



SEMIPACK® 1

Thyristor Modules

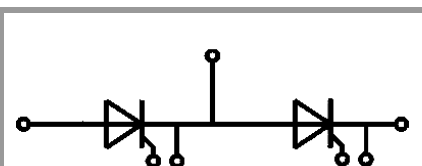
SKKT 140/16 E

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



SKKT

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}	$t_p = 10\text{ ms}$	$T_j = 25\text{ °C}$	2600	A
		$T_j = 130\text{ °C}$	2210	A
i^2t	$t_p = 10\text{ ms}$	$T_j = 25\text{ °C}$	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
Thyristor						
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}	$I_G = 1\text{ A}$	$T_j = 25\text{ °C}$		1		μs
t_{gr}	$di_G/dt = 1\text{ A/μs}$ $V_D = 0.67 * V_{DRM}$	$T_j = 25\text{ °C}$		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}	$T_j = 25\text{ °C}$, 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
$R_{th(j-c)}$	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						
$R_{th(c-s)}$	P12 (reference)	thyristor		0.09		K/W
		module		0.05		K/W
$R_{th(c-s)}$	HP-PCM	thyristor		0.05		K/W
		module		0.03		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

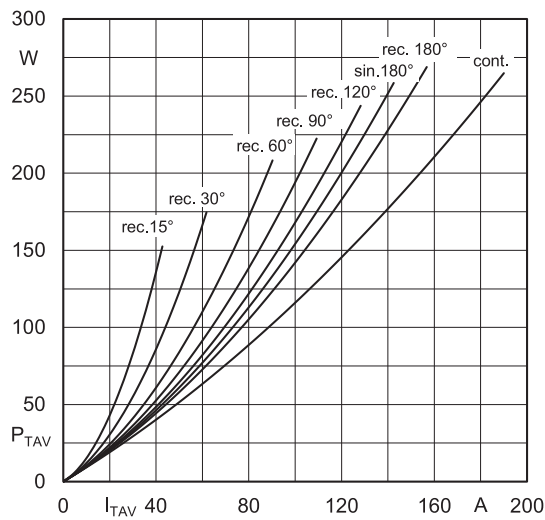


Fig. 1L: Max. power dissipation per chip vs. on-state current

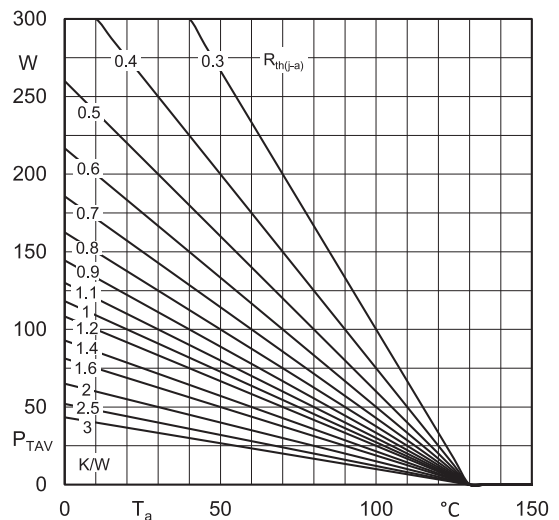


Fig. 1R: Max. power dissipation per chip vs. ambient temperature

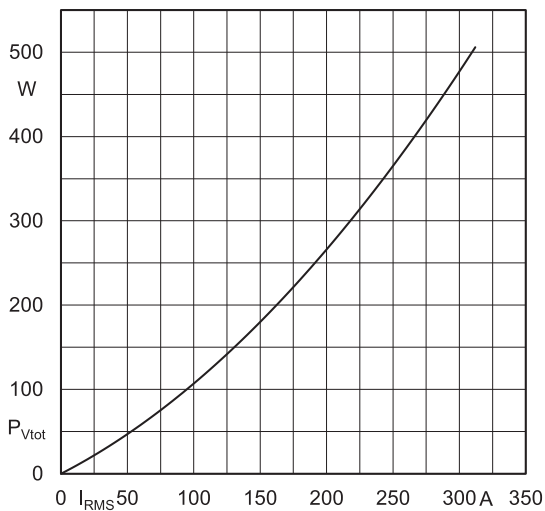


Fig. 2L: Max. power dissipation of one module vs. rms current

