

SEMiX® 1s

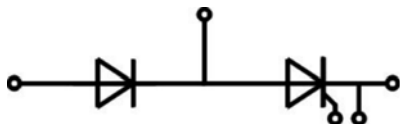
Rectifier Thyr./Diode Module SEMiX171KH16s

Features

- Terminal height 17 mm
- Chips soldered directly to isolated substrate

Typical Applications*

- Input Bridge Rectifier for AC/DC motor control
- Power supply



KH

Absolute Maximum Ratings

Symbol	Conditions		Values	Unit
Chip				
I _{T(AV)}	sinus 180°	T _c = 85 °C	170	A
		T _c = 100 °C	125	A
I _{TSM}	10 ms	T _j = 25 °C	5400	A
		T _j = 130 °C	4800	A
i ² t	10 ms	T _j = 25 °C	145000	A ² s
		T _j = 130 °C	115000	A ² s
V _{RSM}			1700	V
V _{RRM}			1600	V
V _{DRM}			1600	V
(di/dt) _{cr}	T _j = 130 °C		200	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}	AC sinus 50Hz	1 min	4000	V
		1 s	4800	V

Characteristics

Symbol	Conditions	min.	typ.	max.	Unit
Chip					
V_T	$T_j = 25\text{ °C}$, $I_T = 500\text{ A}$			1.6	V
$V_{T(TO)}$	$T_j = 130\text{ °C}$			0.85	V
r_T	$T_j = 130\text{ °C}$			1.5	mΩ
$I_{DD}; I_{RD}$	$T_j = 130\text{ °C}$, $V_{DD} = V_{DRM}$; $V_{RD} = V_{RRM}$			60	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	$T_j = 130\text{ °C}$		150		μs
I_H	$T_j = 25\text{ °C}$		150	400	mA
I_L	$T_j = 25\text{ °C}$, $R_G = 33\text{ Ω}$		300	1000	mA
V_{GT}	$T_j = 25\text{ °C}$, d.c.	2			V
I_{GT}	$T_j = 25\text{ °C}$, d.c.	150			mA
V_{GD}	$T_j = 130\text{ °C}$, d.c.			0.25	V
I_{GD}	$T_j = 130\text{ °C}$, d.c.			10	mA
$R_{th(j-c)}$					K/W
					K/W
$R_{th(j-c)}$	sin. 180°			0.18	K/W
				0.18	K/W
$R_{th(j-c)}$					K/W
					K/W
Module					
$R_{th(c-s)}$	per chip				K/W
	per module		0.075		K/W
M_s	to heat sink (M5)	3		5	Nm
M_t	to terminals (M6)	2.5		5	Nm
a				5 * 9,81	m/s ²
w			145		g

