



SEMiX®1s

Rectifier Thyr./Diode Module

SEMiX171KH16s

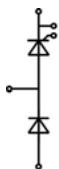
Preliminary Data

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 ² t	10 ms	T _j = 25 °C	146	kA ² s
i ² t		T _j = 130 °C	115	kA 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 °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

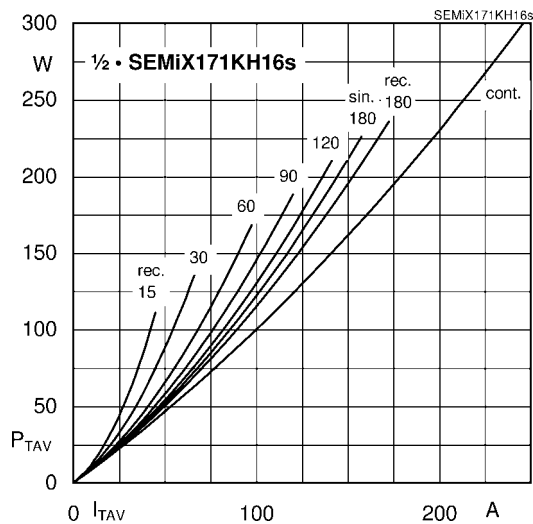


Fig. 1L: Power dissipation per thyristor/diode vs. on-state current

