

SEMiX141KT16s



SEMiX® 1s

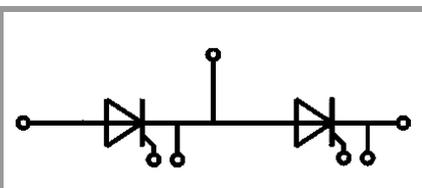
Rectifier Thyristor Module SEMiX141KT16s

Features

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

Typical Applications*

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



KT

Absolute Maximum Ratings				
Symbol	Conditions		Values	Unit
Chip				
$I_{T(AV)}$	sinus 180°	$T_c = 85\text{ °C}$	140	A
		$T_c = 100\text{ °C}$	105	A
I_{TRMS}				A
I_{TSM}	10 ms	$T_j = 25\text{ °C}$	3400	A
		$T_j = 130\text{ °C}$	3000	A
i^2t	10 ms	$T_j = 25\text{ °C}$	57800	A ² s
		$T_j = 130\text{ °C}$	45000	A ² s
V_{RSM}			1700	V
V_{RRM}			1600	V
V_{DRM}			1600	V
$(di/dt)_{cr}$	$T_j = 130\text{ °C}$		200	A/μs
$(dv/dt)_{cr}$	$T_j = 130\text{ °C}$		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	$T_j = 25\text{ °C}$, $I_T = 360\text{ A}$				1.65	V
$V_{T(TO)}$	$T_j = 130\text{ °C}$				0.85	V
r_T	$T_j = 130\text{ °C}$				2.1	mΩ
$I_{DD}; I_{RD}$	$T_j = 130\text{ °C}$, $V_{DD} = V_{DRM}$; $V_{RD} = V_{RRM}$				60	mA
t_{gd}	$T_j = 25\text{ °C}$, $I_G = 1\text{ A}$, $di_G/dt = 1\text{ A}/\mu\text{s}$			1		μs
t_{gr}	$V_D = 0.67 \cdot V_{DRM}$			2		μs
t_q	$T_j = 130\text{ °C}$			120		μs
I_H	$T_j = 25\text{ °C}$			100	300	mA
I_L	$T_j = 25\text{ °C}$, $R_G = 33\text{ Ω}$			200	500	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
$R_{th(j-c)}$	continuous DC	per thyristor				K/W
		per diode				K/W
$R_{th(j-c)}$	sin. 180°	per thyristor			0.21	K/W
		per diode				K/W
$R_{th(j-c)}$	rec. 120°	per thyristor				K/W
		per diode				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

