

High power cycling capability  
 Low on-state and switching losses  
 Optimized for line frequency rectifiers  
 Designed for traction and industrial applications

# Power Rectifier Avalanche Diodes Type DA153-1600-32

Average forward current		$I_{FAV}$		1600 A	
Repetitive peak reverse voltage		$V_{RRM}$		2400 ÷ 3200 V	
$V_{RRM}, V$	2400	2600	2800	3000	3200
Voltage code	24	26	28	30	32
$T_j, ^\circ C$	- 60 ÷ 175				

## MAXIMUM ALLOWABLE RATINGS

Symbols and parameters		Units	Values	Test conditions	
<b>ON-STATE</b>					
$I_{FAV}$	Average forward current	A	1600 1775	$T_c=111\ ^\circ C$ ; Double side cooled; $T_c=100\ ^\circ C$ ; Double side cooled; 180° half-sine wave; 50 Hz	
$I_{FRMS}$	RMS forward current	A	2512	$T_c=111\ ^\circ C$ ; Double side cooled; 180° half-sine wave; 50 Hz	
$I_{FSM}$	Surge forward current	kA	27.0 31.0	$T_j=T_{j\ max}$ $T_j=25\ ^\circ C$	180° half-sine wave; $t_p=10\ ms$ ; single pulse; $V_R=0\ V$ ;
			29.0 33.0	$T_j=T_{j\ max}$ $T_j=25\ ^\circ C$	180° half-sine wave; $t_p=8.3\ ms$ ; single pulse; $V_R=0\ V$ ;
$I^2t$	Safety factor	$A^2s \cdot 10^3$	3645 4805	$T_j=T_{j\ max}$ $T_j=25\ ^\circ C$	180° half-sine wave; $t_p=10\ ms$ ; single pulse; $V_R=0\ V$ ;
			3490 4515	$T_j=T_{j\ max}$ $T_j=25\ ^\circ C$	180° half-sine wave; $t_p=8.3\ ms$ ; single pulse; $V_R=0\ V$ ;
<b>BLOCKING</b>					
$V_{RRM}$	Repetitive peak reverse voltages	V	2400÷3200	$T_{j\ min} < T_j < T_{j\ max}$ ; 180° half-sine wave; 50 Hz;	
$V_{(BR)}$	Breakdown voltage	V	2850÷3650	$T_j=25\ ^\circ C$ ; $I_{br}=100\ mA$ ; $t_p = 10\ ms$ ; 5 Hz	
$V_R$	Reverse continuous voltages	V	$0.75 \cdot V_{RRM}$	$T_j=T_{j\ max}$ ;	
$P_{RSM}$	Surge reverse power dissipation	kW	16	$T_j= T_{j\ max}$ ; $t_p = 100\ \mu s$ ; 180° half-sine current waveforms; single pulse	
<b>THERMAL</b>					
$T_{stg}$	Storage temperature	$^\circ C$	- 60 ÷ 50		
$T_j$	Operating junction temperature	$^\circ C$	- 60 ÷ 175		
<b>MECHANICAL</b>					
F	Mounting force	kN	24.0 ÷ 28.0		
a	Acceleration	$m/s^2$	50	Device unclamped	
			100	Device clamped	

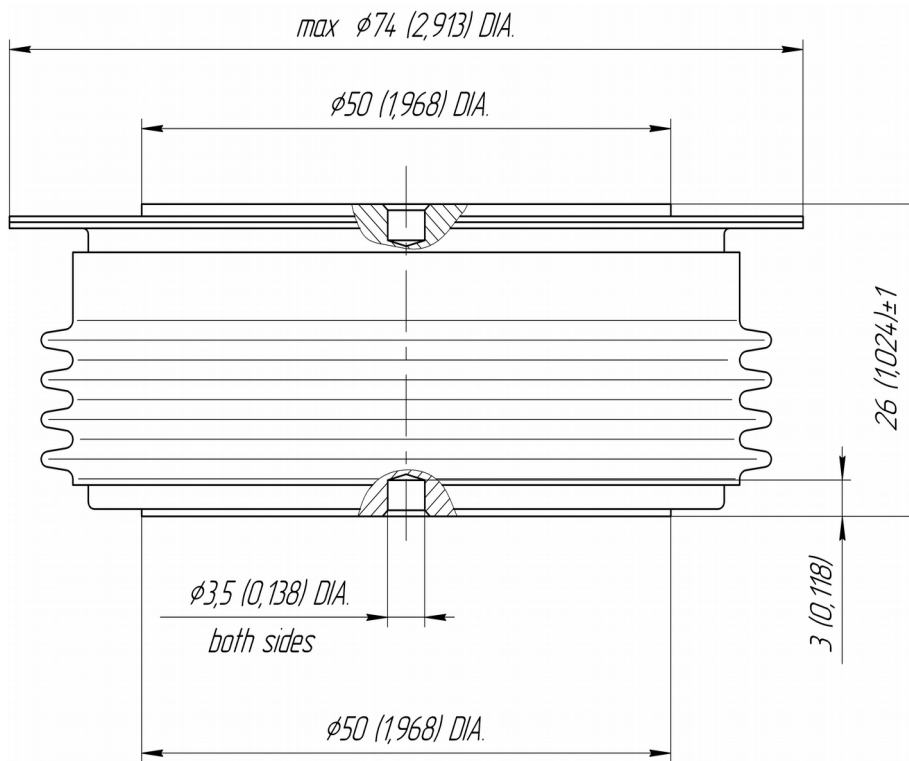
## CHARACTERISTICS

Symbols and parameters		Units	Values	Conditions	
<b>ON-STATE</b>					
$V_{FM}$	Peak forward voltage, max	V	2.00	$T_j=25\text{ }^\circ\text{C}; I_{FM}=5024\text{ A}$	
$V_{F(TO)}$	Forward threshold voltage, max	V	0.95	$T_j=T_{j,max};$	
$r_T$	Forward slope resistance, max	$m\Omega$	0.320	$0.5\pi I_{FAV} < I_T < 1.5\pi I_{FAV}$	
<b>BLOCKING</b>					
$I_{RRM}$	Repetitive peak reverse current, max	mA	50	$T_j=T_{j,max};$ $V_R=V_{RRM}$	
<b>THERMAL</b>					
$R_{thjc}$	Thermal resistance, junction to case, max	$^\circ\text{C/W}$	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	$^\circ\text{C/W}$	0.0040	Direct current	
<b>MECHANICAL</b>					
w	Weight, typ	g	510		
$D_s$	Surface creepage distance	mm (inch)	38.84 (1.529)		
$D_a$	Air strike distance	mm (inch)	22.50 (0.886)		

### PART NUMBERING GUIDE

DA	153	1600	32	N
1	2	3	4	5

1. DA — Avalanche Diode
2. Design version
3. Average forward current, A
4. Voltage code
5. Ambient conditions: N – normal; T – tropical



All dimensions in millimeters (inches)