



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 D333-800-20

Average forward current	I_{FAV}	800 A
Repetitive peak reverse voltage	V_{RRM}	2000 V
V_{RRM}, V	2000	
Voltage code	20	
$T_{jv}, ^\circ C$	-60 ÷ 190	

MAXIMUM ALLOWABLE RATINGS

Symbols and parameters		Units	Values	Test conditions
ON-STATE				
I_{FAV}	Average forward current	A	800 1140	$T_c=134\ ^\circ C$; Double side cooled; $T_c=100\ ^\circ C$; Double side cooled; 180° half-sine wave; 50 Hz
I_{FRMS}	RMS forward current	A	1256	$T_c=134\ ^\circ C$; Double side cooled; 180° half-sine wave; 50 Hz
I_{FSM}	Surge forward current	kA	12.0 14.0	$T_j=T_{j\ max}$ $T_j=25\ ^\circ C$ 180° half-sine wave; 50 Hz ($t_p=10\ ms$); single pulse; $V_R=0\ V$;
			13.0 15.0	$T_j=T_{j\ max}$ $T_j=25\ ^\circ C$ 180° half-sine wave; 60 Hz ($t_p=8.3\ ms$); single pulse; $V_R=0\ V$;
I^2t	Safety factor	$A^2s \cdot 10^3$	720 980	$T_j=T_{j\ max}$ $T_j=25\ ^\circ C$ 180° half-sine wave; 50 Hz ($t_p=10\ ms$); single pulse; $V_R=0\ V$;
			700 930	$T_j=T_{j\ max}$ $T_j=25\ ^\circ C$ 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	$T_{j\ min} < T_j < T_{j\ max}$; 180° half-sine wave; 50 Hz;
V_{RSM}	Non-repetitive peak reverse voltages	V	2100	$T_{j\ min} < T_j < T_{j\ max}$; 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	$^\circ C$	-60 ÷ 190	
T_j	Operating junction temperature	$^\circ C$	-60 ÷ 190	
MECHANICAL				
F	Mounting force	kN	9.0 ÷ 11.0	
a	Acceleration	m/s^2	50	Device unclamped
			100	Device clamped

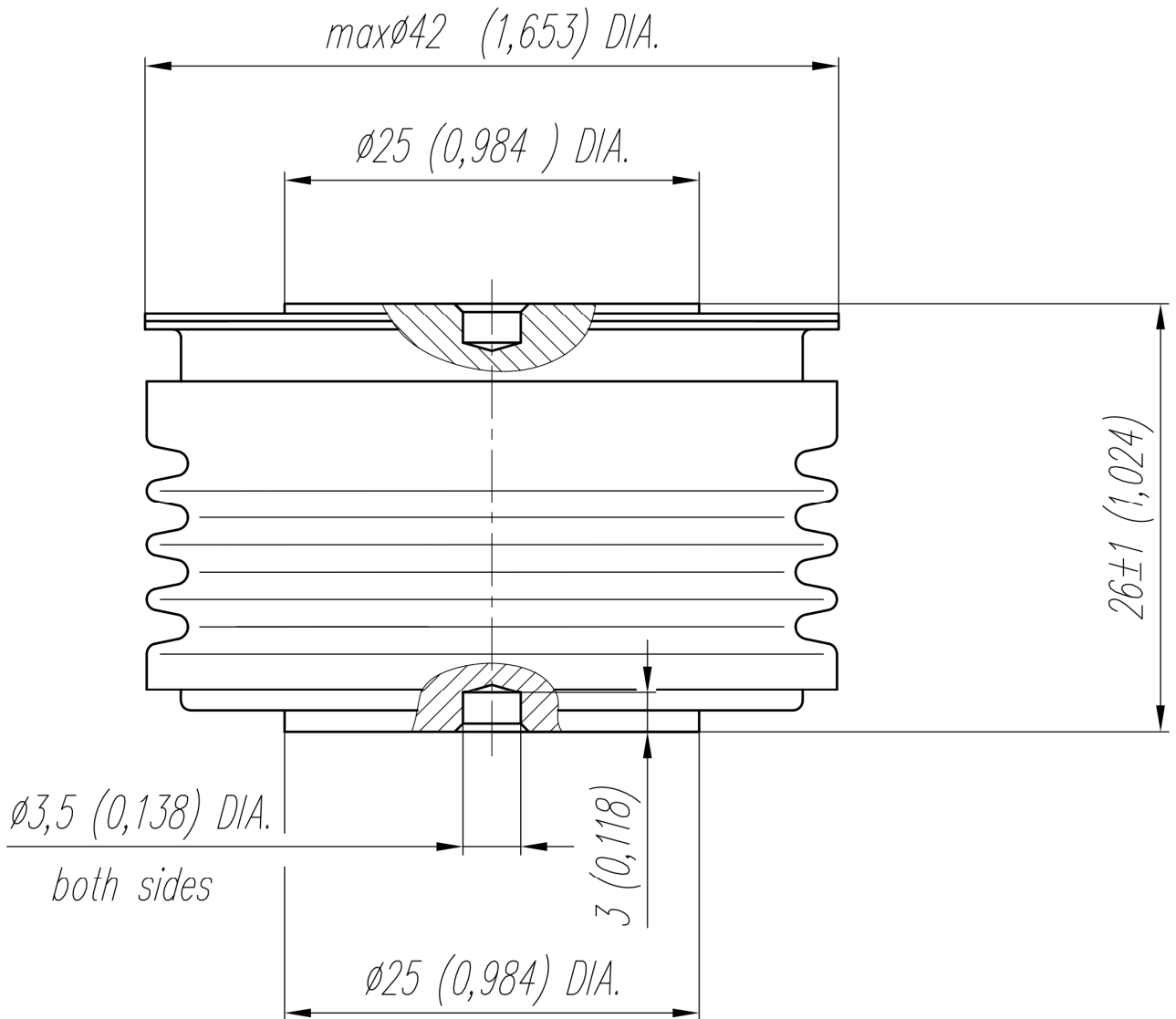
CHARACTERISTICS

Symbols and parameters		Units	Values	Conditions	
ON-STATE					
V_{FM}	Peak forward voltage, max	V	1.60	$T_j=25\text{ }^\circ\text{C}; I_{FM}=2512\text{ A}$	
$V_{F(TO)}$	Forward threshold voltage, max	V	1.00	$T_j=T_{j\text{ max}};$ $0.5\pi I_{FAV} < I_T < 1.5\pi I_{FAV}$	
r_T	Forward slope resistance, max	m Ω	0.270		
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	$^\circ\text{C/W}$	0.045	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	$^\circ\text{C/W}$	0.008	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	800	20	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)