

Fast Recovery Avalanche Diode Type DFA333-320-22

Low switching losses
Low reverse recovery charge
High power cycling capability

Average forward current		I_{FAV}	320 A
Repetitive peak reverse voltage		V_{RRM}	1800...2200 V
Reverse recovery time		t_{rr}	2.50, 3.20, 4.00, 5.00 μ s
V_{RRM} , V	1800	2000	2200
Voltage code	18	20	22
T_j , °C	- 60...+125		

MAXIMUM ALLOWABLE RATINGS

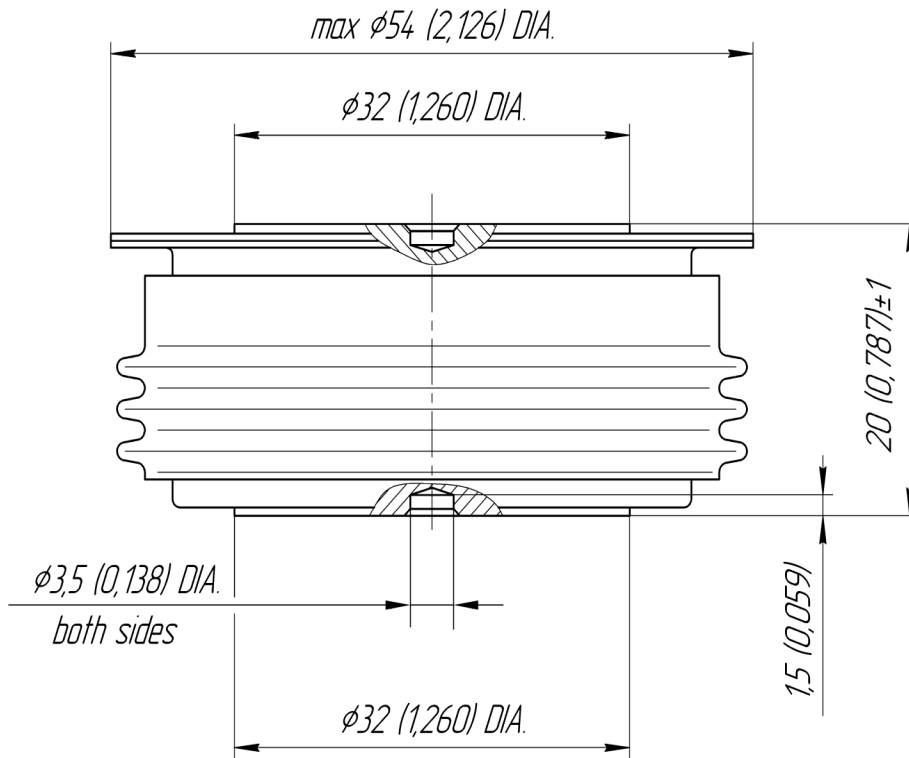
Symbols and parameters		Units	Values	Test conditions
ON-STATE				
I_{FAV}	Average forward current	A	320	$T_c=85$ °C; Double side cooled; 180° half-sine wave; 50 Hz
I_{FRMS}	RMS forward current	A	502	$T_c=85$ °C; Double side cooled; 180° half-sine wave; 50 Hz
I_{FSM}	Surge forward current	kA	6.5 7.5	$T_j=T_{j\max}$ $T_j=25$ °C 180° half-sine wave; $t_p=10$ ms; single pulse; $V_R=0$ V;
			7.0 8.0	$T_j=T_{j\max}$ $T_j=25$ °C 180° half-sine wave; $t_p=8.3$ ms; single pulse; $V_R=0$ V;
I^2t	Safety factor	$A^2s \cdot 10^3$	210 280	$T_j=T_{j\max}$ $T_j=25$ °C 180° half-sine wave; $t_p=10$ ms; single pulse; $V_R=0$ V;
			200 260	$T_j=T_{j\max}$ $T_j=25$ °C 180° half-sine wave; $t_p=8.3$ ms; single pulse; $V_R=0$ V;
BLOCKING				
V_{RRM}	Repetitive peak reverse voltages	V	1800...2200	$T_{j\min} < T_j < T_{j\max}$; 180° half-sine wave; 50 Hz;
V_{RSM}	Non-repetitive peak reverse voltages	V	1900...2300	$T_{j\min} < T_j < T_{j\max}$; 180° half-sine wave; single pulse;
$V_{(BR)}$	Breakdown voltage	V	2000...2400	$T_j=25$ °C; $I_{br}=100$ mA; $t_p = 10$ ms; 5 Hz
V_R	Reverse continuous voltages	V	$0.6 \cdot V_{RRM}$	$T_j=T_{j\max}$;
P_{RSM}	Surge reverse power dissipation	kW	16	$T_j= T_{j\max}$; $t_p = 100$ μ s; 180° half-sine current waveforms; single pulse
THERMAL				
T_{stg}	Storage temperature	°C	-60...+55	
T_j	Operating junction temperature	°C	-60...+125	
MECHANICAL				
F	Mounting force	kN	9.0...11.0	
a	Acceleration	m/s ²	50	Device clamped

CHARACTERISTICS

Symbols and parameters		Units	Values	Conditions	
ON-STATE					
V_{FM}	Peak forward voltage, max	V	2.50	$T_j=25\text{ }^\circ\text{C}; I_{FM}=1005\text{ A}$	
$V_{F(TO)}$	Forward threshold voltage, max	V	1.20	$T_j=T_{j\text{ max}};$ $0.5 \pi I_{FAV} < I_T < 1.5 \pi I_{FAV}$	
r_T	Forward slope resistance, max	m Ω	1.65		
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	tbd*	$T_j=T_{j\text{ max}}; I_{FM}=I_{FAV};$ $di_R/dt=-100\text{ A}/\mu\text{S};$ $V_R=100\text{ V};$	
t_{rr}	Reverse recovery time ¹⁾ , max	μS	2.50, 3.20, 4.00, 5.00		
I_{rrM}	Peak reverse recovery current, max	A	tbd*		
THERMAL					
R_{thjc}	Thermal resistance, junction to case, max	$^\circ\text{C}/\text{W}$	0.0500	Double side cooled	
R_{thjc-A}			0.1100	Direct current	Anode side cooled
R_{thjc-K}			0.0900		Cathode side cooled
R_{thck}	Thermal resistance, case to heatsink, max	$^\circ\text{C}/\text{W}$	0.0090	Direct current	
MECHANICAL					
w	Weight, max	g	180		
D_s	Surface creepage distance	mm (inch)	23.69 (0.933)		
D_a	Air strike distance	mm (inch)	19.10 (0.752)		

* **tbd** – data will be refined as additional tests are conducted and statistics are collected.

PART NUMBERING GUIDE						NOTES										
DFA	333	320	22	E4	N	¹⁾ Reverse recovery time <table border="1"> <thead> <tr> <th>Symbol of group</th> <th>M4</th> <th>K4</th> <th>H4</th> <th>E4</th> </tr> </thead> <tbody> <tr> <td>$t_{rr}, \mu\text{S}$</td> <td>2.50</td> <td>3.20</td> <td>4.00</td> <td>5.00</td> </tr> </tbody> </table>	Symbol of group	M4	K4	H4	E4	$t_{rr}, \mu\text{S}$	2.50	3.20	4.00	5.00
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$t_{rr}, \mu\text{S}$	2.50	3.20	4.00	5.00												
1	2	3	4	5	6											
1. DFA – Fast recovery avalanche 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																



All dimensions in millimeters (inches)