



PROTON-ELECTROTEX RUSSIA

Optimum power handling
Low on-state and switching losses
Designed for traction and industrial applications

Rectifier Stud Diode Type D171-500-12

Mean on-state current	I_{TAV}	500 A
Repetitive peak reverse voltage	V_{RRM}	1000 ÷ 1200V
V_{RRM} , V	1000	1200
Voltage code	10	12
T_{jv} , °C	- 60 ÷ 190	

MAXIMUM ALLOWABLE RATINGS

Symbols and parameters		Units	Values	Test conditions
ON-STATE				
I_{FAV}	Average forward current	A	500 685	$T_c=133\text{ °C}$; $T_c=100\text{ °C}$; 180° half-sine wave; 50 Hz
I_{FRMS}	RMS forward current	A	785	$T_c=133\text{ °C}$; 180° half-sine wave; 50 Hz
I_{FSM}	Surge forward current	kA	15.0 17.0	$T_j=T_{j\max}$ $T_j=25\text{ °C}$ 180° half-sine wave; 50 Hz ($t_p=10\text{ ms}$); single pulse; $V_R=0\text{ V}$;
			16.0 18.0	$T_j=T_{j\max}$ $T_j=25\text{ °C}$ 180° half-sine wave; 60 Hz ($t_p=8.3\text{ ms}$); single pulse; $V_R=0\text{ V}$;
I^2t	Safety factor	$A^2s\cdot 10^3$	1125 1445	$T_j=T_{j\max}$ $T_j=25\text{ °C}$ 180° half-sine wave; 50 Hz ($t_p=10\text{ ms}$); single pulse; $V_R=0\text{ V}$;
			1060 1340	$T_j=T_{j\max}$ $T_j=25\text{ °C}$ 180° half-sine wave; 60 Hz ($t_p=8.3\text{ ms}$); single pulse; $V_R=0\text{ V}$;
BLOCKING				
V_{RRM}	Repetitive peak reverse voltages	V	1000÷1200	$T_{j\min} < T_j < T_{j\max}$; 180° half-sine wave; 50 Hz;
V_{RSM}	Non-repetitive peak reverse voltages	V	1100÷1300	$T_{j\min} < T_j < T_{j\max}$; 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 ÷ 190	
T_j	Operating junction temperature	°C	- 60 ÷ 190	
MECHANICAL				
M	Tightening torque	Nm	25 ÷ 35	
a	Acceleration	m/s^2	100	

JSC "PROTON-ELECTROTEX"

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CHARACTERISTICS

Symbols and parameters		Units	Values	Conditions
ON-STATE				
V_{FM}	Peak forward voltage, max	V	1.40	$T_j=25\text{ }^\circ\text{C}; I_{FM}=1570\text{ A}$
$V_{F(TO)}$	Forward threshold voltage, max	V	0.80	$T_j=T_{j\text{ max}}$
r_T	Forward slope resistance, max	$m\Omega$	0.500	$0.5 \pi I_{FAV} < I_T < 1.5 \pi I_{FAV}$
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	$^\circ\text{C/W}$	0.0800	Direct current
MECHANICAL				
w	Weight, typ	g	440	
D_s	Surface creepage distance	mm (inch)	12.4 (4.882)	
D_a	Air strike distance	mm (inch)	12.4 (4.882)	

PART NUMBERING GUIDE

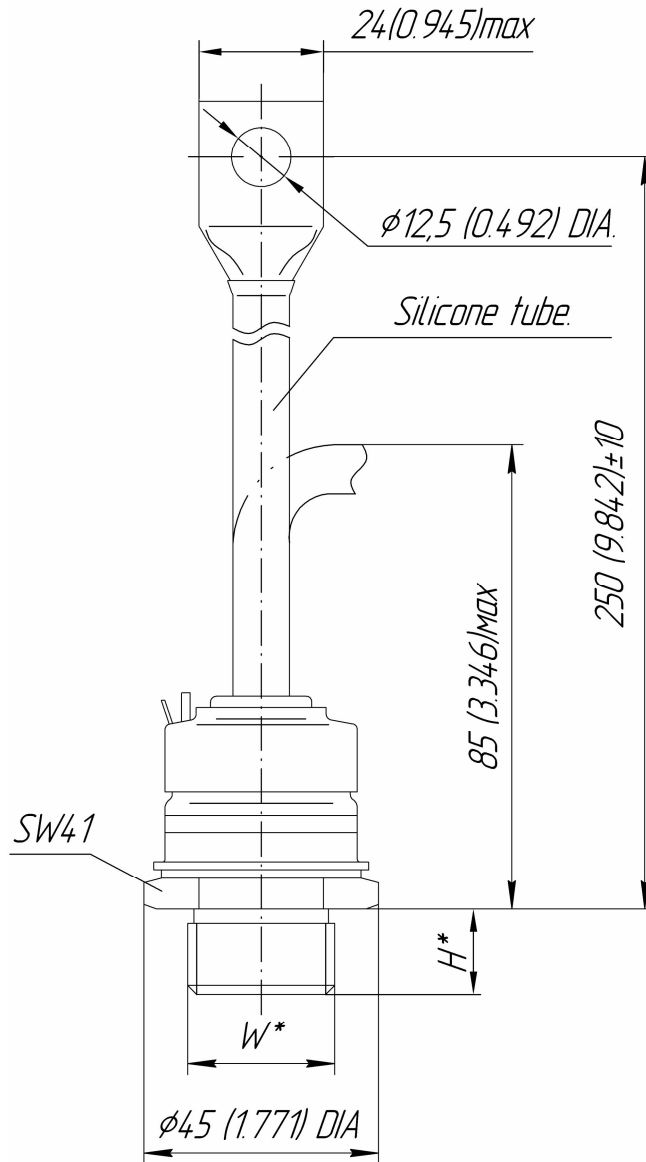
D	171	500		12	N
1	2	3	4	5	6

1. D — Rectifier Diode
2. Design version
3. Average forward current, A
4. Polarity: X – Cathode to Stud; Anode to Stud – no symbol
5. Voltage code
6. Ambient conditions: N – normal; T – tropical

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Type of screw	W	H
Metric Screw Type C	M24x1,5	18
Metric Screw Type B (upon request)	M20x1,5	18

Polarity		Example of code designation	Reference designation	Colors	
				Anode	Cathode
Normal	Anode to stud	D171-500-12		-	Red tube
Reverse	Cathode to stud	D171-500X-12		Black tube	-

All dimensions in millimeters (inches)

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