



SEMIPACK® 1

Thyristor / Diode Modules

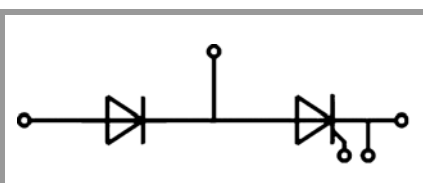
SKKH 107/16 E

Features*

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

Typical Applications

- Rectifier for motor drives
- Process control
- Rectifier for power supplies



SKKH

Absolute Maximum Ratings				
Symbol	Conditions		Values	Unit
Thyristor / diode				
$I_{F(AV)}/I_{T(AV)}$	sin. 180°	$T_c = 85\text{ °C}$	119	A
	$T_j = 130\text{ °C}$	$T_c = 100\text{ °C}$	91	A
I_{FSM}/I_{TSM}	$t_p = 10\text{ ms}$	$T_j = 25\text{ °C}$	2250	A
		$T_j = 130\text{ °C}$	1900	A
i^2t	$t_p = 10\text{ ms}$	$T_j = 25\text{ °C}$	25313	A ² s
		$T_j = 130\text{ °C}$	18050	A ² s
V_{RSM}	$T_j = 25\text{ °C}$, thyristor, diode		1700	V
V_{RRM}	$T_j = 25\text{ °C}$, thyristor, diode		1600	V
V_{DRM}	$T_j = 25\text{ °C}$, thyristor		1600	V
$(di/dt)_{cr}$	$T_j = 130\text{ °C}$, thyristor		140	A/μs
$(dv/dt)_{cr}$	$T_j = 130\text{ °C}$, thyristor		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 °C, I _T = 300 A			1.60	1.75	V
V _{T(TO)}	T _j = 130 °C			0.80	0.90	V
r _T	T _j = 130 °C			2.80	3.35	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	T _j = 25 °C		1		μs
t _{gr}	di _G /dt = 1 A/μs	T _j = 25 °C		2		μs
	V _D = 0.67 * V _{DRM}					
t _q	T _j = 130 °C			200		μs
I _H	T _j = 25 °C			150	250	mA
I _L	T _j = 25 °C, R _G = 33 Ω			300	600	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				0.15	K/W
	sin. 180°, per chip				0.2	K/W
	rec. 120°, per chip				0.21	K/W
Diode						
V _F	T _j = 25 °C, I _F = 300 A			1.30	1.45	V
V _{F0}	T _j = 130 °C			0.77	0.85	V
r _F	T _j = 130 °C			1.85	2.05	mΩ
I _R	T _j = 130 °C, V _{RD} = V _{RRM}				3	mA
R _{th(j-c)}	cont., per chip				0.15	K/W
	sin. 180°, per chip				0.2	K/W
	rec. 120°, per chip				0.21	K/W

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Characteristics					
Symbol	Conditions	min.	typ.	max.	Unit
Module					
$R_{th(c-s)}$	thyristor, P12 (reference)		0.09		K/W
	diode, 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

Thyristor / Diode Modules

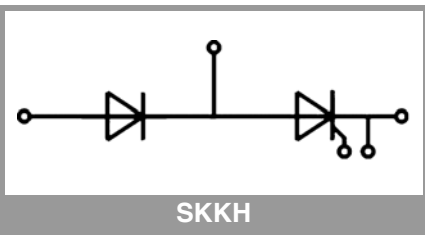
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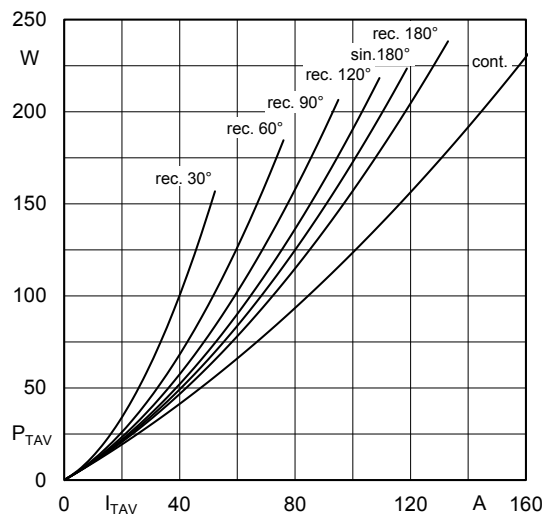


