



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 D143-630-40

Average forward current				I_{FAV}		630 A			
Repetitive peak reverse voltage				V_{RRM}		2400 ÷ 4000 V			
V_{RRM}, V	2400	2600	2800	3000	3200	3400	3600	3800	4000
Voltage code	24	26	28	30	32	34	36	38	40
$T_j, ^\circ C$	-60 ÷ 150								

MAXIMUM ALLOWABLE RATINGS

Symbols and parameters		Units	Values	Test conditions	
ON-STATE					
I_{FAV}	Average forward current	A	630 750	$T_c=112\ ^\circ C$; Double side cooled; $T_c=100\ ^\circ C$; Double side cooled; 180° half-sine wave; 50 Hz	
I_{FRMS}	RMS forward current	A	989	$T_c=112\ ^\circ C$; Double side cooled; 180° half-sine wave; 50 Hz	
I_{FSM}	Surge forward current	kA	10.5 11.0	$T_j=T_{j\ max}$ $T_j=25\ ^\circ C$	180° half-sine wave; 50 Hz ($t_p=10\ ms$); single pulse; $V_R=0\ V$;
			12.0 13.8	$T_j=T_{j\ max}$ $T_j=25\ ^\circ C$	180° half-sine wave; 60 Hz ($t_p=8.3\ ms$); single pulse; $V_R=0\ V$;
I^2t	Safety factor	$A^2s \cdot 10^3$	550 730	$T_j=T_{j\ max}$ $T_j=25\ ^\circ C$	180° half-sine wave; 50 Hz ($t_p=10\ ms$); single pulse; $V_R=0\ V$;
			595 790	$T_j=T_{j\ max}$ $T_j=25\ ^\circ C$	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	2400 ÷ 4000	$T_{j\ min} < T_j < T_{j\ max}$; 180° half-sine wave; 50 Hz;	
V_{RSM}	Non-repetitive peak reverse voltages	V	2500 ÷ 4100	$T_{j\ min} < T_j < T_{j\ max}$; 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 ÷ 50		
T_j	Operating junction temperature	$^\circ C$	-60 ÷ 150		
MECHANICAL					
F	Mounting force	kN	14.0 ÷ 16.0		
a	Acceleration	m/s^2	50	Device unclamped	
			100	Device clamped	

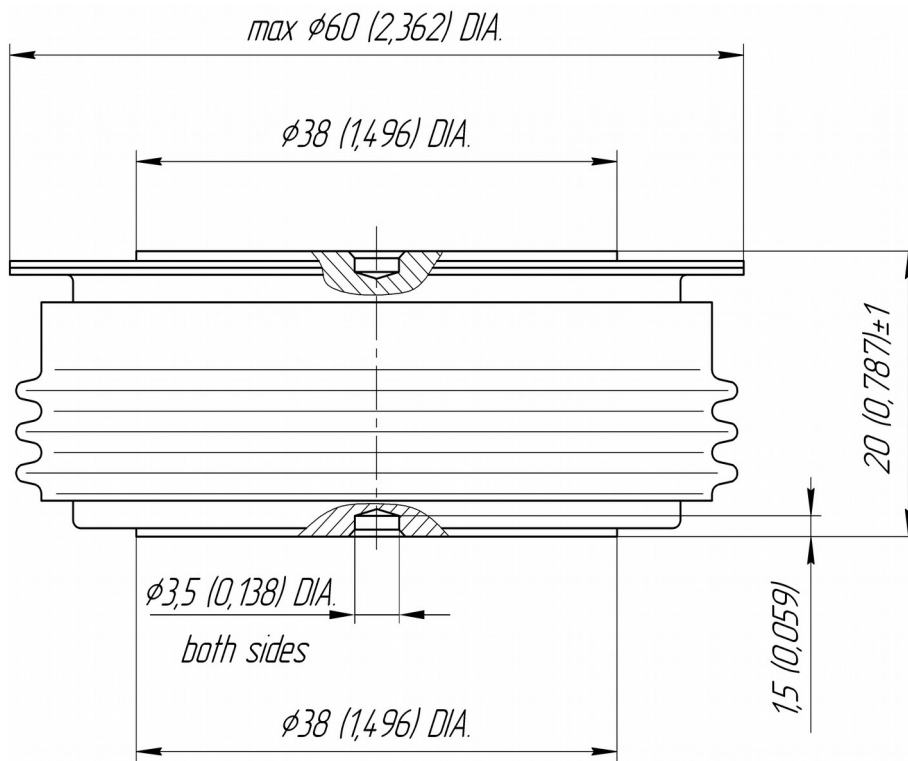
CHARACTERISTICS

Symbols and parameters		Units	Values	Conditions
ON-STATE				
V_{FM}	Peak forward voltage, max	V	2.10	$T_j=25\text{ }^\circ\text{C}; I_{FM}=1978\text{ A}$
$V_{F(TO)}$	Forward threshold voltage, max	V	1.10	$T_j=T_{j\text{ max}}$;
r_T	Forward slope resistance, max	m Ω	0.730	$0.5\pi I_{FAV} < I_T < 1.5\pi I_{FAV}$
BLOCKING				
I_{RRM}	Repetitive peak reverse current, max	mA	70	$T_j=T_{j\text{ max}}$; $V_R=V_{RRM}$
THERMAL				
R_{thjc}	Thermal resistance, junction to case, max	$^\circ\text{C/W}$	0.027	Double side cooled
R_{thjc-A}			0.060	Direct current
R_{thjc-K}			0.049	Cathode side cooled
R_{thck}	Thermal resistance, case to heatsink, max	$^\circ\text{C/W}$	0.006	Direct current
MECHANICAL				
w	Weight, typ	g	260	
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	143	630	40	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)