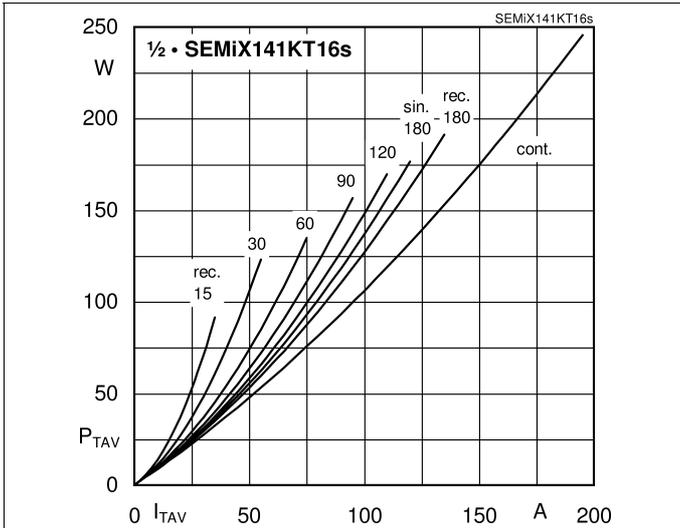


Fig. 1L: Power dissipation per thyristor/diode vs. on-state current

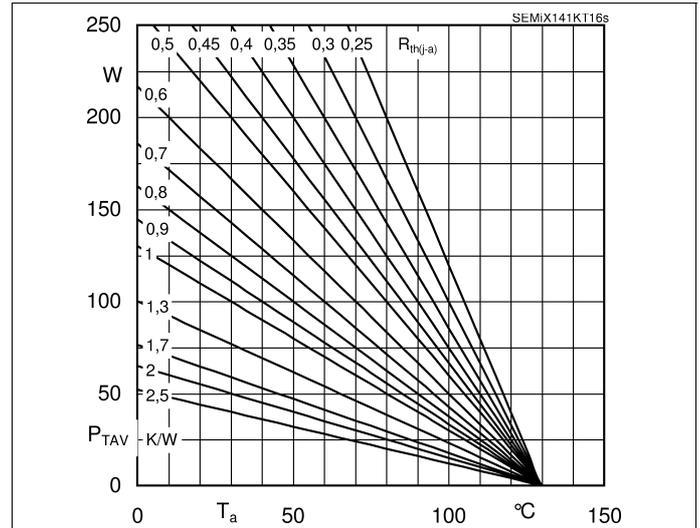


Fig. 1R: Power dissipation per thyristor/diode vs. ambient temperature

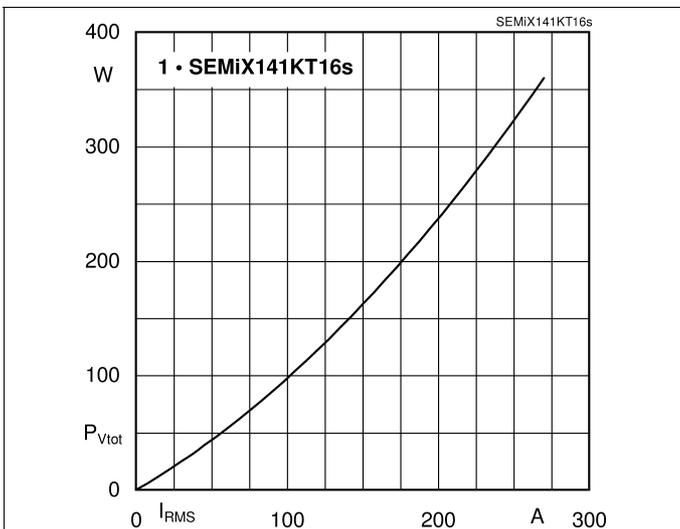


Fig. 2L: Power dissipation of one module vs. rms current

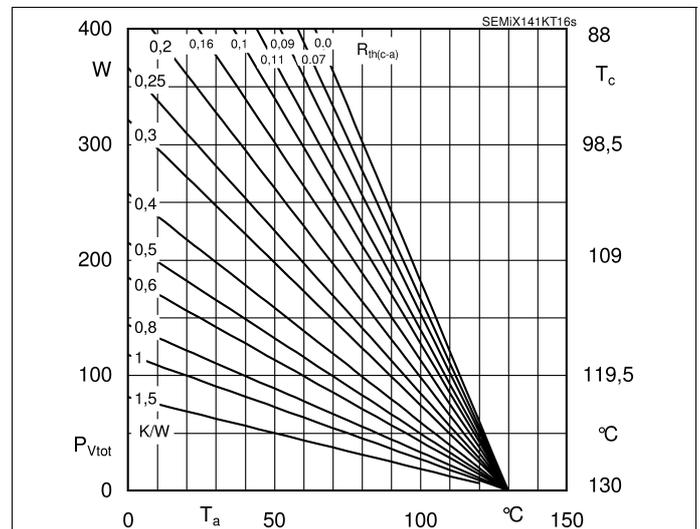


