



SEMIPACK® 1

## Thyristor / Diode Modules

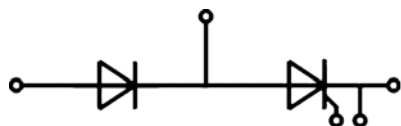
### SKKH 58/16 E

#### 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
Chip				
I <sub>T(AV)</sub>	sin. 180°	T <sub>c</sub> = 85 °C	55	A
	T <sub>j</sub> = 130 °C	T <sub>c</sub> = 100 °C	41	A
I <sub>TSM</sub>	10 ms	T <sub>j</sub> = 25 °C	1500	A
		T <sub>j</sub> = 130 °C	1200	A
i <sup>2</sup> t	10 ms	T <sub>j</sub> = 25 °C	11250	A <sup>2</sup> s
		T <sub>j</sub> = 130 °C	7200	A <sup>2</sup> s
V <sub>RSM</sub>	T <sub>j</sub> = 25 °C		1700	V
V <sub>RRM</sub>	T <sub>j</sub> = 25 °C		1600	V
V <sub>DRM</sub>	T <sub>j</sub> = 25 °C		1600	V
(di/dt) <sub>cr</sub>	T <sub>j</sub> = 130 °C		140	A/μs
(dv/dt) <sub>cr</sub>	T <sub>j</sub> = 130 °C		1000	V/μs
T <sub>j</sub>			-40 ... 130	°C
Module				
T <sub>stg</sub>			-40 ... 125	°C
V <sub>isol</sub>	a.c.; 50 Hz; r.m.s.	1 min	3000	V
		1 s	3600	V

Characteristics						
Symbol	Conditions		min.	typ.	max.	Unit
Chip						
V <sub>T</sub>	T <sub>j</sub> = 25 °C, I <sub>T</sub> = 180 A			1.5	1.75	V
V <sub>T(TO)</sub>	T <sub>j</sub> = 130 °C			0.85	1.00	V
r <sub>T</sub>	T <sub>j</sub> = 130 °C			4.00	4.8	mΩ
I <sub>DD</sub> ;I <sub>RD</sub>	T <sub>j</sub> = 130 °C, V <sub>DD</sub> = V <sub>DRM</sub> ; V <sub>RD</sub> = V <sub>RRM</sub>				20	mA
t <sub>gd</sub>	T <sub>j</sub> = 25 °C, I <sub>G</sub> = 1 A, di <sub>G</sub> /dt = 1 A/μs			1		μs
t <sub>gr</sub>	V <sub>D</sub> = 0.67 * V <sub>DRM</sub>			2		μs
t <sub>q</sub>	T <sub>j</sub> = 130 °C			170		μs
I <sub>H</sub>	T <sub>j</sub> = 25 °C			150	250	mA
I <sub>L</sub>	T <sub>j</sub> = 25 °C, R <sub>G</sub> = 33 Ω			300	600	mA
V <sub>GT</sub>	T <sub>j</sub> = 25 °C, d.c.		2.5			V
I <sub>GT</sub>	T <sub>j</sub> = 25 °C, d.c.		100			mA
V <sub>GD</sub>	T <sub>j</sub> = 130 °C, d.c.				0.25	V
I <sub>GD</sub>	T <sub>j</sub> = 130 °C, d.c.				4	mA
R <sub>th(j-c)</sub>	continuous DC	per chip			0.42	K/W
		per module			0.21	K/W
R <sub>th(j-c)</sub>	sin. 180°	per chip			0.49	K/W
		per module			0.245	K/W
R <sub>th(j-c)</sub>	rec. 120°	per chip			0.51	K/W
		per module			0.255	K/W
Module						
R <sub>th(c-s)</sub>	chip			0.09		K/W
	module			0.05		K/W
M <sub>s</sub>	to heatsink M5		4.25		5.75	Nm
M <sub>t</sub>	to terminals M5		2.55		3.45	Nm
a					5 * 9.81	m/s <sup>2</sup>
w				75		g

