



# PROTON-ELECTROTEX RUSSIA

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

## Rectifier Stud Diode Type D161-320-18

Mean on-state current			$I_{FAV}$	320 A	
Repetitive peak reverse voltage			$V_{RRM}$	1000 ÷ 1800V	
$V_{RRM}$ , V	1000	1200	1400	1600	1800
Voltage code	10	12	14	16	18
$T_j$ , °C	– 60 ÷ 190				

### MAXIMUM ALLOWABLE RATINGS

Symbols and parameters		Units	Values	Test conditions	
ON-STATE					
I <sub>FAV</sub>	Average forward current	A	320 520	T <sub>c</sub> =144 °C; T <sub>c</sub> =100 °C; 180° half-sine wave; 50 Hz	
I <sub>FRMS</sub>	RMS forward current	A	502	T <sub>c</sub> =144 °C; 180° half-sine wave; 50 Hz	
I <sub>FSM</sub>	Surge forward current	kA	7.5 8.6	T <sub>J</sub> =T <sub>J max</sub> T <sub>J</sub> =25 °C	180° half-sine wave; 50 Hz (t <sub>p</sub> =10 ms); single pulse; V <sub>R</sub> =0 V;
			8.0 9.2	T <sub>J</sub> =T <sub>J max</sub> T <sub>J</sub> =25 °C	180° half-sine wave; 60 Hz (t <sub>p</sub> =8.3 ms); single pulse; V <sub>R</sub> =0 V;
I <sup>2</sup> t	Safety factor	A <sup>2</sup> s·10 <sup>3</sup>	280 365	T <sub>J</sub> =T <sub>J max</sub> T <sub>J</sub> =25 °C	180° half-sine wave; 50 Hz (t <sub>p</sub> =10 ms); single pulse; V <sub>R</sub> =0 V;
			265 350	T <sub>J</sub> =T <sub>J max</sub> T <sub>J</sub> =25 °C	180° half-sine wave; 60 Hz (t <sub>p</sub> =8.3 ms); single pulse; V <sub>R</sub> =0 V;
BLOCKING					
V <sub>RRM</sub>	Repetitive peak reverse voltages	V	1000÷1800	T <sub>J min</sub> < T <sub>J</sub> <T <sub>J max</sub> ; 180° half-sine wave; 50 Hz;	
V <sub>RSM</sub>	Non-repetitive peak reverse voltages	V	1100÷1900	T <sub>J min</sub> < T <sub>J</sub> <T <sub>J max</sub> ; 180° half-sine wave; 50 Hz;single pulse;	
V <sub>R</sub>	Reverse continuous voltages	V	0.75·V <sub>RRM</sub>	T <sub>J</sub> =T <sub>J max</sub> ;	
THERMAL					
T <sub>stg</sub>	Storage temperature	°C	– 60 ÷ 190		
T <sub>j</sub>	Operating junction temperature	°C	– 60 ÷ 190		
MECHANICAL					
M	Tightening torque	Nm	20 ÷ 30		
a	Acceleration	m/s <sup>2</sup>	100		

### JSC "PROTON-ELECTROTEX"

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## CHARACTERISTICS

Symbols and parameters		Units	Values	Conditions
ON-STATE				
V <sub>FM</sub>	Peak forward voltage, max	V	1.35	T <sub>J</sub> =25 °C; I <sub>FM</sub> =1005 A
V <sub>F(TO)</sub>	Forward threshold voltage, max	V	0.90	T <sub>J</sub> =T <sub>J max</sub> ;
r <sub>T</sub>	Forward slope resistance, max	mΩ	0.650	0.5 π I <sub>FAV</sub> < I <sub>T</sub> < 1.5 π I <sub>FAV</sub>
BLOCKING				
I <sub>RRM</sub>	Repetitive peak reverse current, max	mA	50	T <sub>J</sub> =T <sub>J max</sub> ; V <sub>R</sub> =V <sub>RRM</sub>
THERMAL				
R <sub>thjc</sub>	Thermal resistance, junction to case, max	°C/W	0.1000	Direct current
MECHANICAL				
w	Weight, typ	g	250	
D <sub>s</sub>	Surface creepage distance	mm (inch)	12.4 (4.882)	
D <sub>a</sub>	Air strike distance	mm (inch)	12.4 (4.882)	

## PART NUMBERING GUIDE

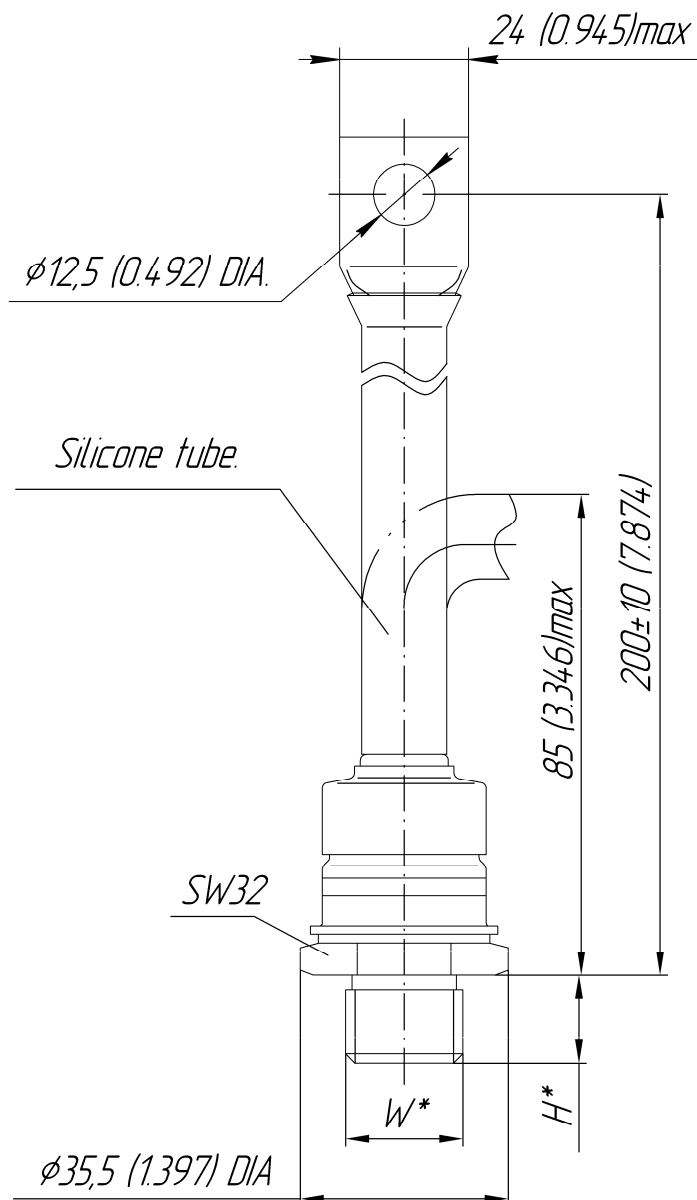
D	161	320		18	N
1	2	3	4	5	6

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 B	M20x1,5	16
Metric Screw Type A (upon request)	M16x1,5	13

Polarity		Example of code designation	Reference designation	Colors	
				Anode	Cathode
Normal	Anode to stud	D161-320-18		-	Red tube
Reverse	Cathode to stud	D161-320X-18		Black tube	-

All dimensions in millimeters (inches)

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In the interest of product improvement, Proton-Electrotex reserves the right to change data sheet without notice.

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