Fig. 2R: Power dissipation of one module vs. case temperature

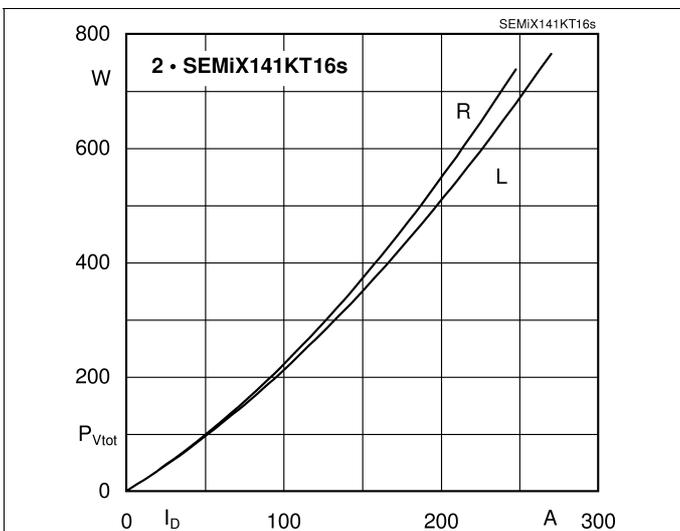


Fig. 3L: Power dissipation of two modules vs. direct current

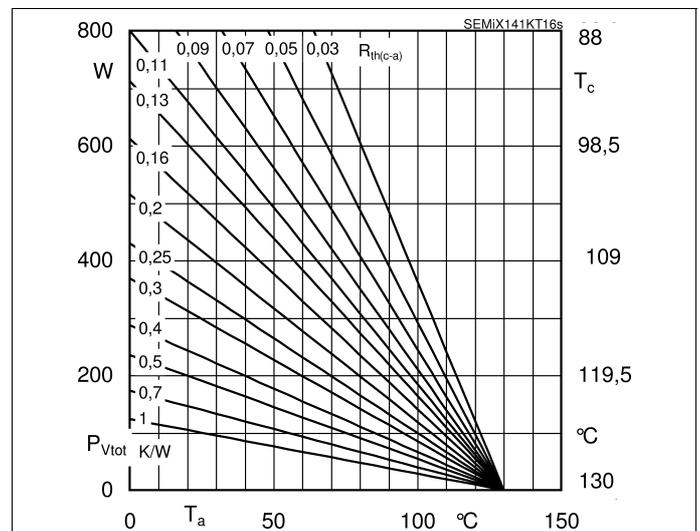


Fig. 3R: Power dissipation of two modules vs. case temperature

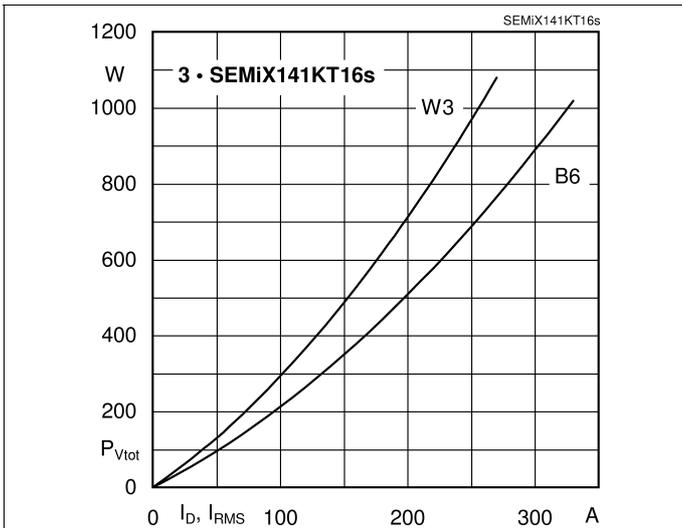


Fig. 4L: Power dissipation of three modules vs. direct current

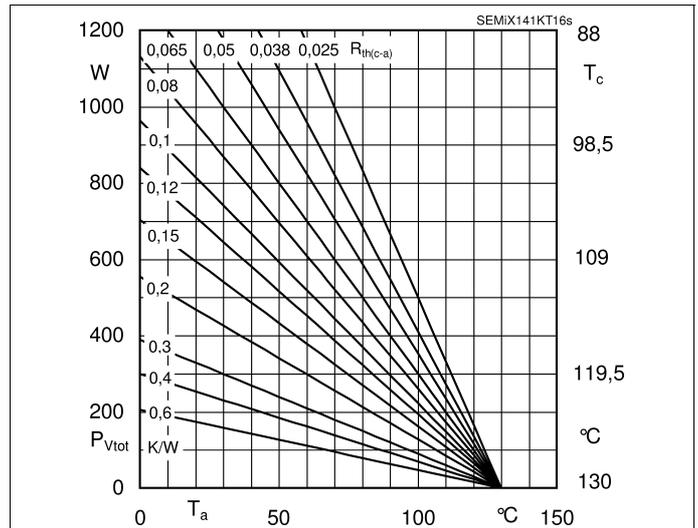


