SK 100 TAE 12

SEMITOP® 2

Thyristor and Diode separated in the same housing

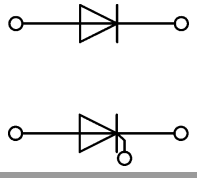
SK 100 TAE 12

Features*

- Compact design
- One screw mounting
- High current density due to double mesa technology
- Heat transfer and insulation through direct copper bonded aluminum oxide ceramic (DBC)
- Glass passivated thyristor chips
- High surge currents
- UL recognized, file no. E 63 532

Typical Applications

- Controlled rectifier circuit
- Solid state relays



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Absolute Maximum Ratings				
Symbol	**Conditions**		**Values**	**Unit**
Diode 1				
V_{RRM}	T_j = 25 °C		1200	V
I_F	T_j = 150 °C	T_s = 25 °C	253	A
		T_s = 70 °C	180	A
I_{FSM}	10 ms, T_j = 150 °C		2300	A
i^2t	10 ms, T_j = 150 °C		26450	A^2s
T_j			-40 ... 150	°C

Absolute Maximum Ratings			
Symbol	**Conditions**	**Values**	**Unit**
Thyristor 1			
V_{RRM}		1200	V
V_{DRM}		1200	V
$I_{T(AV)}$	T_j = 130 °C, T_s = 70 °C	96	A
I_{TSM}	t_p = 10 ms, sin 180°, T_j = 25 °C	2000	A
i^2t	t_p = 10 ms, sin 180°, T_j = 25 °C	20000	A^2s
T_j		-40 ... 130	°C

Absolute Maximum Ratings			
Symbol	**Conditions**	**Values**	**Unit**
Module			
$I_{t(RMS)}$	$\Delta T_{terminal}$ at PCB joint = 30 K, per pin	60	A
T_{stg}	module without TIM	-40 ... 125	°C
V_{isol}	AC, sinusoidal, t = 1 min	2500	V

Characteristics						
Symbol	**Conditions**		**min.**	**typ.**	**max.**	**Unit**
Diode 1						
V_F	I_F = 160 A	T_j = 25 °C		1.00	1.21	V
	chiplevel	T_j = 125 °C		0.90	1.10	V
V_{F0}	chiplevel	T_j = 25 °C		0.88	0.98	V
		T_j = 125 °C		0.73	0.83	V
r_F	chiplevel	T_j = 25 °C		0.75	1.44	mΩ
		T_j = 125 °C		1.06	1.69	mΩ
I_R	T_j = 120 °C, V_{RRM}				4	mA
$R_{th(j-s)}$	per diode, λ_{paste}=0.8 W/(mK)			0.4		K/W

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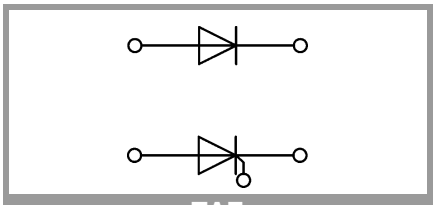

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Characteristics					
Symbol	**Conditions**	**min.**	**typ.**	**max.**	**Unit**
Thyristor 1					
V_T	T_j = 25 °C, I_T = 150 A			1.26	V
$V_{T(TO)}$	T_j = 130 °C			0.85	V
r_T	T_j = 130 °C			2.20	mΩ
I_{DD};I_{RD}	T_j = 130 °C, V_{DD} = V_{DRM}; V_{RD} = V_{RRM}			21	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		150		µs
I_H	T_j = 25 °C	220			mA
I_L	T_j = 25 °C, R_G = 33 Ω	550			mA
V_{GT}	T_j = 25 °C, d.c.	2			V
I_{GT}	T_j = 25 °C, d.c.	100			mA
V_{GD}	T_j = 130 °C, d.c.			0.25	V
I_{GD}	T_j = 130 °C, d.c.			6	mA
$R_{th(j-s)}$	per thyristor, λ_{paste}=0.8 W/(mK), sin. 180°		0.45		K/W

