

# SEMiX141KT16s



SEMiX<sup>®</sup> 1s

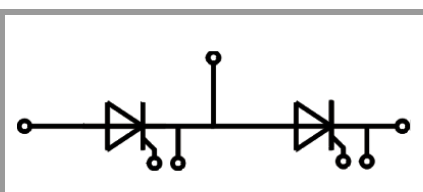
## Rectifier Thyristor Module SEMiX141KT16s

### 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
<b>Chip</b>				
$I_{T(AV)}$	sinus 180°	$T_c = 85\text{ °C}$	140	A
		$T_c = 100\text{ °C}$	105	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 <sup>2</sup> s
		$T_j = 130\text{ °C}$	45000	A <sup>2</sup> 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
<b>Module</b>				
$T_{stg}$			-40 ... 125	°C
$V_{isol}$	AC sinus 50Hz	1 min	4000	V
		1 s	4800	V

Characteristics						
Symbol	Conditions		min.	typ.	max.	Unit
<b>Chip</b>						
$V_T$	$T_j = 25\text{ °C}$ , $I_T = 360\text{ A}$				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
$t_{gd}$	$T_j = 25\text{ °C}$ , $I_G = 1\text{ A}$ , $di_G/dt = 1\text{ A/μs}$			1		μs
$t_{gr}$	$V_D = 0.67 * V_{DRM}$			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 module				K/W
$R_{th(j-c)}$	sin. 180°	per thyristor			0.21	K/W
		per module				K/W
$R_{th(j-c)}$		per thyristor				K/W
		per module				K/W
<b>Module</b>						
$R_{th(c-s)}$	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 <sup>2</sup>
$w$				145		g