Fig. 4R: Power dissipation of three modules vs. case temperature

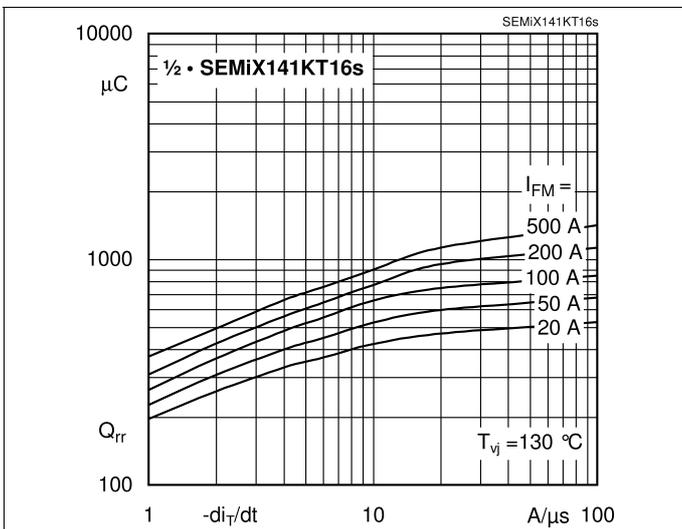


Fig. 5: Recovered charge vs. current decrease

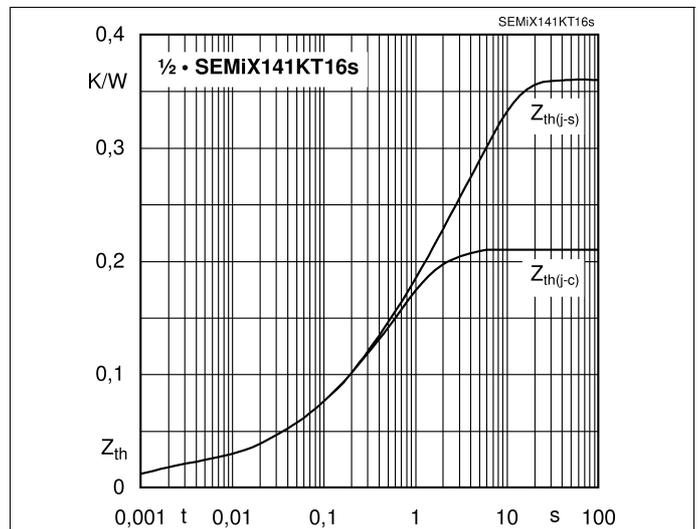


Fig. 6: Transient thermal impedance vs. time

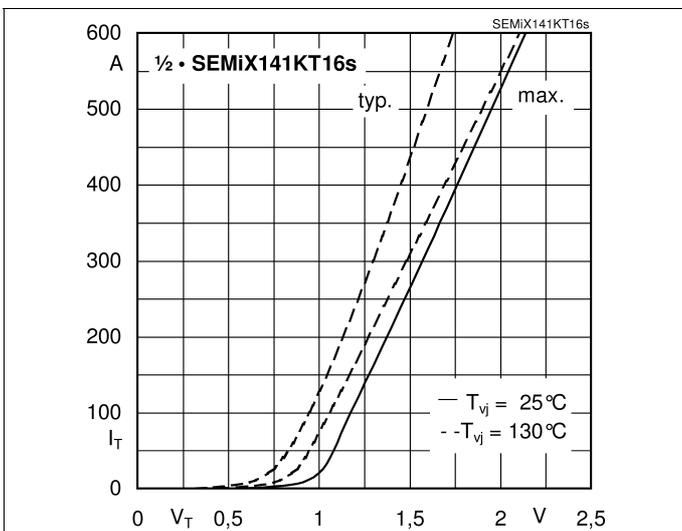


Fig. 7: On-state characteristics

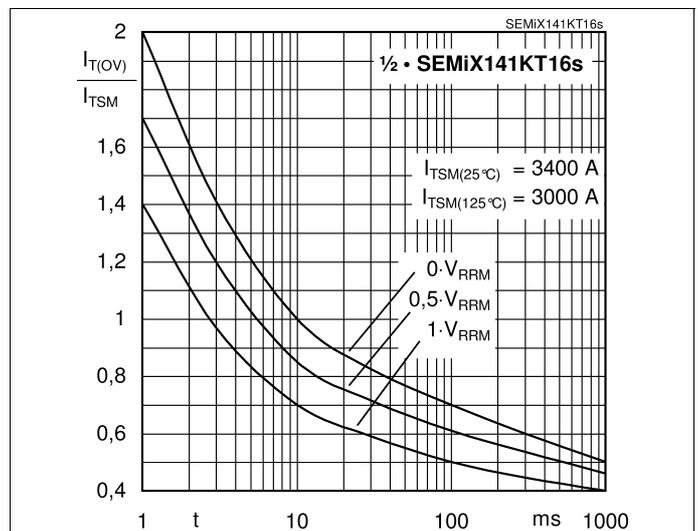


Fig. 8: Surge overload current vs. time