Characteristics					
Symbol	**Conditions**	**min.**	**typ.**	**max.**	**Unit**
Module					
M_s	to heatsink	1.8		2	Nm
w	weight		19		g

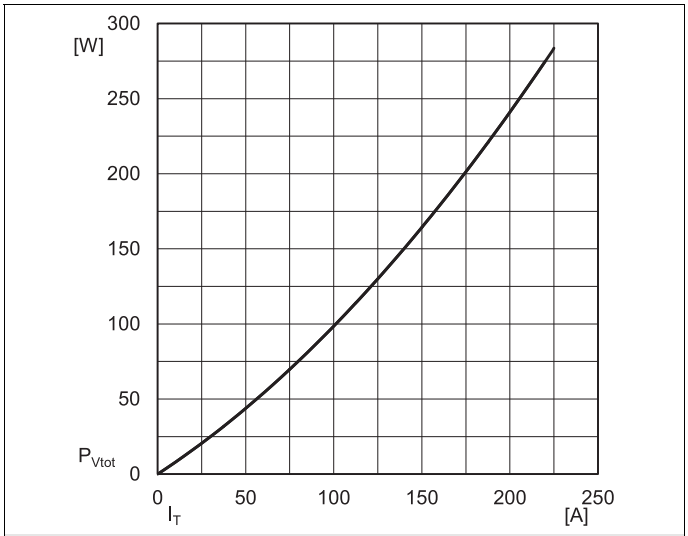


Fig. 1: Power dissipation per module vs r.m.s current

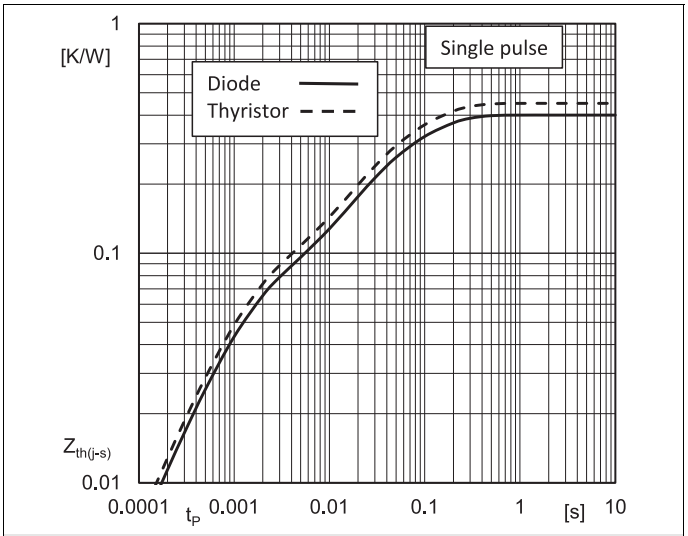


Fig. 2: Typ. transient thermal impedance vs. time

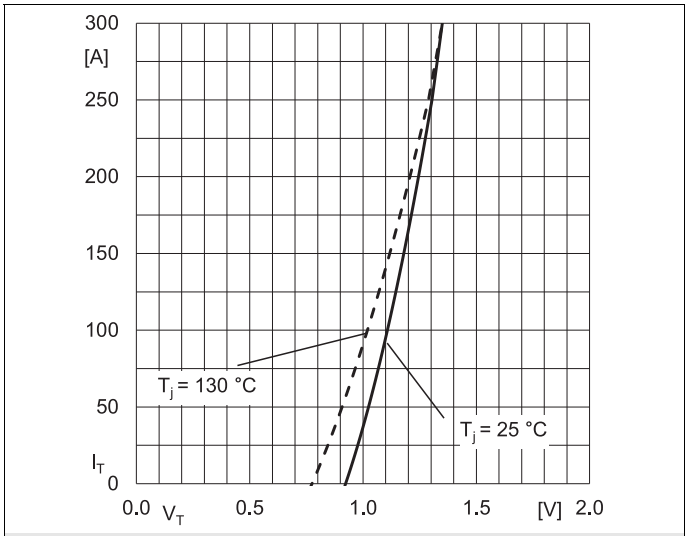


Fig. 3: Typ. forward characteristic of single thyristor

