



High-end Power Semiconductor Manufacturer

ZK320A 3000-3600V Fast Recovery Diode

- Low switching losses
- Low reverse recovery charge High
- power cycling capability



Average forward current		I_{FAV}	320 A	
Repetitive peak reverse voltage		V_{RRM}	3000 – 3600 V	
Reverse recovery time		t_{rr}	5.00, 6.30, 8.00, 10.0 μ s	
V_{RRM} , V	3000	3200	3400	3600
Voltage code	30	32	34	36
T_j , °C	– 60 – 125			

MAXIMUM ALLOWABLE RATINGS

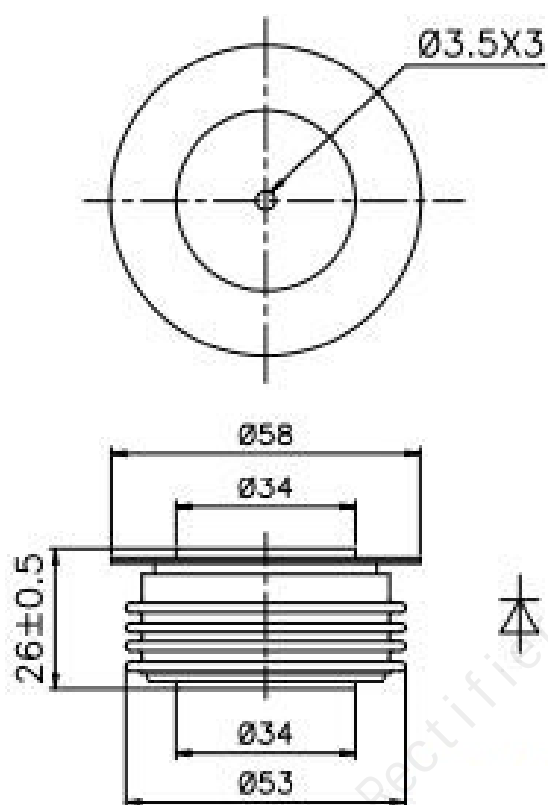
Symbols and parameters		Units	Values	Test conditions	
ON-STATE					
I_{FAV}	Average forward current	A	320	$T_c=85\text{ }^{\circ}\text{C}$; Double side cooled; 180° half-sine wave; 50 Hz	
I_{FRMS}	RMS forward current	A	502	$T_c=85\text{ }^{\circ}\text{C}$; Double side cooled; 180° half-sine wave; 50 Hz	
I_{FSM}	Surge forward current	kA	6.5 7.5	$T_j=T_{j\max}$ $T_j=25\text{ }^{\circ}\text{C}$	180° half-sine wave; $t_p=10\text{ ms}$; single pulse; $V_R=0\text{ V}$;
			7.0 8.0	$T_j=T_{j\max}$ $T_j=25\text{ }^{\circ}\text{C}$	180° half-sine wave; $t_p=8.3\text{ ms}$; single pulse; $V_R=0\text{ V}$;
I^2t	Safety factor	$A^2s\cdot 10^3$	210 280	$T_j=T_{j\max}$ $T_j=25\text{ }^{\circ}\text{C}$	180° half-sine wave; $t_p=10\text{ ms}$; single pulse; $V_R=0\text{ V}$;
			200 260	$T_j=T_{j\max}$ $T_j=25\text{ }^{\circ}\text{C}$	180° half-sine wave; $t_p=8.3\text{ ms}$; single pulse; $V_R=0\text{ V}$;
BLOCKING					
V_{RRM}	Repetitive peak reverse voltages	V	3000 – 3600	$T_{j\min} < T_j < T_{j\max}$; 180° half-sine wave; 50 Hz;	
V_{RSM}	Non-repetitive peak reverse voltages	V	3100 – 3700	$T_{j\min} < T_j < T_{j\max}$; 180° half-sine wave; single pulse;	
V_R	Reverse continuous voltages	V	$0.6V_{RRM}$	$T_j=T_{j\max}$;	
THERMAL					
T_{stg}	Storage temperature	$^{\circ}\text{C}$	−60 – 55		
T_j	Operating junction temperature	$^{\circ}\text{C}$	−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	1.30	T _j =T _{j max} ;	
r _T	Forward slope resistance, max	mΩ	2.30	0.5 π I _{FAV} < I _T < 1.5 π I _{FAV}	
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	90	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	5.00, 6.30, 8.00, 10.0		
I _{rrM}	Peak reverse recovery current, max	A	tbd*		
THERMAL					
R _{thjc}	Thermal resistance, junction to case, max	°C/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	°C/W	0.0080	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.

OVERALL DIMENSIONS



ZT40

All dimensions in millimeters