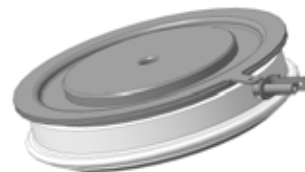




T R I A C

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- ◆ $V_{DRM} = \underline{300 \div 1200 \text{ V}}$
- ◆ $I_{TRMS} = \underline{1000 \text{ A}}$ ($T_C = 85 \text{ }^\circ\text{C}$)
- ◆ $I_{TSM} = \underline{5 \text{ kA}}$ ($T_{Vj} = 125 \text{ }^\circ\text{C}$)
- ◆ AC switch with one gate terminal on one Si - wafer
- ◆ double polar drive



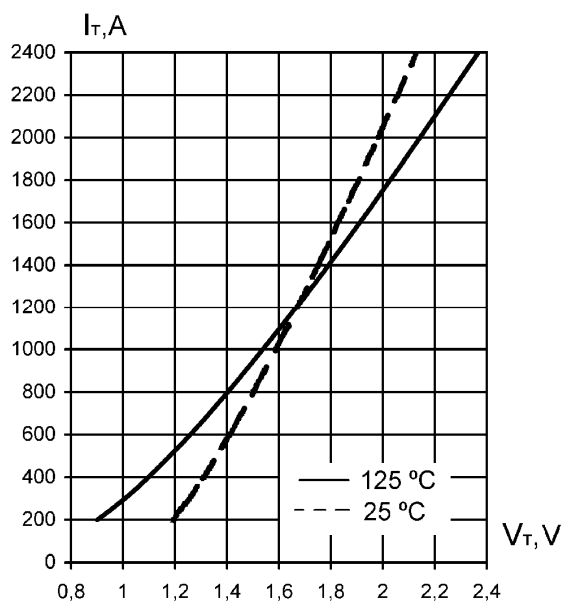
MAXIMUM RATED VALUES

Parameter and conditions	Symbol	Values			Units
		min.	typ.	max.	
Repetitive peak off-state voltage, $T_{Vj} = -60 \text{ }^\circ\text{C} \dots +125 \text{ }^\circ\text{C}$	V_{DRM}	300	-	1200	V
Non-repetitive peak off-state voltage, $T_{Vj} = -60 \text{ }^\circ\text{C} \dots +125 \text{ }^\circ\text{C}$	V_{DSM}	400	-	1300	
Repetitive peak off-state current, $T_{Vj} = 125 \text{ }^\circ\text{C}$, $V_D = V_{DRM}$	I_{DRM}	-	-	35	mA
Max. average on-state current, $f = 50 \text{ Hz}$, $T_C = 85 \text{ }^\circ\text{C}$	I_{TRMS}	-	-	1000	A
Surge non-repetitive current, $T_{Vj} = 125 \text{ }^\circ\text{C}$, $t_p = 20 \text{ ms}$	I_{TSM}	-	-	5	kA
Critical rate of rise of on-state current, $V = 0,67V_{DRM}$, $I_T = 2000 \text{ A}$, $I_{FG} = 1 \text{ A}$, $t_r = 1 \text{ } \mu\text{s}$, $f = 50 \text{ Hz}$, $T_{Vj} = 125 \text{ }^\circ\text{C}$	$(di_T/dt)_{crit}$	-	-	25	A/ μs
Critical rate of rise of switching voltage, $V_D = 0,67V_{DRM}$, $T_{Vj} = 125 \text{ }^\circ\text{C}$, $I_T = I_{TRMS}$, $t_P = 10 \text{ ms}$	$(dV_D/dt)_{com}$	6.3	-	100	V/ μs
Gate power loss, DC	P_{GM}	-	-	4	W
Control quadrants		1, 3, 4			
Operation junction temperature range	T_{Vj}	- 60	-	+ 125	$^\circ\text{C}$
Storage temperature range	T_{stg}	- 60	-	+ 50	

