

## PHASE CONTROL THYRISTOR T173-1600

<ul style="list-style-type: none"> <li>◆ <math>V_{DRM} = \underline{2400 - 3400 V}</math></li> <li>◆ <math>V_{RRM} = \underline{2400 - 3400 V}</math></li> <li>◆ <math>I_{T(AV)} = \underline{2103 A}</math> (<math>T_C = 70\text{ }^\circ\text{C}</math>)</li> <li>◆ <math>I_{T(AV)} = \underline{1705 A}</math> (<math>T_C = 85\text{ }^\circ\text{C}</math>)</li> <li>◆ <math>I_{TSM} = \underline{34 kA}</math> (<math>T_j = 125\text{ }^\circ\text{C}</math>)</li> </ul>		
<ul style="list-style-type: none"> <li>◆ Amplifying gate</li> <li>◆ Low on-state switching losses</li> <li>◆ Acceptable for series and parallel connections</li> <li>◆ Low dispersion <math>Q_{rr}</math>, <math>V_{TM}</math></li> </ul>		

### MAXIMUM RATED VALUES

Parameter and conditions	Symbol	Values	Units
Repetitive peak off-state voltage, $T_j = -60 \dots +125\text{ }^\circ\text{C}$	$V_{DRM}$	2400 - 3400	V
Repetitive peak reverse voltage, $T_j = -60 \dots +125\text{ }^\circ\text{C}$	$V_{RRM}$	2400 - 3400	
Non-repetitive peak off-state voltage, $T_j = -60 \dots +125\text{ }^\circ\text{C}$	$V_{DSM}$	2500 - 3500	
Non-repetitive peak reverse voltage, $T_j = -60 \dots +125\text{ }^\circ\text{C}$	$V_{RSM}$	2500 - 3500	
Repetitive peak off-state current/ Repetitive peak reverse current, $T_j = 125\text{ }^\circ\text{C}$ , $V_D / V_R = V_{DRM} / V_{RRM}$	$I_{DRM} / I_{RRM}$	180	mA
Average on-state current, $f = 50\text{ Hz}$ , double side cooling, $T_C = 85\text{ }^\circ\text{C}$ $T_C = 70\text{ }^\circ\text{C}$	$I_{T(AV)}$	1705 2103	A
RMS on-state current, $T_C = 70\text{ }^\circ\text{C}$ , $f = 50\text{ Hz}$	$I_{TRMS}$	3302	A
Surge non-repetitive on-state current, $T_j = 125\text{ }^\circ\text{C}$ , $V_R = 0$ , $t_p = 10\text{ ms}$	$I_{TSM}$	34	kA
Safety factor	$I^2t$	$5.8 \cdot 10^6$	$A^2s$
Critical rate of rise of on-state current, $T_j = 125\text{ }^\circ\text{C}$ , $V_D = 0.67V_{DRM}$ , $I_T = 3200\text{ A}$ , $I_{FG} = 2\text{ A}$ , $t_r = 1\text{ } \mu\text{s}$ , $f = 50\text{ Hz}$	$(di_T/dt)_{crit}$	200	$A/\mu\text{s}$
Critical rate of rise of off-state voltage, $T_j = 125\text{ }^\circ\text{C}$ , $V_D = 0.67V_{DRM}$	$(dv_D/dt)_{crit}$	1000 - 1600	$V/\mu\text{s}$
Gate power loss, DC	$P_{GM}$	4	W
Operation junction temperature range	$T_j$	-60... +125	$^\circ\text{C}$
Storage temperature range	$T_{stg}$	-60... +50	

