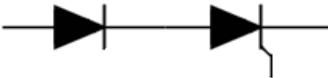


PHASE CONTROL DIODE-THYRISTOR MODULES

MDT-160

<ul style="list-style-type: none"> ◆ $V_{DRM}/V_{RRM} = \mathbf{400 - 1600 V}$ ◆ $I_{T(AV)} = \mathbf{160 A}$ ($T_C = 84,3\text{ }^\circ\text{C}$) ◆ $I_{TSM} = \mathbf{4,5 kA}$ ($T_j = 125\text{ }^\circ\text{C}$) 		
<ul style="list-style-type: none"> ◆ Heat transfer through AlN ceramic isolated metal baseplate ◆ Presspack construction ◆ High reliability at thermal cycles (10^5 at $\Delta T_C = 70\text{ }^\circ\text{C}$) ◆ Case width 34 mm 		

MAXIMUM RATED VALUES

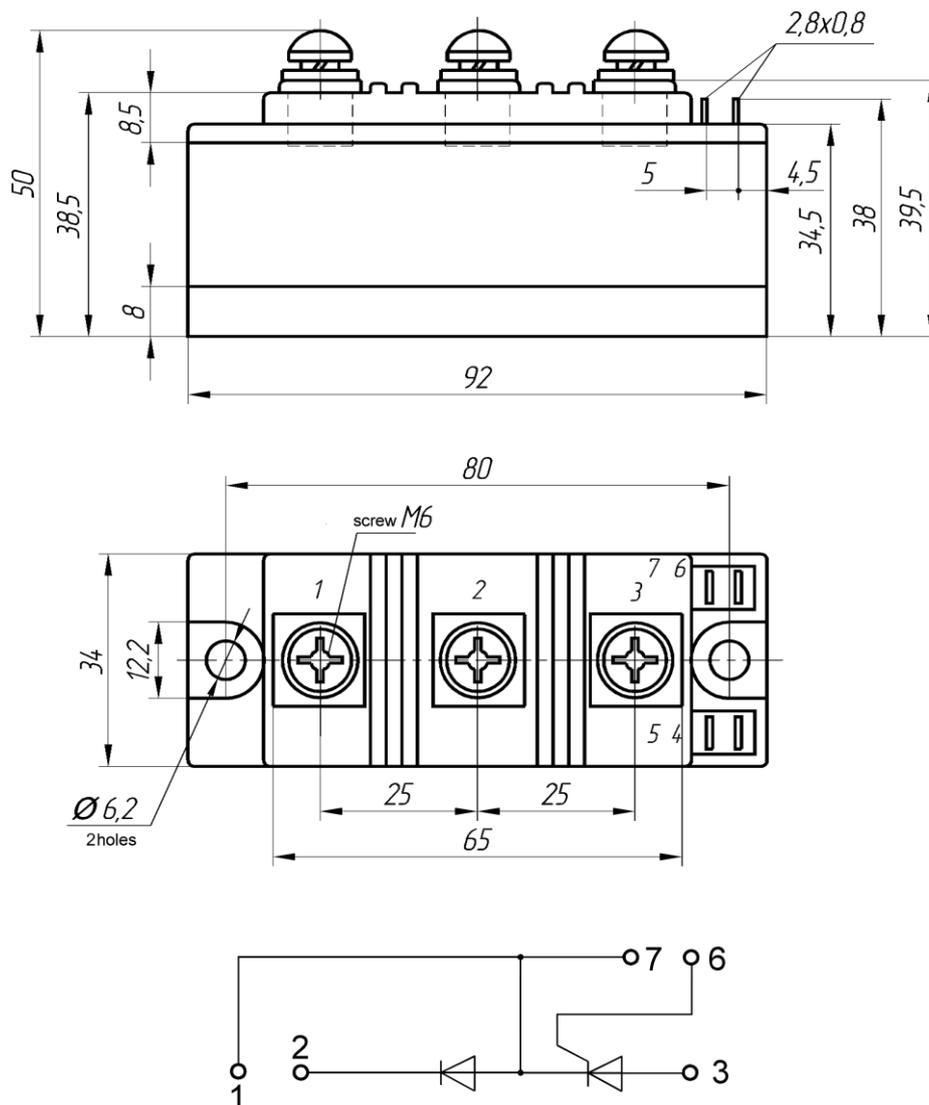
Parameter and conditions	Symbol	Values	Units
Repetitive peak off-state voltage / Repetitive peak reverse voltage, $T_j = -40 \dots +125\text{ }^\circ\text{C}$	V_{DRM} / V_{RRM}	400-1600	V
Non-repetitive peak off-state voltage/ Non-repetitive peak reverse voltage, $T_j = -40 \dots +125\text{ }^\circ\text{C}$	V_{DSM} / V_{RSM}	500-1700	
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}	25	mA
Maximum average on-state current, $f = 50\text{ Hz}$, $T_C = 84,3\text{ }^\circ\text{C}$	$I_{T(AV)}$	160	A
RMS on-state current, $T_C = 84,3\text{ }^\circ\text{C}$	I_{TRMS}	251	
Surge non-repetitive current, $T_j = 125\text{ }^\circ\text{C}$, $t_p = 10\text{ ms}$, $V_R = 0$	I_{TSM}	4,5	kA
Safety factor	I^2t	$0,10125 \cdot 10^6$	A^2s
Critical rate of rise of on-state current, $T_j = 125\text{ }^\circ\text{C}$, $V_D = 0,67V_{DRM}$, $I_T = 320\text{ A}$, $I_{FG} = 1\text{ A}$, $t_r \leq 1\text{ } \mu\text{s}$, $f = 50\text{ Hz}$	$(di_T/dt)_{crit}$	200	$A/\mu\text{s}$
Critical rate of rise of off-state voltage $T_j = 125\text{ }^\circ\text{C}$, $V_D = 0,67V_{DRM}$	$(dv_D/dt)_{crit}$	500-1600	$V/\mu\text{s}$
Gate power loss, DC	P_{GM}	4	W
Operation junction temperature range	T_j	-40 ... +125	$^\circ\text{C}$
Storage temperature range	T_{stg}	-40 ... +50	