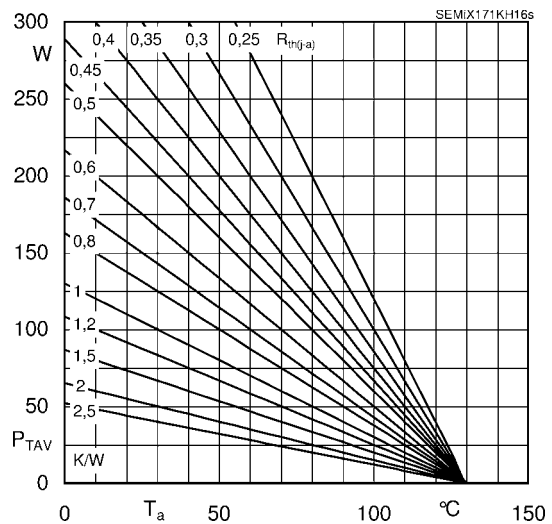


Fig. 1R: Power dissipation per thyristor/diode vs. ambient temperature

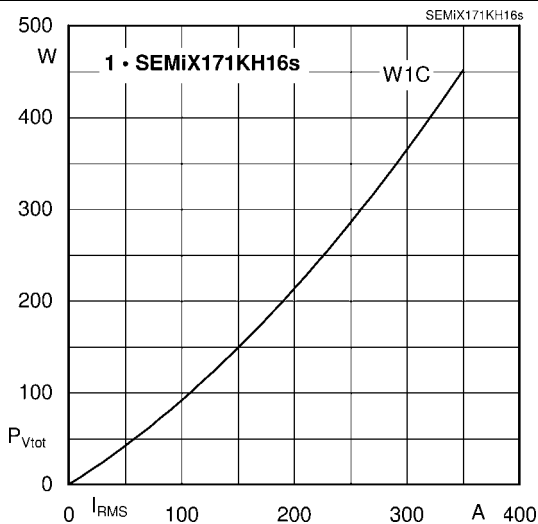


Fig. 2L: Power dissipation of one module vs. rms current

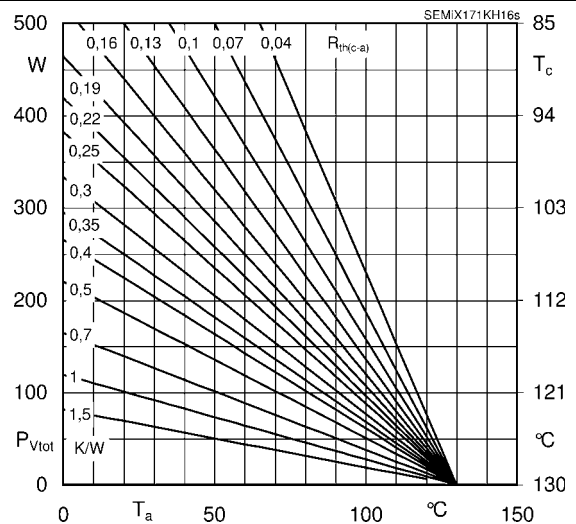


Fig. 2R: Power dissipation of one module vs. case temperature

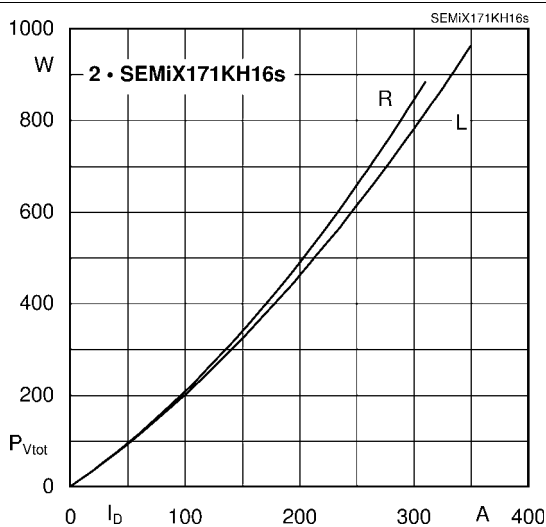


Fig. 3L: Power dissipation of two modules vs. direct current

