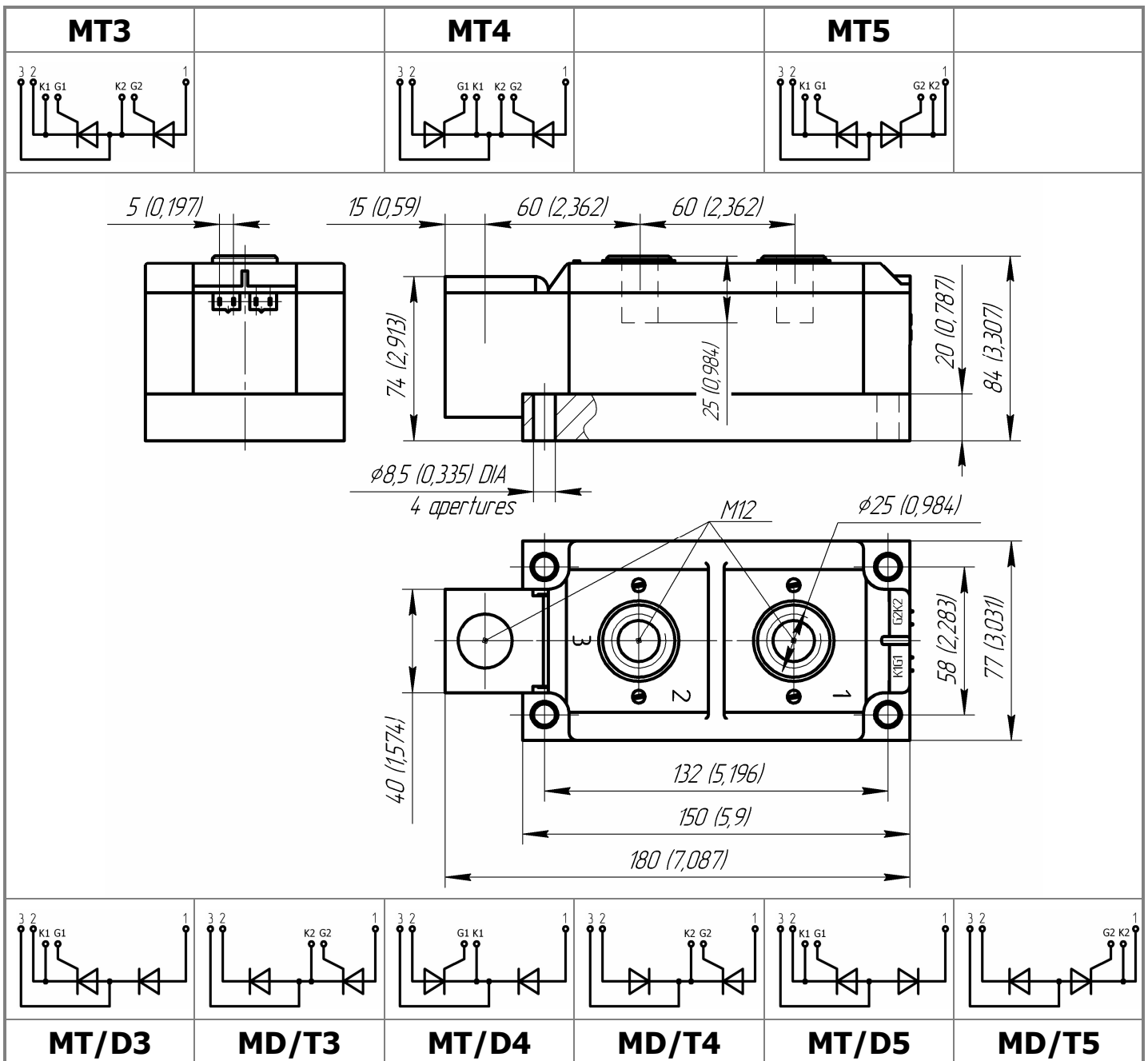




Electrically isolated base plate  
Industrial standard package  
Simplified mechanical design, rapid assembly  
Pressure contact

**Double Thyristor Module**  
**For Phase Control**  
**MTx-740-22-D**

Mean on-state current	$I_{TAV}$	740 A
Repetitive peak off-state voltage	$V_{DRM}$	2000 ÷ 2200 V
Repetitive peak reverse voltage	$V_{RRM}$	
Turn-off time	$t_q$	320 $\mu$ s
$V_{DRM}, V_{RRM}, V$	2000	2200
Voltage code	20	22
$T_{jv}, ^\circ C$	- 40 ÷ 125	



All dimensions in millimeters (inches)