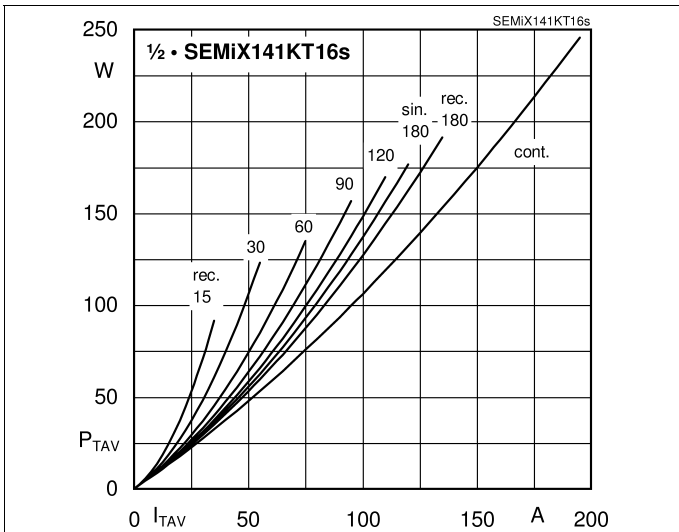


Fig. 1L: Power dissipation per thyristor/diode vs. on-state current

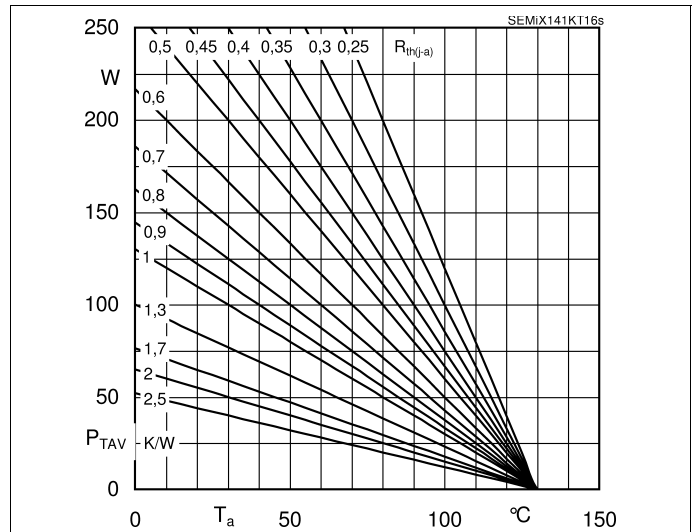


Fig. 1R: Power dissipation per thyristor/diode vs. ambient temperature

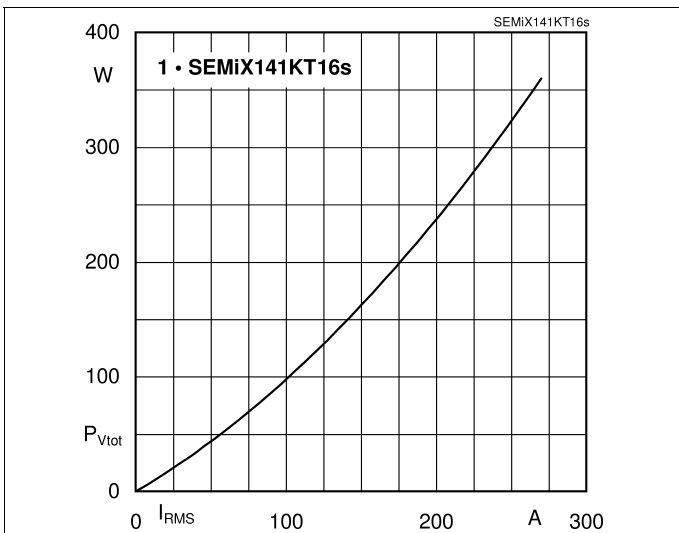


Fig. 2L: Power dissipation of one module vs. rms current

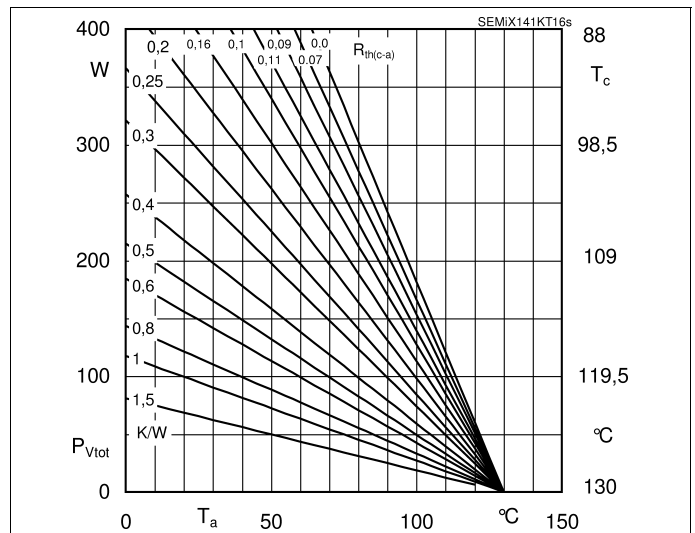