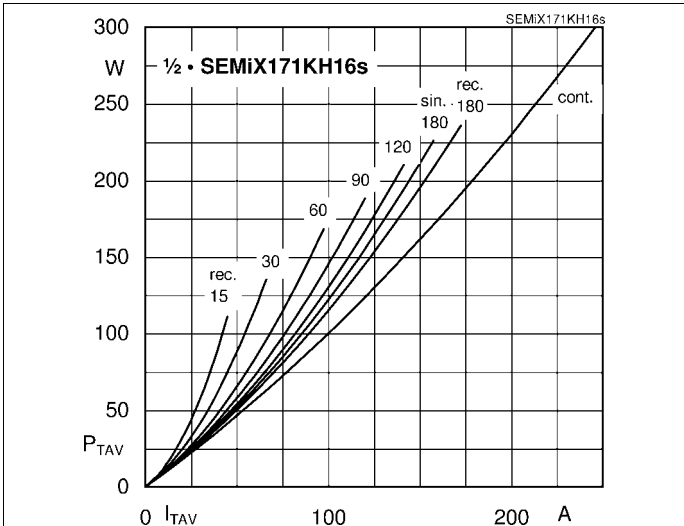


Fig. 1L: Power dissipation per thyristor/diode vs. on-state current

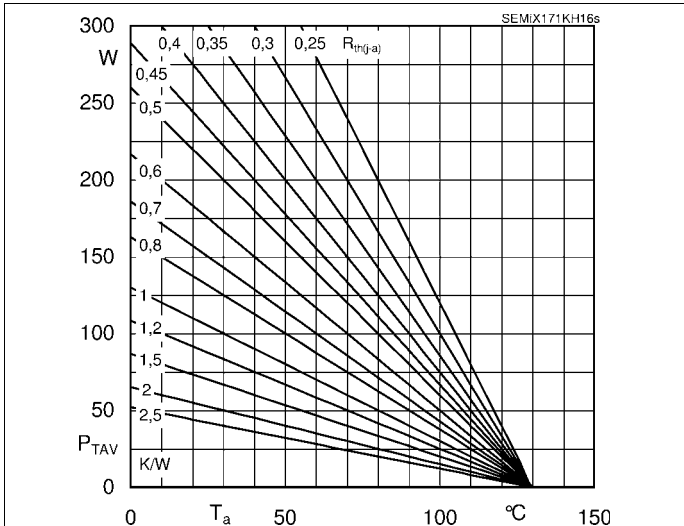


Fig. 1R: Power dissipation per thyristor/diode vs. ambient temperature

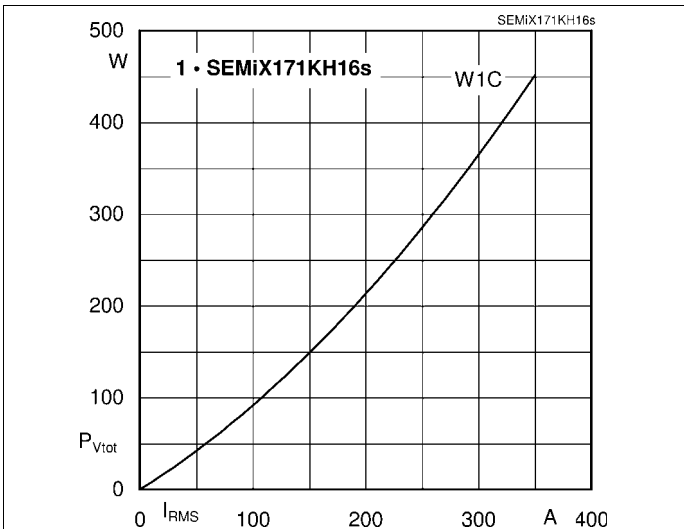


Fig. 2L: Power dissipation of one module vs. rms current

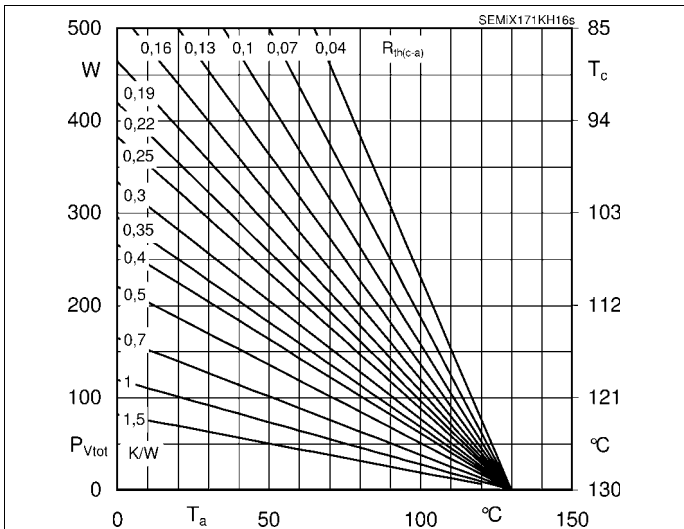


Fig. 2R: Power dissipation of one module vs. case temperature

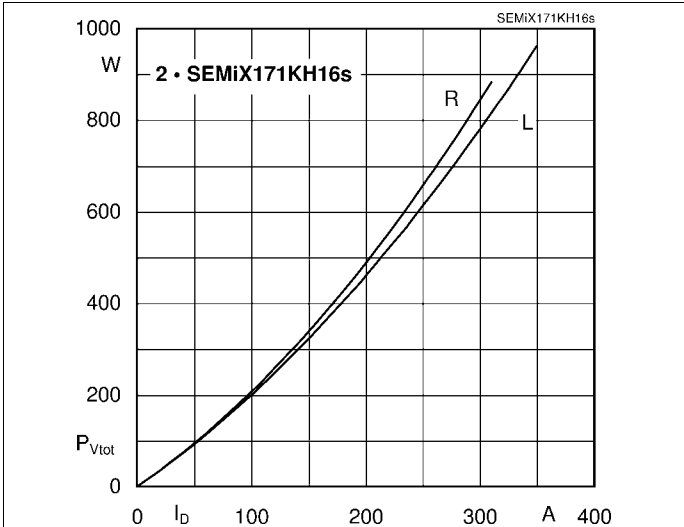