MDT-160

ELECTRICAL CHARACTERISTICS					
Parameter and conditions	Symbol	Values			Units
		min	type	max	
Maximum peak on-state voltage, $T_j = 25\text{ °C}$, $I_T = 502\text{ A}$	V_{TM}	-	-	1,50	V
On-state threshold voltage, $T_j = 125\text{ °C}$, $I_T = 250 - 750\text{ A}$	$V_{T(TO)}$	-	-	1,00	
On-state slope resistance, $T_j = 125\text{ °C}$, $I_T = 250 - 750\text{ A}$	r_T	-	-	1,05	mΩ
Delay time, $T_j = 25\text{ °C}$, $V_D = 0,67V_{DRM}$, $I_T = 160\text{ A}$, $I_{FG} = 1\text{ A}$, $t_r \leq 1\text{ }\mu\text{s}$	t_d	-	-	5,0	μs
Circuit-commutated turn-off time, $T_j = 125\text{ °C}$, $I_T = 160\text{ A}$, $di_T/dt = -5\text{ A}/\mu\text{s}$, $V_R \geq 100\text{ V}$, $V_D = 0,67V_{DRM}$, $dv_D/dt = 50\text{ V}/\mu\text{s}$	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	$R_{th(j-c)}$	-	-	0,180	°C/W
Thermal resistance case to heatsink	$R_{th(c-h)}$	-	-	0,010	
MECHANICAL PARAMETERS					
Weight	w	-	0,45	-	kg
Heatsink mounting torque	M_s	4	-	6	Nm
Terminal connection torque	M_t	1,5	-	3,5	Nm
Maximum acceleration (at nominal mounting force)	a	-	-	50	m/s ²



MDT-160



1 – Anode/Cathode; 2 – Cathode; 3 – Anode; 6 – Gate; 7 - Auxiliary cathode

Device Outline Drawing

(dimensions in mm)



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