

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

Phase Control Disc Thyristor Type DT99-3600-36

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

Mean on-state current	I_{TAV}		3600 A	
Repetitive peak off-state voltage	V_{DRM}		3000...3600 V	
Repetitive peak reverse voltage	V_{RRM}			
Turn-off time	t_q		630 μ s	
V_{DRM}, V_{RRM}, V	3000	3200	3400	3600
Voltage code	30	32	34	36
$T_{j,r}, ^\circ C$	-60...+125			

MAXIMUM ALLOWABLE RATINGS

Symbols and parameters		Units	Values	Test conditions	
ON-STATE					
I_{TAV}	Maximum allowable mean on-state current	A	3600 4540	$T_c = 86^\circ C$, Double side cooled $T_c = 70^\circ C$, Double side cooled 180° half-sine wave; 50 Hz	
I_{TRMS}	RMS on-state current	A	5652	$T_c = 86^\circ C$, Double side cooled 180° half-sine wave; 50 Hz	
I_{TSM}	Surge on-state current	kA	72.0 83.0	$T_j = T_{j,max}$ $T_j = 25^\circ C$	180° half-sine wave; $t_p = 10$ ms; single pulse; $V_D = V_R = 0$ V; Gate pulse: $I_G = 2$ A; $t_{GP} = 50$ μ s; $di_G/dt \geq 1$ A/ μ s
			76.0 87.0	$T_j = T_{j,max}$ $T_j = 25^\circ C$	180° half-sine wave; $t_p = 8.3$ ms; single pulse; $V_D = V_R = 0$ V; Gate pulse: $I_G = 2$ A; $t_{GP} = 50$ μ s; $di_G/dt \geq 1$ A/ μ s
I^2t	Safety factor	$A^2s \cdot 10^3$	25900 34400	$T_j = T_{j,max}$ $T_j = 25^\circ C$	180° half-sine wave; $t_p = 10$ ms; single pulse; $V_D = V_R = 0$ V; Gate pulse: $I_G = 2$ A; $t_{GP} = 50$ μ s; $di_G/dt \geq 1$ A/ μ s
			23900 31400	$T_j = T_{j,max}$ $T_j = 25^\circ C$	180° half-sine wave; $t_p = 8.3$ ms; single pulse; $V_D = V_R = 0$ V; Gate pulse: $I_G = 2$ A; $t_{GP} = 50$ μ s; $di_G/dt \geq 1$ A/ μ s
BLOCKING					
V_{DRM}, V_{RRM}	Repetitive peak off-state and Repetitive peak reverse voltages	V	3000...3600	$T_{j,min} < T_j < T_{j,max}$; 180° half-sine wave; 50 Hz; Gate open	
V_{DSM}, V_{RSM}	Non-repetitive peak off-state and Non-repetitive peak reverse voltages	V	3100...3700	$T_{j,min} < T_j < T_{j,max}$; 180° half-sine wave; single pulse; Gate open	
V_D, V_R	Direct off-state and Direct reverse voltages	V	$0.6 \cdot V_{DRM}$ $0.6 \cdot V_{RRM}$	$T_j = T_{j,max}$; Gate open	

