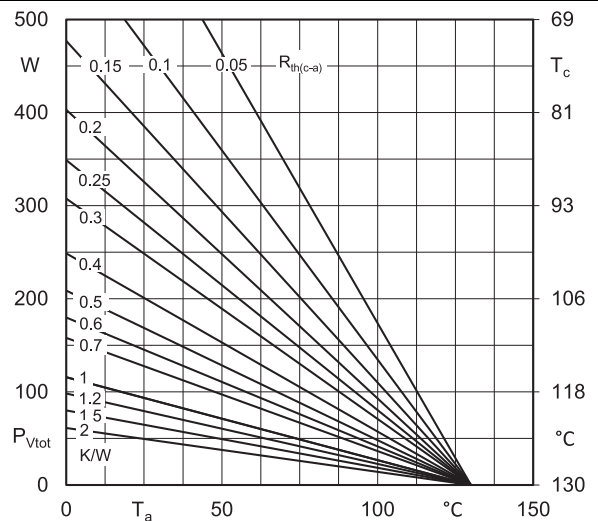


Fig. 3R: Max. power dissipation of two modules vs. case temperature

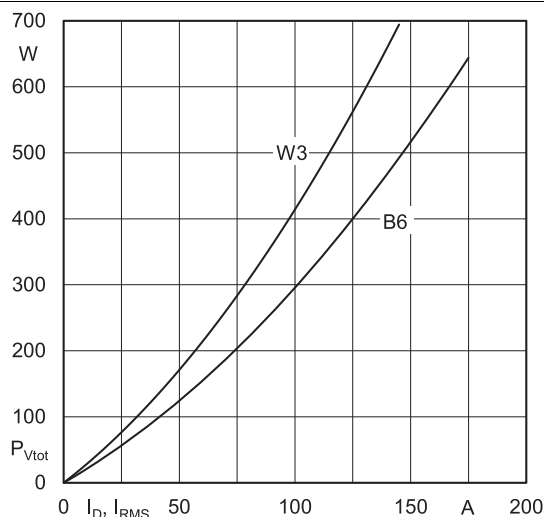


Fig. 4L: Max. power dissipation of three modules vs. direct current

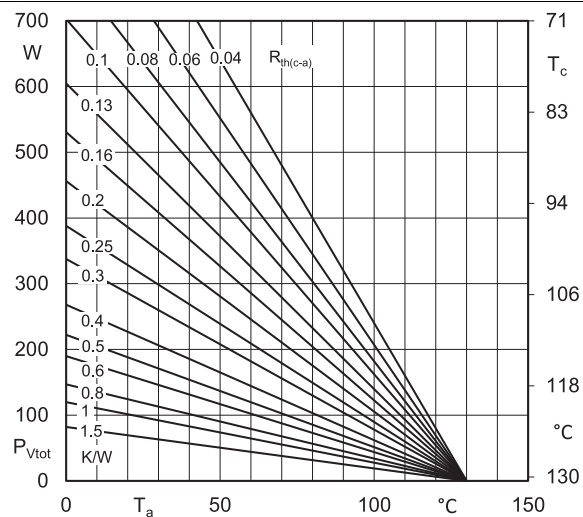


Fig. 4R: Max. power dissipation of three modules vs. case temperature

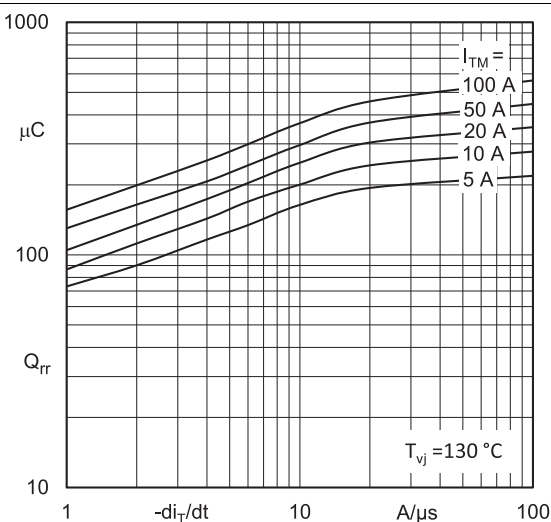


Fig. 5: Recovered charge vs. current decrease

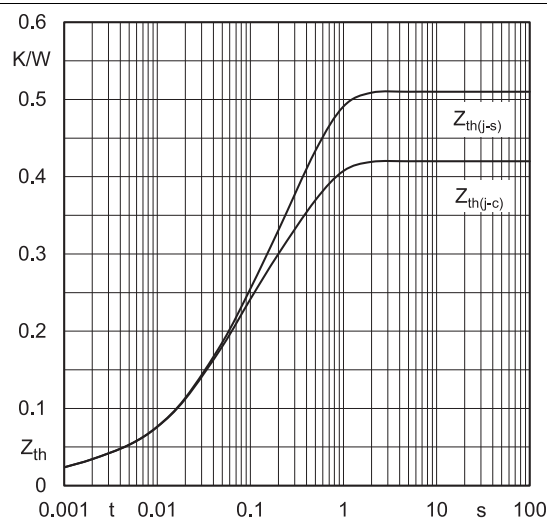


Fig. 6: Transient thermal impedance vs. time