Fig. 2R: Power dissipation of one module vs. case temperature

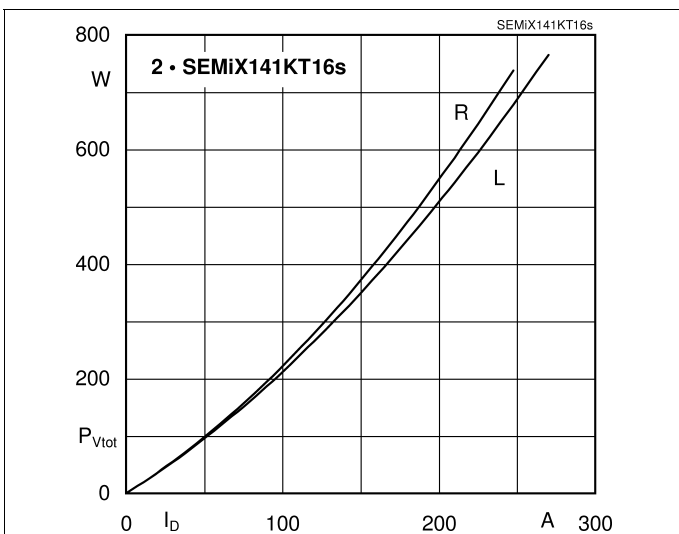


Fig. 3L: Power dissipation of two modules vs. direct current

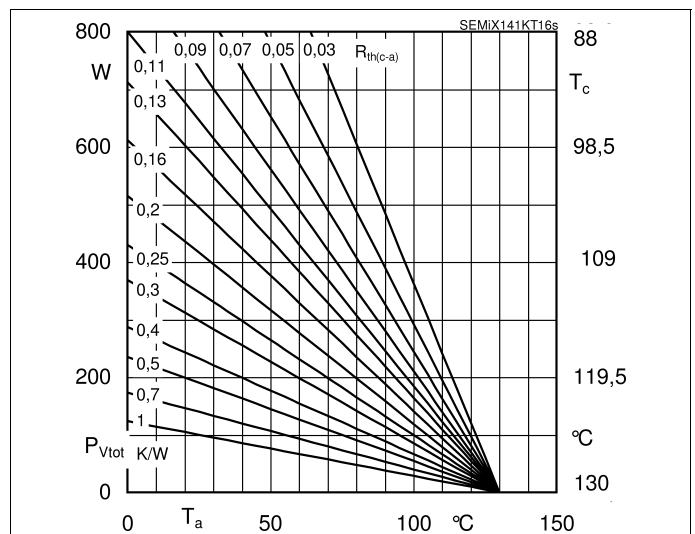


Fig. 3R: Power dissipation of two modules vs. case temperature

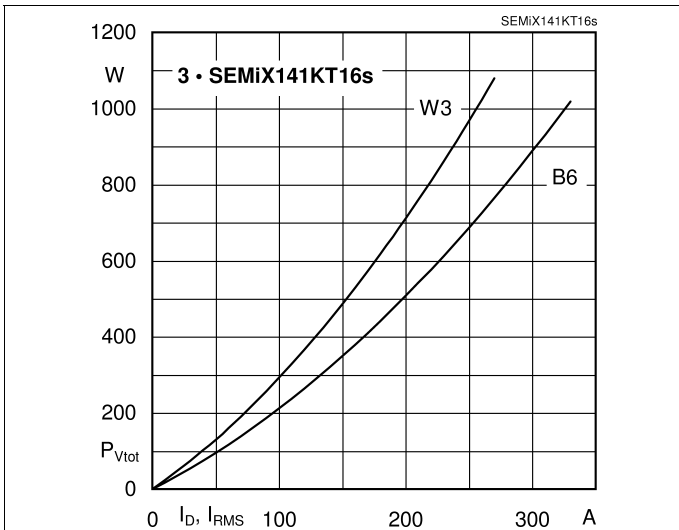


Fig. 4L: Power dissipation of three modules vs. direct current

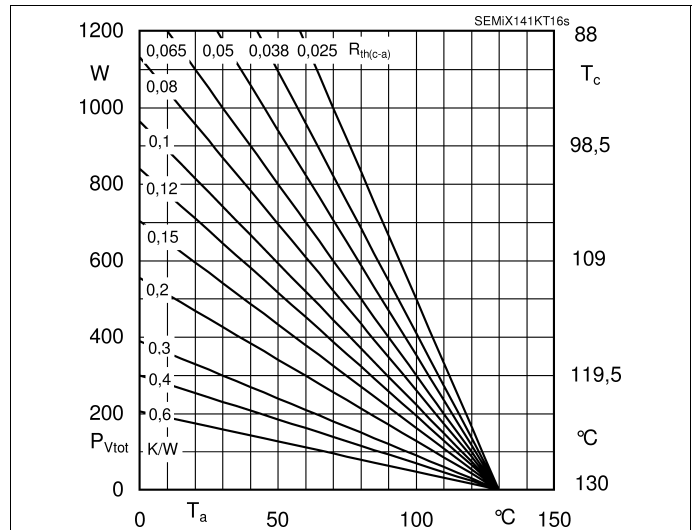


