

SKKH 75/16 E



SEMIPACK® 1

Thyristor / Diode Modules

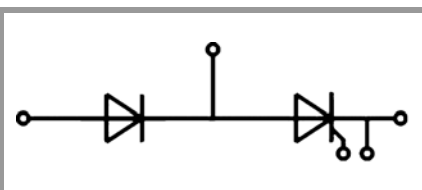
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Features*

- 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



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Absolute Maximum Ratings				
Symbol	Conditions		Values	Unit
Thyristor / diode				
$I_{F(AV)}/I_{T(AV)}$	sin. 180°	$T_c = 85\text{ °C}$	75	A
	$T_j = 130\text{ °C}$	$T_c = 100\text{ °C}$	57	A
I_{FSM}/I_{TSM}	$t_p = 10\text{ ms}$	$T_j = 25\text{ °C}$	1500	A
		$T_j = 130\text{ °C}$	1200	A
i^2t	$t_p = 10\text{ ms}$	$T_j = 25\text{ °C}$	11250	A ² s
		$T_j = 130\text{ °C}$	7200	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/ μ s
$(dv/dt)_{cr}$	$T_j = 130\text{ °C}$, thyristor		1000	V/ μ s
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	$T_j = 25\text{ °C}$, $I_T = 225\text{ A}$				1.81	V
$V_{T(TO)}$	$T_j = 130\text{ °C}$				0.92	V
r_T	$T_j = 130\text{ °C}$				4.6	m Ω
$I_{DD}; I_{RD}$	$T_j = 130\text{ °C}$, $V_{DD} = V_{DRM}$; $V_{RD} = V_{RRM}$				15	mA
t_{gd}	$I_G = 1\text{ A}$	$T_j = 25\text{ °C}$		1		μ s
t_{gr}	$di_G/dt = 1\text{ A}/\mu\text{s}$ $V_D = 0.67 * V_{DRM}$	$T_j = 25\text{ °C}$		2		μ s
t_q	$T_j = 130\text{ °C}$			200		μ s
I_H	$T_j = 25\text{ °C}$				220	mA
I_L	$T_j = 25\text{ °C}$, $R_G = 33\text{ }\Omega$				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				0.23	K/W
	sin. 180°, per chip				0.3	K/W
	rec. 120°, per chip				0.32	K/W
Diode						
V_F	$T_j = 25\text{ °C}$, $I_F = 225\text{ A}$				1.65	V
V_{F0}	$T_j = 130\text{ °C}$				0.85	V
r_F	$T_j = 130\text{ °C}$				3.90	m Ω
I_R	$T_j = 130\text{ °C}$, $V_{RD} = V_{RRM}$				1.7	mA
$R_{th(j-c)}$	cont., per chip				0.3	K/W
	sin. 180°, per chip				0.38	K/W
	rec. 120°, per chip				0.4	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

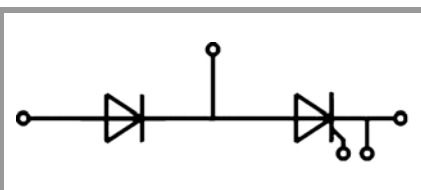
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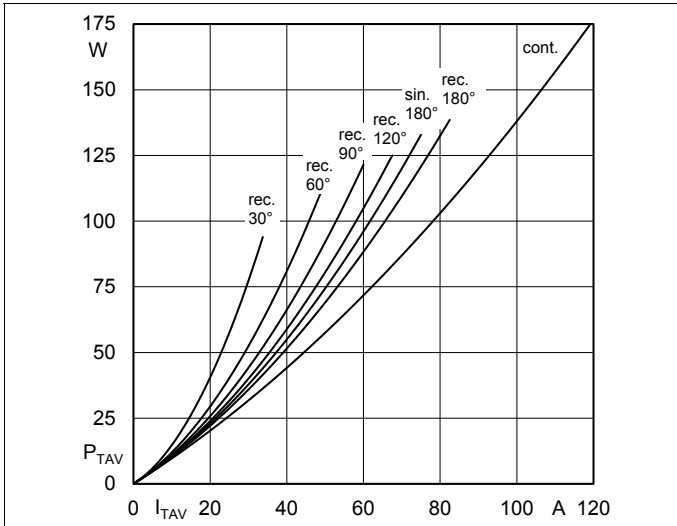