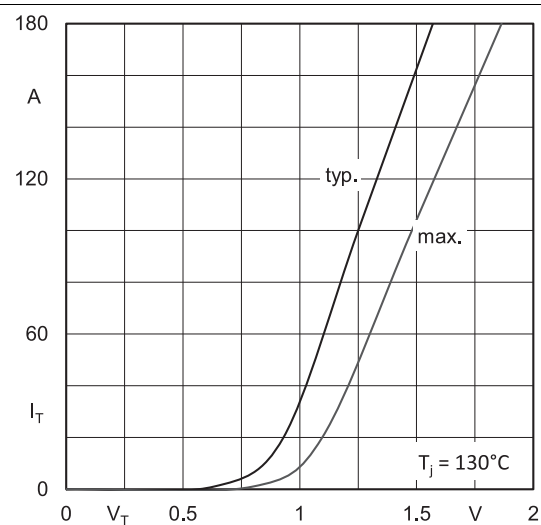


Fig. 7: On-state characteristics

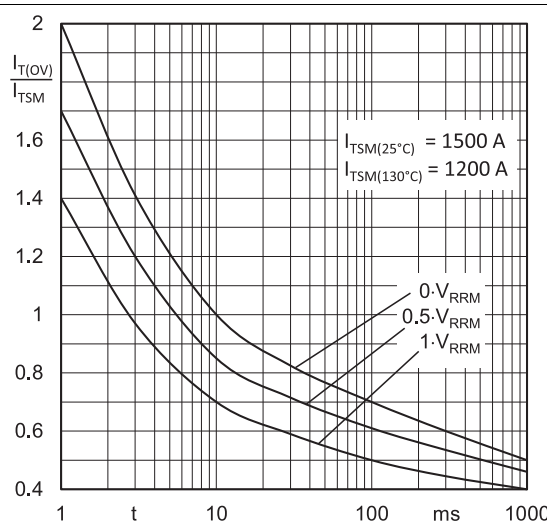


Fig. 8: Surge overload current vs. time

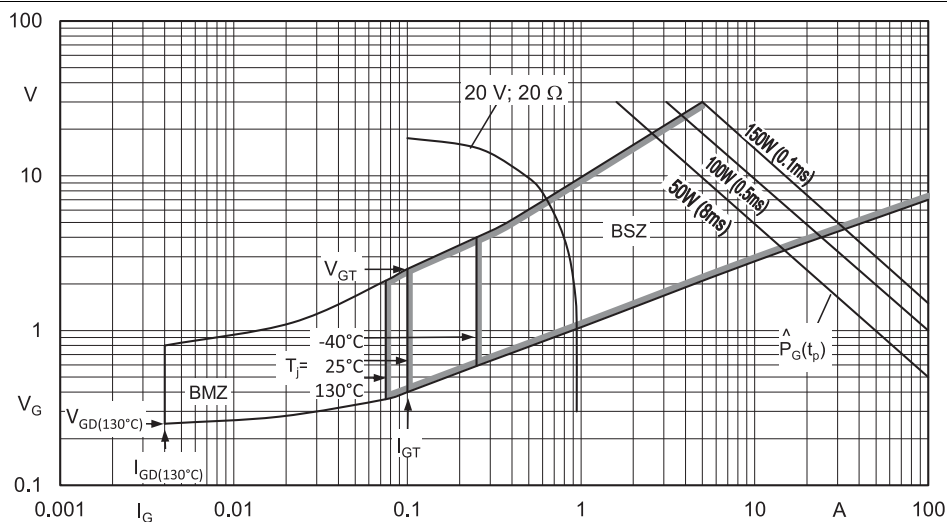
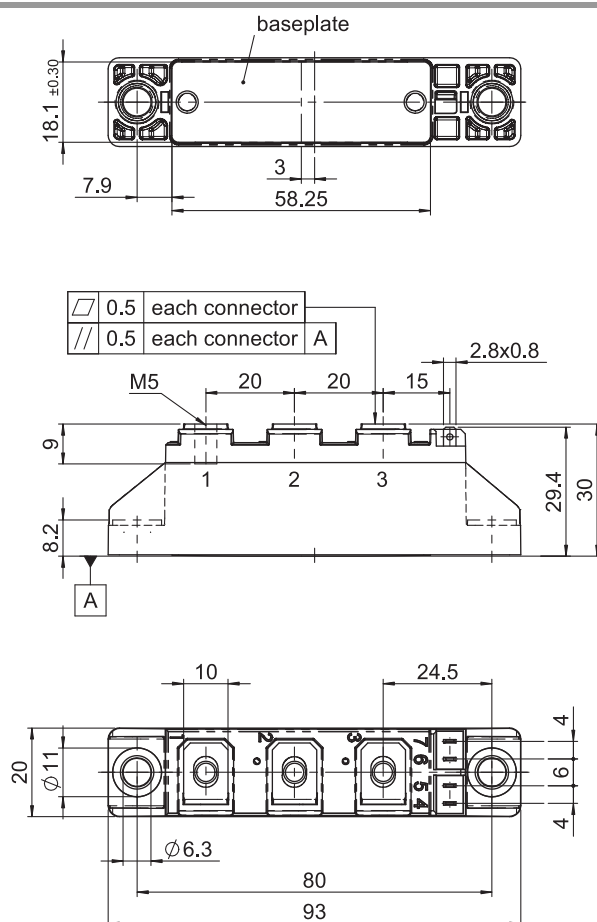
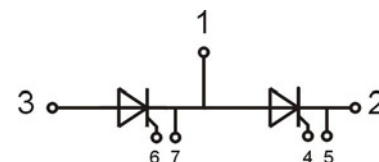


Fig. 9: Gate trigger characteristics



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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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