Fig. 1L: Power dissipation per thyristor vs. on-state current

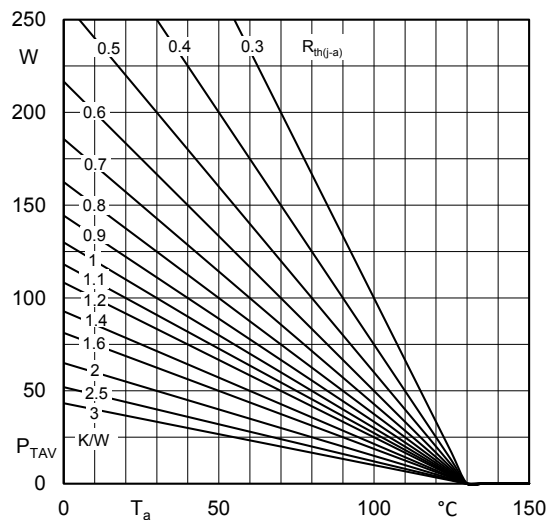


Fig. 1R: Max. power dissipation per thyristor vs. ambient temperature

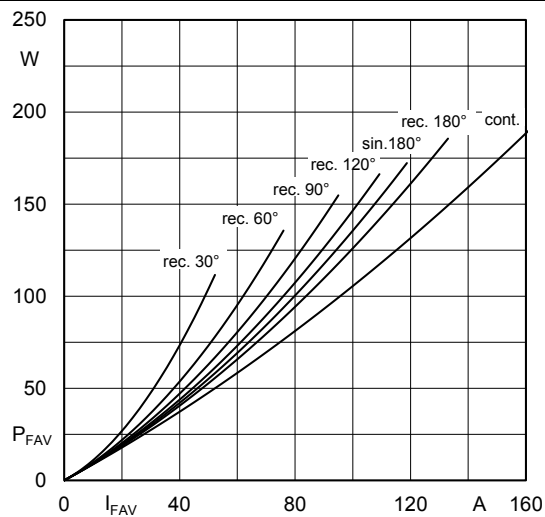


Fig. 2L: Power dissipation per diode vs. forward current

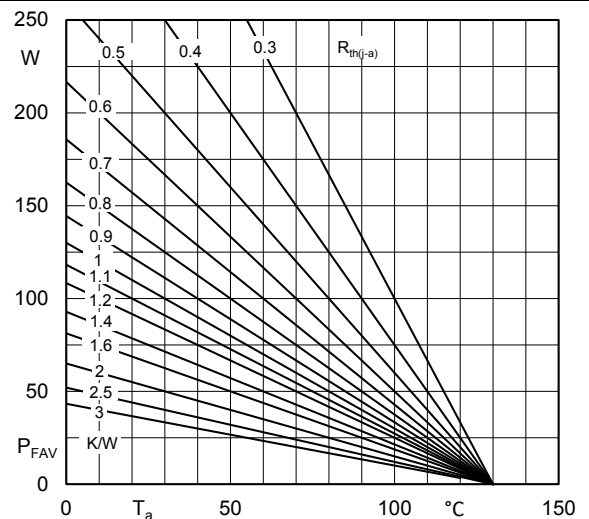


Fig. 2R: Max power dissipation per diode vs. ambient temperature