Fig. 1L: Power dissipation per thyristor vs. on-state current

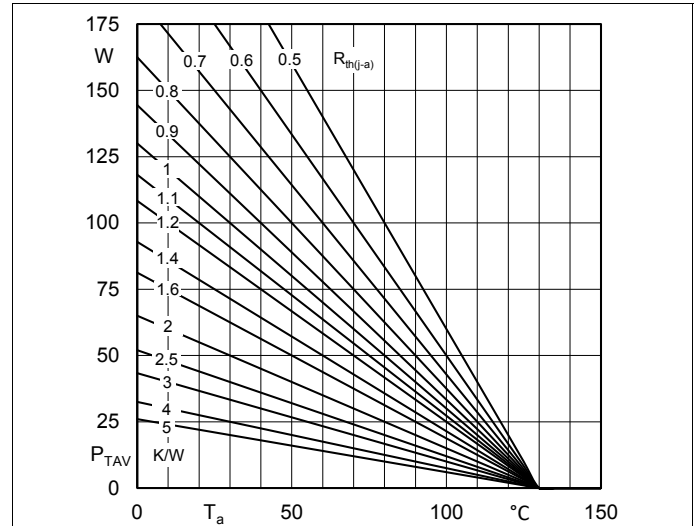


Fig. 1R: Max. power dissipation per thyristor vs. ambient temperature

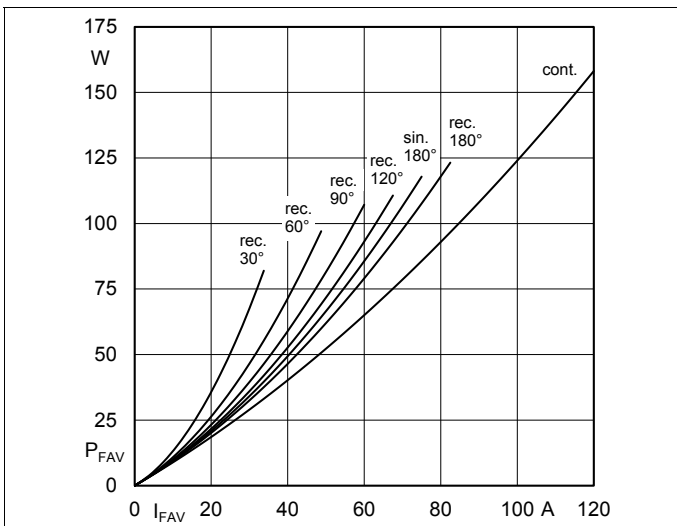


Fig. 2L: Power dissipation per diode vs. forward current

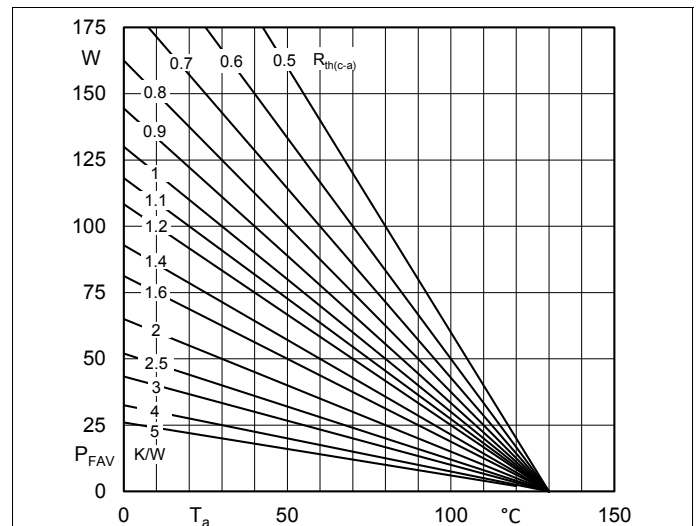


Fig. 2R: Max. power dissipation per diode vs. ambient temperature