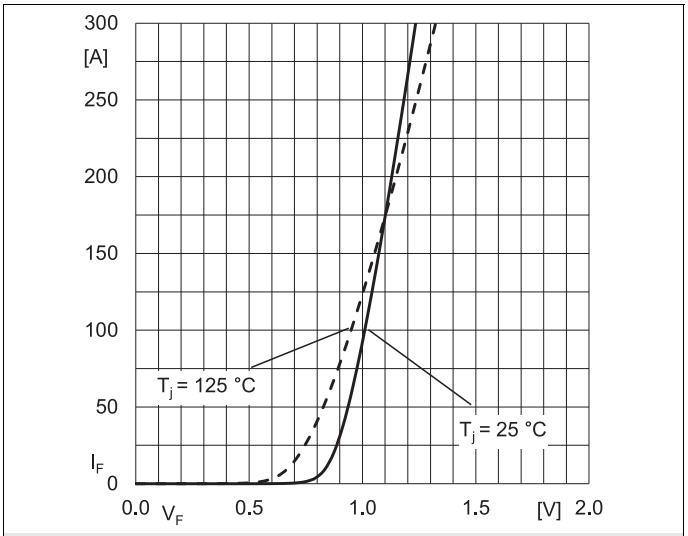


Fig. 4: Typ. Rect. characteristic of Diode, incl. $R_{CC'+EE'}$

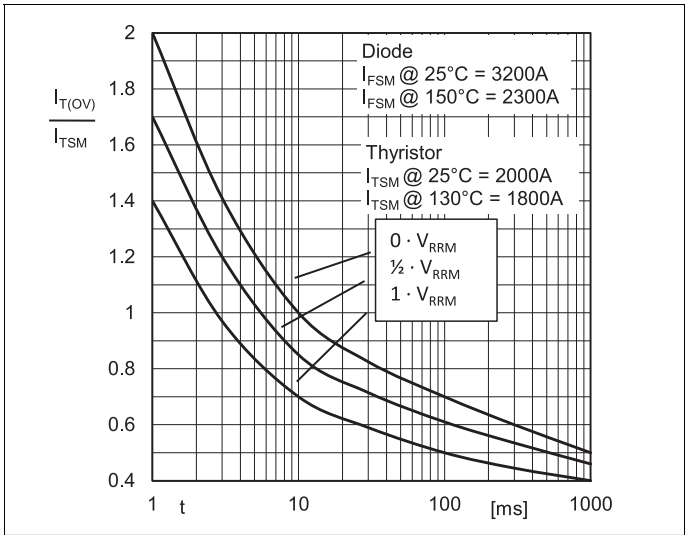


Fig. 5: Surge overload current vs. time

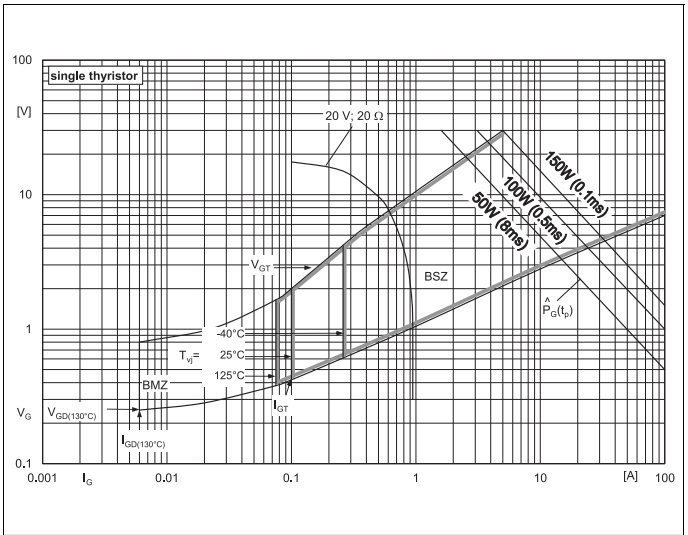
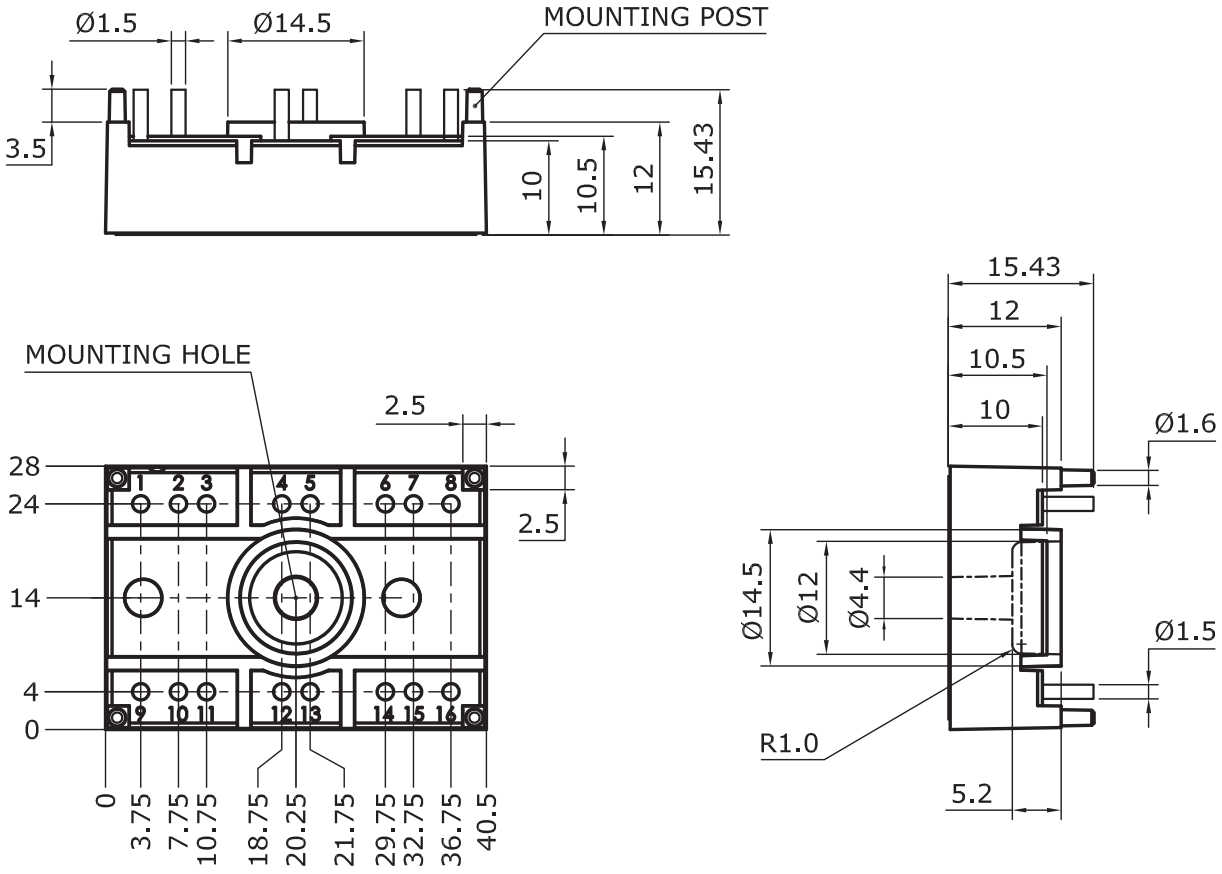


Fig. 6: Gate trigger characteristic

Dimensions: mm
Tolerance system: ISO 2768-m



Suggested hole diameter for solder pins in the circuit board:

- refer Mounting Instruction SEMITOP® Classic

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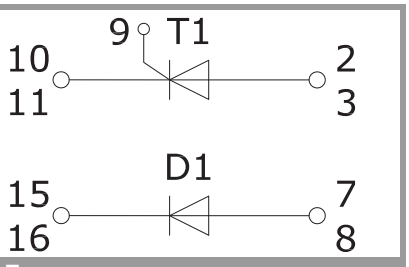

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This is an electrostatic discharge sensitive device (ESDS) due to international standard IEC 61340.

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