SEMiX171KH16s

SEMiX®1s

Rectifier Thyr./Diode Module

SEMiX171KH16s

Preliminary Data

Features

Terminal height 17 mm
Chips soldered directly to isolated substrate

Typical Applications

Input Bridge Rectifier for
AC/DC motor control
power supply

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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^2t	10 ms	T_j = 25 °C	146	kA^2s
i^2t		T_j = 130 °C	115	kA^2s
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 °C, I_T = 500 A				1.6	V
$V_{T(TO)}$	T_j = 130 °C				0.85	V
r_T	T_j = 130 °C				1.5	mΩ
I_{DD};I_{RD}	T_j = 130 °C, V_{DD} = V_{DRM}; V_{RD} = V_{RRM}				60	mA
t_{gd}	T_j = 25 °C, I_G = 1 A, di_G/dt = 1 A/µs			1		µs
t_{gr}	V_D = 0.67 * V_{DRM}			2		µs
t_q	T_j = 130 °C					µs
I_H	T_j = 25 °C			150	400	mA
I_L	T_j = 25 °C, R_G = 33 Ω			300	1000	mA
V_{GT}	T_j = 25 °C, d.c.		2			V
I_{GT}	T_j = 25 °C, d.c.		150			mA
V_{GD}	T_j = 130 °C, d.c.				0.25	V
I_{GD}	T_j = 130 °C, d.c.				10	mA
$R_{th(j-c)}$		per thyristor				K/W
		per diode				K/W
$R_{th(j-c)}$	sin. 180°	per thyristor			0.18	K/W
		per diode			0.18	K/W
$R_{th(j-c)}$		per thyristor				K/W
		per diode				K/W
Module						
$R_{th(c-s)}$						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

