

PHASE CONTROL THYRISTOR-DIODE MODULES

MTD-250

<ul style="list-style-type: none"> ◆ $V_{DRM}/V_{RRM} = \mathbf{400 - 1600 V}$ ◆ $I_{T(AV)} = \mathbf{250 A}$ ($T_C = 83,7\text{ °C}$) ◆ $I_{TSM} = \mathbf{7,0 kA}$ ($T_j = 125\text{ °C}$) 		
<ul style="list-style-type: none"> ◆ Heat transfer through AlN ceramic isolated metal baseplate ◆ Presspack construction ◆ High reliability at thermal cycles (10^5 at $\Delta TC = 70\text{ °C}$) ◆ Case width 50 mm 		

MAXIMUM RATED VALUES

Parameter and conditions	Symbol	Values	Units
Repetitive peak off-state voltage / Repetitive peak reverse voltage, $T_j = -40 \dots +125\text{ °C}$	V_{DRM} / V_{RRM}	400-1600	V
Non-repetitive peak off-state voltage/ Non-repetitive peak reverse voltage, $T_j = -40 \dots +125\text{ °C}$	V_{DSM} / V_{RSM}	500-1700	
Repetitive peak off-state current/ Repetitive peak reverse current, $T_j = 125\text{ °C}, V_D / V_R = V_{DRM} / V_{RRM}$	I_{DRM} / I_{RRM}	40	mA
Maximum average on-state current, $f = 50\text{ Hz},$ $T_C = 83,7\text{ °C}$	$I_{T(AV)}$	250	A
RMS on-state current, $T_C = 83,7\text{ °C}$	I_{TRMS}	392	
Surge non-repetitive current, $T_j = 125\text{ °C}, t_p = 10\text{ ms}, V_R = 0$	I_{TSM}	7,0	kA
Safety factor	I^2t	$0,245 \cdot 10^6$	A^2s
Critical rate of rise of on-state current, $T_j = 125\text{ °C}, V_D = 0,67V_{DRM}, I_T = 500\text{ A}, I_{FG} = 1\text{ A},$ $t_r \leq 1\text{ }\mu s, f = 50\text{ Hz}$	$(di_T/dt)_{crit}$	200	$A/\mu s$
Critical rate of rise of off-state voltage $T_j = 125\text{ °C}, V_D = 0,67V_{DRM}$	$(dv_D/dt)_{crit}$	500-1600	$V/\mu s$
Gate power loss, DC	P_{GM}	4	W
Operation junction temperature range	T_j	-40 ... +125	°C
Storage temperature range	T_{stg}	-40 ... +50	

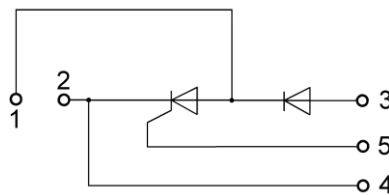
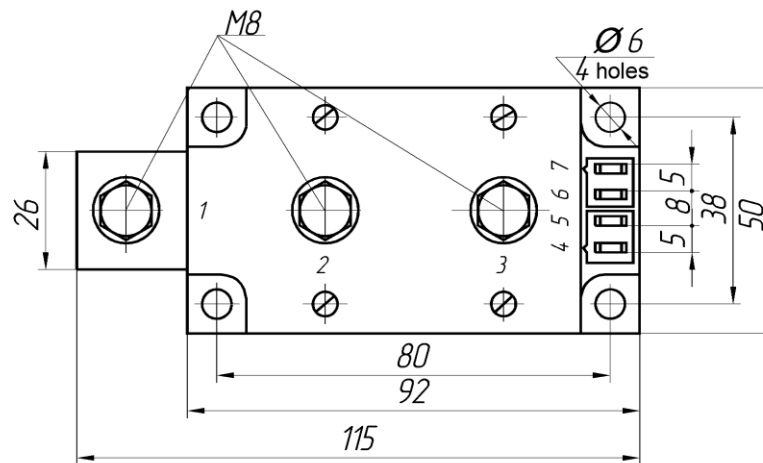
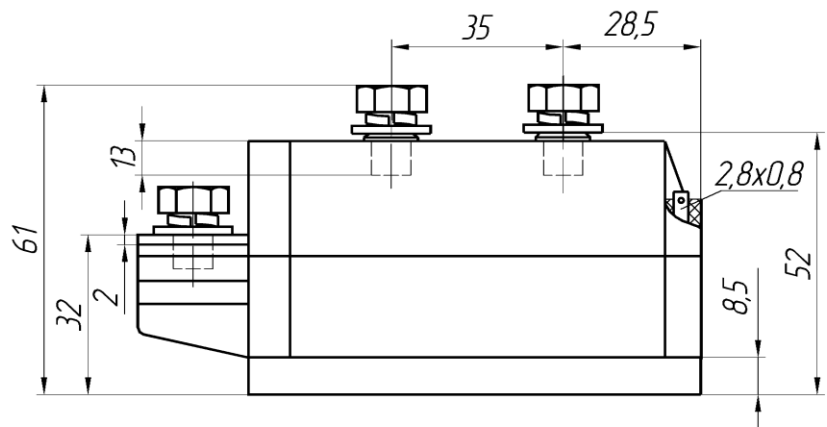