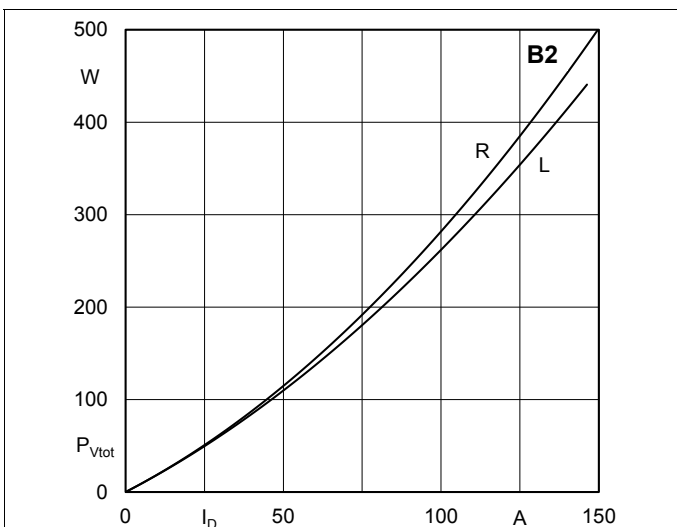


Fig. 3L: Max. power dissipation of two modules vs. direct current

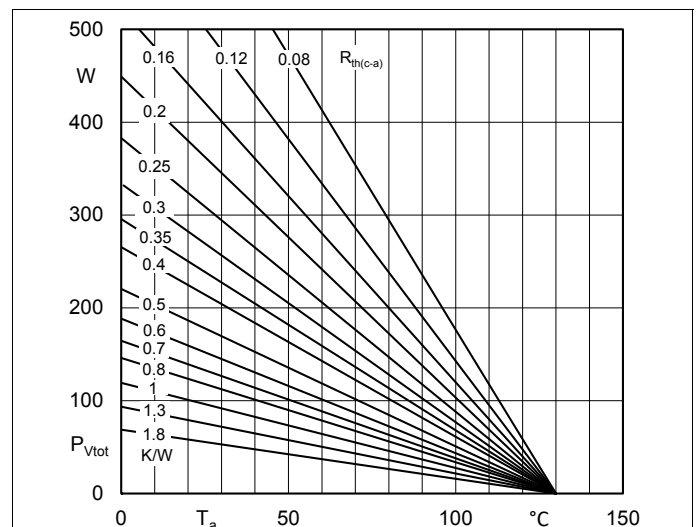


Fig. 3R: Max. power dissipation of two modules vs. ambient temperature

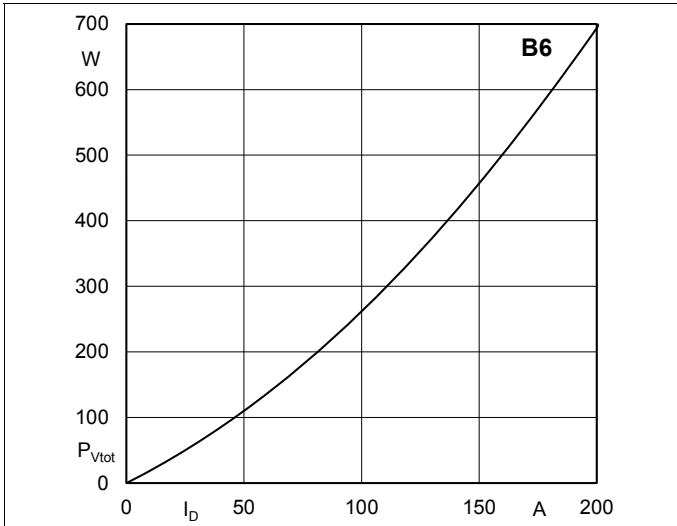


Fig. 4L: Max. power dissipation of three modules vs. direct current

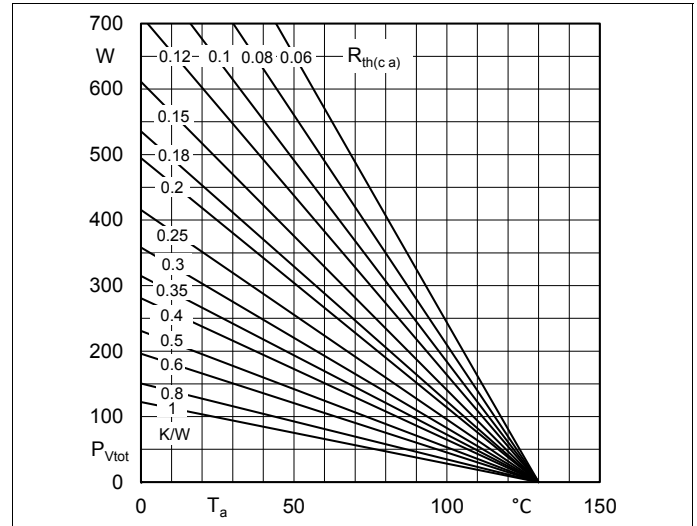


