

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 DA173-4000-28

Average forward current		$I_{FAV}$		4000 A	
Repetitive peak reverse voltage		$V_{RRM}$		2000 ÷ 2800 V	
$V_{RRM}, V$	2000	2200	2400	2600	2800
Voltage code	20	22	24	26	28
$T_j, ^\circ C$	- 60 ÷ 175				

## MAXIMUM ALLOWABLE RATINGS

Symbols and parameters		Units	Values	Test conditions	
<b>ON-STATE</b>					
$I_{FAV}$	Average forward current	A	4000 4300	$T_c=107^\circ C$ ; Double side cooled; $T_c=100^\circ C$ ; Double side cooled; 180° half-sine wave; 50 Hz	
$I_{FRMS}$	RMS forward current	A	6280	$T_c=107^\circ C$ ; Double side cooled; 180° half-sine wave; 50 Hz	
$I_{FSM}$	Surge forward current	kA	50.0 58.0	$T_j=T_{jmax}$ $T_j=25^\circ C$	180° half-sine wave; $t_p=10$ ms; single pulse; $V_R=0$ V;
			53.0 61.0	$T_j=T_{jmax}$ $T_j=25^\circ C$	180° half-sine wave; $t_p=8.3$ ms; single pulse; $V_R=0$ V;
$I^2t$	Safety factor	$A^2s \cdot 10^3$	12500 16820	$T_j=T_{jmax}$ $T_j=25^\circ C$	180° half-sine wave; $t_p=10$ ms; single pulse; $V_R=0$ V;
			11655 15440	$T_j=T_{jmax}$ $T_j=25^\circ C$	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	2000÷2800	$T_{jmin} < T_j < T_{jmax}$ ; 180° half-sine wave; 50 Hz;	
$V_{(BR)}$	Breakdown voltage	V	2450÷3250	$T_j=25^\circ C$ ; $I_{br}=100$ mA; $t_p = 10$ ms; 5 Hz	
$V_R$	Reverse continuous voltages	V	$0.75 \cdot V_{RRM}$	$T_j=T_{jmax}$ ;	
$P_{RSM}$	Surge reverse power dissipation	kW	16	$T_j= T_{jmax}$ ; $t_p = 100$ $\mu$ 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	40.0 ÷ 50.0		
a	Acceleration	$m/s^2$	50	Device unclamped	
			100	Device clamped	

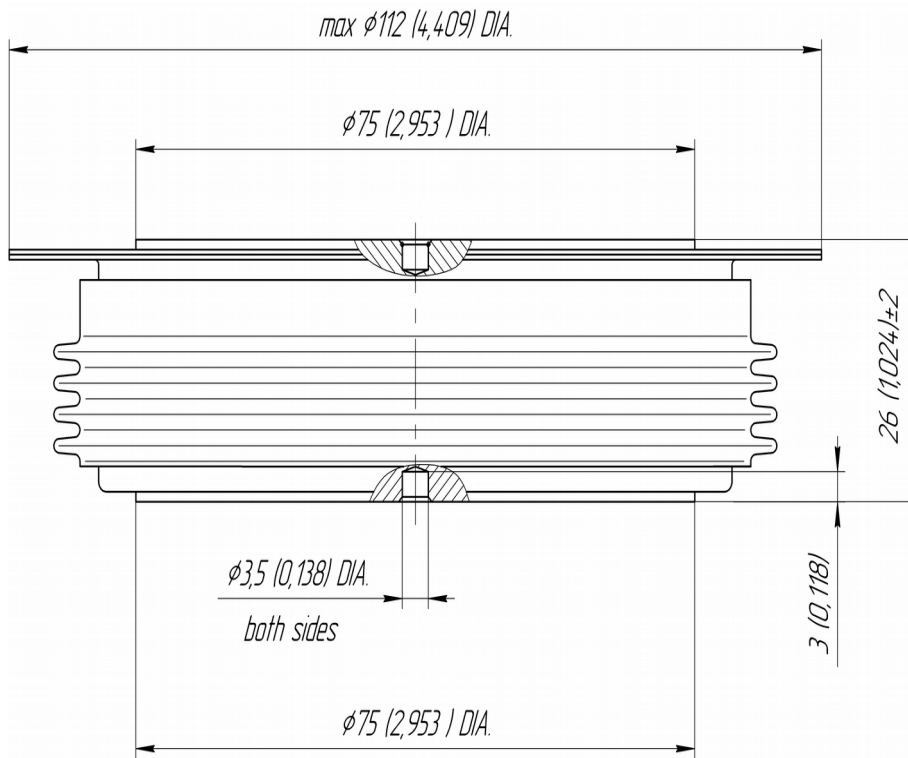
## CHARACTERISTICS

Symbols and parameters		Units	Values	Conditions
<b>ON-STATE</b>				
$V_{FM}$	Peak forward voltage, max	V	2.20	$T_j=25\text{ }^\circ\text{C}; I_{FM}=12560\text{ A}$
$V_{F(TO)}$	Forward threshold voltage, max	V	1.00	$T_j=T_{j\text{ max}};$
$r_T$	Forward slope resistance, max	$m\Omega$	0.100	$0.5\pi I_{FAV} < I_T < 1.5\pi I_{FAV}$
<b>BLOCKING</b>				
$I_{RRM}$	Repetitive peak reverse current, max	mA	100	$T_j=T_{j\text{ max}};$ $V_R=V_{RRM}$
<b>THERMAL</b>				
$R_{thjc}$	Thermal resistance, junction to case, max	$^\circ\text{C/W}$	0.0085	Double side cooled
$R_{thjc-A}$			0.0187	Direct current
$R_{thjc-K}$			0.0153	Cathode side cooled
$R_{thck}$	Thermal resistance, case to heatsink, max	$^\circ\text{C/W}$	0.0020	Direct current
<b>MECHANICAL</b>				
w	Weight, typ	g	1500	
$D_s$	Surface creepage distance	mm (inch)	41.40 (1.630)	
$D_a$	Air strike distance	mm (inch)	23.10 (0.909)	

### PART NUMBERING GUIDE

DA	173	4000	28	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)