**TS143-1000**

ELECTRICAL CHARACTERISTICS					
Maximum peak on-state voltage, $I_T = 1400 \text{ A}$, $T_{Vj} = 25 \text{ °C}$	V_{TM}	-	-	1.75	V
On-state threshold voltage, $T_{Vj} = 125 \text{ °C}$, $I_T = 700 \div 2200 \text{ A}$	$V_{(TO)}$	-	-	0.90	
On-state slope resistance, $T_{Vj} = 125 \text{ °C}$, $I_T = 700 \div 2200 \text{ A}$	r_T	-	-	0.61	mΩ
Gate trigger voltage, $V_D = 12 \text{ V}$, $T_{Vj} = -60 \text{ °C}$ $T_{Vj} = 25 \text{ °C}$ $T_{Vj} = 125 \text{ °C}$	V_{GT}	-	-	6.0 3.0 2.0	V
Gate trigger current, $V_D = 12 \text{ V}$, $T_{Vj} = -60 \text{ °C}$ $T_{Vj} = 25 \text{ °C}$ $T_{Vj} = 125 \text{ °C}$	I_{GT}	-	-	600 300 200	mA
Gate non-trigger voltage, $V_D = 0,67V_{DRM}$, $T_{Vj} = 125 \text{ °C}$	V_{GD}	0.25	-	-	V
THERMAL PARAMETERS					
Thermal resistance junction to case, double side cooled anode side cooled cathode side cooled	$R_{th(j-c)}$ $R_{th(j-c)A}$ $R_{th(j-c)C}$	-	-	0.028 0.056 0.056	°C/W
Thermal resistance case to heatsink, double side cooled single side cooled	$R_{th(c-h)}$	-	-	0.01 0.02	
MECHANICAL PARAMETERS					
Weight	w	-	0.16	-	kg
Mounting force	F	13.5	-	16.5	kN
Maximum acceleration (at nominal mounting force)	a	-	-	100	m/s ²
Gate-anode distance on insulator surface	D_s	-	19.6	-	mm
Air strike distance	D_a	-	11.7	-	

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On-state characteristics model

$$V_T = A + B \cdot I_T + C \cdot \ln(I_T + 1) + D \cdot \sqrt{I_T}$$

Valid for $I_T = 200 \div 2400$ A

	$T_{Vj} = 125$ °C	$T_{Vj} = 25$ °C
A	0.251	0.816
B	0.0004181	0.0003021
C	0.08	0.047
D	0.009998	0.004565

Fig. 1. Maximum on-state characteristics
(Limit device, 10 ms, half sine)

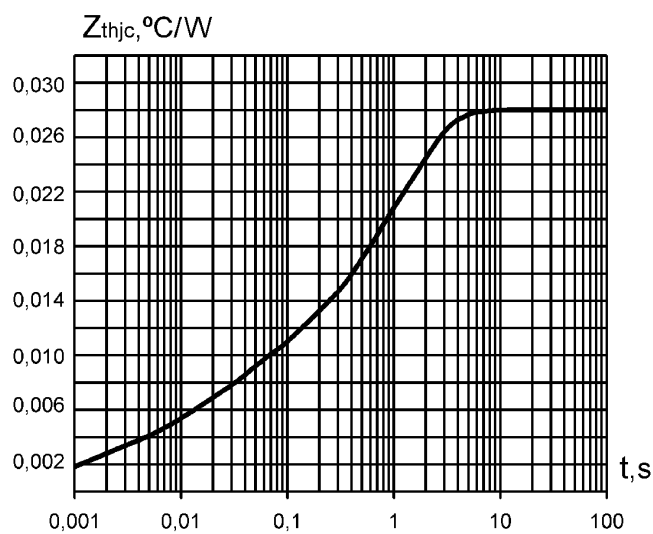


Fig. 2. Transient thermal impedance junction to case

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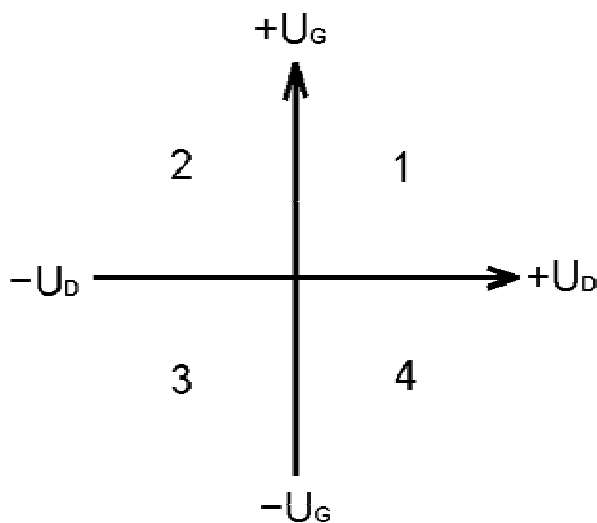