## MAXIMUM ALLOWABLE RATINGS

Symbols and parameters		Units	Values	Test conditions
<b>ON-STATE</b>				
$I_{TAV}$	Mean on-state current	A	740 645	$T_c=77\text{ }^\circ\text{C}$ ; $T_c=85\text{ }^\circ\text{C}$ ; 180° half-sine wave; 50 Hz
$I_{TRMS}$	RMS on-state current	A	1162	$T_c=77\text{ }^\circ\text{C}$ ; 180° half-sine wave; 50 Hz
$I_{TSM}$	Surge on-state current	kA	24.5 28.0	$T_j=T_{j\max}$ $T_j=25\text{ }^\circ\text{C}$ 180° half-sine wave; 50 Hz ( $t_p=10\text{ ms}$ ); single pulse; $V_D=V_R=0\text{ V}$ ; Gate pulse: $I_G=2\text{ A}$ ; $t_{GP}=50\text{ }\mu\text{s}$ ; $di_G/dt\geq 1\text{ A}/\mu\text{s}$
			26.0 30.0	$T_j=T_{j\max}$ $T_j=25\text{ }^\circ\text{C}$ 180° half-sine wave; 60 Hz ( $t_p=8.3\text{ ms}$ ); single pulse; $V_D=V_R=0\text{ V}$ ; Gate pulse: $I_G=2\text{ A}$ ; $t_{GP}=50\text{ }\mu\text{s}$ ; $di_G/dt\geq 1\text{ A}/\mu\text{s}$
$I^2t$	Safety factor	$A^2s\cdot 10^3$	3000 3920	$T_j=T_{j\max}$ $T_j=25\text{ }^\circ\text{C}$ 180° half-sine wave; 50 Hz ( $t_p=10\text{ ms}$ ); single pulse; $V_D=V_R=0\text{ V}$ ; Gate pulse: $I_G=2\text{ A}$ ; $t_{GP}=50\text{ }\mu\text{s}$ ; $di_G/dt\geq 1\text{ A}/\mu\text{s}$
			2805 3735	$T_j=T_{j\max}$ $T_j=25\text{ }^\circ\text{C}$ 180° half-sine wave; 60 Hz ( $t_p=8.3\text{ ms}$ ); single pulse; $V_D=V_R=0\text{ V}$ ; Gate pulse: $I_G=2\text{ A}$ ; $t_{GP}=50\text{ }\mu\text{s}$ ; $di_G/dt\geq 1\text{ A}/\mu\text{s}$
<b>BLOCKING</b>				
$V_{DRM}, V_{RRM}$	Repetitive peak off-state and Repetitive peak reverse voltages	V	2000÷2200	$T_{j\min} < T_j < T_{j\max}$ ; 180° half-sine wave; 50 Hz; Gate open
$V_{DSM}, V_{RSM}$	Non-repetitive peak off-state and Non-repetitive peak reverse voltages	V	2100÷2300	$T_{j\min} < T_j < T_{j\max}$ ; 180° half-sine wave; 50 Hz; single pulse; Gate open
$V_D, V_R$	Direct off-state and Direct reverse voltages	V	$0.75\cdot V_{DRM}$ $0.75\cdot V_{RRM}$	$T_j=T_{j\max}$ ; Gate open
<b>TRIGGERING</b>				
$I_{FGM}$	Peak forward gate current	A	8	$T_j=T_{j\max}$
$V_{RGM}$	Peak reverse gate voltage	V	5	
$P_G$	Gate power dissipation	W	4	$T_j=T_{j\max}$ for DC gate current
<b>SWITCHING</b>				
$(di_T/dt)_{crit}$	Critical rate of rise of on-state current non-repetitive ( $f=1\text{ Hz}$ )	$A/\mu\text{s}$	400	$T_j=T_{j\max}$ ; $V_D=0.67\cdot V_{DRM}$ ; $I_{TM}=2\text{ }I_{TAV}$ ; Gate pulse: $I_G=2\text{ A}$ ; $t_{GP}=50\text{ }\mu\text{s}$ ; $di_G/dt\geq 1\text{ A}/\mu\text{s}$
<b>THERMAL</b>				
$T_{stg}$	Storage temperature	$^\circ\text{C}$	-40 ÷ 125	
$T_j$	Operating junction temperature	$^\circ\text{C}$	-40 ÷ 125	
<b>MECHANICAL</b>				
a	Acceleration under vibration	$\text{m/s}^2$	50	

