EVLYS LTD. - POWER SEMICONDUCTORS DEVICES - Wholesale and Retail.

Phase Control Disc Thyristor Type DT56-800-65

High power cycling capability / Low on-state and switching losses
Designed for traction and industrial applications

Mean on-state current					I_{TAV}		800 A				
Repetitive peak off-state voltage					V_{DRM}		4600 ÷ 6500 V				
Repetitive peak reverse voltage					V_{RRM}						
Turn-off time					t_q		630, 800 µs				
V_{DRM}, V_{RRM}, V	4600	4800	5000	5200	5400	5600	5800	6000	6200	6400	6500
Voltage code	46	48	50	52	54	56	58	60	62	64	65
T_j, °C	-60 ÷ 125										

MAXIMUM ALLOWABLE RATINGS

Symbols and parameters		Units	Values	Test conditions	
ON-STATE					
I_{TAV}	Mean on-state current	A	800 894 733	T_c=79 °C, Double side cooled T_c=70 °C, Double side cooled T_c=85 °C, Double side cooled 180° half-sine wave; 50 Hz	
I_{TRMS}	RMS on-state current	A	1256	T_c=79 °C, Double side cooled 180° half-sine wave; 50 Hz	
I_{TSM}	Surge on-state current	kA	10.0 11.5	T_j=$T_{j\,max}$ T_j=25 °C	180° half-sine wave; 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
			10.5 12.0	T_j=$T_{j\,max}$ T_j=25 °C	180° half-sine wave; 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	$A^2s \cdot 10^3$	500 660	T_j=$T_{j\,max}$ T_j=25 °C	180° half-sine wave; 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
			450 590	T_j=$T_{j\,max}$ T_j=25 °C	180° half-sine wave; 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	4600÷6500	$T_{j\,min}$< 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	4700÷6600	$T_{j\,min}$< T_j <$T_{j\,max}$; 180° half-sine wave; single pulse; Gate open	
V_D, V_R	Direct off-state and Direct reverse voltages	V	0.6·V_{DRM} 0.6·V_{RRM}	T_j=$T_{j\,max}$; Gate open	

TRIGGERING				
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
SWITCHING				
$(di_T/dt)_{crit}$	Critical rate of rise of on-state current non-repetitive (f=1 Hz)	A/µs	60	$T_j=T_{j\,max}$; $V_D=0.67\cdot V_{DRM}$; $I_{TM}=1540$ A; Gate pulse: $I_G=2$ A; $t_{GP}=50$ µs; $di_G/dt\geq 2$ A/µs
THERMAL				
T_{stg}	Storage temperature	°C	-60÷50	
T_j	Operating junction temperature	°C	-60÷125	
MECHANICAL				
F	Mounting force	kN	24.0÷28.0	
a	Acceleration	m/s^2	50	Device clamped

CHARACTERISTICS

Symbols and parameters		Units	Values	Conditions	
ON-STATE					
V_{TM}	Peak on-state voltage, max	V	2.40	$T_j=25$ °C; $I_{TM}=1500$ A	
$V_{T(TO)}$	On-state threshold voltage, max	V	1.269	$T_j=T_{j\,max}$; $0.5\ \pi\ I_{TAV} < I_T < 1.5\ \pi\ I_{TAV}$	
r_T	On-state slope resistance, max	mΩ	0.981		
I_L	Latching current, max	mA	1500	$T_j=25$ °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	200	$T_j=T_{j\,max}$; $V_D=V_{DRM}$; $V_R=V_{RRM}$	
$(dv_D/dt)_{crit}$	Critical rate of rise of off-state voltage[1)], min	V/µs	1000, 1600, 2000, 2500	$T_j=T_{j\,max}$; $V_D=0.67\cdot V_{DRM}$; Gate open	
TRIGGERING					
V_{GT}	Gate trigger direct voltage, max	V	3.00 2.50 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	500 300 150	$T_j=T_{j\,min}$ $T_j=25$ °C $T_j=T_{j\,max}$	
V_{GD}	Gate non-trigger direct voltage, min	V	0.45	$T_j=T_{j\,max}$; $V_D=0.67\cdot V_{DRM}$; Direct gate current	
I_{GD}	Gate non-trigger direct current, min	mA	55.00		
SWITCHING					
t_{gd}	Delay time, max	µs	3.00	$T_j=25$ °C; $V_D=1500$ V; $I_{TM}=I_{TAV}$; di/dt=200 A/µs; Gate pulse: $I_G=2$ A; $V_G=20$ V; $t_{GP}=50$ µs; $di_G/dt=2$ A/µs	
t_{gt}	Turn-on time, max	µs	14.00		
t_q	Turn-off time[2)], max	µs	630, 800	$dv_D/dt=50$ V/µs; $T_j=T_{j\,max}$; $I_{TM}=I_{TAV}$; $di_R/dt=-10$ A/µs; $V_R=100$V; $V_D=0.67\cdot V_{DRM}$	
Q_{rr}	Total recovered charge, max	µC	4500	$T_j=T_{j\,max}$; $I_{TM}=1000$ A; $di_R/dt=-5$ A/µs; $V_R=100$ V	
t_{rr}	Reverse recovery time, typ	µs	60.0		
I_{rrM}	Peak reverse recovery current, max	A	150		

