Double Thyristor Module For Phase Control MTx-200-28-C1

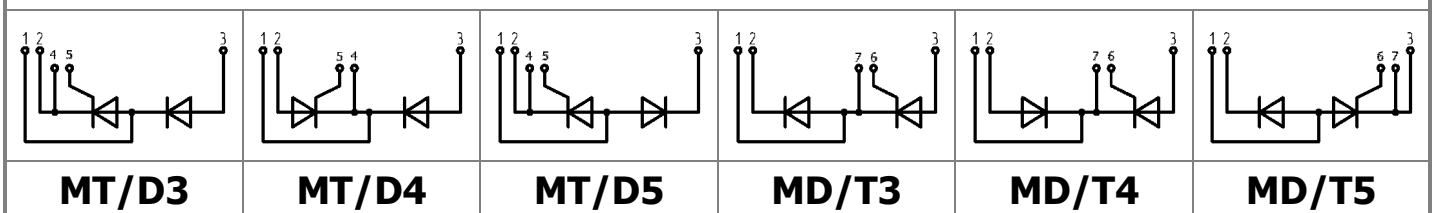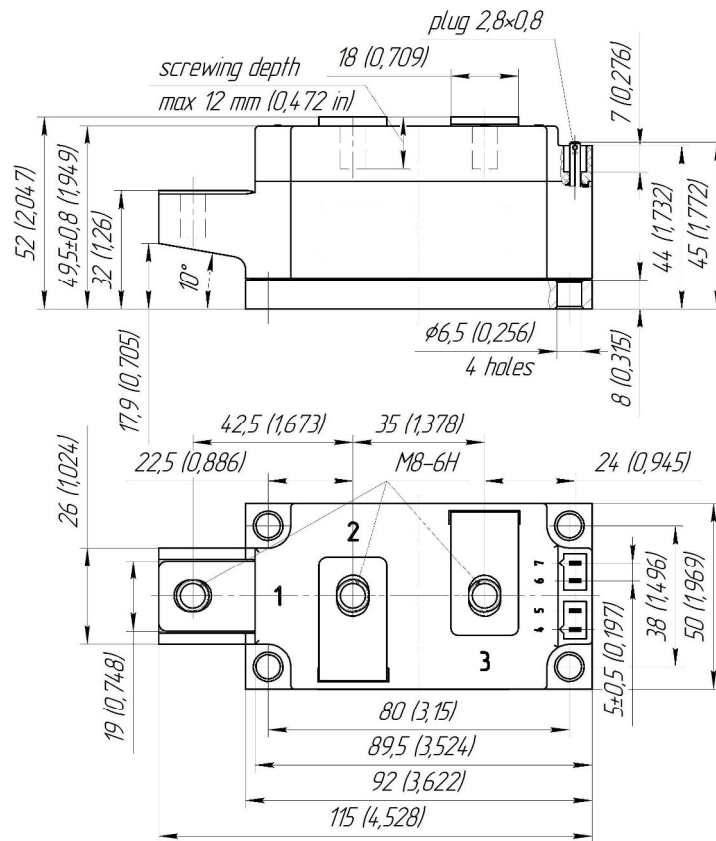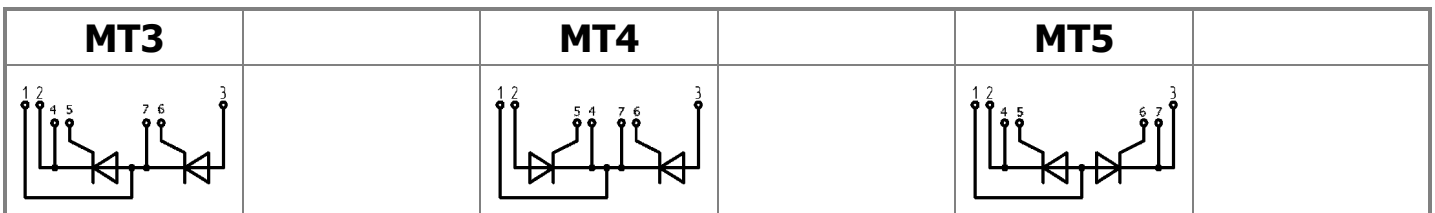Electrically isolated base plate
Industrial standard package
Simplified mechanical design, rapid assembly
Pressure contact

Mean on-state current	I_{TAV}	200 A	
Repetitive peak off-state voltage	V_{DRM}	2600 ÷ 2800 V	
Repetitive peak reverse voltage	V_{RRM}		
Turn-off time	t_q	200 μs	
V_{DRM}, V_{RRM}, V	2600		2800
Voltage code	26		28
T_j, °C	− 40 ÷ 125		

MT3	MT4	MT5	

MT/D3	MT/D4	MT/D5	MD/T3	MD/T4	MD/T5

All dimensions in millimeters (inches)