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

TRIGGERING				
I_{FGM}	Peak forward gate current	A	12	$T_j = T_{j\max}$
V_{RGM}	Peak reverse gate voltage	V	5	
P_G	Gate power dissipation	W	5	$T_j = T_{j\max}$ for DC gate current
SWITCHING				
$(di_T/dt)_{crit}$	Critical rate of rise of on-state current non-repetitive (f=1 Hz)	A/ μ s	1000	$T_j = T_{j\max}$; $V_D = 0.67 \cdot V_{DRM}$; $I_{TM} = 7200$ A; Gate pulse: $I_G = 2$ A; $t_{GP} = 50$ μ s; $di_G/dt \geq 2$ A/ μ s
THERMAL				
T_{stg}	Storage temperature	$^{\circ}$ C	-60...+50	
T_j	Operating junction temperature	$^{\circ}$ C	-60...+125	
MECHANICAL				
F	Mounting force	kN	70.0...90.0	
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	1.70	$T_j = 25$ $^{\circ}$ C; $I_{TM} = 6300$ A	
$V_{T(TO)}$	On-state threshold voltage, max	V	0.90	$T_j = T_{j\max}$;	
r_T	On-state slope resistance, max	m Ω	0.110	$0.5 \pi I_{TAV} < I_T < 1.5 \pi I_{TAV}$	
I_L	Latching current, max	mA	1500	$T_j = 25$ $^{\circ}$ C; $V_D = 12$ V; Gate pulse: $I_G = 2$ A; $t_{GP} = 50$ μ s; $di_G/dt \geq 1$ A/ μ s	
I_H	Holding current, max	mA	300	$T_j = 25$ $^{\circ}$ C; $V_D = 12$ V; Gate open	
BLOCKING					
I_{DRM} , I_{RRM}	Repetitive peak off-state and Repetitive peak reverse currents, max	mA	300	$T_j = T_{j\max}$; $V_D = V_{DRM}$; $V_R = V_{RRM}$	
$(dv_D/dt)_{crit}$	Critical rate of rise of off-state voltage ¹⁾ , min	V/ μ s	500, 1000, 1600	$T_j = T_{j\max}$; $V_D = 0.67 \cdot V_{DRM}$; Gate open	
TRIGGERING					
V_{GT}	Gate trigger direct voltage, max	V	5.00	$T_j = T_{j\min}$ $T_j = 25$ $^{\circ}$ C $T_j = T_{j\max}$	$V_D = 12$ V; $I_D = 3$ A; Direct gate current
			3.00		
			2.00		
I_{GT}	Gate trigger direct current, max	mA	500	$T_j = T_{j\min}$ $T_j = 25$ $^{\circ}$ C $T_j = T_{j\max}$	
			300		
			200		
V_{GD}	Gate non-trigger direct voltage, min	V	0.35	$T_j = T_{j\max}$; $V_D = 0.67 \cdot V_{DRM}$;	
I_{GD}	Gate non-trigger direct current, min	mA	15.00	Direct gate current	
SWITCHING					
t_{gd}	Delay time, max	μ s	3.00	$T_j = 25$ $^{\circ}$ C; $V_D = 1500$ V; $I_{TM} = I_{TAV}$; Gate pulse: $I_G = 2$ A; $t_{GP} = 50$ μ s; $di_G/dt \geq 2$ A/ μ s	
t_q	Turn-off time ²⁾ , max	μ s	630	$dv_D/dt = 50$ V/ μ s; $T_j = T_{j\max}$; $I_{TM} = 1000$ A; $di_R/dt = -10$ A/ μ s; $V_R = 100$ V; $V_D = 0.67 V_{DRM}$	
Q_{rr}	Recovered charge, max	μ C	7000	$T_j = T_{j\max}$; $I_{TM} = 1000$ A;	
t_{rr}	Reverse recovery time, max	μ s	68	$di_R/dt = -5$ A/ μ s;	
I_{rr}	Reverse recovery current, max	A	205	$V_R = 100$ V	

