

## PHASE CONTROL THYRISTOR T163-1250

<ul style="list-style-type: none"> <li>◆ <math>V_{DRM} = \mathbf{2000-2800\ B}</math></li> <li>◆ <math>V_{RRM} = \mathbf{2000-2800\ B}</math></li> <li>◆ <math>I_{T(AV)} = \mathbf{1610A}</math> (<math>T_C = 70^\circ\text{C}</math>)</li> <li>◆ <math>I_{T(AV)} = \mathbf{1300\ A}</math> (<math>T_C = 85^\circ\text{C}</math>)</li> <li>◆ <math>I_{TSM} = \mathbf{25.0\ kA}</math> (<math>T_j = 125^\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>, <math>I_{DRM}</math></li> </ul>		

### MAXIMUM RATED VALUES

Parameter and conditions	Symbol	Values	Units
Repetitive peak off-state voltage, $T_j = -60 \dots + 125^\circ\text{C}$	$V_{DRM}$	2000-2800	V
Repetitive peak reverse voltage, $T_j = -60 \dots + 125^\circ\text{C}$	$V_{RRM}$	2000-2800	
Non-repetitive peak off-state voltage, $T_j = -60 \dots + 125^\circ\text{C}$	$V_{DSM}$	2100-2900	
Non-repetitive peak reverse voltage, $T_j = -60 \dots + 125^\circ\text{C}$	$V_{RSM}$	2100-2900	
Repetitive peak off-state current/ Repetitive peak reverse current, $T_j = 125^\circ\text{C}$ , $V_D / V_R = V_{DRM} / V_{RRM}$	$I_{DRM} / I_{RRM}$	100	mA
Average on-state current, $f = 50\ \text{Hz}$ , double side cooling, $T_C = 85^\circ\text{C}$ $T_C = 70^\circ\text{C}$	$I_{T(AV)}$	1300 1610	A
RMS on-state current, $f = 50\ \text{Hz}$ , $T_C = 70^\circ\text{C}$	$I_{TRMS}$	2520	A
Surge non-repetitive on-state current, $T_j = 125^\circ\text{C}$ , $V_R = 0$ , $t_p = 10\ \text{ms}$	$I_{TSM}$	25.0	kA
Safety factor	$I^2t$	$3.1 \cdot 10^6$	$A^2s$
Critical rate of rise of on-state current, $T_j = 125^\circ\text{C}$ , $V_D = 0.67V_{DRM}$ , $I_T = 2500\ \text{A}$ , $I_{FG} = 2\ \text{A}$ , $t_r = 1\ \mu\text{s}$ , $f = 50\ \text{Hz}$	$(di_T/dt)_{crit}$	200	$A/\mu\text{s}$
Critical rate of rise of off-state voltage, $T_j = 125^\circ\text{C}$ , $V_D = 0.67V_{DRM}$	$(dv_D/dt)_{crit}$	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	

