



Fast Recovery Diode
Type DF233-200-24

Low switching losses
Low reverse recovery charge
High power cycling capability

Average forward current	I_{FAV}	200 A
Repetitive peak reverse voltage	V_{RRM}	2000 ÷ 2400 V
Reverse recovery time	t_{rr}	1.25 μs
V_{RRM}, V	2000	2200
Voltage code	20	22
$T_j, °C$	- 60 ÷ 125	

MAXIMUM ALLOWABLE RATINGS

Symbols and parameters		Units	Values	Test conditions
ON-STATE				
I_{FAV}	Average forward current	A	200 505	$T_c=107 °C$; Double side cooled; $T_c=55 °C$; Double side cooled; 180° half-sine wave; 50 Hz
I_{FRMS}	RMS forward current	A	314	$T_c=107 °C$; Double side cooled; 180° half-sine wave; 50 Hz
I_{FSM}	Surge forward current	kA	6.0 6.9	$T_j=T_{jmax}$ $T_j=25 °C$ 180° half-sine wave; 50 Hz ($t_p=10 ms$); single pulse; $V_R=0 V$;
			7.0 8.1	$T_j=T_{jmax}$ $T_j=25 °C$ 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	$T_j=T_{jmax}$ $T_j=25 °C$ 180° half-sine wave; 50 Hz ($t_p=10 ms$); single pulse; $V_R=0 V$;
			200 270	$T_j=T_{jmax}$ $T_j=25 °C$ 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÷2400	$T_{jmin} < T_j < T_{jmax}$; 180° half-sine wave; 50 Hz;
V_{RSM}	Non-repetitive peak reverse voltages	V	2100÷2500	$T_{jmin} < T_j < T_{jmax}$; 180° half-sine wave; 50 Hz; single pulse;
V_R	Reverse continuous voltages	V	$0.75 \cdot V_{RRM}$	$T_j = T_{jmax}$;
THERMAL				
T_{stg}	Storage temperature	°C	- 60 ÷ 125	
T_j	Operating junction temperature	°C	- 60 ÷ 125	
MECHANICAL				
F	Mounting force	kN	9.0 ÷ 11.0	
a	Acceleration	m/s^2	50	Device unclamped
			100	Device clamped

JSC "PROTON-ELECTROTEX"

19 Leskova, 302027, Orel, RUSSIA, Fax : +7 (4862) 41-00-56 Phones : +7 (4862) 43-41-39 / 43-41-40

E-mail: eletex@eletex.ru / eltex@orel.ru; I-net: www.eletex.ru

CHARACTERISTICS

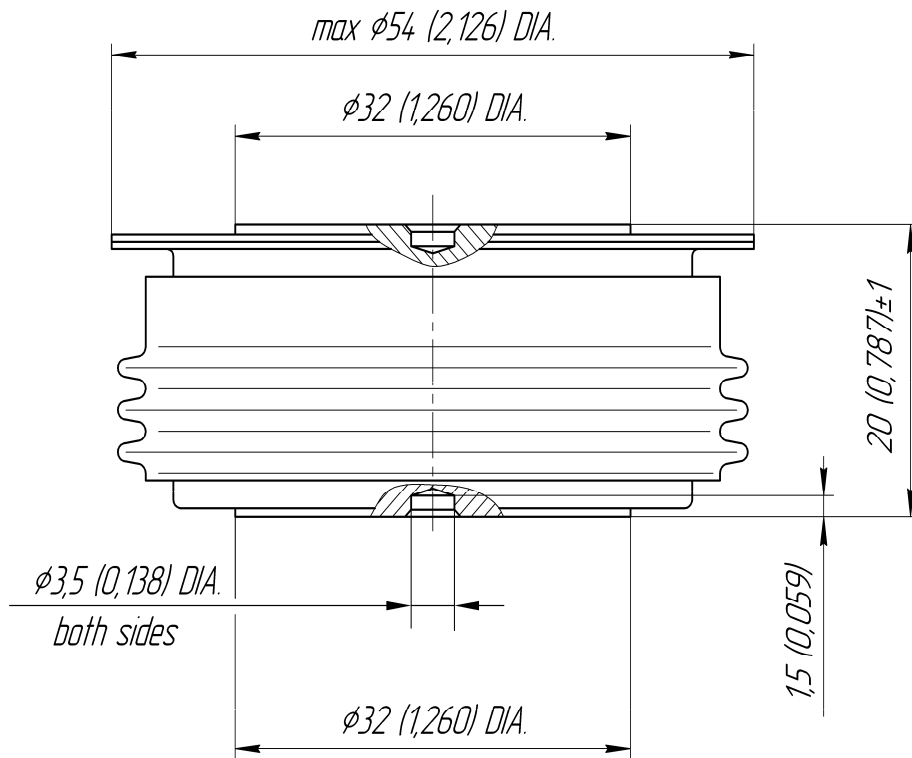
Symbols and parameters		Units	Values	Conditions	
ON-STATE					
V_{FM}	Peak forward voltage, max	V	2.20	$T_j=25\text{ }^\circ\text{C}; I_{FM}=628\text{ A}$	
$V_{F(TO)}$	Forward threshold voltage, max	V	1.35	$T_j=T_{j\text{ max}};$ $0.5\pi I_{FAV} < I_T < 1.5\pi I_{FAV}$	
r_T	Forward slope resistance, max	m Ω	1.700		
BLOCKING					
I_{RRM}	Repetitive peak reverse current, max	mA	50	$T_j=T_{j\text{ max}};$ $V_R=V_{RRM}$	
SWITCHING					
Q_{rr}	Total recovered charge, max	μC	70	$T_j=T_{j\text{ max}}; I_{FM}=I_{FAV};$ $di_R/dt=-100\text{ A}/\mu\text{s};$ $V_R=100\text{ V};$	
t_{rr}	Reverse recovery time, max	μs	1.25		
I_{rrM}	Peak reverse recovery current, max	A	110		
THERMAL					
R_{thjc}	Thermal resistance, junction to case, max	$^\circ\text{C}/\text{W}$	0.0400	Direct current	Double side cooled
R_{thjc-A}			0.0880		Anode side cooled
R_{thjc-K}			0.0720		Cathode side cooled
R_{thck}	Thermal resistance, case to heatsink, max	$^\circ\text{C}/\text{W}$	0.0080	Direct current	
MECHANICAL					
w	Weight, typ	g	180		
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						GROUP OF RECOVERY TIME	
DF	233	200	24	X4	N	Group Symbol	
1	2	3	4	5	6	$t_{rr}, \mu\text{s}$	
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						X4	
						1.25	

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All dimensions in millimeters (inches)

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