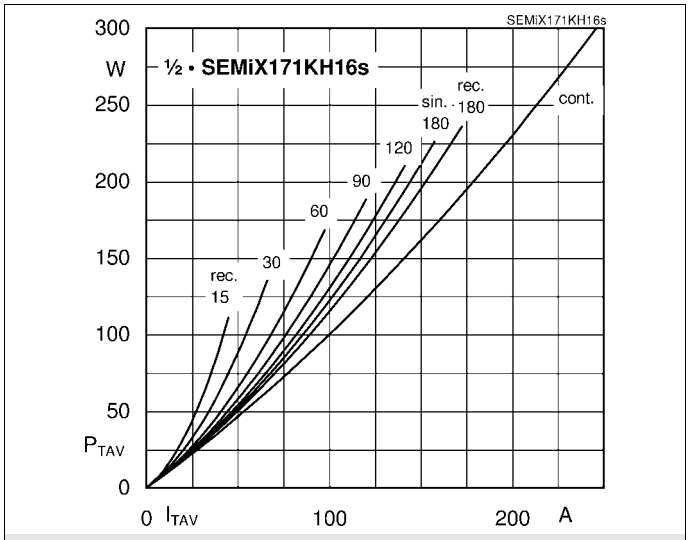


Fig. 1L: Power dissipation per thyristor/diode vs. on-state current

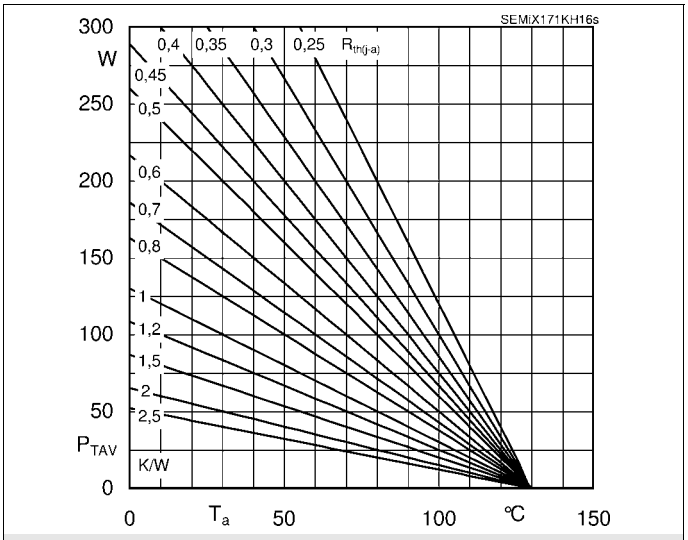


Fig. 1R: Power dissipation per thyristor/diode vs. ambient temperature

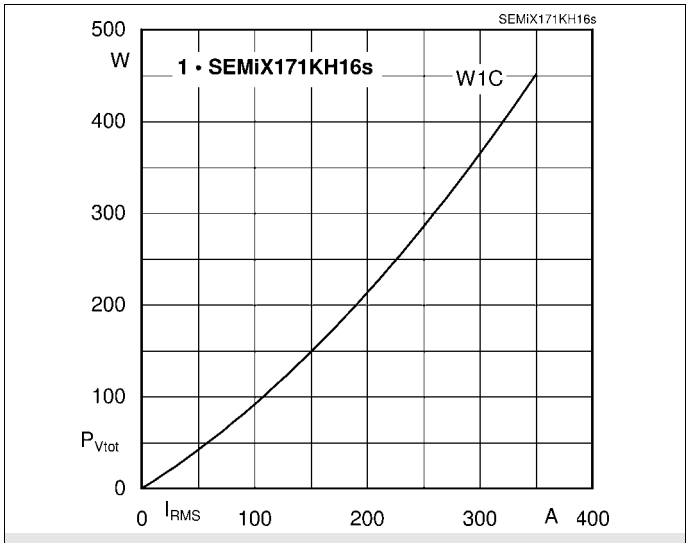


Fig. 2L: Power dissipation of one module vs. rms current

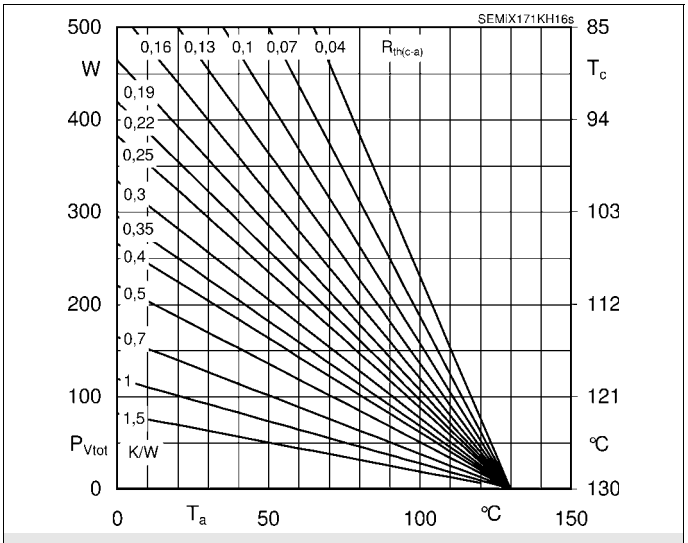