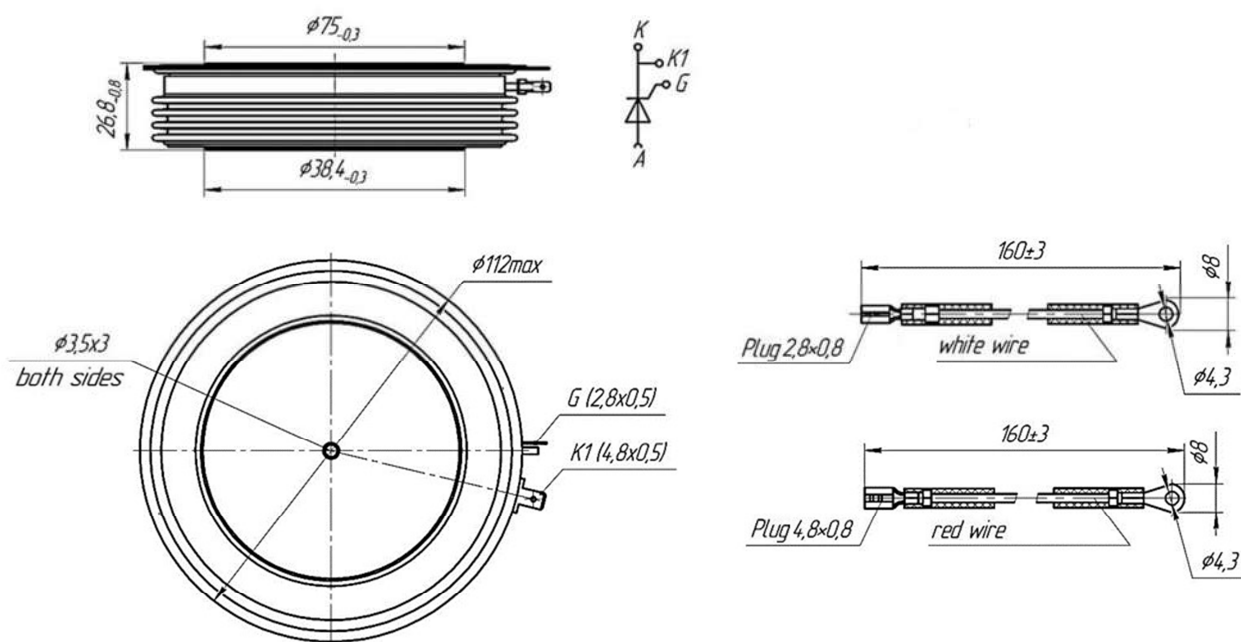


## T173-1600

ELECTRICAL CHARACTERISTICS					
Parameter and conditions	Symbol	Values			Units
		min	typ.	max	
Peak on-state voltage, $T_j = 25\text{ °C}$ , $I_T = 5030\text{ A}$	$V_{TM}$	-	-	2.10	V
On-state threshold voltage, $T_j = 125\text{ °C}$ , $I_T = 2510 - 7540\text{ A}$	$V_{T(TO)}$	-	-	1.08	
On-state slope resistance, $T_j = 125\text{ °C}$ , $I_T = 2510 - 7540\text{ A}$	$r_T$	-	-	0.25	mΩ
Delay time, $T_j = 25\text{ °C}$ , $V_D = 0.67V_{DRM}$ , $I_T = 1600\text{ A}$ , $I_{FG} = 2\text{ A}$ , $t_r = 0.5\text{ μs}$	$t_d$	-	-	3.0	μs
Turn off-time, $T_j = 125\text{ °C}$ , $I_T = 1600\text{ A}$ , $di_T/dt = -5\text{ A/μs}$ , $V_R \geq 100\text{ V}$ , $V_D = 0.67V_{DRM}$ , $dv_D/dt = 50\text{ V/μs}$	$t_q$	-	400	-	
Reverse recovery charge, $T_j = 125\text{ °C}$ , $I_T = 1600\text{ A}$ , $di_T/dt = -5\text{ A/μs}$ , $V_R \geq 100\text{ V}$	$Q_{RR}$	-	-	4000	μAs
Holding current, $T_j = 25\text{ °C}$ , $V_D = 12\text{ V}$	$I_H$	-	-	300	mA
Latching current, $T_j = 25\text{ °C}$ , $V_D = 12\text{ V}$ , $I_{FG} = 2\text{ A}$ , $t_r = 0.5\text{ μs}$	$I_L$	-	-	1500	
Gate trigger voltage, $V_D = 12\text{ V}$ , $T_j = -60\text{ °C}$ $T_j = 25\text{ °C}$ $T_j = 125\text{ °C}$	$V_{GT}$	-	-	3.5 2.5 2.0	V
Gate trigger current, $V_D = 12\text{ V}$ , $T_j = -60\text{ °C}$ $T_j = 25\text{ °C}$ $T_j = 125\text{ °C}$	$I_{GT}$	-	-	450 250 200	mA
Gate non-trigger direct voltage, $T_j = 125\text{ °C}$ , $V_D = 0.67V_{DRM}$	$V_{GD}$	0.25	-	-	V
Gate non-trigger direct current, $T_j = 125\text{ °C}$ , $V_D = 0.67V_{DRM}$	$I_{GD}$	15	-	-	mA
THERMAL PARAMETERS					
Thermal junction to case resistance, DC: double side cooled DC: anode side cooled DC: cathode side cooled	$R_{th(j-c)}$ $R_{th(j-cA)}$ $R_{th(j-cK)}$	-	-	0.011 0.022 0.022	°C/W
Thermal case to heatsink resistance, double side cooled single side cooled	$R_{th(c-h)}$	-	-	0.003 0.006	
MECHANICAL PARAMETERS					
Weight	w	-	1.2	-	kg
Clamping force	F	40	-	60	kN
Maximum acceleration (at nominal mounting force)	a	-	-	100	m/s <sup>2</sup>
Minimal gate-anode distance on insulator surface	$D_s$	-	41.3	-	mm



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**Device Outline Drawing**  
(dimensions in mm)



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