Fig. 3L: Power dissipation of two modules vs. direct current

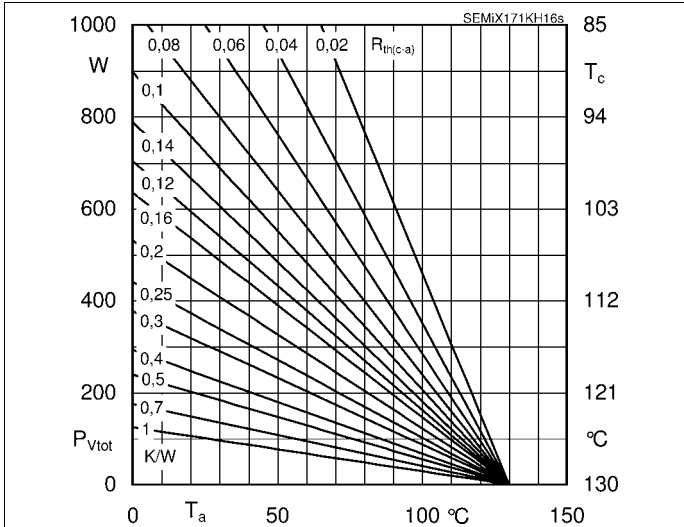


Fig. 3R: Power dissipation of two modules vs. case temperature

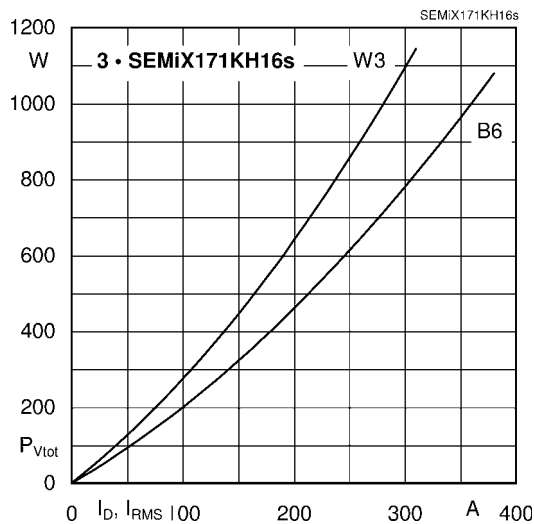


Fig. 4L: Power dissipation of three modules vs. direct current

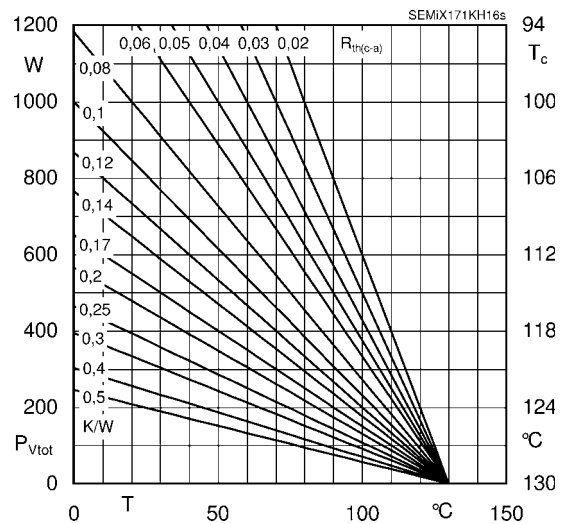


Fig. 4R: Power dissipation of three modules vs. case temperature

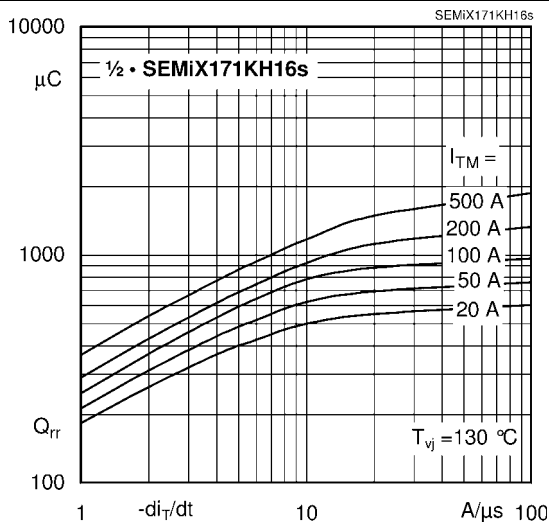


Fig. 5: Recovered charge vs. current decrease