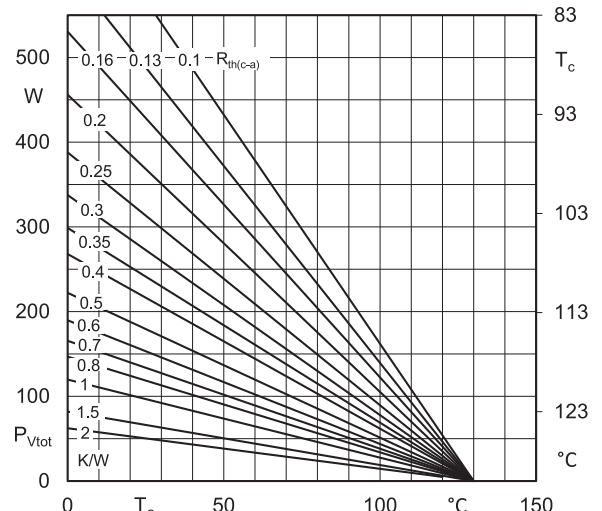


Fig. 2R: Max. power dissipation of one module vs. ambient temperature

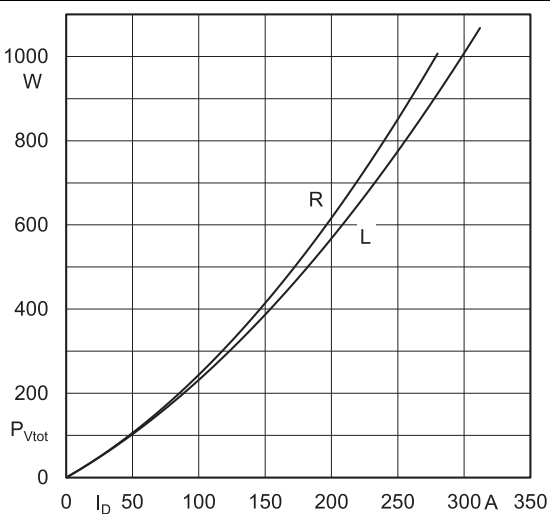


Fig. 3L: Max. power dissipation of two modules vs. direct current

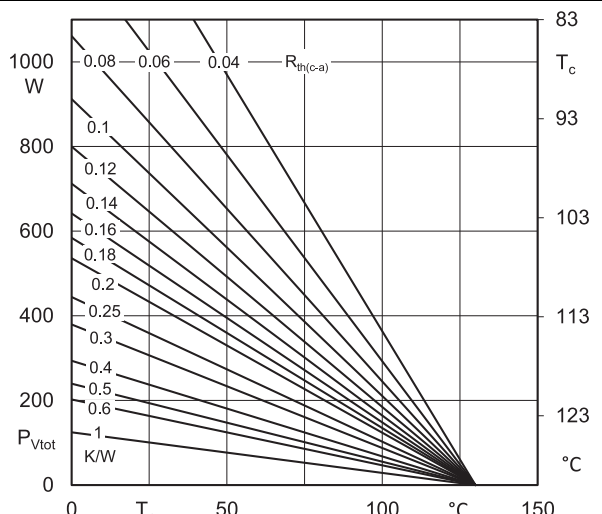


Fig. 3R: Max. power dissipation of two modules vs. ambient temperature

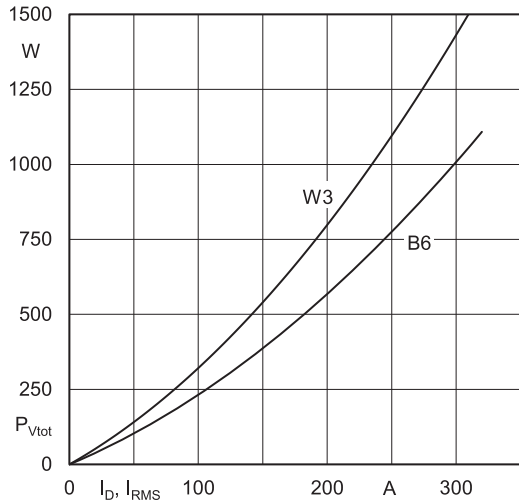


Fig. 4L: Max. power dissipation of three modules vs. direct current

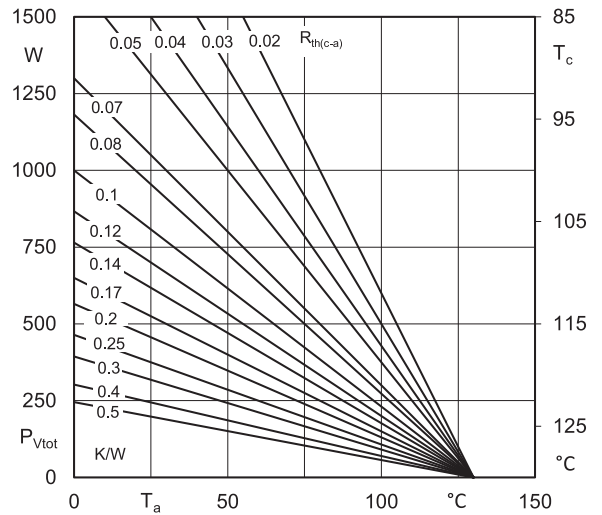


Fig. 4R: Max. power dissipation of three modules vs. ambient temperature

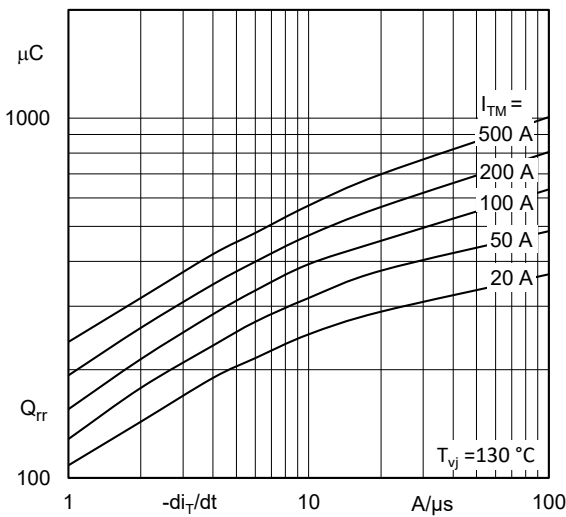


Fig. 5: Recovered charge vs. current decrease