Fig. 2R: Power dissipation of one module vs. case temperature

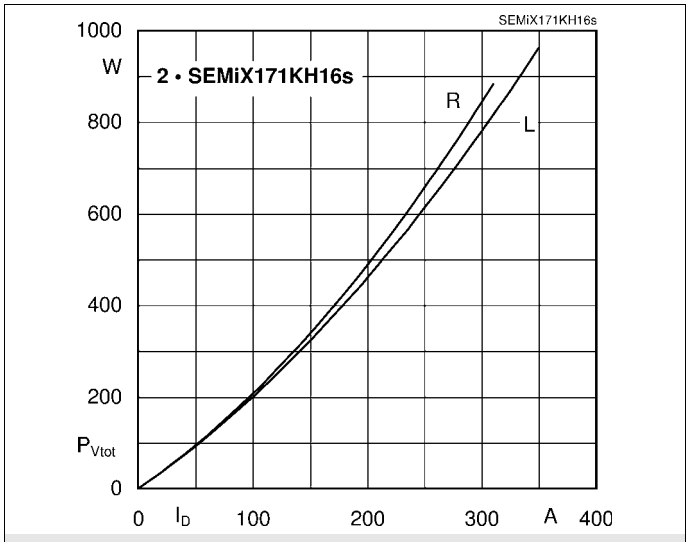


Fig. 3L: Power dissipation of two modules vs. direct current

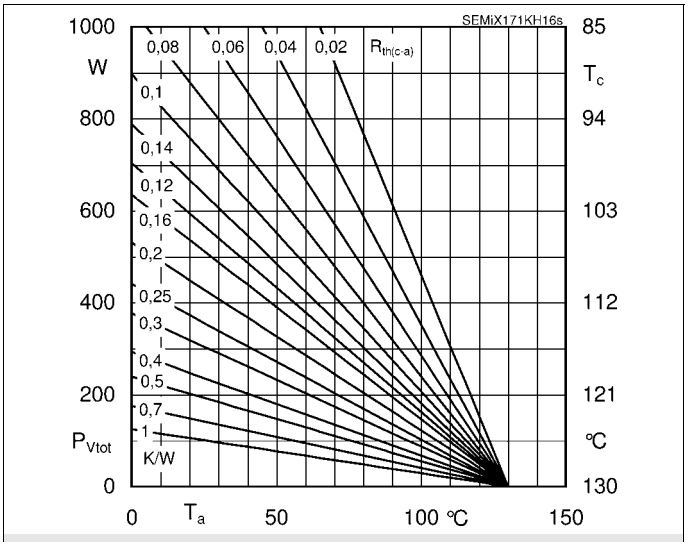


Fig. 3R: Power dissipation of two modules vs. case temperature

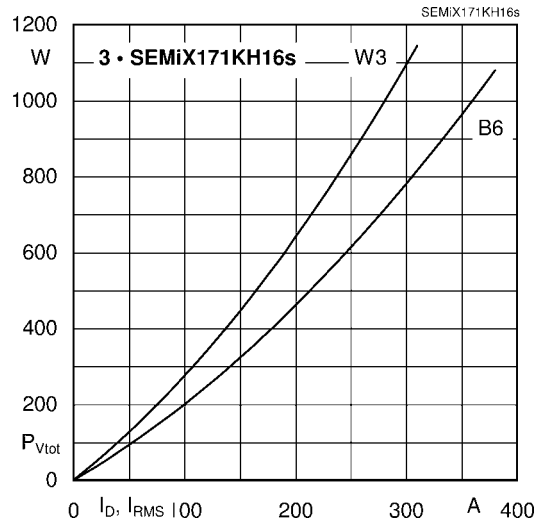


Fig. 4L: Power dissipation of three modules vs. direct current

