Low switching losses
Low reverse recovery charge
High power cycling capability

Fast Recovery Avalanche Diode
Type DFA133-320-22

Average forward current		I_{FAV}	320 A	
Repetitive peak reverse voltage		V_{RRM}	1600...2200 V	
Reverse recovery time		t_{rr}*	2.00, 2.50, 3.20, 4.00, 5.00 μs	
V_{RRM}, V	1600	1800	2000	2200
Voltage code	16	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	$A^2s\cdot10^3$	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	1600...2200	$T_{j\,min}$< T_j <$T_{j\,max}$; 180° half-sine wave; 50 Hz;	
V_{RSM}	Non-repetitive peak reverse voltages	V	1700...2300	$T_{j\,min}$< T_j <$T_{j\,max}$; 180° half-sine wave; single pulse;	
$V_{(BR)}$	Breakdown voltage	V	1800...2400	T_j=25 °C; I_{br}=100 mA; t_p = 10 ms; 5 Hz	
V_R	Reverse continuous voltages	V	0.6·V_{RRM}	T_j=$T_{j\,max}$;	
P_{RSM}	Surge reverse power dissipation	kW	16	T_j= $T_{j\,max}$; t_p = 100 μs; 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 °C; I_{FM}=1005 A	
$V_{F(TO)}$	Forward threshold voltage, max	V	1.20	$T_j=T_{j\,max}$; 0.5 π I_{FAV} < I_T < 1.5 π I_{FAV}	
r_T	Forward slope resistance, max	mΩ	1.65		
BLOCKING					
I_{RRM}	Repetitive peak reverse current, max	mA	40	$T_j=T_{j\,max}$; $V_R=V_{RRM}$	
SWITCHING					
Q_{rr}	Total recovered charge, max	μC	tbd*	$T_j=T_{j\,max}$; I_{FM}= I_{FAV}; di_R/dt=-100 A/μs; V_R=100 V;	
t_{rr}*	Reverse recovery time[1)], max	μs	2.00, 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	°C/W	0.0500	Direct current	Double side cooled
R_{thjc-A}			0.1100		Anode side cooled
R_{thjc-K}			0.0900		Cathode side cooled
R_{thck}	Thermal resistance, case to heatsink, max	°C/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)		

* **2.00 μs** - for voltage code 16
2.50, 3.20, 4.00, 5.00 μs - for the range of voltage codes (18-22)

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

PART NUMBERING GUIDE

DFA	133	320	22	E4	N
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

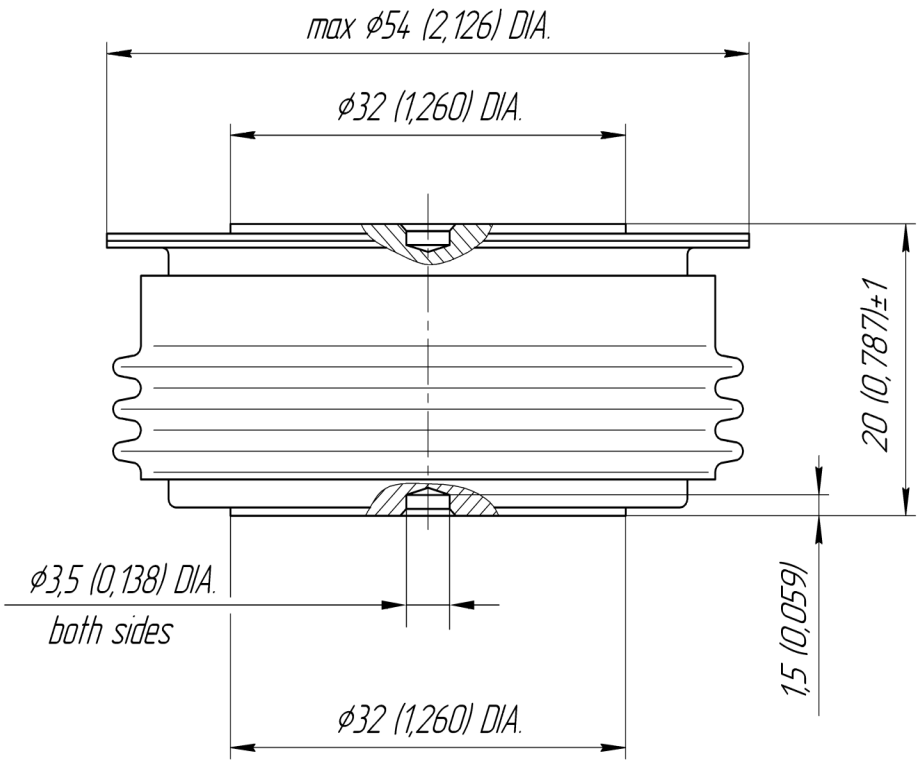
NOTES

[1)] Reverse recovery time

Symbol of group	P4	M4	K4	H4	E4
t_{rr}, μs	2.0	2.5	3.2	4.00	5.00

OVERALL DIMENSIONS

Package type: D.B2



All dimensions in millimeters (inches)

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