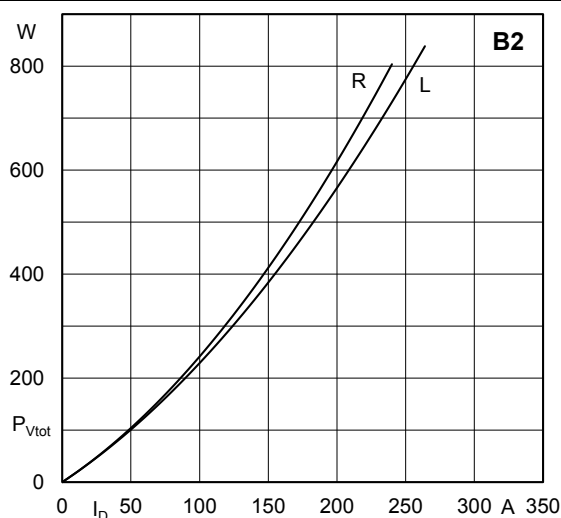


Fig. 3L: Max. power dissipation of two modules vs. direct current

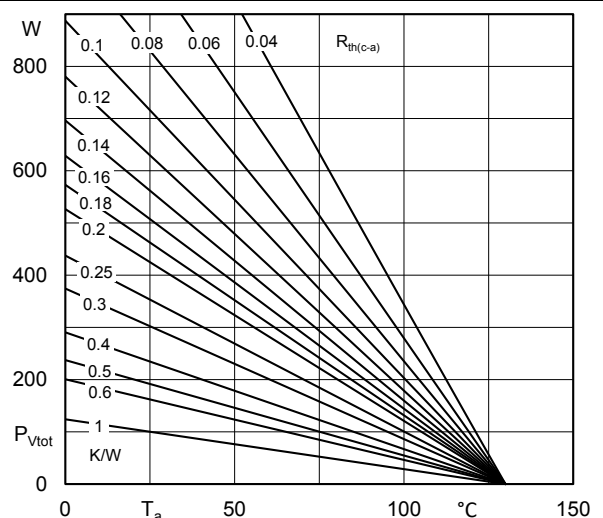


Fig. 3R: Max. power dissipation of two modules vs. case temperature

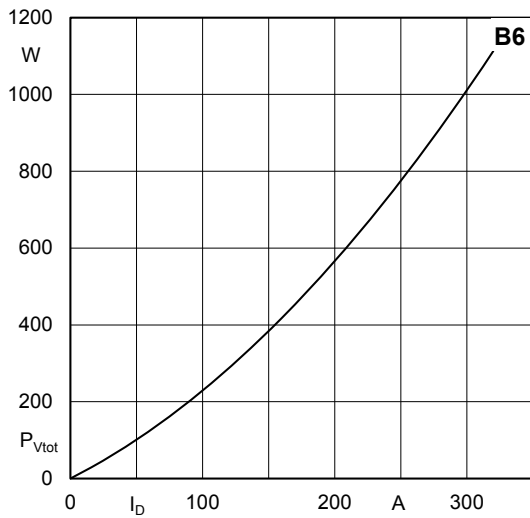


Fig. 4L: Max. power dissipation of three modules vs. direct current

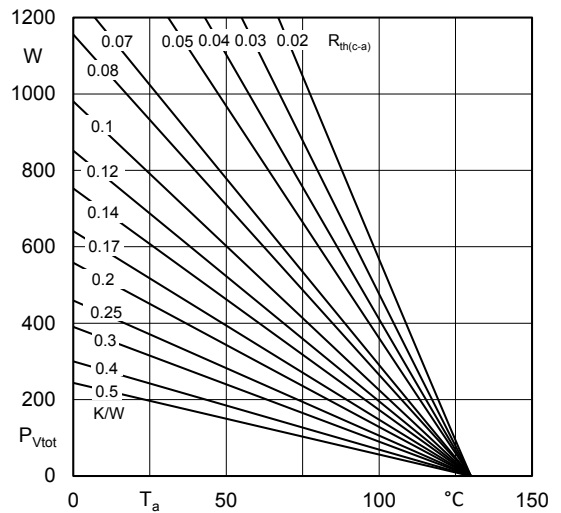