Fig. 3. Control quadrants

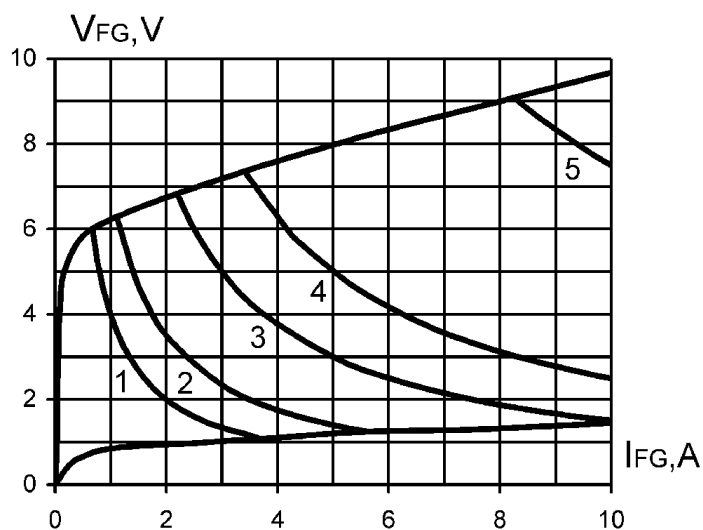


Fig. 4. Maximum peak gate power losses

Position at fig. 4	Duty cycle, $D = f \cdot t_p$	Gate pulse length, t_p , ms	Maximum gate pulse power P_{GM} , W
1	1	DC	4
2	2	10	7
3	20	1,0	15
4	40	0,5	25
5	200	0,1	75

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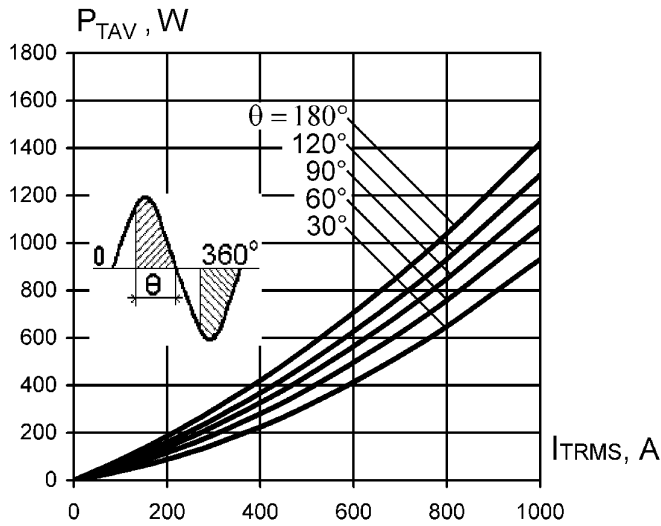


Fig. 5. Mean power of losses
(sine)

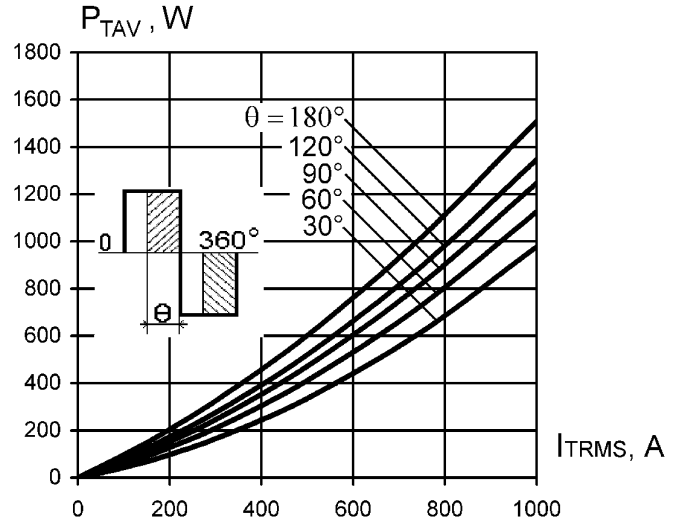


Fig. 6. Mean power of losses
(rectangular)

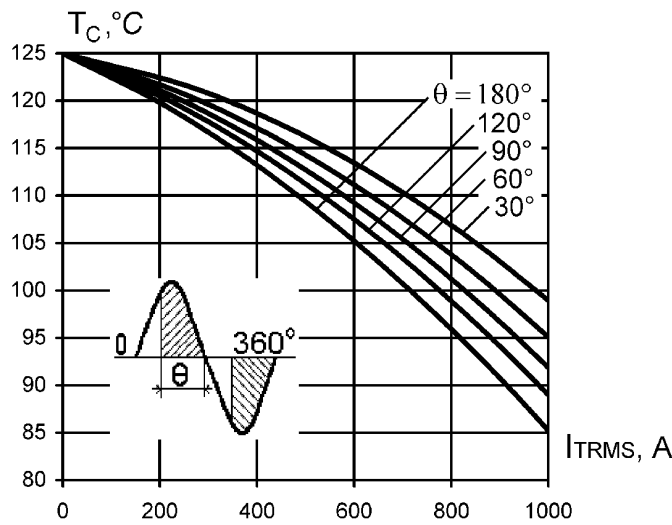


Fig. 7. Maximum allowable case temperature
(sine)