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ELECTRICAL CHARACTERISTICS					
Parameter and conditions	Symbol	Values			Units
		min	type	max	
Maximum peak on-state voltage, $T_j = 25\text{ °C}$, $I_T = 785\text{ A}$	V_{TM}	-	-	1,50	V
On-state threshold voltage, $T_j = 125\text{ °C}$, $I_T = 390 - 1150\text{ A}$	$V_{T(TO)}$	-	-	1,05	
On-state slope resistance, $T_j = 125\text{ °C}$, $I_T = 390 - 1150\text{ A}$	r_T	-	-	0,53	mΩ
Delay time, $T_j = 25\text{ °C}$, $V_D = 0,67V_{DRM}$, $I_T = 250\text{ A}$, $I_{FG} = 1\text{ A}$, $t_r \leq 1\text{ }\mu\text{s}$	t_d	-	-	5,0	μs
Circuit-commutated turn-off time, $T_j = 125\text{ °C}$, $I_T = 250\text{ A}$, $di_T/dt = -5\text{ A}/\mu\text{s}$, $V_R \geq 100\text{ V}$, $V_D = 0,67V_{DRM}$, $dv_D/dt = 50\text{ V}/\mu\text{s}$	t_q	-	160	-	
Holding current, $T_j = 25\text{ °C}$, $V_D = 12\text{ V}$	I_H	-	-	250	mA
Gate trigger voltage, $V_D = 12\text{ V}$ $T_j = -40\text{ °C}$ $T_j = 25\text{ °C}$ $T_j = 125\text{ °C}$	V_{GT}	-	-	4,5 2,5 2,0	V
Gate trigger current, $V_D = 12\text{ V}$ $T_j = -40\text{ °C}$ $T_j = 25\text{ °C}$ $T_j = 125\text{ °C}$	I_{GT}	-	-	350 200 150	mA
Gate non-trigger voltage, $T_j = 125\text{ °C}$, $V_D = 0,67V_{DRM}$	V_{GD}	0,25	-	-	V
Electrical isolated baseplate (RMS), $f = 50\text{ Hz}$, $t = 1\text{ sec}/1\text{ min}$	V_{isol}	-	-	3000/2500	V
THERMAL PARAMETERS					
Thermal resistance junction to case	$R_{th(j-c)}$	-	-	0,120	°C/W
Thermal resistance case to heatsink	$R_{th(c-h)}$	-	-	0,005	
MECHANICAL PARAMETERS					
Weight	w	-	0,8	-	kg
Heatsink mounting torque	M_s	4	-	6	Nm
Terminal connection torque	M_t	8	-	10	Nm
Maximum acceleration (at nominal mounting force)	a	-	-	50	m/s ²



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1 – Anode/Cathode; 2 – Cathode; 3 – Anode; 4 - Auxiliary cathode; 5 – Gate

Device Outline Drawing

(dimensions in mm)



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