Fig. 4R: Max. power dissipation of three modules vs. ambient temperature

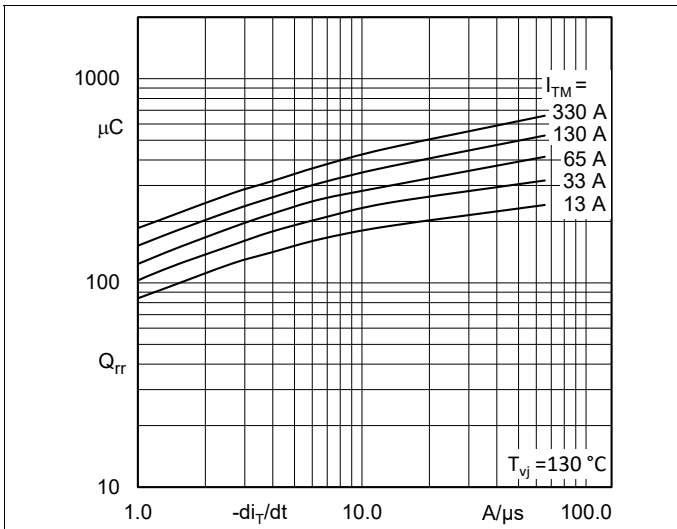


Fig. 5: Recovered charge vs. current decrease

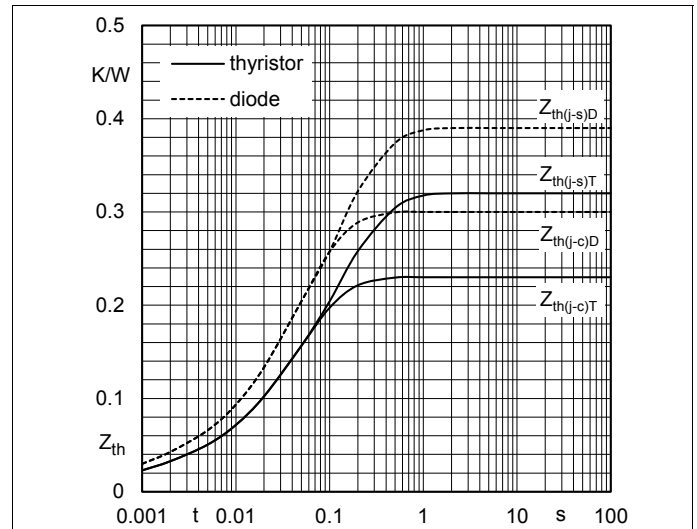


Fig. 6: Transient thermal impedance vs. time

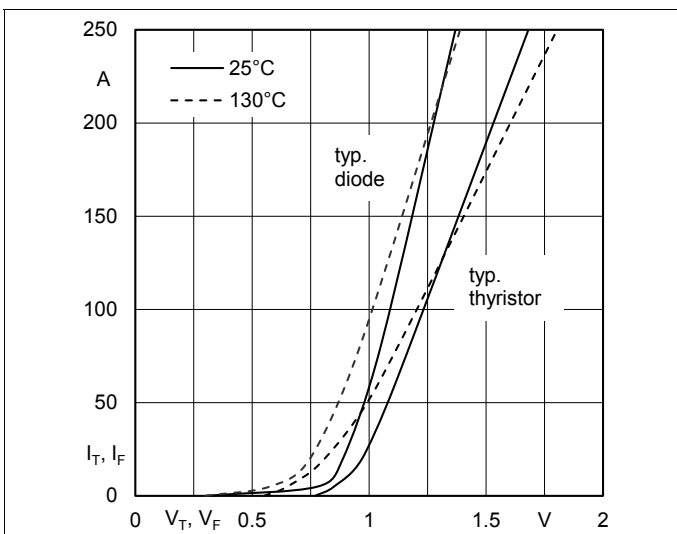


Fig. 7: On-state characteristics

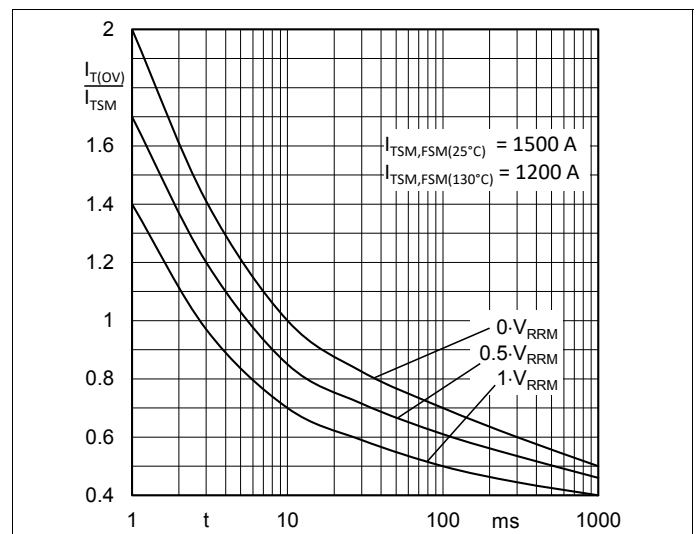