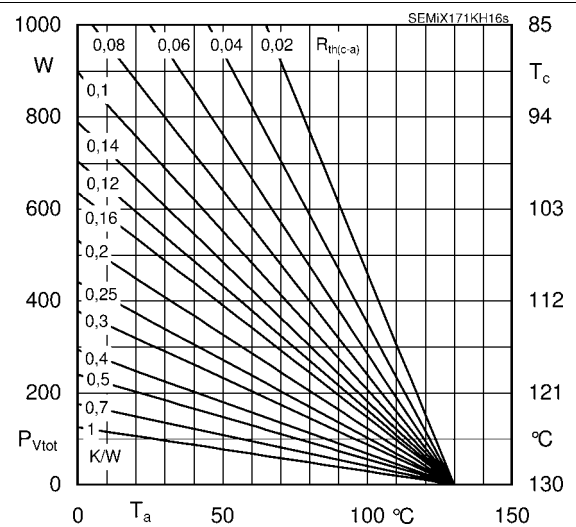


Fig. 3R: Power dissipation of two modules vs. case temperature

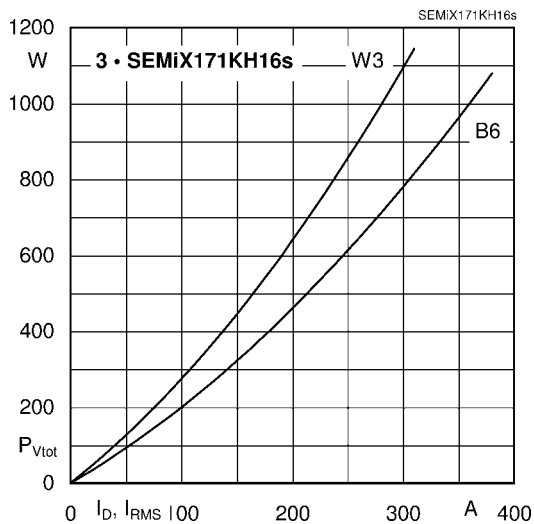


Fig. 4L: Power dissipation of three modules vs. direct current

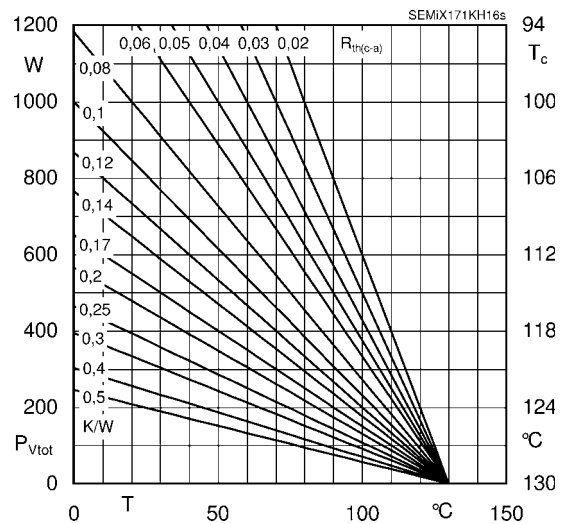


Fig. 4R: Power dissipation of three modules vs. case temperature

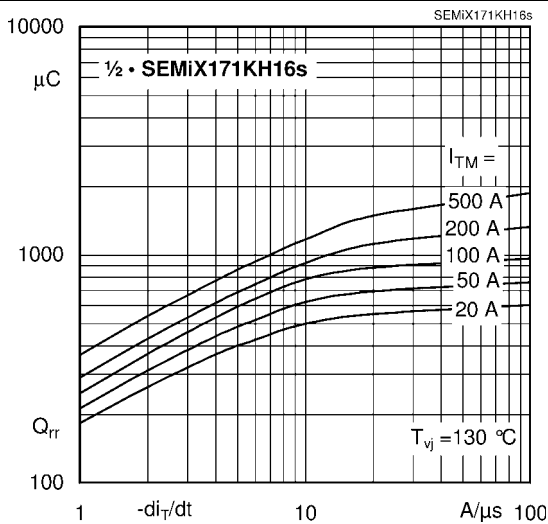


Fig. 5: Recovered charge vs. current decrease

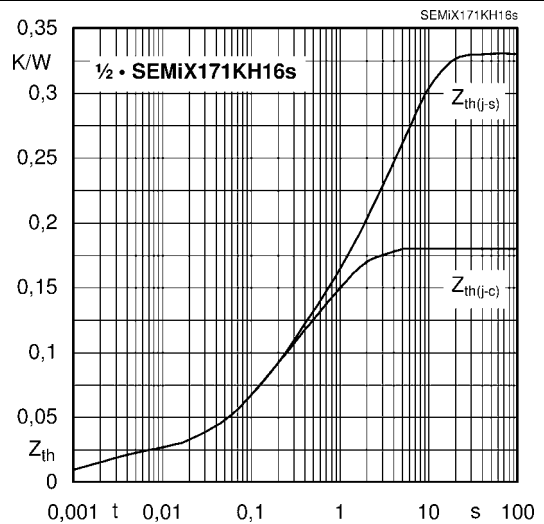