Fig. 4R: Max. power dissipation of three modules vs. ambient temperature

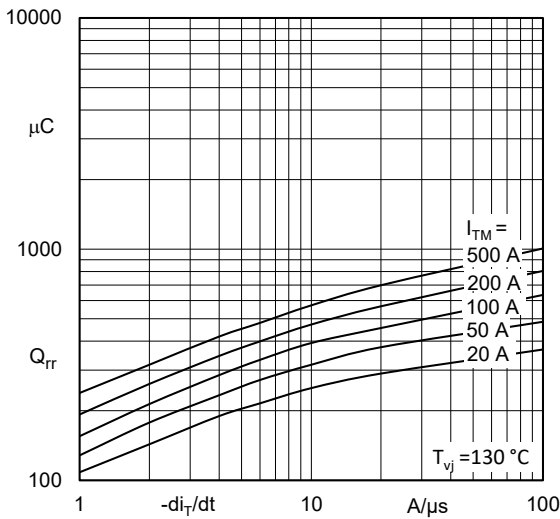


Fig. 5: Recovered charge vs. current decrease

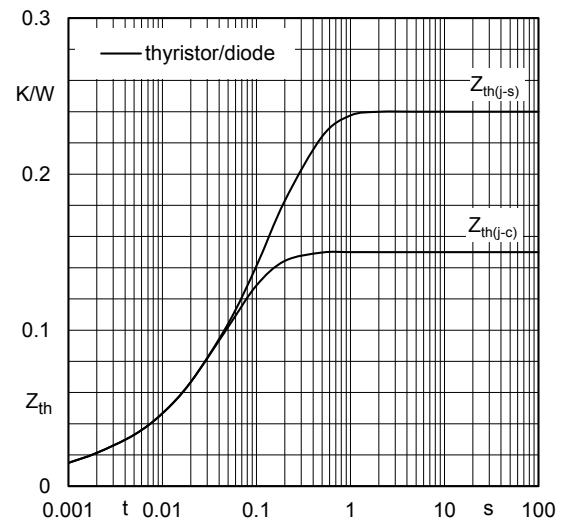


Fig. 6: Transient thermal impedance vs. time

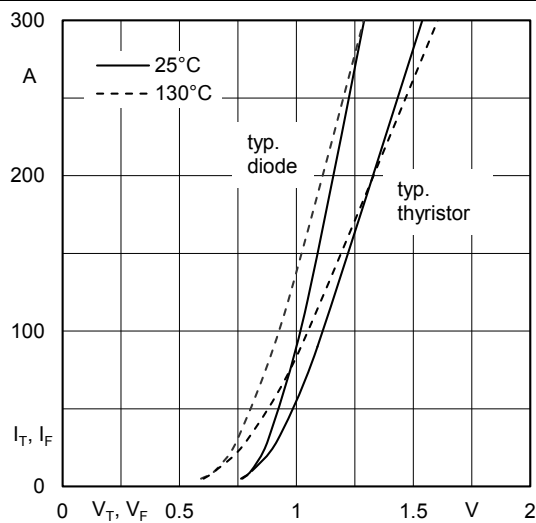


Fig. 7: On-state characteristics

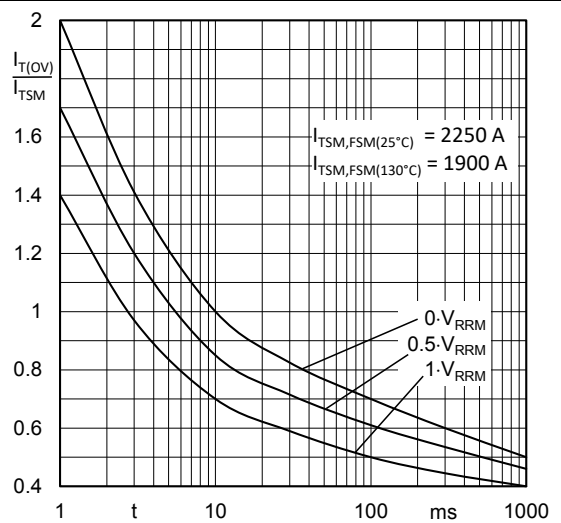


Fig. 8: Surge overload current vs. time