Fig. 8: Surge overload current vs. time

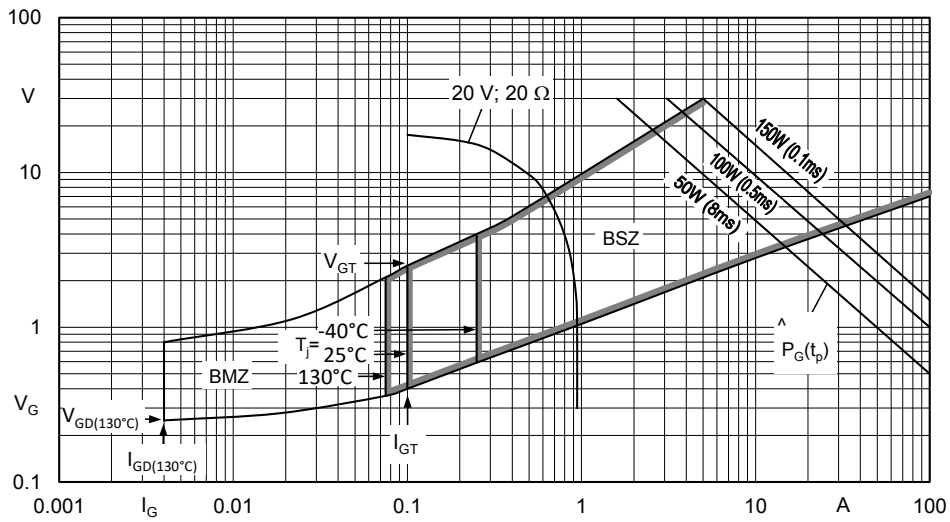
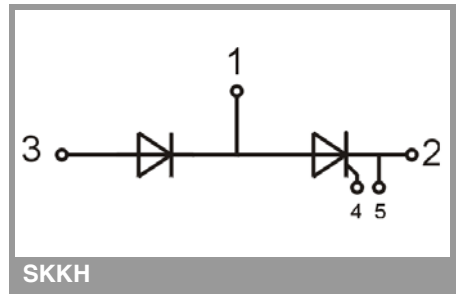
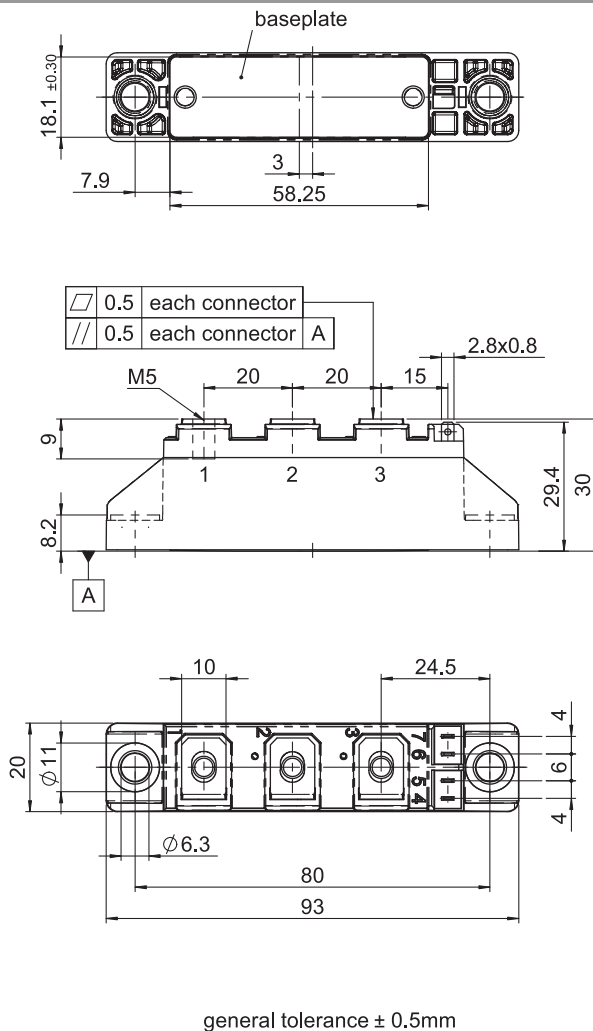


Fig. 9: Gate trigger characteristics



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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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