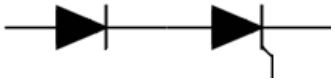
PHASE CONTROL DIODE-THYRISTOR MODULES

MDT-100

- V_{DRM}/V_{RRM} = **400 - 1600 V**
- $I_{T(AV)}$ = **100 A** (T_C = 86,7 °C)
- I_{TSM} = **2,5 kA** (T_j = 125 °C)



- Heat transfer through AlN ceramic isolated metal baseplate
- Presspack construction
- High reliability at thermal cycles (10^5 at ΔTC = 70 ºC)
- 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 …+ 125 °C	V_{DRM} / V_{RRM}	400-1600	V
Non-repetitive peak off-state voltage/ Non- repetitive peak reverse voltage, T_j = - 40 …+ 125 °C	V_{DSM} / V_{RSM}	500-1700	
Repetitive peak off-state current/ Repetitive peak reverse current, T_j = 125 °C, V_D / V_R = V_{DRM} / V_{RRM}	I_{DRM} / I_{RRM}	25	mA
Maximum average on-state current, f = 50 Hz, T_C = 86,7 °C	$I_{T(AV)}$	100	A
RMS on-state current, T_C = 86,7 °C	I_{TRMS}	157	
Surge non-repetitive current, T_j = 125 °C, t_p = 10 ms, V_R = 0	I_{TSM}	2,5	kA
Safety factor	I^2t	$0{,}03125 \cdot 10^6$	A^2s
Critical rate of rise of on-state current, T_j =125 °C, V_D = 0,67V_{DRM}, I_T = 200 A, I_{FG} = 1 A, $t_r \le 1$ µs, f = 50 Hz	$(di_T/dt)_{crit}$	200	A/µs
Critical rate of rise of off-state voltage T_j = 125 °C, V_D = 0,67V_{DRM}	$(dv_D/dt)_{crit}$	500-1600	V/µs
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 °C, I_T = 314 A	V_{TM}	-	-	1,80	V
On-state threshold voltage, T_j = 125 °C, I_T = 150 - 470 A	$V_{T(TO)}$	-	-	1,15	
On-state slope resistance, T_j = 125 °C, I_T = 150 - 470 A	r_T	-	-	2,40	mΩ
Delay time, T_j = 25 °C, V_D = 0,67V_{DRM}, I_T = 100 A, I_{FG} = 1 A, t_r ≤ 1 µs	t_d	-	-	5,0	µs
Circuit-commutated turn-off time, T_j = 125 °C, I_T = 100 A, di_T/dt = - 5 A/µs, V_R ≥ 100 V, V_D = 0,67V_{DRM}, dv_D/dt = 50 V/µs	t_q	-	160	-	
Holding current, T_j = 25 °C, V_D =12 V	I_H	-	-	250	mA
Gate trigger voltage, V_D = 12 V T_j = - 40 °C T_j = 25 °C T_j = 125 °C	V_{GT}	-	-	 4,5 2,5 2,0	V
Gate trigger current, V_D = 12 V T_j = - 40 °C T_j = 25 °C T_j = 125 °C	I_{GT}	-	-	 350 200 150	mA
Gate non-trigger voltage, T_j = 125 °C, V_D = 0,67V_{DRM}	V_{GD}	0,25	-	-	V
Electrical isolated baseplate (RMS), f = 50 Hz, t = 1 sec/1min	V_{isol}	-	-	3000/2500	V
THERMAL PARAMETERS					
Thermal resistance junction to case	$R_{th(j-c)}$	-	-	0,220	°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

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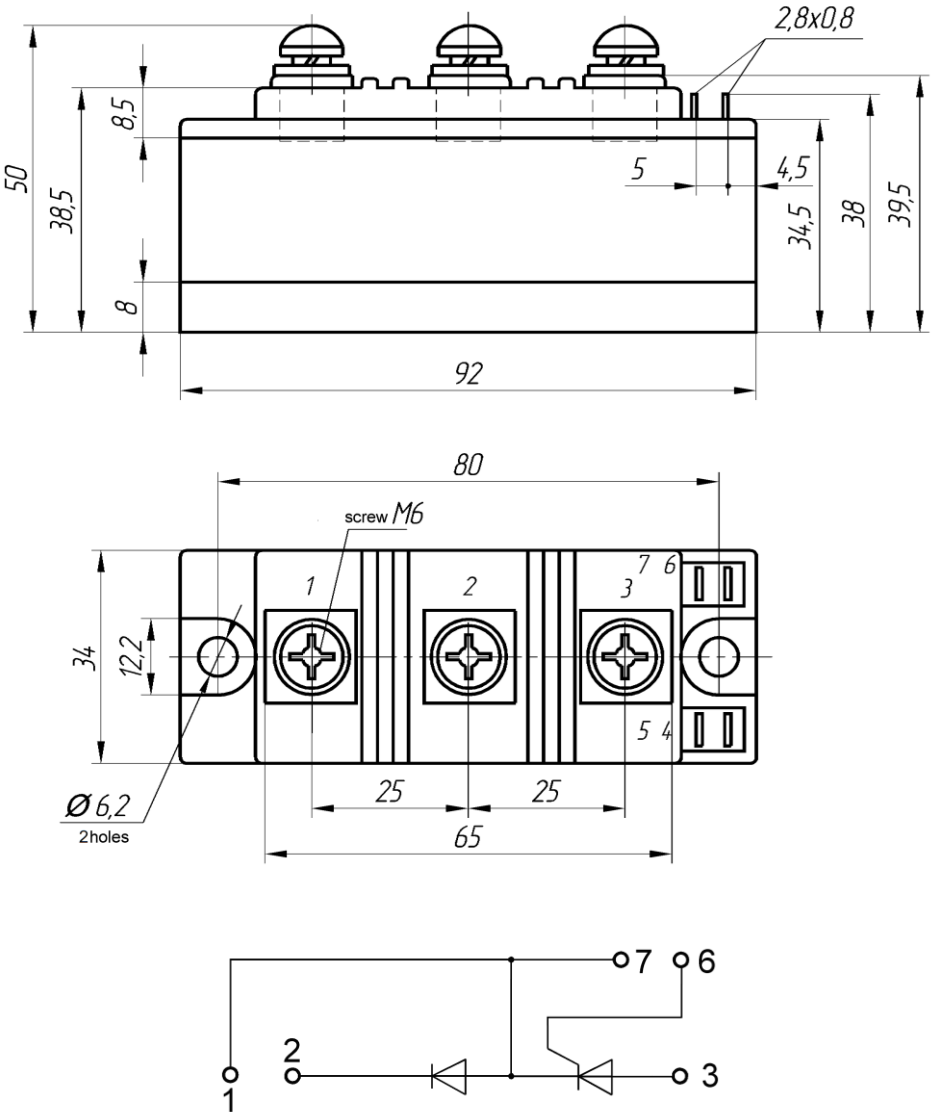

1 – Anode/Cathode; 2 – Cathode; 3 – Anode; 6 – Gate; 7 - Auxiliary cathode

Device Outline Drawing

(dimensions in mm)

126, Proletarskaya str.,
430001, Saransk, Republic Mordovia, Russia
Tel: +7(8342) 47-04-30
Tel/Fax: +7 (8342) 47-15-01
E-mail: vpruvs@elvpr.ru
Internet: www.elvpr.ru Internet: www.elvpr.ru