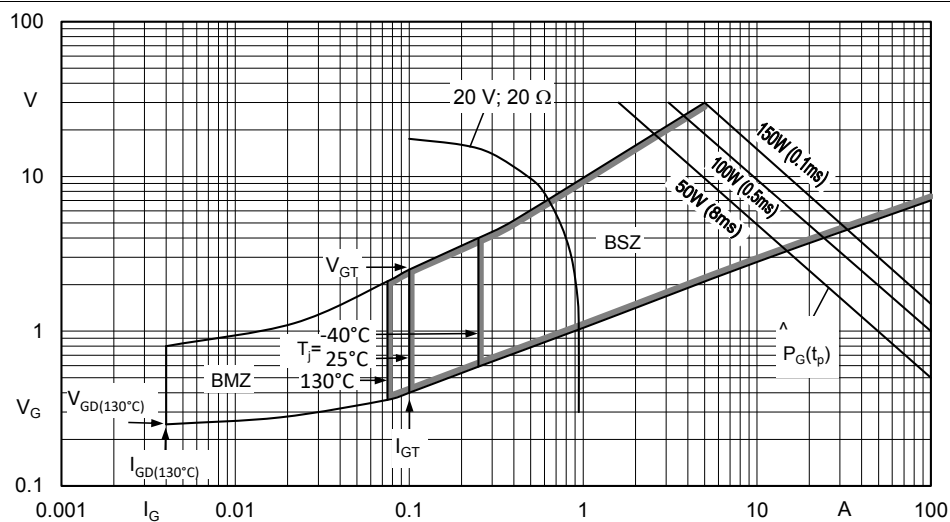
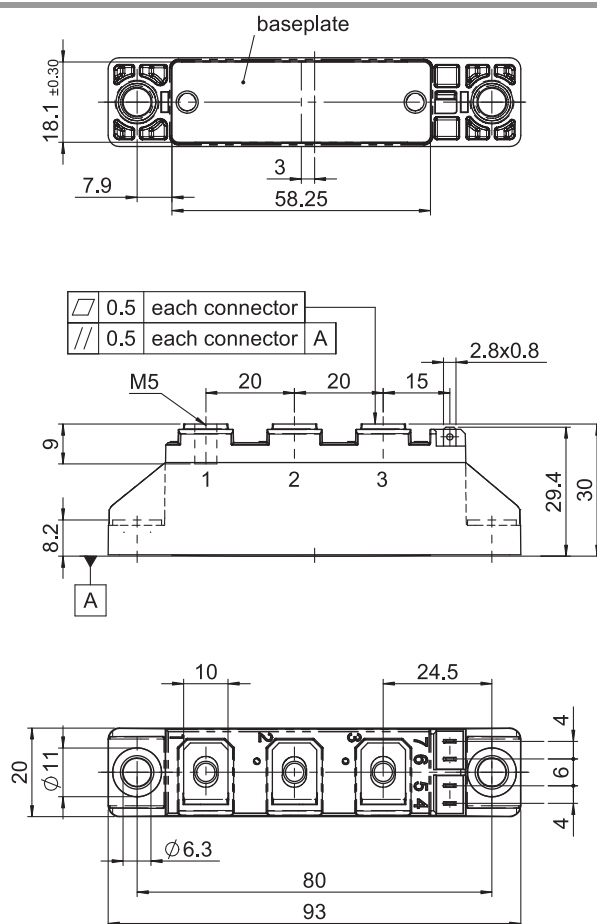
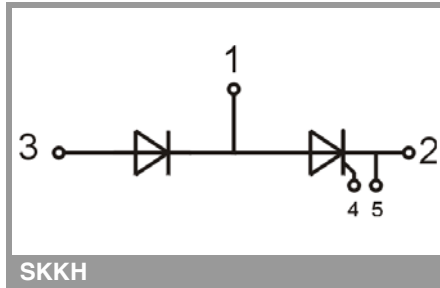


Fig. 9: Gate trigger characteristics



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

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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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