MAXIMUM ALLOWABLE RATINGS

Symbols and parameters		Units	Values	Test conditions	
ON-STATE					
I_{TAV}	Mean on-state current	A	200 237	T_c=93 °C; T_c=85 °C; 180° half-sine wave; 50 Hz	
I_{TRMS}	RMS on-state current	A	314	T_c=93 °C; 180° half-sine wave; 50 Hz	
I_{TSM}	Surge on-state current	kA	5.5 6.3	T_j=$T_{j\ max}$ T_j=25 °C	180° half-sine wave; 50 Hz (t_p=10 ms); single pulse; V_D=V_R=0 V; Gate pulse: I_G=2 A; t_{GP}=50 µs; di_G/dt≥1 A/µs
			6.0 6.9	T_j=$T_{j\ max}$ T_j=25 °C	180° half-sine wave; 60 Hz (t_p=8.3 ms); single pulse; V_D=V_R=0 V; Gate pulse: I_G=2 A; t_{GP}=50 µs; di_G/dt≥1 A/µs
I^2t	Safety factor	$A^2s \cdot 10^3$	150 195	T_j=$T_{j\ max}$ T_j=25 °C	180° half-sine wave; 50 Hz (t_p=10 ms); single pulse; V_D=V_R=0 V; Gate pulse: I_G=2 A; t_{GP}=50 µs; di_G/dt≥1 A/µs
			145 195	T_j=$T_{j\ max}$ T_j=25 °C	180° half-sine wave; 60 Hz (t_p=8.3 ms); single pulse; V_D=V_R=0 V; Gate pulse: I_G=2 A; t_{GP}=50 µs; di_G/dt≥1 A/µs
BLOCKING					
V_{DRM}, V_{RRM}	Repetitive peak off-state and Repetitive peak reverse voltages	V	2600÷2800	$T_{j\ min}$< 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	2700÷2900	$T_{j\ min}$< 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·V_{DRM} 0.75·V_{RRM}	T_j=$T_{j\ max}$; Gate open	
TRIGGERING					
I_{FGM}	Peak forward gate current	A	6	T_j=$T_{j\ max}$	
V_{RGM}	Peak reverse gate voltage	V	5		
P_G	Gate power dissipation	W	3	T_j=$T_{j\ max}$ for DC gate current	
SWITCHING					
$(di_T/dt)_{crit}$	Critical rate of rise of on-state current non-repetitive (f=1 Hz)	A/µs	200	T_j=$T_{j\ max}$; V_D=0.67·V_{DRM}; I_{TM}=2 I_{TAV}; Gate pulse: I_G=2 A; t_{GP}=50 µs; di_G/dt≥1 A/µs	
THERMAL					
T_{stg}	Storage temperature	°C	-40 ÷ 50		
T_j	Operating junction temperature	°C	-40 ÷ 125		
MECHANICAL					
a	Acceleration under vibration	m/s^2	50		

CHARACTERISTICS

	Symbols and parameters	Units	Values	Conditions	
ON-STATE					
V_{TM}	Peak on-state voltage, max	V	2.00	T_j=25 °C; I_{TM}= 785 A	
$V_{T(TO)}$	On-state threshold voltage, max	V	0.90	T_j=$T_{j\,max}$;	
r_T	On-state slope resistance, max	mΩ	1.100	$0.5\,\pi\,I_{TAV} < I_T < 1.5\,\pi\,I_{TAV}$	
I_L	Latching current, max	mA	700	T_j=25 °C; V_D=12 V; Gate pulse: I_G=2 A; t_{GP}=50 µs; $di_G/dt \geq 1$ A/µs	
I_H	Holding current, max	mA	300	T_j=25 °C; V_D=12 V; Gate open	
BLOCKING					
I_{DRM}, I_{RRM}	Repetitive peak off-state and Repetitive peak reverse currents, max	mA	50	T_j=$T_{j\,max}$; V_D=V_{DRM}; V_R=V_{RRM}	
$(dv_D/dt)_{crit}$	Critical rate of rise of off-state voltage, min	V/µs	1000	T_j=$T_{j\,max}$; V_D=0.67·V_{DRM}; Gate open	
TRIGGERING					
V_{GT}	Gate trigger direct voltage, max	V	3.50 2.00 1.50	T_j= $T_{j\,min}$ T_j=25 °C T_j= $T_{j\,max}$	V_D=12 V; I_D=3 A; Direct gate current
I_{GT}	Gate trigger direct current, max	mA	250 150 100	T_j= $T_{j\,min}$ T_j= 25 °C T_j= $T_{j\,max}$	
V_{GD}	Gate non-trigger direct voltage, min	V	0.25	T_j=$T_{j\,max}$; V_D=0.67·V_{DRM}; Direct gate current	
I_{GD}	Gate non-trigger direct current, min	mA	10.00		
SWITCHING					
t_{gd}	Delay time	µs	2.50	T_j=25 °C; V_D=0.4·V_{DRM}; I_{TM}=I_{TAV}; Gate pulse: I_G=2 A; t_{GP}=50 µs; $di_G/dt \geq 1$ A/µs	
t_q	Turn-off time, max	µs	200	dv_D/dt=50 V/µs; T_j=$T_{j\,max}$; I_{TM}= I_{TAV}; di_R/dt=-10 A/µs; V_R=100V; V_D=0.67 V_{DRM}	
THERMAL					
R_{thjc}	Thermal resistance, junction to case			180° half-sine wave, 50 Hz	
	per module	°C/W	0.0550		
	per arm	°C/W	0.1100		
R_{thch}	Thermal resistance, case to heatsink				
	per module	°C/W	0.0200		
	per arm	°C/W	0.0400		
INSULATION					
V_{ISOL}	Insulation test voltage	kV	3.00	Sine wave, 50 Hz; RMS	t=1 min
			3.60		t=1 sec
MECHANICAL					
M_1	Mounting torque (M6)[1]	Nm	6.00	Tolerance ± 15%	
M_2	Terminal connection torque (M8)[1]	Nm	9.00	Tolerance ± 15%	
w	Weight	g	800		

PART NUMBERING GUIDE	NOTES
MT 3 - 200 - 28 - C1 - N 　1　2　　　3　　　4　　　5　　　6 1. Thyristor module (MT) 　　Thyristor – Diode module (MT/D) 　　Diode – Thyristor module (MD/T) 2. Circuit Schematic 3. Average On-state Current, A 4. Voltage Code 5. Package Type (M.C1) 6. Ambient Conditions: 　　N – Normal	[1] The screws must be lubricated