



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

**Double Thyristor Module
For Phase Control
MTx-130-28-F**

Mean on-state current	I_{TAV}	130 A	
Repetitive peak off-state voltage	V_{DRM}	2400 ÷ 2800 V	
Repetitive peak reverse voltage	V_{RRM}		
Turn-off time	t_q	160 μ s	
V_{DRM}, V_{RRM}, V	2400	2600	2800
Voltage code	24	26	28
$T_{ij}, ^\circ C$	- 40 ÷ 125		


MT3		MT4			
MT/D3	MD/T3			MT/D5	

MAXIMUM ALLOWABLE RATINGS

Symbols and parameters		Units	Values	Test conditions
ON-STATE				
I_{TAV}	Mean on-state current	A	130	$T_c = 85\text{ }^\circ\text{C}$; 180° half-sine wave; 50 Hz
I_{TRMS}	RMS on-state current	A	204	
I_{TSM}	Surge on-state current	kA	3.4 4.0	$T_j = T_{j\text{ max}}$ $T_j = 25\text{ }^\circ\text{C}$ 180° half-sine wave; 50 Hz ($t_p = 10\text{ ms}$); single pulse; $V_D = V_R = 0\text{ V}$; Gate pulse: $I_G = 2\text{ A}$; $t_{GP} = 50\text{ }\mu\text{s}$; $di_G/dt \geq 1\text{ A}/\mu\text{s}$
			4.0 4.6	$T_j = T_{j\text{ max}}$ $T_j = 25\text{ }^\circ\text{C}$ 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	$A^2s \cdot 10^3$	55 75	$T_j = T_{j\text{ max}}$ $T_j = 25\text{ }^\circ\text{C}$ 180° half-sine wave; 50 Hz ($t_p = 10\text{ ms}$); single pulse; $V_D = V_R = 0\text{ V}$; Gate pulse: $I_G = 2\text{ A}$; $t_{GP} = 50\text{ }\mu\text{s}$; $di_G/dt \geq 1\text{ A}/\mu\text{s}$
			65 85	$T_j = T_{j\text{ max}}$ $T_j = 25\text{ }^\circ\text{C}$ 180° half-sine wave; 60 Hz ($t_p = 8.3\text{ ms}$); single pulse; $V_D = V_R = 0\text{ V}$; Gate pulse: $I_G = 2\text{ A}$; $t_{GP} = 50\text{ }\mu\text{s}$; $di_G/dt \geq 1\text{ A}/\mu\text{s}$
BLOCKING				
V_{DRM}, V_{RRM}	Repetitive peak off-state and Repetitive peak reverse voltages	V	2400÷2800	$T_{j\text{ min}} < T_j < T_{j\text{ max}}$; 180° half-sine wave; 50 Hz; Gate open
V_{DSM}, V_{RSM}	Non-repetitive peak off-state and Non-repetitive peak reverse voltages	V	2500÷2900	$T_{j\text{ min}} < T_j < T_{j\text{ max}}$; 180° half-sine wave; 50 Hz; single pulse; Gate open
V_D, V_R	Direct off-state and Direct reverse voltages	V	$0.75 \cdot V_{DRM}$ $0.75 \cdot V_{RRM}$	$T_j = T_{j\text{ max}}$; Gate open
TRIGGERING				
I_{FGM}	Peak forward gate current	A	5	$T_j = T_{j\text{ max}}$
V_{RGM}	Peak reverse gate voltage	V	5	
P_G	Gate power dissipation	W	3	$T_j = T_{j\text{ max}}$ 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	$T_j = T_{j\text{ max}}$; $V_D = 0.67 \cdot V_{DRM}$; $I_{TM} = 2 I_{TAV}$; Gate pulse: $I_G = 2\text{ A}$; $t_{GP} = 50\text{ }\mu\text{s}$; $di_G/dt \geq 1\text{ A}/\mu\text{s}$
THERMAL				
T_{stg}	Storage temperature	$^\circ\text{C}$	-40 ÷ 125	
T_j	Operating junction temperature	$^\circ\text{C}$	-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	1.80	$T_j=25\text{ }^\circ\text{C}$; $I_{TM}=500\text{ A}$	
$V_{T(TO)}$	On-state threshold voltage, max	V	0.85	$T_j=T_{j\text{ max}}$;	
r_T	On-state slope resistance, max	m Ω	2.400	$0.5\pi I_{TAV} < I_T < 1.5\pi I_{TAV}$	
I_L	Latching current, max	mA	500	$T_j=25\text{ }^\circ\text{C}$; $V_D=12\text{ V}$; 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	250	$T_j=25\text{ }^\circ\text{C}$; $V_D=12\text{ V}$; Gate open	
BLOCKING					
I_{DRM} , I_{RRM}	Repetitive peak off-state and Repetitive peak reverse currents, max	mA	40	$T_j=T_{j\text{ max}}$; $V_D=V_{DRM}$; $V_R=V_{RRM}$	
$(dv_D/dt)_{crit}$	Critical rate of rise of off-state voltage, min	V/ μs	1000	$T_j=T_{j\text{ max}}$; $V_D=0.67V_{DRM}$; Gate open	
TRIGGERING					
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	$T_j=T_{j\text{ max}}$; $V_D=0.67V_{DRM}$;	
I_{GD}	Gate non-trigger direct current, min	mA	10.00	Direct gate current	
SWITCHING					
t_{gd}	Delay time	μs	2.50	$T_j=25\text{ }^\circ\text{C}$; $V_D=0.4V_{DRM}$; $I_{TM}=I_{TAV}$; 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	μs	160	$dv_D/dt=50\text{ V}/\mu\text{s}$; $T_j=T_{j\text{ max}}$; $I_{TM}=200\text{ A}$; $di_R/dt=-10\text{ A}/\mu\text{s}$; $V_R=100\text{ V}$; $V_D=0.67V_{DRM}$;	
THERMAL					
R_{thjc}	Thermal resistance, junction to case				
	per module	$^\circ\text{C}/\text{W}$	0.0950	180° half-sine wave, 50 Hz	
	per arm	$^\circ\text{C}/\text{W}$	0.1900		
	per module	$^\circ\text{C}/\text{W}$	0.0900	DC	
per arm	$^\circ\text{C}/\text{W}$	0.1800			
R_{thch}	Thermal resistance, case to heatsink				
	per module	$^\circ\text{C}/\text{W}$	0.0300		
	per arm	$^\circ\text{C}/\text{W}$	0.0600		
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 $\pm 15\%$	
M_2	Terminal connection torque (M6) ¹⁾	Nm	6.00	Tolerance $\pm 15\%$	
w	Weight	g	320		

PART NUMBERING GUIDE										NOTES
MT	3	-	130	-	28	-	F	-	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. Average On-state Current, A 4. Voltage Code 5. Package Type (M.F) 6. Ambient Conditions: N – Normal										
		UL certified file-No. E255404								