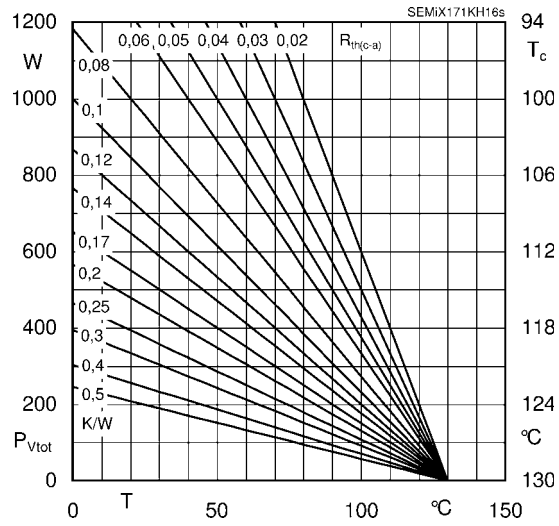


Fig. 4R: Power dissipation of three modules vs. case temperature

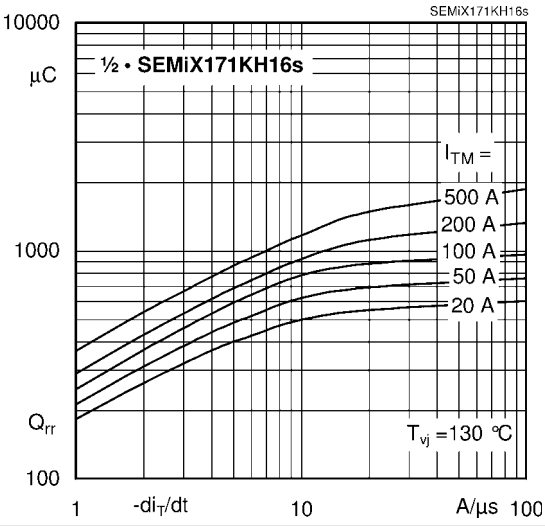


Fig. 5: Recovered charge vs. current decrease

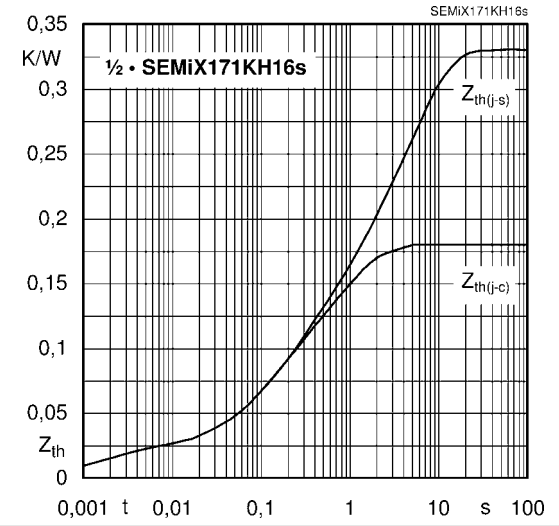


Fig. 6: Transient thermal impedance vs. time

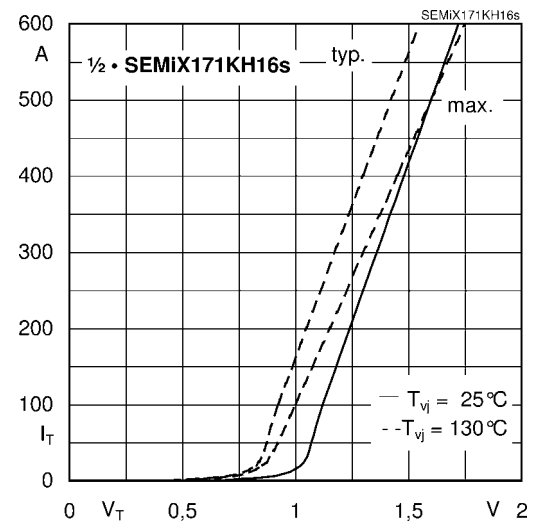


Fig. 7: On-state characteristics

