



**Fast Recovery Diode**  
**Type DF443-320-44**

Low switching losses  
Low reverse recovery charge  
High power cycling capability

Average forward current		$I_{FAV}$	320 A	
Repetitive peak reverse voltage		$V_{RRM}$	3800 ÷ 4400 V	
Reverse recovery time		$t_{rr}$	4.0 $\mu$ s	
$V_{RRM}, V$	3800	4000	4200	4400
Voltage code	38	40	42	44
$T_j, ^\circ C$	- 60 ÷ 125			

**MAXIMUM ALLOWABLE RATINGS**

Symbols and parameters		Units	Values	Test conditions	
<b>ON-STATE</b>					
$I_{FAV}$	Average forward current	A	320 350 500	$T_c=90^\circ C$ ; Double side cooled; $T_c=85^\circ C$ ; Double side cooled; $T_c=55^\circ C$ ; Double side cooled; 180° half-sine wave; 50 Hz	
$I_{FRMS}$	RMS forward current	A	502	$T_c=90^\circ C$ ; Double side cooled; 180° half-sine wave; 50 Hz	
$I_{FSM}$	Surge forward current	kA	6.0 7.0	$T_j=T_{jmax}$ $T_j=25^\circ C$	180° half-sine wave; 50 Hz ( $t_p=10$ ms); single pulse; $V_R=0$ V;
			7.0 8.0	$T_j=T_{jmax}$ $T_j=25^\circ C$	180° half-sine wave; 60 Hz ( $t_p=8.3$ ms); single pulse; $V_R=0$ V;
$I^2t$	Safety factor	$A^2s \cdot 10^3$	180 245	$T_j=T_{jmax}$ $T_j=25^\circ C$	180° half-sine wave; 50 Hz ( $t_p=10$ ms); single pulse; $V_R=0$ V;
			200 265	$T_j=T_{jmax}$ $T_j=25^\circ C$	180° half-sine wave; 60 Hz ( $t_p=8.3$ ms); single pulse; $V_R=0$ V;
<b>BLOCKING</b>					
$V_{RRM}$	Repetitive peak reverse voltages	V	3800÷4400	$T_{jmin} < T_j < T_{jmax}$ ; 180° half-sine wave; 50 Hz;	
$V_{RSM}$	Non-repetitive peak reverse voltages	V	3900÷4500	$T_{jmin} < T_j < T_{jmax}$ ; 180° half-sine wave; 50 Hz; single pulse;	
$V_R$	Reverse continuous voltages	V	$0.75 \cdot V_{RRM}$	$T_j=T_{jmax}$ ;	
<b>THERMAL</b>					
$T_{stg}$	Storage temperature	$^\circ C$	- 60 ÷ 125		
$T_j$	Operating junction temperature	$^\circ C$	- 60 ÷ 125		
<b>MECHANICAL</b>					
F	Mounting force	kN	14.0 ÷ 16.0		
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	
<b>ON-STATE</b>					
$V_{FM}$	Peak forward voltage, max	V	3.60 4.00	$T_j=25\text{ }^\circ\text{C}; I_{FM}=1000\text{ A}$ $T_j=125\text{ }^\circ\text{C}; I_{FM}=1400\text{ A}$	
$V_{F(TO)}$	Forward threshold voltage, max	V	1.50	$T_j=T_{j\text{ max}}$ ;	
$r_T$	Forward slope resistance, max	m $\Omega$	2.000	$0.5\pi I_{FAV} < I_T < 1.5\pi I_{FAV}$	
<b>BLOCKING</b>					
$I_{RRM}$	Repetitive peak reverse current, max	mA	50	$T_j=T_{j\text{ max}}$ ; $V_R=V_{RRM}$	
<b>SWITCHING</b>					
$Q_{rr}$	Total recovered charge, max	$\mu\text{C}$	500	$T_j=T_{j\text{ max}}; I_{FM}=600\text{ A};$ $di_R/dt=-100\text{ A}/\mu\text{s};$ $V_R=100\text{ V};$	
$t_{rr}$	Reverse recovery time, max	$\mu\text{s}$	4.0		
$I_{rrM}$	Peak reverse recovery current, max	A	250		
<b>THERMAL</b>					
$R_{thjc}$	Thermal resistance, junction to case, max	$^\circ\text{C}/\text{W}$	0.0350	Direct current	Double side cooled
$R_{thjC-A}$			0.0770		Anode side cooled
$R_{thjC-K}$			0.0630		Cathode side cooled
$R_{thck}$	Thermal resistance, case to heatsink, max	$^\circ\text{C}/\text{W}$	0.0060	Direct current	
<b>MECHANICAL</b>					
w	Weight, typ	g	280		
$D_s$	Surface creepage distance	mm (inch)	33.3 (1.311)		
$D_a$	Air strike distance	mm (inch)	22.5 (0.886)		

PART NUMBERING GUIDE						GROUP OF RECOVERY TIME	
DF	443	320	44	H4	N	Group Symbol	
1	2	3	4	5	6	$t_{rr}, \mu\text{s}$	H4 4.0
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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