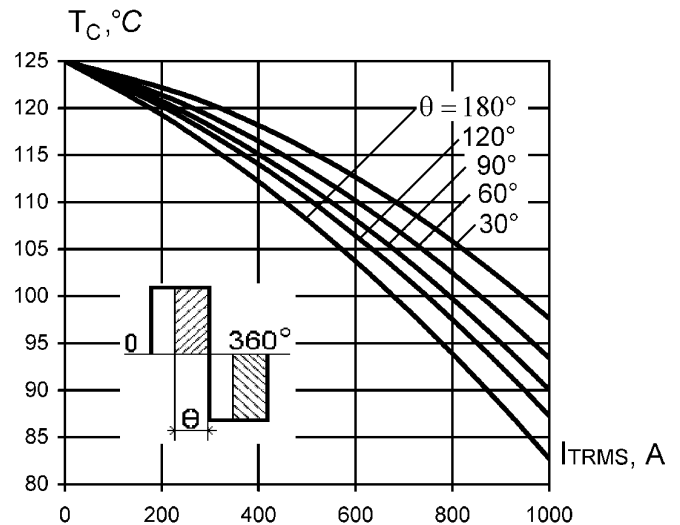


Fig. 8. Maximum allowable case temperature
(rectangular)

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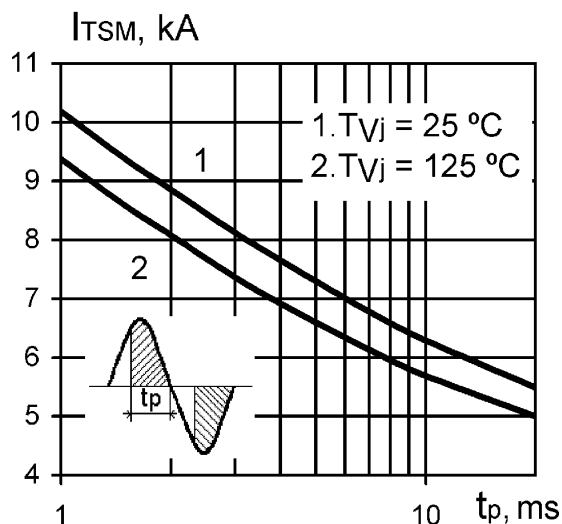


Fig. 9. Surge on-state current vs. pulse length

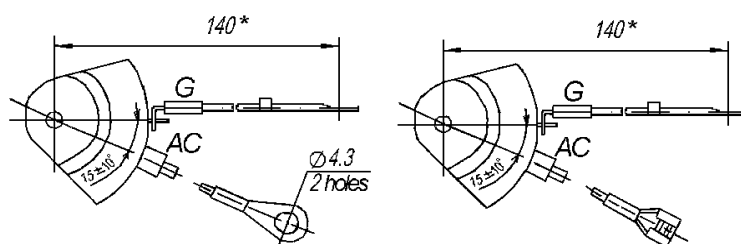
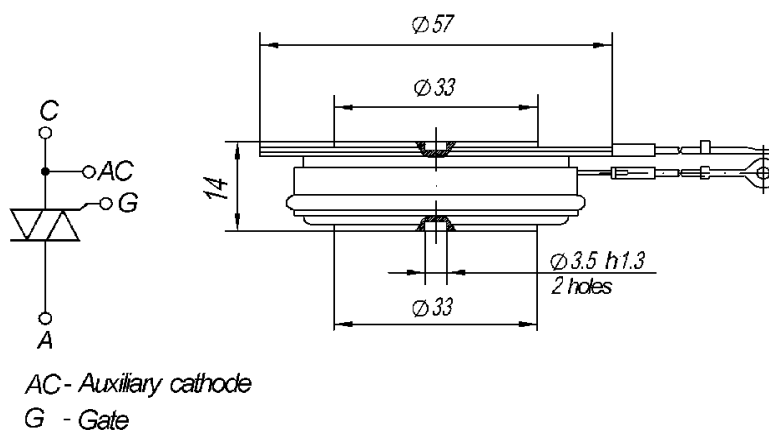


Fig. 10. Device Outline Drawing

(dimensions in mm) JSC «ELECTROVIPRYAMITEL» reserves the right to change specification without notice.

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