Fig. 4R: Power dissipation of three modules vs. case temperature

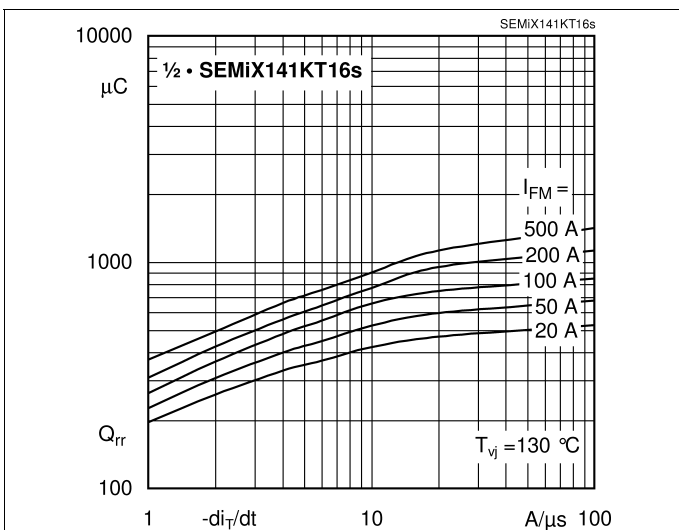


Fig. 5: Recovered charge vs. current decrease

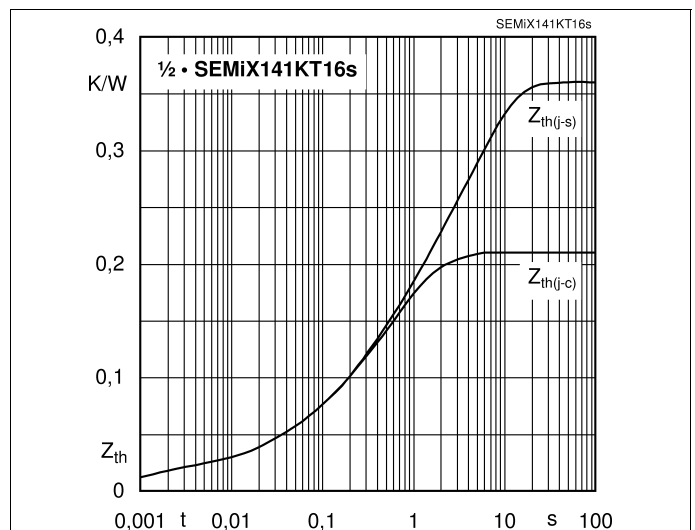


Fig. 6: Transient thermal impedance vs. time

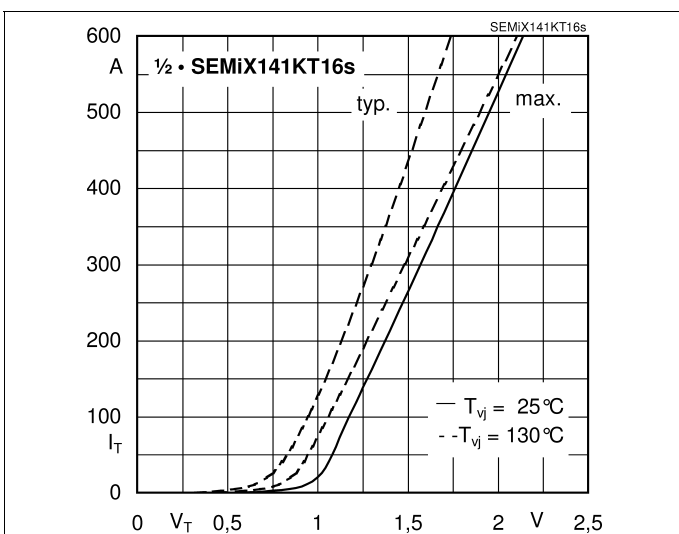


Fig. 7: On-state characteristics

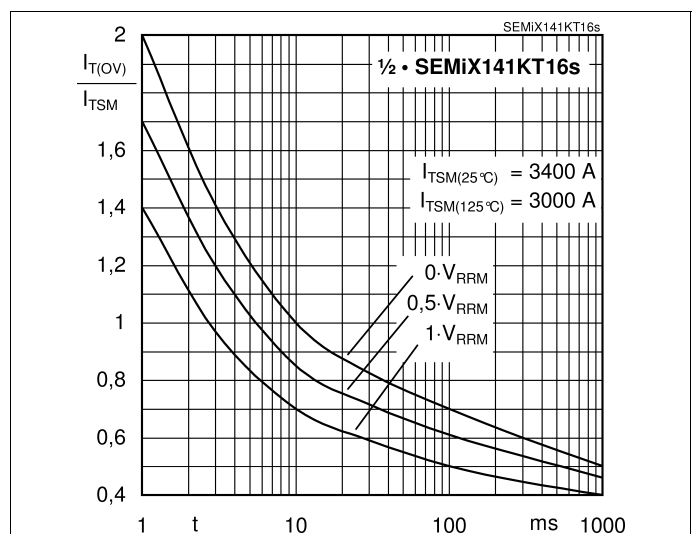


Fig. 8: Surge overload current vs. time