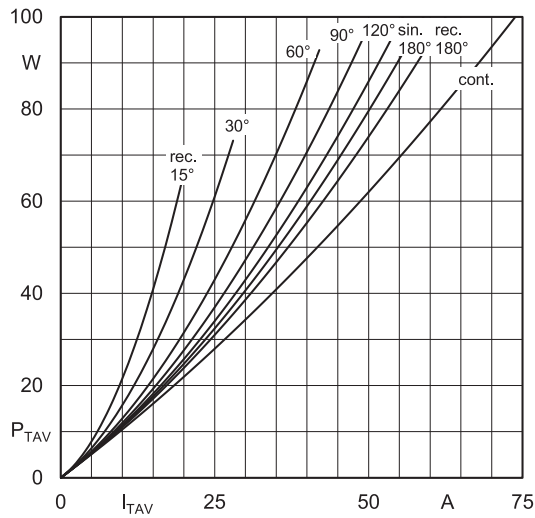


Fig. 1L: Power dissipation per thyristor/diode vs. on-state current

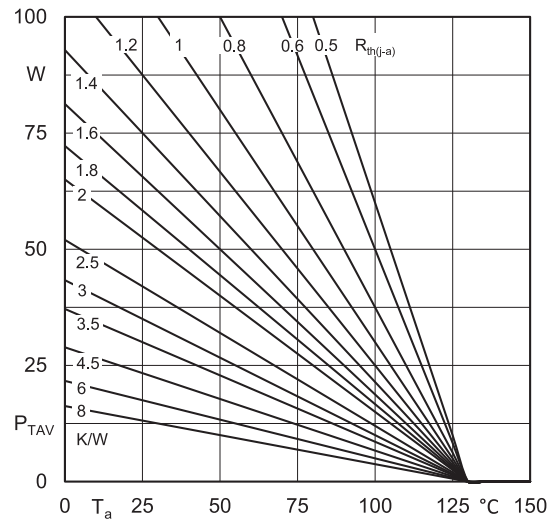


Fig. 1R: Max. power dissipation per chip vs. ambient temperature

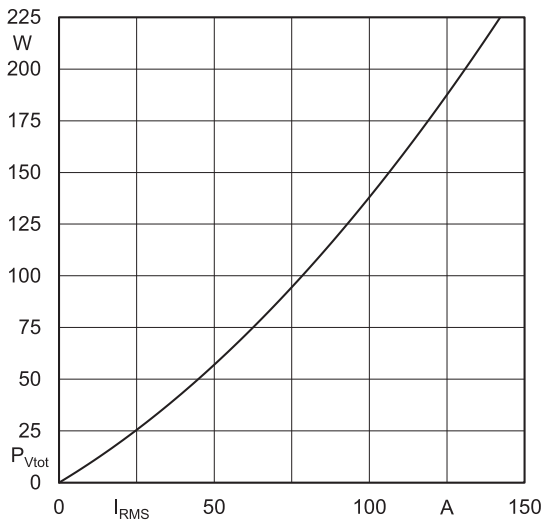


Fig. 2L: Max. power dissipation of one module vs. rms current

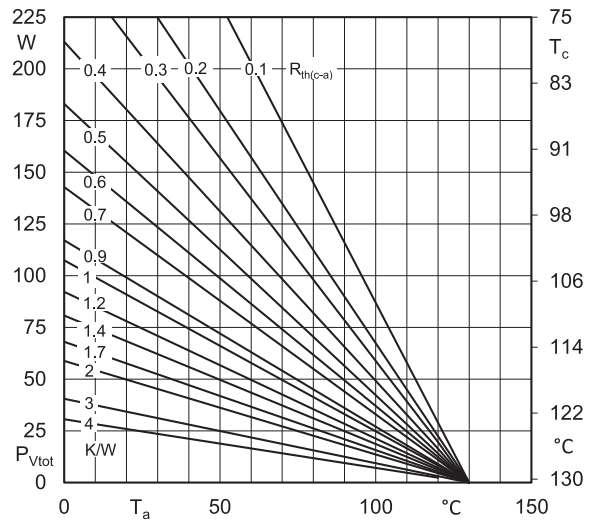