THERMAL					
R_{thjc}	Thermal resistance, junction to case, max	°C/W	0.0180	Direct current	Double side cooled
R_{thjc-A}			0.0396		Anode side cooled
R_{thjc-K}			0.0324		Cathode side cooled
R_{thck}	Thermal resistance, case to heatsink, max	°C/W	0.0040	Direct current	
MECHANICAL					
w	Weight, max	g	510		
D_s	Surface creepage distance	mm (inch)	31.60 (1.244)		
D_a	Air strike distance	mm (inch)	16.50 (0.649)		

PART NUMBERING GUIDE

DT	56	800	65	7	3
1	2	3	4	5	6

1. DT - Phase Control Disc Thyristor
2. Element Diameter
3. Mean on-state current, A
4. Voltage code
5. Critical rate of rise of on-state current non-repetitive, V/µs
6. Turn-off time (dv_D/dt=50 V/µs)

NOTES

[1] Critical rate of rise of off-state voltage

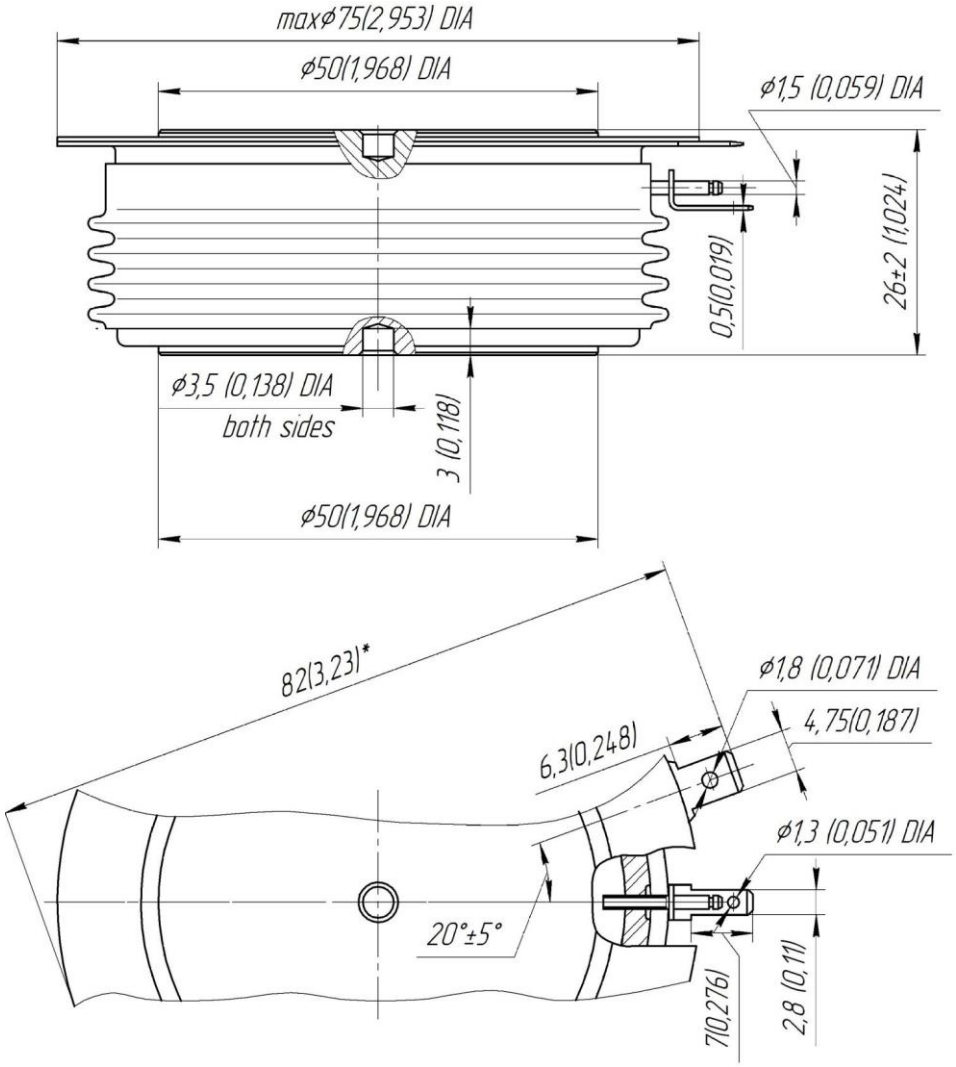
Symbol of Group	7	8	8.5	9
$(dv_D/dt)_{crit}$, V/µs	1000	1600	2000	2500

[2] Turn-off time (dv_D/dt=50 V/µs)

Symbol of Group	0	0
t_q, µs	630	800

OVERALL DIMENSIONS

Package type: T.D5



All dimensions in millimeters (inches)