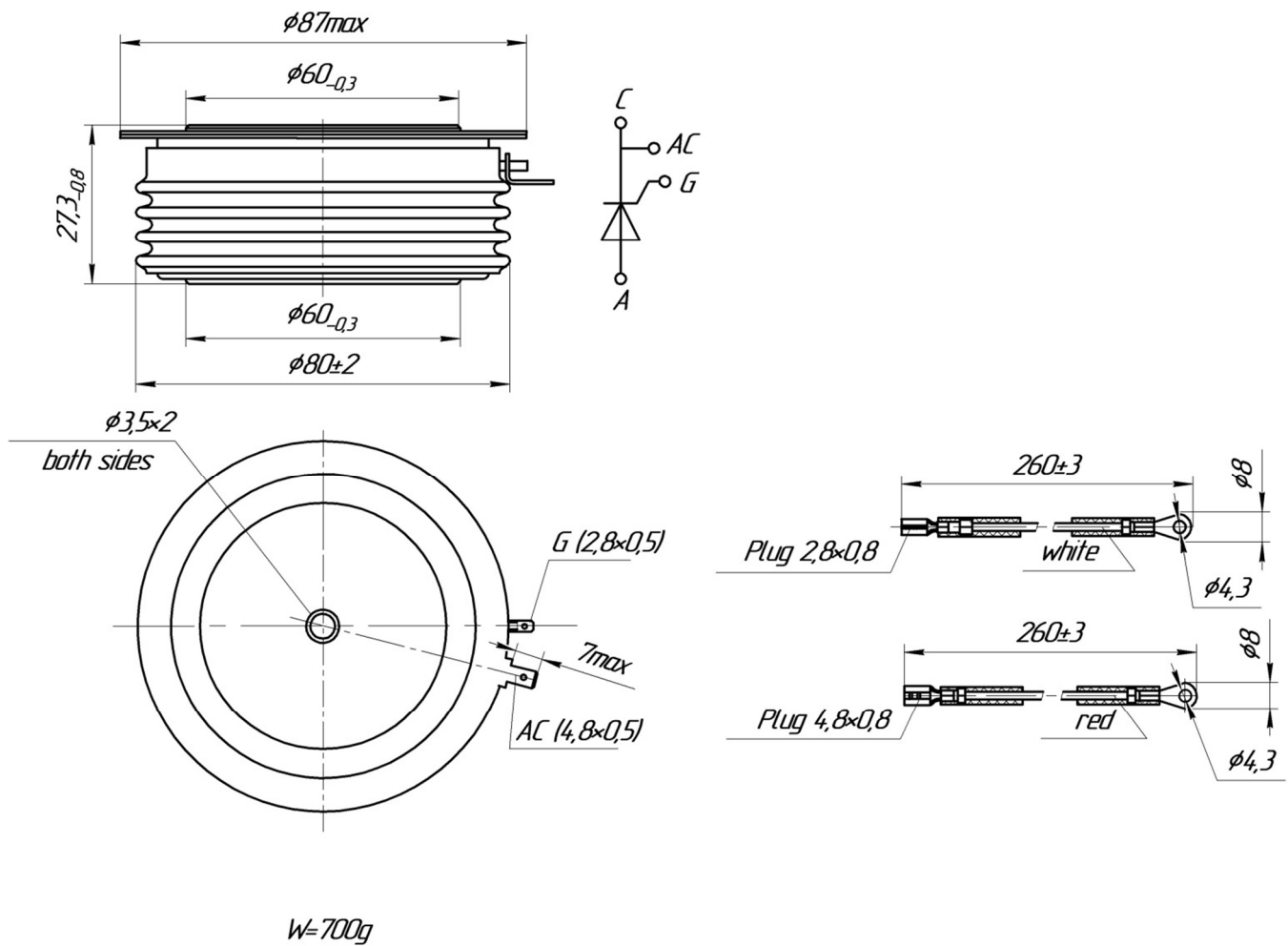


## T163-1250

ELECTRICAL CHARACTERISTICS					
Parameter and conditions	Symbol	Values			Units
		min	typ.	max	
Peak on-state voltage, $T_j = 25\text{ }^\circ\text{C}$ , $I_T = 3927\text{ A}$	$V_{TM}$	-	-	2.0	V
On-state threshold voltage, $T_j = 125\text{ }^\circ\text{C}$ , $I_T = 1963\text{-}5890\text{ A}$	$V_{T(TO)}$	-	-	1.05	
On-state slope resistance, $T_j = 125\text{ }^\circ\text{C}$ , $I_T = 1963\text{-}5890\text{ A}$	$r_T$	-	-	0.27	mΩ
Delay time, $T_j = 25\text{ }^\circ\text{C}$ , $V_D = 0.67V_{DRM}$ , $I_T = 1250\text{ A}$ , $I_{FG} = 2\text{ A}$ , $t_r = 0.5\text{ }\mu\text{s}$	$t_d$	-	-	3.5	μs
Turn off-time, $T_j = 125\text{ }^\circ\text{C}$ , $I_T = 1250\text{ A}$ , $di_T/dt = -5\text{ A}/\mu\text{s}$ , $V_R \geq 100\text{ V}$ , $V_D = 0.67V_{DRM}$ , $dv_D/dt = 50\text{ V}/\mu\text{s}$	$t_q$	-	-	250	
Reverse recovery charge, $T_j = 125\text{ }^\circ\text{C}$ , $I_T = 1250\text{ A}$ , $di_T/dt = -5\text{ A}/\mu\text{s}$ , $V_R \geq 100\text{ V}$	$Q_{RR}$	-	-	2000	μAs
Holding current, $T_j = 25\text{ }^\circ\text{C}$ , $V_D = 12\text{ V}$	$I_H$	-	-	300	mA
Latching current, $T_j = 25\text{ }^\circ\text{C}$ , $V_D = 12\text{ V}$ , $I_{FG} = 2\text{ A}$ , $t_r = 0.5\text{ }\mu\text{s}$	$I_L$	-	-	1500	
Gate trigger voltage, $V_D = 12\text{ V}$ , $T_j = -60\text{ }^\circ\text{C}$ $T_j = 25\text{ }^\circ\text{C}$ $T_j = 125\text{ }^\circ\text{C}$	$V_{GT}$	-	-	3.5 2.5 2.0	V
Gate trigger current, $V_D = 12\text{ V}$ , $T_j = -60\text{ }^\circ\text{C}$ $T_j = 25\text{ }^\circ\text{C}$ $T_j = 125\text{ }^\circ\text{C}$	$I_{GT}$	-	-	450 250 200	mA
Gate non-trigger direct voltage, $T_j = 125\text{ }^\circ\text{C}$ , $V_D = 0.67V_{DRM}$	$V_{GD}$	0.25	-	-	V
Gate non-trigger direct current, $T_j = 125\text{ }^\circ\text{C}$ , $V_D = 0.67V_{DRM}$	$I_{GD}$	15	-	-	mA
THERMAL PARAMETERS					
Thermal junction to case resistance, DC: double side cooled DC: anode side cooled DC: cathode side cooled	$R_{th(j-c)}$ $R_{th(j-cA)}$ $R_{th(j-cK)}$	-	-	0.0160 0.0320 0.0320	°C/W
Thermal case to heatsink resistance, double side cooled single side cooled	$R_{th(c-h)}$	-	-	0.004 0.008	
MECHANICAL PARAMETERS					
Weight	w	-	0.7		kg
Clamping force	F	30	-	36	kN
Maximum acceleration (at nominal mounting force)	a	-	-	100	m/s <sup>2</sup>
Minimal gate-anode distance on insulator surface	$D_s$	-	24.7	-	mm



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Another length of outputs G and AC is permissible if required by clients

**Fig. 1. Device Outline Drawing**  
(dimensions in mm)



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