## CHARACTERISTICS

Symbols and parameters		Units	Values	Conditions	
<b>ON-STATE</b>					
$V_{TM}$	Peak on-state voltage, max	V	1.55	$T_j=25\text{ }^\circ\text{C}; I_{TM}=3140\text{ A}$	
$V_{T(TO)}$	On-state threshold voltage, max	V	0.90	$T_j=T_{j\text{ max}};$	
$r_T$	On-state slope resistance, max	m $\Omega$	0.210	$0.5\pi I_{TAV} < I_T < 1.5\pi I_{TAV}$	
$I_L$	Latching current, max	mA	1500	$T_j=25\text{ }^\circ\text{C}; V_D=12\text{ V};$ Gate pulse: $I_G=2\text{ A};$ $t_{GP}=50\text{ }\mu\text{s}; di_G/dt \geq 1\text{ A}/\mu\text{s}$	
$I_H$	Holding current, max	mA	300	$T_j=25\text{ }^\circ\text{C};$ $V_D=12\text{ V};$ Gate open	
<b>BLOCKING</b>					
$I_{DRM}, I_{RRM}$	Repetitive peak off-state and Repetitive peak reverse currents, max	mA	150	$T_j=T_{j\text{ max}};$ $V_D=V_{DRM}; V_R=V_{RRM}$	
$(dv_D/dt)_{crit}$	Critical rate of rise of off-state voltage, min	V/ $\mu\text{s}$	1000	$T_j=T_{j\text{ max}};$ $V_D=0.67\cdot V_{DRM};$ Gate open	
<b>TRIGGERING</b>					
$V_{GT}$	Gate trigger direct voltage, max	V	4.00 2.50 2.00	$T_j= T_{j\text{ min}}$ $T_j=25\text{ }^\circ\text{C}$ $T_j= T_{j\text{ max}}$	$V_D=12\text{ V}; I_D=3\text{ A};$ Direct gate current
$I_{GT}$	Gate trigger direct current, max	mA	400 250 200	$T_j= T_{j\text{ min}}$ $T_j= 25\text{ }^\circ\text{C}$ $T_j= T_{j\text{ max}}$	
$V_{GD}$	Gate non-trigger direct voltage, min	V	0.25	$T_j=T_{j\text{ max}};$ $V_D=0.67\cdot V_{DRM};$	
$I_{GD}$	Gate non-trigger direct current, min	mA	10.00	Direct gate current	
<b>SWITCHING</b>					
$t_{gd}$	Delay time	$\mu\text{s}$	2.50	$T_j=25\text{ }^\circ\text{C}; V_D=0.4\cdot V_{DRM}; I_{TM}=I_{TAV};$ Gate pulse: $I_G=2\text{ A};$ $t_{GP}=50\text{ }\mu\text{s}; di_G/dt \geq 1\text{ A}/\mu\text{s}$	
$t_q$	Turn-off time, max	$\mu\text{s}$	320	$dv_D/dt=50\text{ V}/\mu\text{s}; T_j=T_{j\text{ max}}; I_{TM}= I_{TAV};$ $di_R/dt=-10\text{ A}/\mu\text{s}; V_R=100\text{V};$ $V_D=0.67\text{ }V_{DRM};$	
<b>THERMAL</b>					
$R_{thjc}$	Thermal resistance, junction to case			180° half-sine wave, 50 Hz	
	per module	$^\circ\text{C}/\text{W}$	0.0250		
	per arm	$^\circ\text{C}/\text{W}$	0.0500		
$R_{thch}$	Thermal resistance, case to heatsink				
	per module	$^\circ\text{C}/\text{W}$	0.0080		
	per arm	$^\circ\text{C}/\text{W}$	0.0160		
<b>INSULATION</b>					
$V_{ISOL}$	Insulation test voltage	kV	3.00	Sine wave, 50 Hz; RMS	t=1 min
			3.60		t=1 sec
<b>MECHANICAL</b>					
$M_1$	Mounting torque (M8) <sup>1)</sup>	Nm	9.00	Tolerance $\pm 15\%$	
$M_2$	Terminal connection torque (M12) <sup>1)</sup>	Nm	18.00	Tolerance $\pm 10\%$	
w	Weight	g	3500		

PART NUMBERING GUIDE										NOTES	
MT	3	-	740	-	22	-	D	-	N		1) The screws must be lubricated
1	2		3		4		5		6		
1. Thyristor module (MT) Thyristor – Diode module (MT/D) Diode – Thyristor module (MD/T) 2. Circuit Schematic: 3 – serial connection 4 – common Cathode 5 – common Anode 3. Average On-state Current, A 4. Voltage Code 5. Package Type (M.D) 6. Ambient Conditions: N – Normal											

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