Fig. 2R: Max. power dissipation of one module vs. case temperature

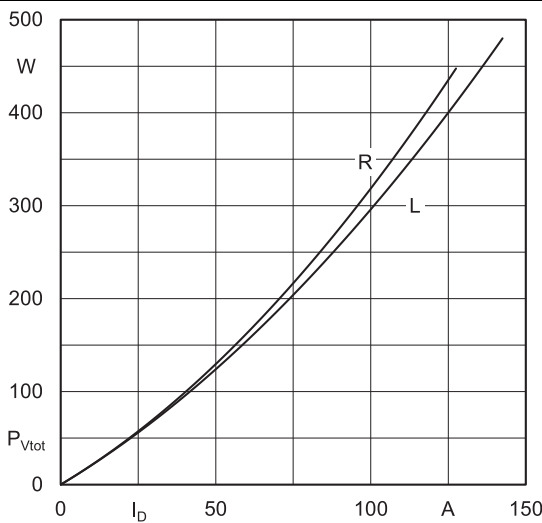


Fig. 3L: Max. power dissipation of two modules vs. direct current

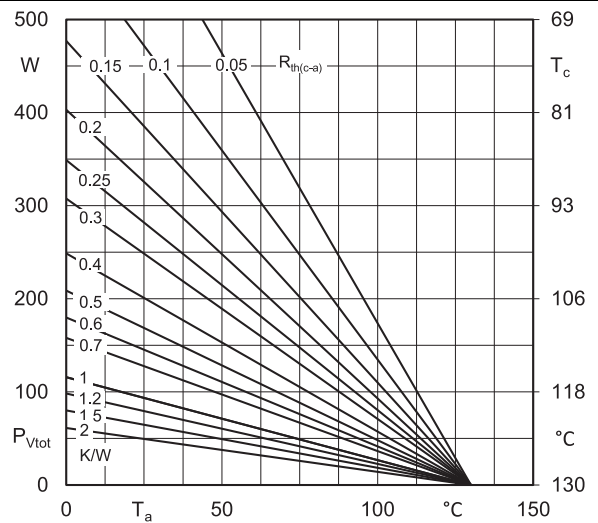


Fig. 3R: Max. power dissipation of two modules vs. case temperature

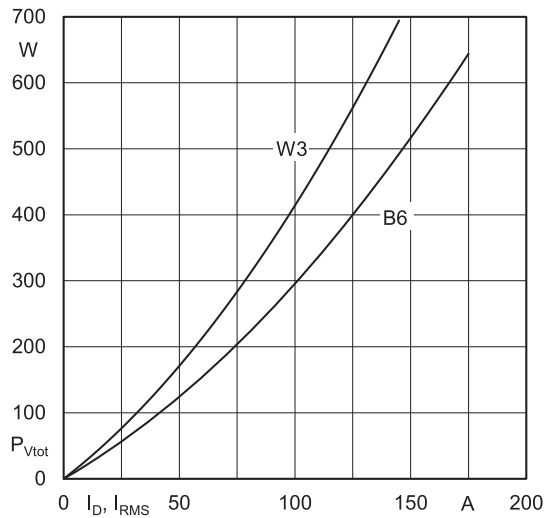


Fig. 4L: Max. power dissipation of three modules vs. direct current

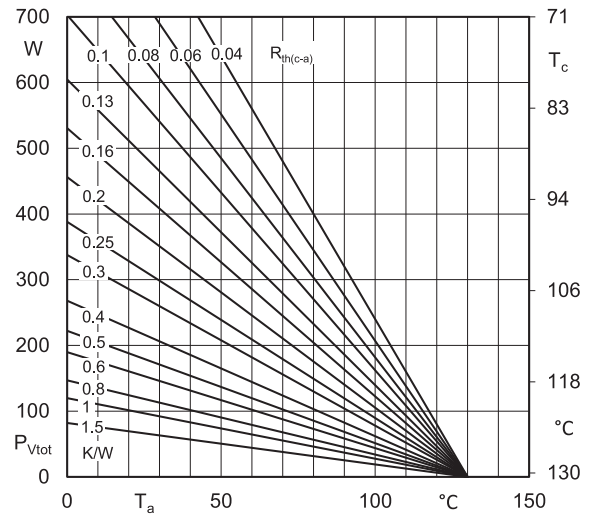


