



PROTON-ELECTROTEX RUSSIA

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

Rectifier Diode Type D333-500-44

Average forward current		I _{FAV}	500 A	
Repetitive peak reverse voltage		V _{RRM}	3800 ÷ 4400 V	
V _{RRM} , V	3800	4000	4200	4400
Voltage code	38	40	42	44
T _{ij} , °C	-60 ÷ 150			

MAXIMUM ALLOWABLE RATINGS

Symbols and parameters		Units	Values	Test conditions	
ON-STATE					
I _{FAV}	Average forward current	A	500 510	T _c =101 °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 =101 °C; Double side cooled; 180° half-sine wave; 50 Hz	
I _{FSM}	Surge forward current	kA	6.5 7.5	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;
			7.0 8.1	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 ² t	Safety factor	A ² s·10 ³	210 280	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;
			200 270	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	3800÷4400	T _{j min} < T _j <T _{j max} ; 180° half-sine wave; 50 Hz;	
V _{RSM}	Non-repetitive peak reverse voltages	V	3900÷4500	T _{j min} < T _j <T _{j max} ; 180° half-sine wave; 50 Hz;single pulse;	
V _R	Reverse continuous voltages	V	0.75·V _{RRM}	T _i =T _{j max} ;	
THERMAL					
T _{stg}	Storage temperature	°C	-60÷150		
T _j	Operating junction temperature	°C	-60÷150		
MECHANICAL					
F	Mounting force	kN	9.0÷11.0		
a	Acceleration	m/s ²	50 100	Device unclamped Device clamped	

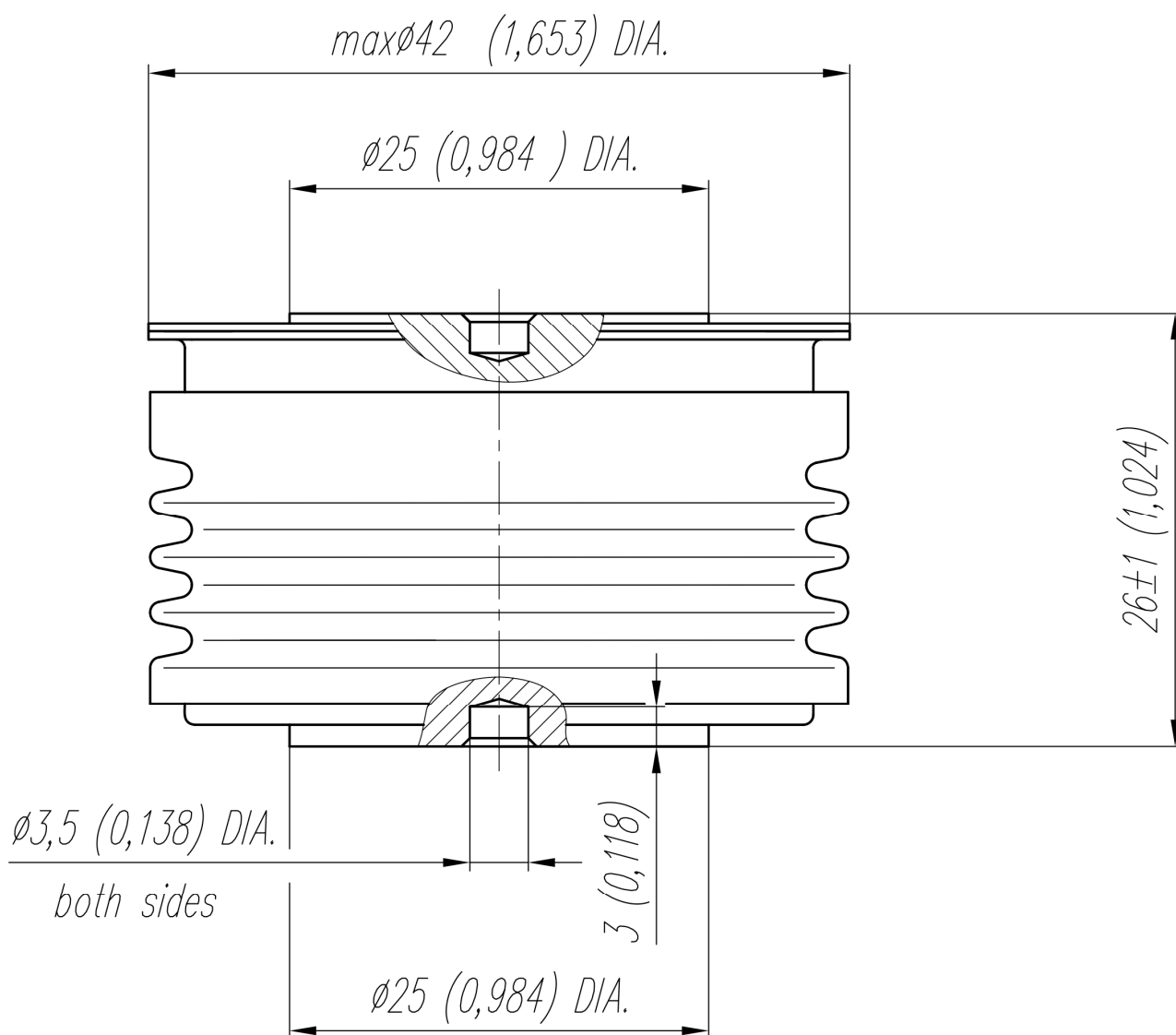
CHARACTERISTICS

Symbols and parameters		Units	Values	Conditions	
ON-STATE					
V _{FM}	Peak forward voltage, max	V	2.00	T _j =25 °C; I _{FM} =1570 A	
V _{F(TO)}	Forward threshold voltage, max	V	1.05	T _j =T _{j max} ; 0.5 π I _{FAV} < I _T < 1.5 π I _{FAV}	
r _T	Forward slope resistance, max	mΩ	0.900		
BLOCKING					
I _{RRM}	Repetitive peak reverse current, max	mA	50	T _j =T _{j max} ; V _R =V _{RRM}	
THERMAL					
R _{thjc}	Thermal resistance, junction to case, max	°C/W	0.045	Direct current	Double side cooled
R _{thjc-A}			0.099		Anode side cooled
R _{thjc-K}			0.081		Cathode side cooled
R _{thck}	Thermal resistance, case to heatsink, max	°C/W	0.009	Direct current	
MECHANICAL					
w	Weight, typ	g	210		
D _s	Surface creepage distance	mm (inch)	30.77 (1.211)		
D _a	Air strike distance	mm (inch)	24.40 (0.960)		

PART NUMBERING GUIDE

D	333	500	44	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)