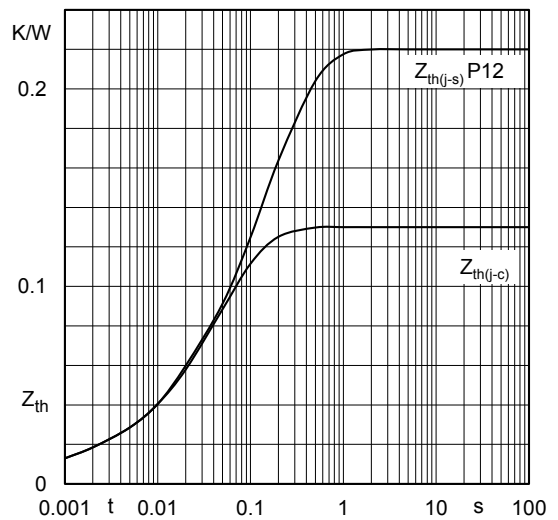


Fig. 6: Transient thermal impedance vs. time

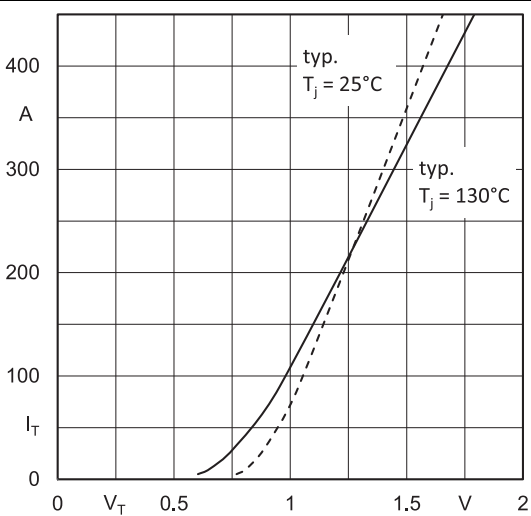


Fig. 7: On-state characteristics

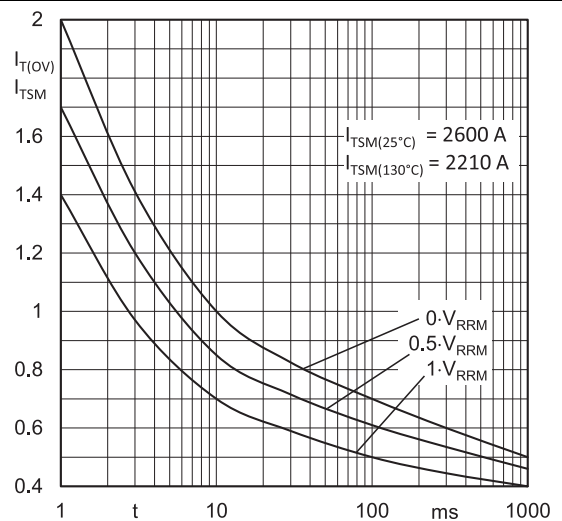


Fig. 8: Surge overload current vs. time

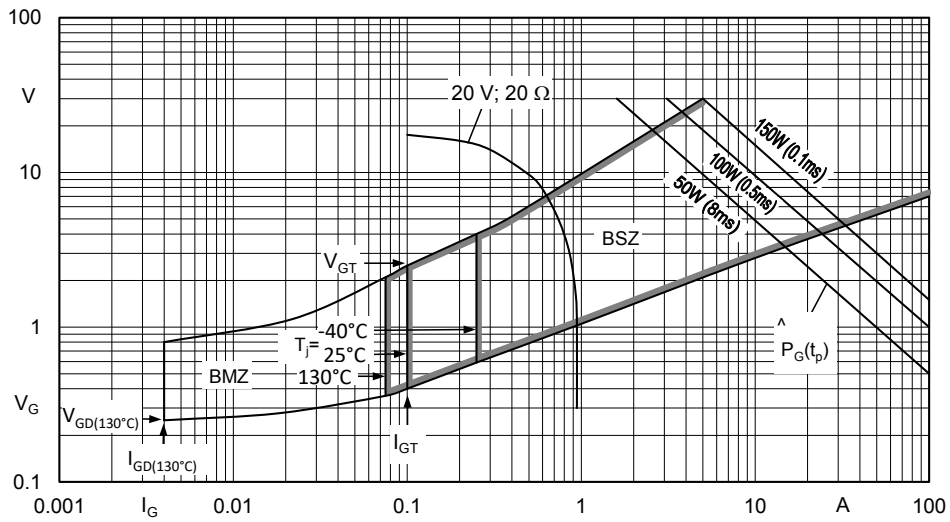
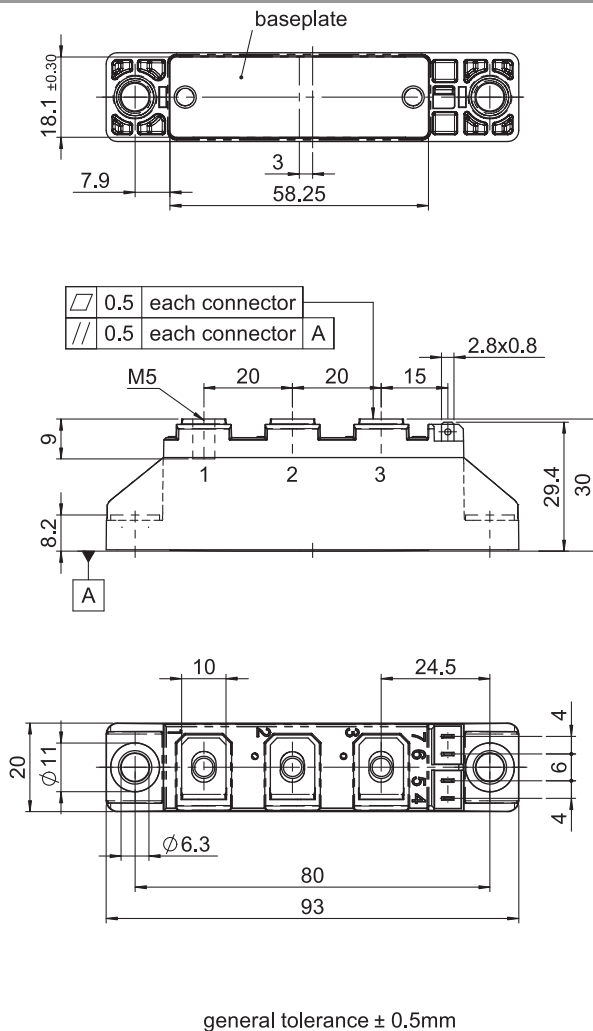
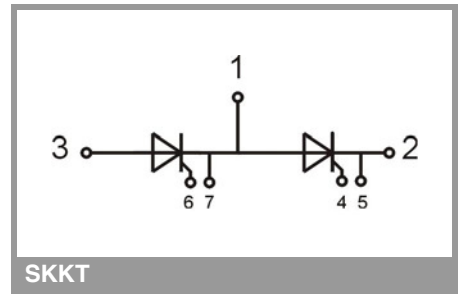


Fig. 9: Gate trigger characteristics



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IMPORTANT INFORMATION AND WARNINGS

This is an electrostatic discharge sensitive device (ESDS) according to international standard IEC 61340.

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