



Fast Recovery Diode
Type DF123-320-12

Low switching losses
Low reverse recovery charge
High power cycling capability

Average forward current	I_{FAV}	320 A
Repetitive peak reverse voltage	V_{RRM}	1000 ÷ 1200 V
Reverse recovery time	t_{rr}	3.2 μ s
V_{RRM}, V	1000	1200
Voltage code	10	12
$T_{jv}, ^\circ C$	- 60 ÷ 150	

MAXIMUM ALLOWABLE RATINGS

Symbols and parameters		Units	Values	Test conditions
ON-STATE				
I_{FAV}	Average forward current	A	320 565	$T_c=108\ ^\circ C$; Double side cooled; $T_c=55\ ^\circ C$; Double side cooled; 180° half-sine wave; 50 Hz
I_{FRMS}	RMS forward current	A	502	$T_c=108\ ^\circ C$; Double side cooled; 180° half-sine wave; 50 Hz
I_{FSM}	Surge forward current	kA	6.0 6.9	$T_j=T_{j\ max}$ $T_j=25\ ^\circ C$ 180° half-sine wave; 50 Hz ($t_p=10\ ms$); single pulse; $V_R=0\ V$;
			7.0 8.1	$T_j=T_{j\ max}$ $T_j=25\ ^\circ C$ 180° half-sine wave; 60 Hz ($t_p=8.3\ ms$); single pulse; $V_R=0\ V$;
I^2t	Safety factor	$A^2s \cdot 10^3$	180 235	$T_j=T_{j\ max}$ $T_j=25\ ^\circ C$ 180° half-sine wave; 50 Hz ($t_p=10\ ms$); single pulse; $V_R=0\ V$;
			200 270	$T_j=T_{j\ max}$ $T_j=25\ ^\circ C$ 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	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	$^\circ C$	- 60 ÷ 150	
T_j	Operating junction temperature	$^\circ C$	- 60 ÷ 150	
MECHANICAL				
F	Mounting force	kN	5.0 ÷ 7.0	
a	Acceleration	m/s^2	50	Device unclamped
			100	Device clamped

JSC "PROTON-ELECTROTEX"

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CHARACTERISTICS

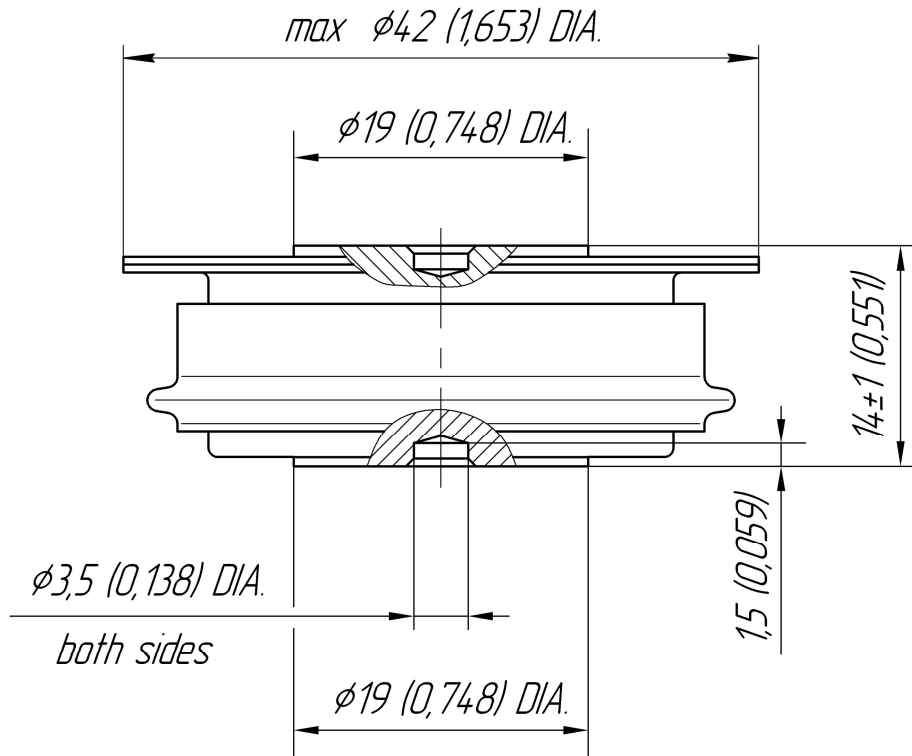
Symbols and parameters		Units	Values	Conditions	
ON-STATE					
V_{FM}	Peak forward voltage, max	V	1.70	$T_j=25\text{ }^\circ\text{C}; I_{FM}=1005\text{ A}$	
$V_{F(TO)}$	Forward threshold voltage, max	V	1.20	$T_j=T_{j\text{ max}};$	
r_T	Forward slope resistance, max	m Ω	0.850	$0.5\pi I_{FAV} < I_T < 1.5\pi I_{FAV}$	
BLOCKING					
I_{RRM}	Repetitive peak reverse current, max	mA	40	$T_j=T_{j\text{ max}};$ $V_R=V_{RRM}$	
SWITCHING					
Q_{rr}	Total recovered charge, max	μC	300	$T_j=T_{j\text{ max}}; I_{FM}=I_{FAV};$	
t_{rr}	Reverse recovery time, max	μs	3.2	$di_R/dt=-100\text{ A}/\mu\text{s};$	
I_{rrM}	Peak reverse recovery current, max	A	188	$V_R=100\text{ V};$	
THERMAL					
R_{thjc}	Thermal resistance, junction to case, max	$^\circ\text{C}/\text{W}$	0.0700	Direct current	Double side cooled
R_{thjc-A}			0.1540		Anode side cooled
R_{thjc-K}			0.1260		Cathode side cooled
R_{thck}	Thermal resistance, case to heatsink, max	$^\circ\text{C}/\text{W}$	0.0100	Direct current	
MECHANICAL					
w	Weight, typ	g	65		
D_s	Surface creepage distance	mm (inch)	11.74 (0.462)		
D_a	Air strike distance	mm (inch)	11.60 (0.457)		

PART NUMBERING GUIDE						GROUP OF RECOVERY TIME	
DF	123	320	12	K4	N	Group Symbol	K4
1	2	3	4	5	6	$t_{rr}, \mu\text{s}$	3.2
1. Fast recovery diode 2. Design version 3. Average forward current, A 4. Voltage code 5. Group of reverse recovery time 6. Ambient conditions: N – normal; T – tropical							

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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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