Fig. 6: Transient thermal impedance vs. time

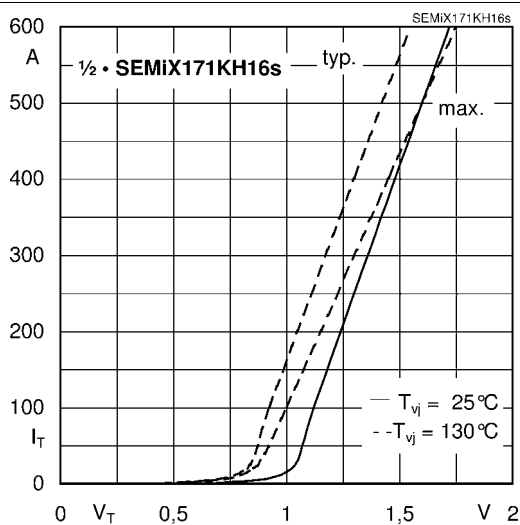


Fig. 7: On-state characteristics

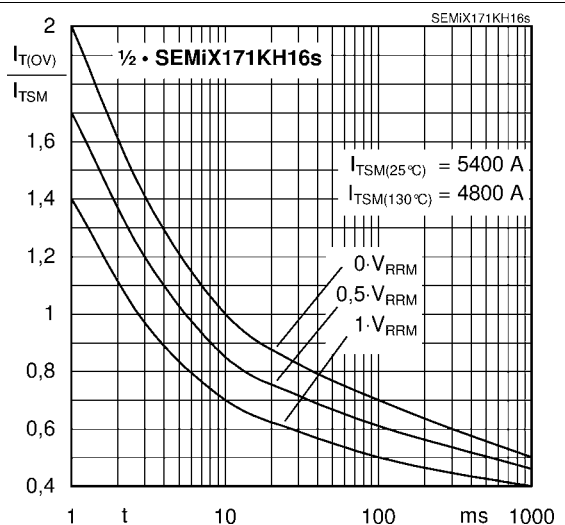


Fig. 8: Surge overload current vs. time

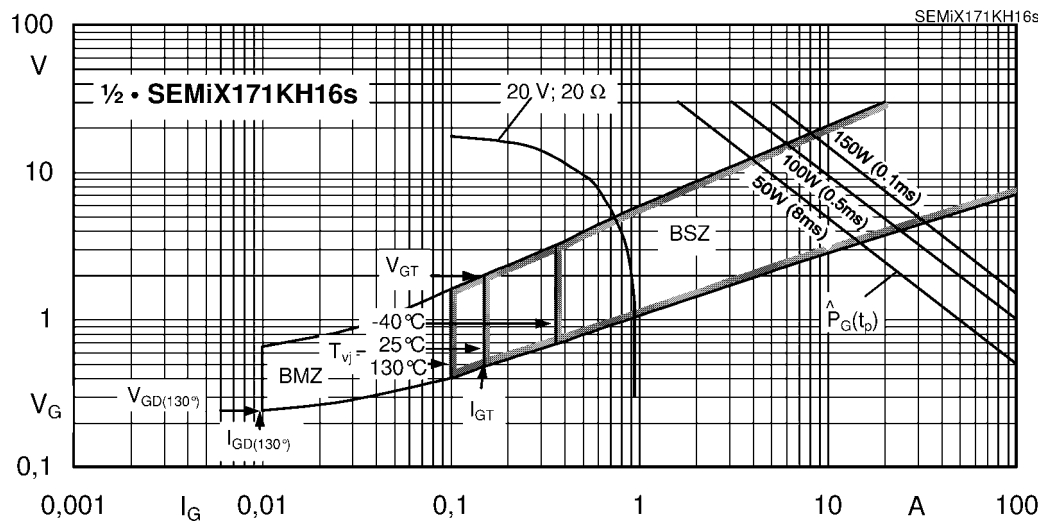
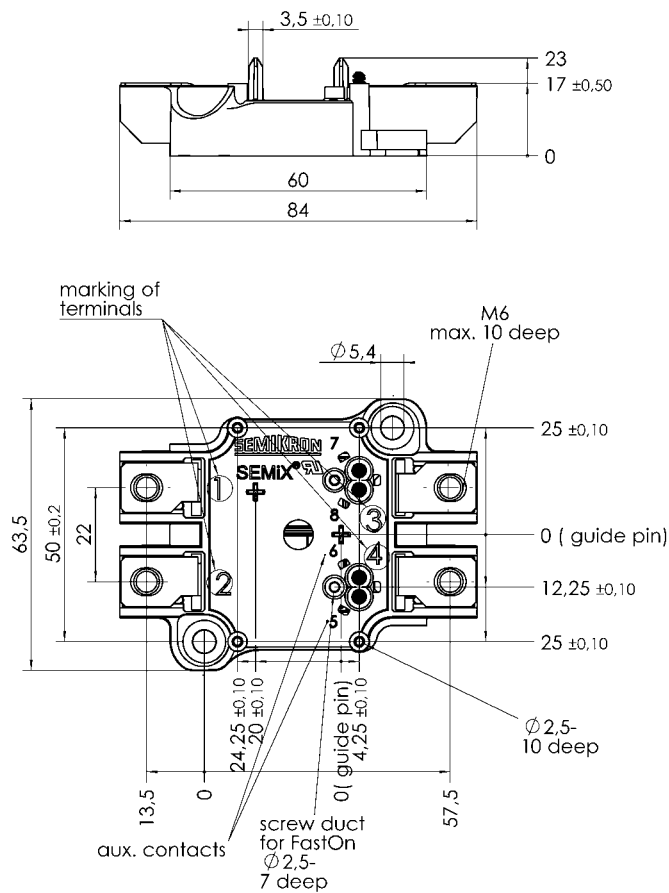
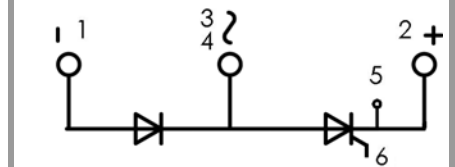


Fig. 9: Gate trigger characteristics



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