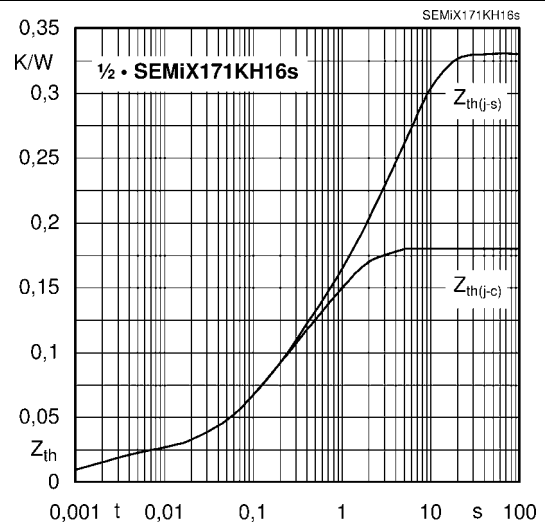


Fig. 6: Transient thermal impedance vs. time

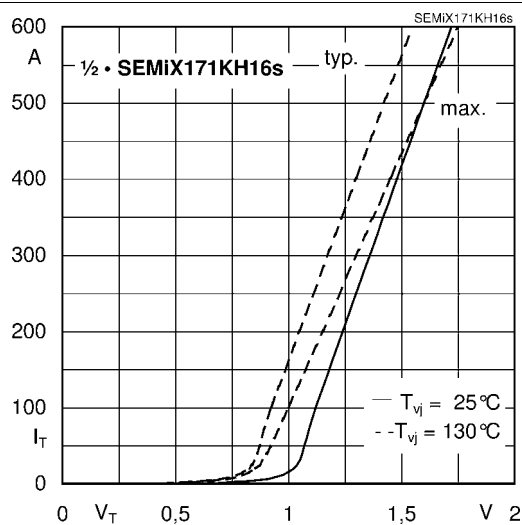


Fig. 7: On-state characteristics

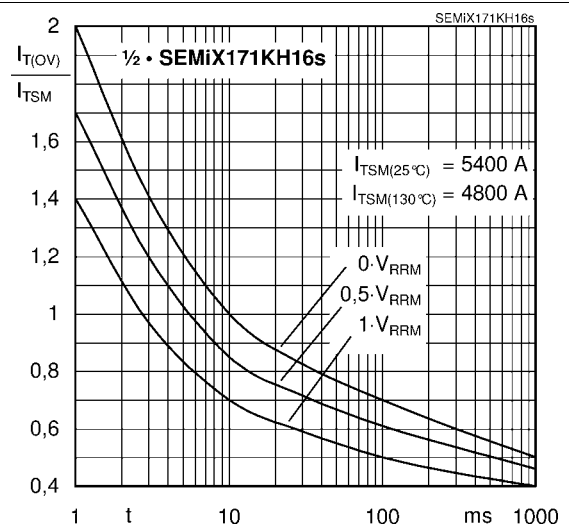


Fig. 8: Surge overload current vs. time

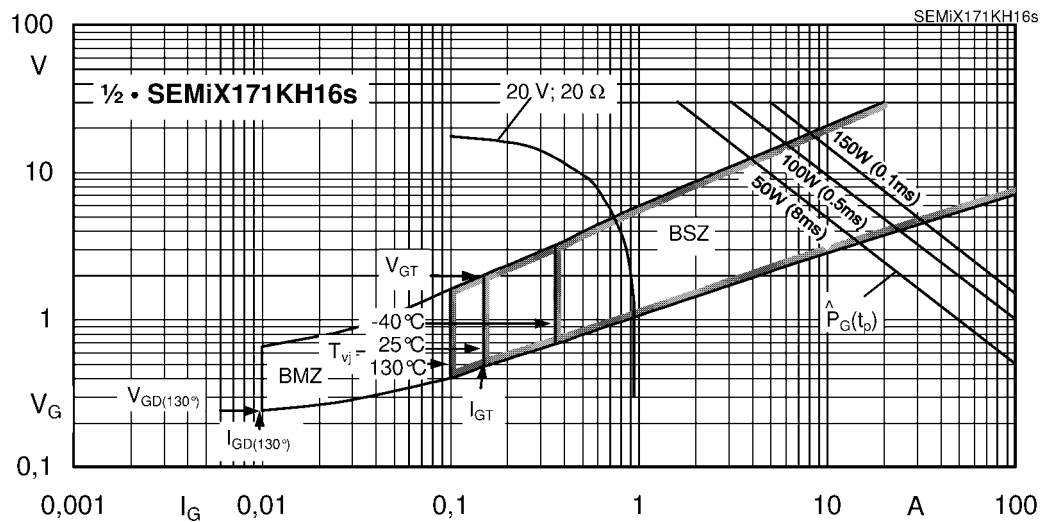
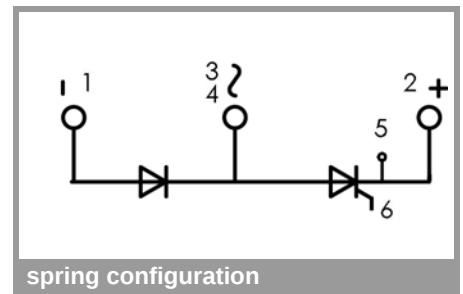
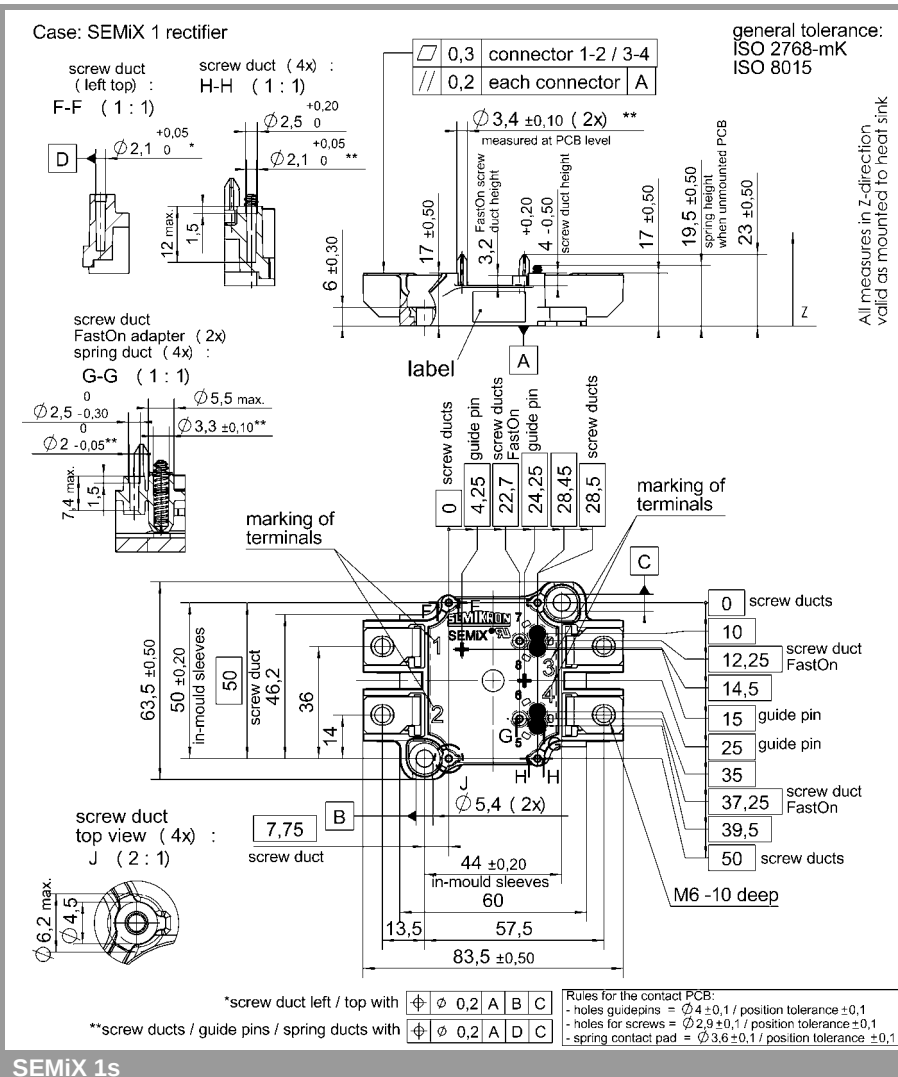


Fig. 9: Gate trigger characteristics



This is an electrostatic discharge sensitive device (ESDS), international standard IEC 60747-1, Chapter IX

* The specifications of our components may not be considered as an assurance of component characteristics. Components have to be tested for the respective application. Adjustments may be necessary. The use of SEMIKRON products in life support appliances and systems is subject to prior specification and written approval by SEMIKRON. We therefore strongly recommend prior consultation of our personal.