Fig. 4R: Max. power dissipation of three modules vs. case temperature

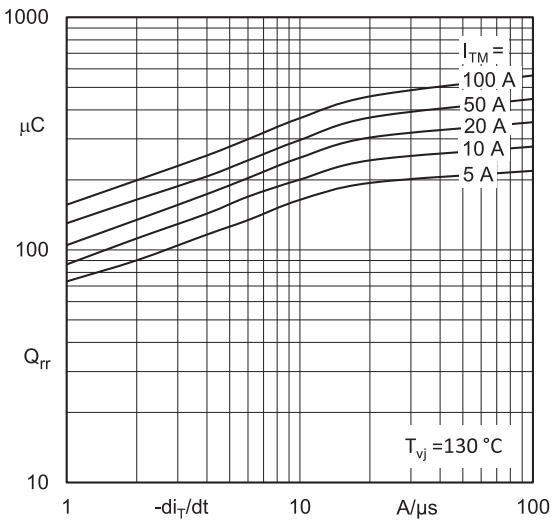


Fig. 5: Recovered charge vs. current decrease

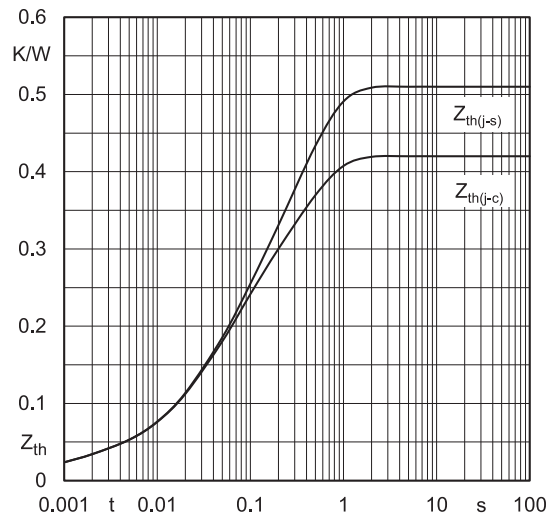


Fig. 6: Transient thermal impedance vs. time

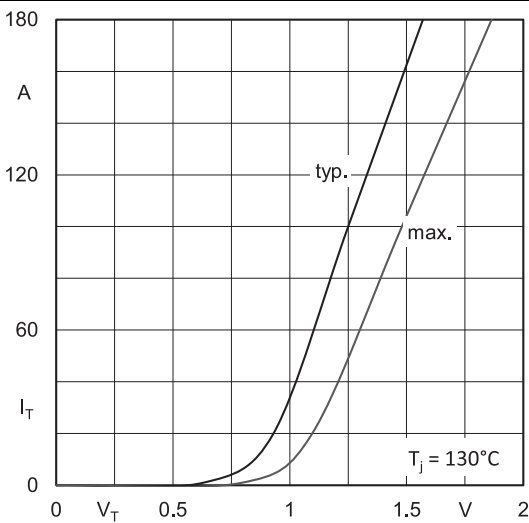


Fig. 7: On-state characteristics

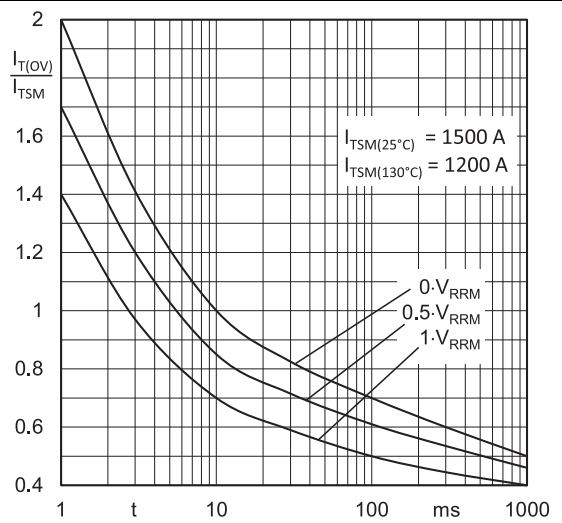


Fig. 8: Surge overload current vs. time

