

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

Rectifier Diode Type D133-500-28

Average forward current		I_{FAV}	500 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
$T_j, °C$	-60 ÷ 175				

MAXIMUM ALLOWABLE RATINGS

Symbols and parameters		Units	Values	Test conditions
ON-STATE				
I_{FAV}	Average forward current	A	500 830	$T_c=140 °C$; Double side cooled; $T_c=100 °C$; Double side cooled; 180° half-sine wave; 50 Hz
I_{FRMS}	RMS forward current	A	785	$T_c=140 °C$; Double side cooled; 180° half-sine wave; 50 Hz
I_{FSM}	Surge forward current	kA	11.0 12.0	$T_j=T_{j\ max}$ $T_j=25 °C$ 180° half-sine wave; 50 Hz ($t_p=10\ ms$); single pulse; $V_R=0\ V$;
			11.6 12.6	$T_j=T_{j\ max}$ $T_j=25 °C$ 180° half-sine wave; 60 Hz ($t_p=8.3\ ms$); single pulse; $V_R=0\ V$;
I^2t	Safety factor	$A^2s \cdot 10^3$	605 719	$T_j=T_{j\ max}$ $T_j=25 °C$ 180° half-sine wave; 50 Hz ($t_p=10\ ms$); single pulse; $V_R=0\ V$;
			554 658	$T_j=T_{j\ max}$ $T_j=25 °C$ 180° half-sine wave; 60 Hz ($t_p=8.3\ ms$); single pulse; $V_R=0\ V$;
BLOCKING				
V_{RRM}	Repetitive peak reverse voltages	V	2000 ÷ 2800	$T_{j\ min} < T_j < T_{j\ max}$; 180° half-sine wave; 50 Hz;
V_{RSM}	Non-repetitive peak reverse voltages	V	2100 ÷ 2900	$T_{j\ min} < T_j < T_{j\ max}$; 180° half-sine wave; 50 Hz; single pulse;
V_R	Reverse continuous voltages	V	$0.75 \cdot V_{RRM}$	$T_j = T_{j\ max}$;
THERMAL				
T_{stg}	Storage temperature	°C	-60 ÷ 50	
T_j	Operating junction temperature	°C	-60 ÷ 175	
MECHANICAL				
F	Mounting force	kN	9.0 ÷ 11.0	
a	Acceleration	m/s^2	50	Device unclamped
			100	Device clamped

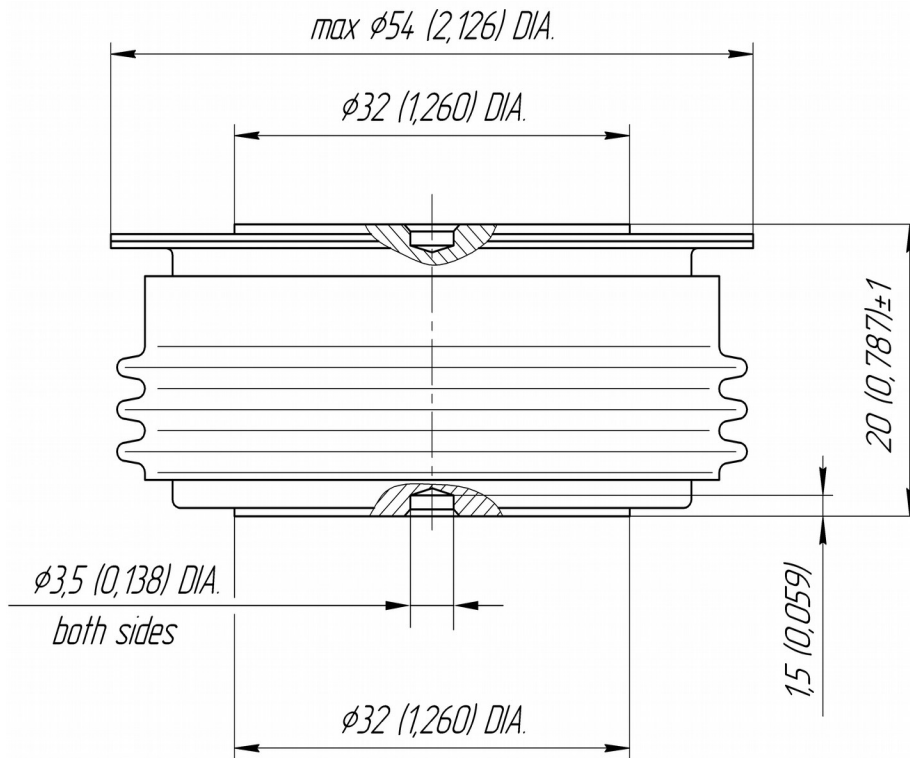
CHARACTERISTICS

Symbols and parameters		Units	Values	Conditions
ON-STATE				
V_{FM}	Peak forward voltage, max	V	1.70	$T_j=25\text{ }^\circ\text{C}; I_{FM}=1570\text{ A}$
$V_{F(TO)}$	Forward threshold voltage, max	V	1.10	$T_j=T_{j\text{ max}}$;
r_T	Forward slope resistance, max	m Ω	0.690	$0.5\pi I_{FAV} < I_T < 1.5\pi I_{FAV}$
BLOCKING				
I_{RRM}	Repetitive peak reverse current, max	mA	50	$T_j=T_{j\text{ max}}$; $V_R=V_{RRM}$
THERMAL				
R_{thjc}	Thermal resistance, junction to case, max	$^\circ\text{C/W}$	0.036	Double side cooled
R_{thjc-A}			0.079	Direct current
R_{thjc-K}			0.065	Cathode side cooled
R_{thck}	Thermal resistance, case to heatsink, max	$^\circ\text{C/W}$	0.008	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

D	133	500	28	N
1	2	3	4	5

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



All dimensions in millimeters (inches)