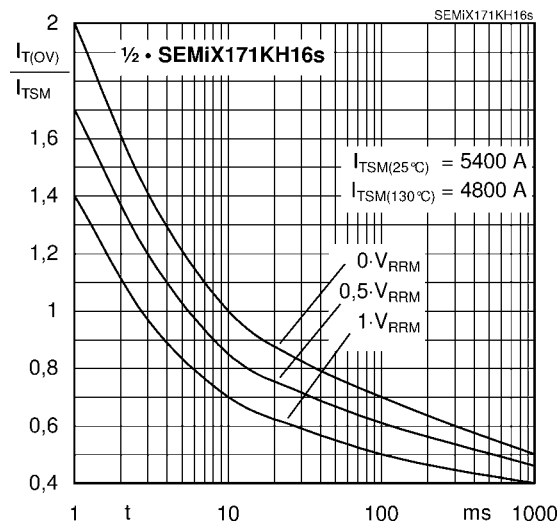


Fig. 8: Surge overload current vs. time

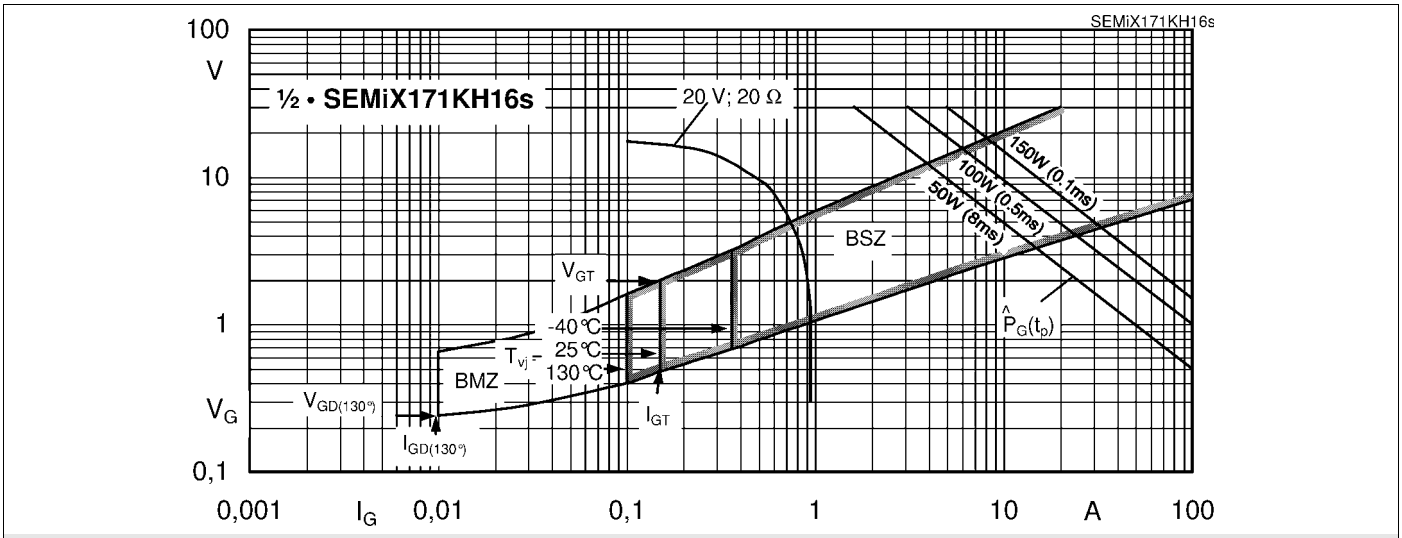
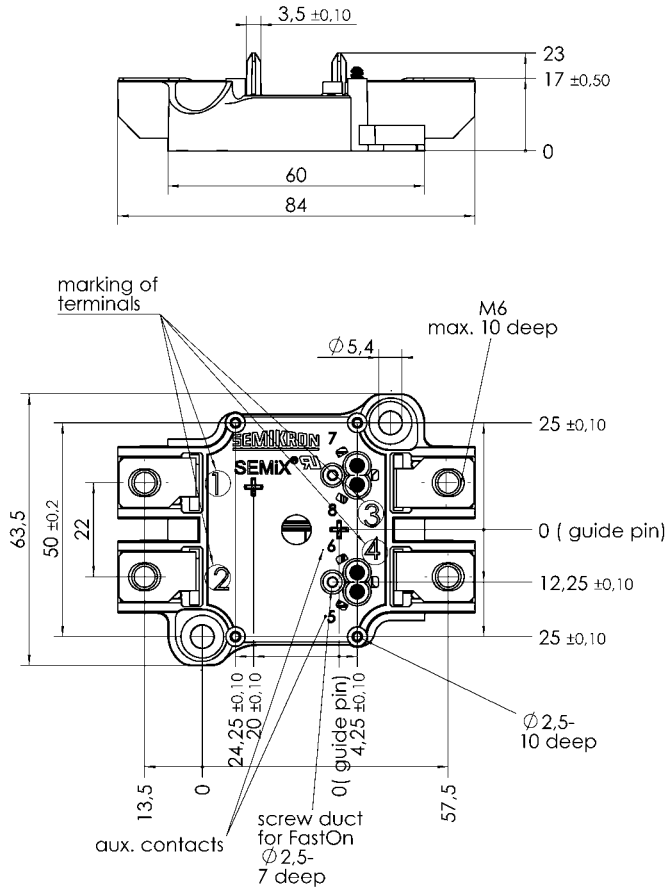


Fig. 9: Gate trigger characteristics



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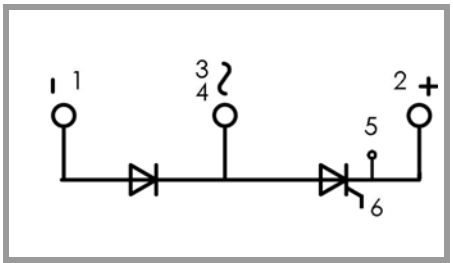

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