

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 DA133-500-16

Average forward current				I_{FAV}	500 A			
Repetitive peak reverse voltage				V_{RRM}	1000 ÷ 1600 V			
V_{RRM}, V	1000	1100	1200	1300	1400	1500	1600	
Voltage code	10	11	12	13	14	15	16	
$T_j, ^\circ C$	- 60 ÷ 150							

MAXIMUM ALLOWABLE RATINGS

Symbols and parameters		Units	Values	Test conditions	
ON-STATE					
I_{FAV}	Average forward current	A	500 785	$T_c=123\text{ }^\circ C$; Double side cooled; $T_c=100\text{ }^\circ C$; Double side cooled; 180° half-sine wave; 50 Hz	
I_{FRMS}	RMS forward current	A	785	$T_c=123\text{ }^\circ C$; Double side cooled; 180° half-sine wave; 50 Hz	
I_{FSM}	Surge forward current	kA	12.0 13.0	$T_j=T_{j\max}$ $T_j=25\text{ }^\circ C$	180° half-sine wave; $t_p=10\text{ ms}$; single pulse; $V_R=0\text{ V}$;
			13.0 15.0	$T_j=T_{j\max}$ $T_j=25\text{ }^\circ C$	180° half-sine wave; $t_p=8.3\text{ ms}$; single pulse; $V_R=0\text{ V}$;
I^2t	Safety factor	$A^2s \cdot 10^3$	720 980	$T_j=T_{j\max}$ $T_j=25\text{ }^\circ C$	180° half-sine wave; $t_p=10\text{ ms}$; single pulse; $V_R=0\text{ V}$;
			700 930	$T_j=T_{j\max}$ $T_j=25\text{ }^\circ C$	180° half-sine wave; $t_p=8.3\text{ ms}$; single pulse; $V_R=0\text{ V}$;
BLOCKING					
V_{RRM}	Repetitive peak reverse voltages	V	1000÷1600	$T_{j\min} < T_j < T_{j\max}$; 180° half-sine wave; 50 Hz;	
$V_{(BR)}$	Breakdown voltage	V	1250÷2000	$T_j=25\text{ }^\circ C$; $I_{br}=100\text{ mA}$; $t_p = 10\text{ ms}$; 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	$T_j= T_{j\max}$; $t_p = 100\text{ }\mu s$; 180° half-sine current waveforms; single pulse	
THERMAL					
T_{stg}	Storage temperature	$^\circ C$	- 60 ÷ 50		
T_j	Operating junction temperature	$^\circ C$	- 60 ÷ 150		
MECHANICAL					
F	Mounting force	kN	9.0 ÷ 11.0		
a	Acceleration	m/s^2	50	Device unclamped	
			100	Device clamped	

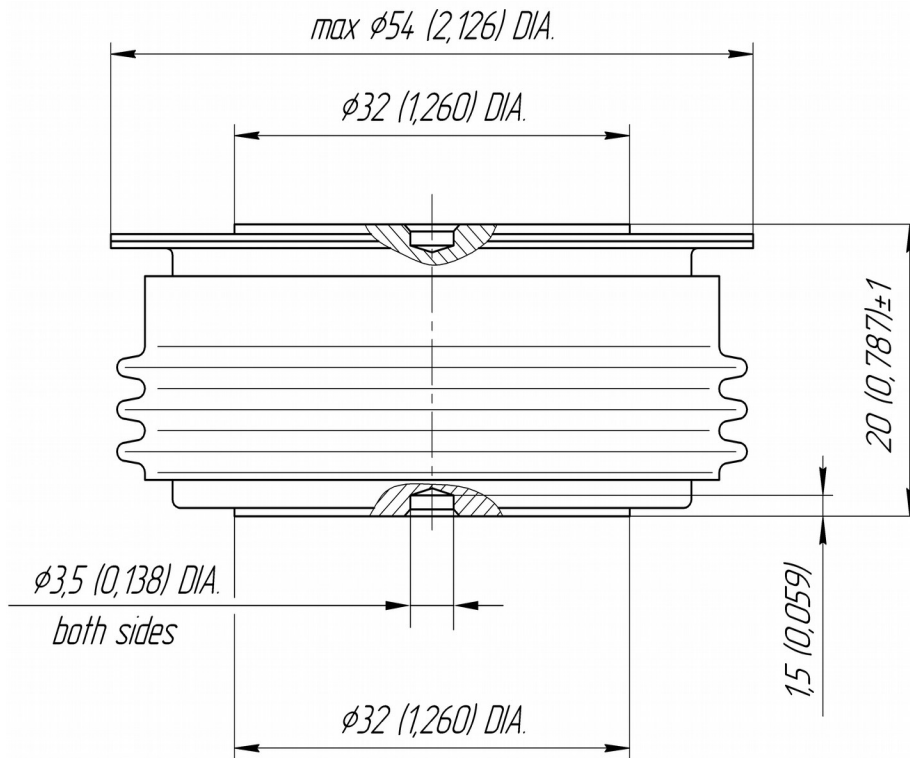
CHARACTERISTICS

Symbols and parameters		Units	Values	Conditions
ON-STATE				
V_{FM}	Peak forward voltage, max	V	1.50	$T_j=25\text{ }^\circ\text{C}; I_{FM}=1570\text{ A}$
$V_{F(TO)}$	Forward threshold voltage, max	V	0.95	$T_j=T_{j,max};$
r_T	Forward slope resistance, max	m Ω	0.330	$0.5\pi I_{FAV} < I_T < 1.5\pi I_{FAV}$
BLOCKING				
I_{RRM}	Repetitive peak reverse current, max	mA	25	$T_j=T_{j,max};$ $V_R=V_{RRM}$
THERMAL				
R_{thjc}	Thermal resistance, junction to case, max	$^\circ\text{C/W}$	0.0400	Double side cooled
R_{thjc-A}			0.0880	Direct current Anode side cooled
R_{thjc-K}			0.0720	Cathode side cooled
R_{thck}	Thermal resistance, case to heatsink, max	$^\circ\text{C/W}$	0.0080	Direct current
MECHANICAL				
w	Weight, typ	g	180	
D_s	Surface creepage distance	mm (inch)	23.69 (0.933)	
D_a	Air strike distance	mm (inch)	19.10 (0.752)	

PART NUMBERING GUIDE

DA	133	500	16	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)