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

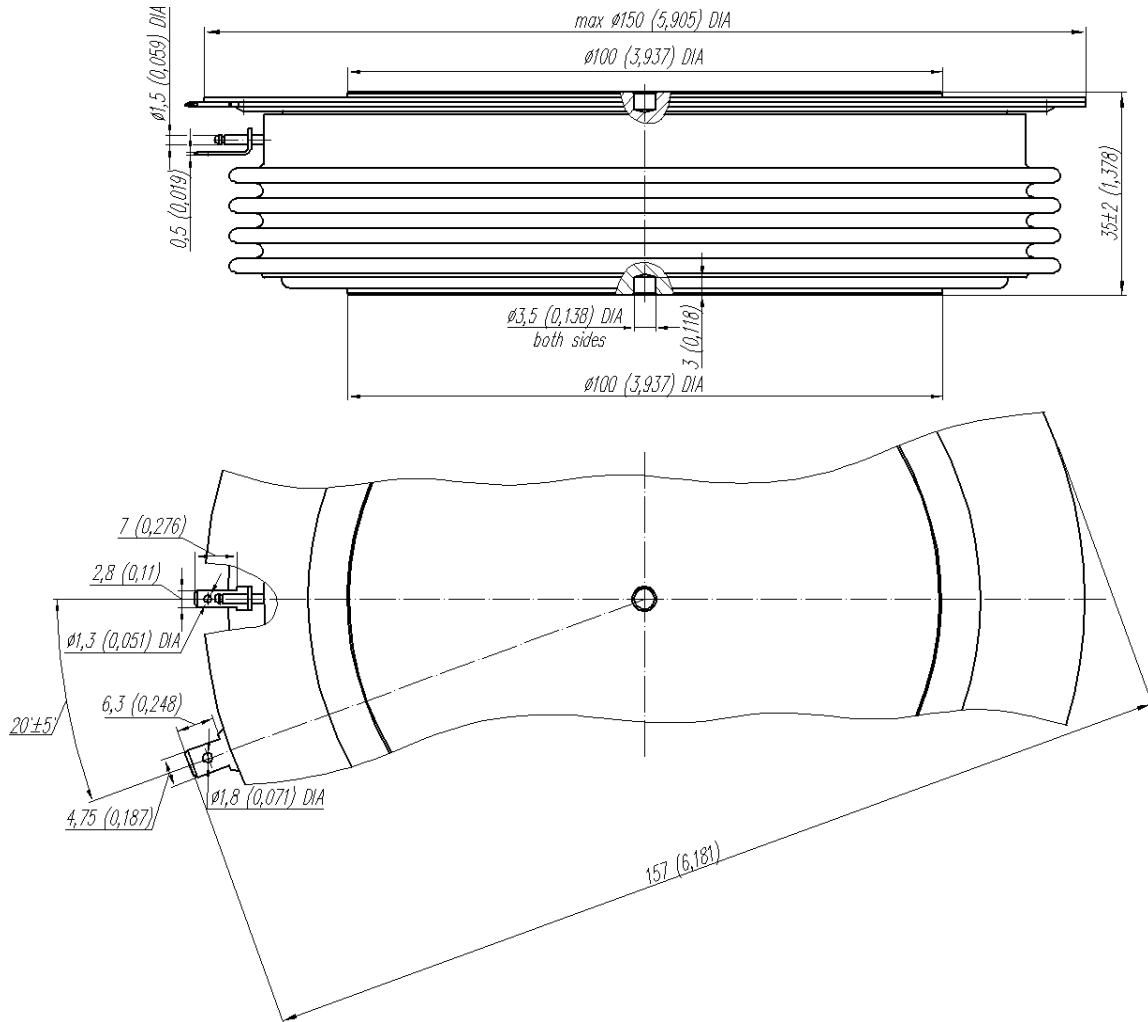
THERMAL					
R_{thjc}	Thermal resistance, junction to case, max	°C/W	0.0057	Direct current	Double side cooled
R_{thjc-A}			0.0125		Anode side cooled
R_{thjc-K}			0.0103		Cathode side cooled
R_{thck}	Thermal resistance, case to heatsink, max	°C/W	0.0010	Direct current	
MECHANICAL					
m	Weight, max	g	2700		
D_s	Surface creepage distance	mm (inch)	62.09 (2.444)		
D_a	Air strike distance	mm (inch)	23.40 (0.921)		

PART NUMBERING GUIDE							NOTES											
DT	99	3600	36	7	3		1) Critical rate of rise of off-state voltage											
1	2	3	4	5	6		<table border="1" style="width: 100%;"> <thead> <tr> <th style="background-color: #cccccc;">Symbol of Group</th> <th style="background-color: #cccccc;">6</th> <th style="background-color: #cccccc;">7</th> <th style="background-color: #cccccc;">8</th> </tr> </thead> <tbody> <tr> <td>$(dv_D/dt)_{crit}, V/\mu s$</td> <td>500</td> <td>1000</td> <td>1600</td> </tr> </tbody> </table>				Symbol of Group	6	7	8	$(dv_D/dt)_{crit}, V/\mu s$	500	1000	1600
Symbol of Group	6	7	8															
$(dv_D/dt)_{crit}, V/\mu s$	500	1000	1600															
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 ($dv_D/dt=50 V/\mu s$)							2) Turn-off time ($dv_D/dt=50 V/\mu s$)											
							<table border="1" style="width: 100%;"> <thead> <tr> <th style="background-color: #cccccc;">Symbol of Group</th> <th style="background-color: #cccccc;">0</th> </tr> </thead> <tbody> <tr> <td>$t_q, \mu s$</td> <td>630</td> </tr> </tbody> </table>				Symbol of Group	0	$t_q, \mu s$	630				
Symbol of Group	0																	
$t_q, \mu s$	630																	

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

OVERALL DIMENSIONS

Package type: T.G6



All dimensions in millimeters (inches)