

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 DA153-2000-20

Average forward current		$I_{FAV}$	2000 A
Repetitive peak reverse voltage		$V_{RRM}$	1600 ÷ 2000 V
$V_{RRM}$ , V	1600	1800	2000
Voltage code	16	18	20
$T_j$ , °C	- 60 ÷ 175		

## MAXIMUM ALLOWABLE RATINGS

Symbols and parameters		Units	Values	Test conditions
<b>ON-STATE</b>				
$I_{FAV}$	Average forward current	A	2000	$T_c=107$ °C; Double side cooled; 180° half-sine wave; 50 Hz
$I_{FRMS}$	RMS forward current	A	3140	
$I_{FSM}$	Surge forward current	kA	30.0 33.0	$T_j=T_{jmax}$ $T_j=25$ °C 180° half-sine wave; $t_p=10$ ms; single pulse; $V_R=0$ V;
			32.0 37.0	$T_j=T_{jmax}$ $T_j=25$ °C 180° half-sine wave; $t_p=8.3$ ms; single pulse; $V_R=0$ V;
$I^2t$	Safety factor	$A^2s \cdot 10^3$	4500 6125	$T_j=T_{jmax}$ $T_j=25$ °C 180° half-sine wave; $t_p=10$ ms; single pulse; $V_R=0$ V;
			4245 5680	$T_j=T_{jmax}$ $T_j=25$ °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	1600÷2000	$T_{jmin} < T_j < T_{jmax}$ ; 180° half-sine wave; 50 Hz;
$V_{(BR)}$	Breakdown voltage	V	2000÷2450	$T_j=25$ °C; $I_{br}=100$ mA; $t_p = 10$ ms; 5 Hz
$V_R$	Reverse continuous voltages	V	$0.75 \cdot V_{RRM}$	$T_j=T_{jmax}$ ;
$P_{RSM}$	Surge reverse power dissipation	kW	16	$T_j= T_{jmax}$ ; $t_p = 100$ μs; 180° half-sine current waveforms; single pulse
<b>THERMAL</b>				
$T_{stg}$	Storage temperature	°C	- 60 ÷ 50	
$T_j$	Operating junction temperature	°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

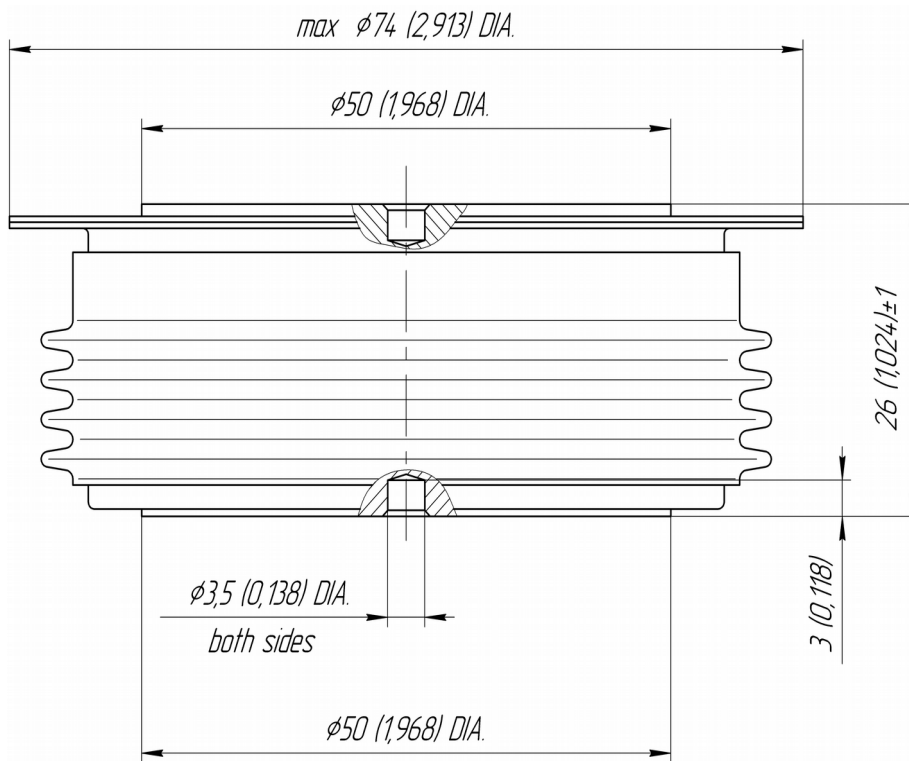
## CHARACTERISTICS

Symbols and parameters		Units	Values	Conditions
<b>ON-STATE</b>				
$V_{FM}$	Peak forward voltage, max	V	1.80	$T_j=25\text{ }^\circ\text{C}; I_{FM}=6280\text{ A}$
$V_{F(TO)}$	Forward threshold voltage, max	V	0.95	$T_j=T_{j\text{ max}};$
$r_T$	Forward slope resistance, max	$m\Omega$	0.190	$0.5\pi I_{FAV} < I_T < 1.5\pi I_{FAV}$
<b>BLOCKING</b>				
$I_{RRM}$	Repetitive peak reverse current, max	mA	50	$T_j=T_{j\text{ max}};$ $V_R=V_{RRM}$
<b>THERMAL</b>				
$R_{thjc}$	Thermal resistance, junction to case, max	$^\circ\text{C/W}$	0.0180	Double side cooled
$R_{thjc-A}$			0.0440	Anode side cooled
$R_{thjc-K}$			0.0360	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	2000	20	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)