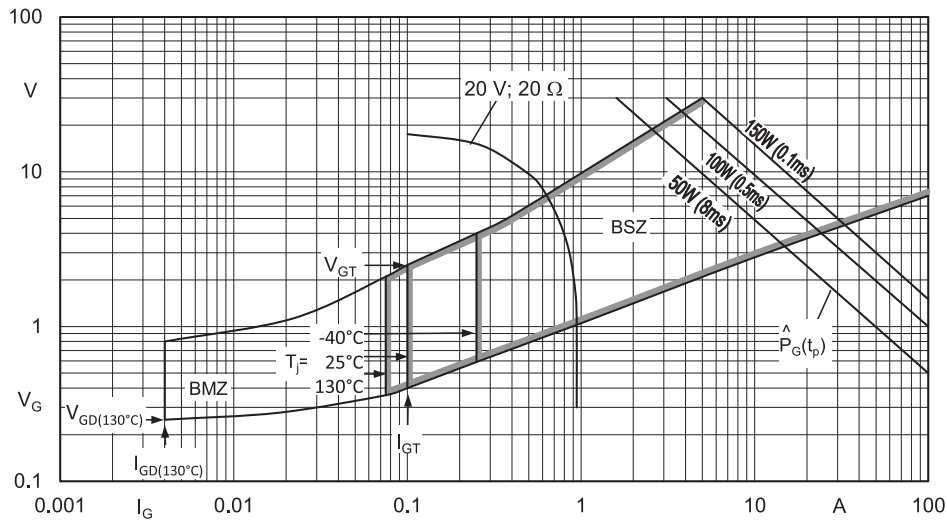
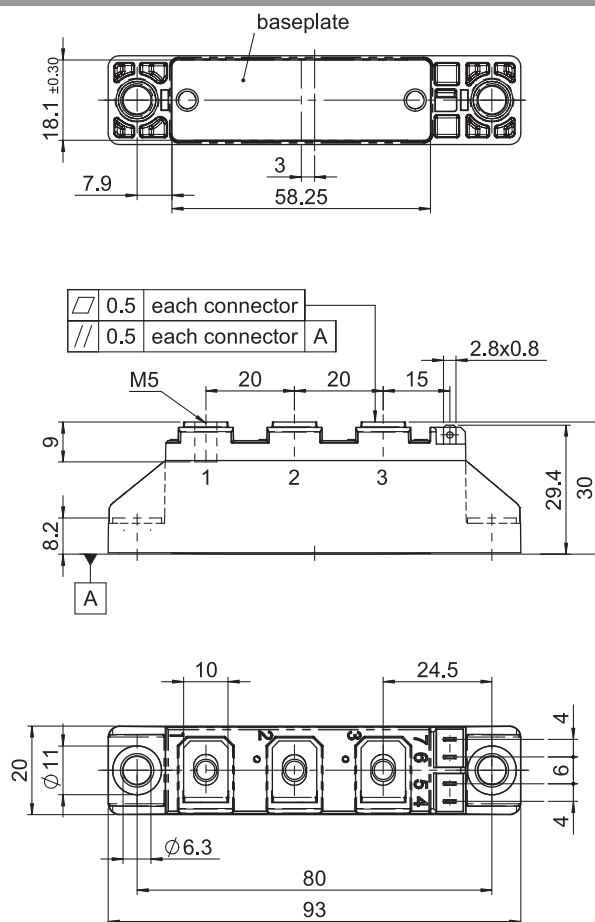
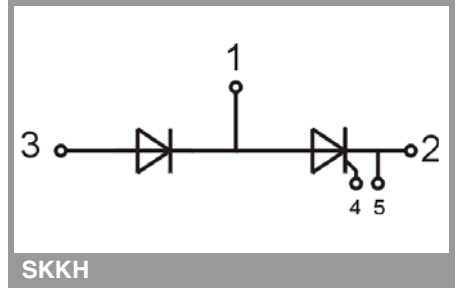


Fig. 9: Gate trigger characteristics



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

## SEMPACK 1



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

### \*IMPORTANT INFORMATION AND WARNINGS

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