



High-end Power Semiconductor Manufacturer

ZP800A 3800-4400V Standard Rectifier Diode

- High power cycling capability
- Low on-state and switching losses
- Optimized for line frequency rectifiers
- Designed for traction and industrial applications



Average forward current		I_{FAV}	800 A
Repetitive peak reverse voltage		V_{RRM}	3800 – 4400 V
V_{RRM} , V	3800	4000	4200
Voltage code	38	40	42
T_j , °C	-60 – 150		

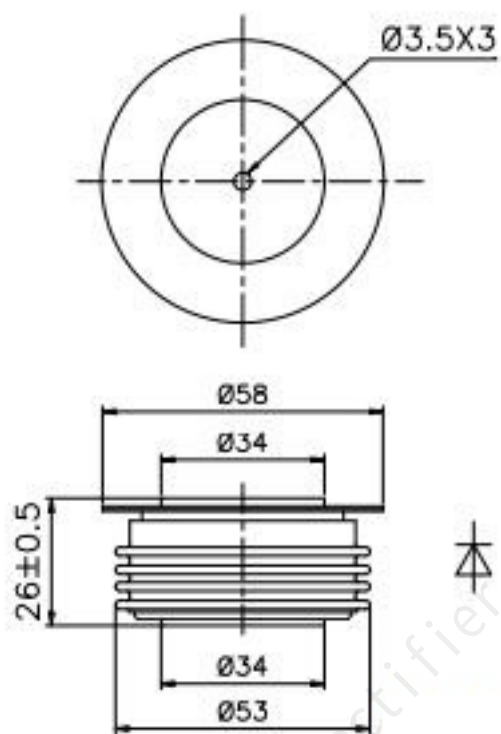
MAXIMUM ALLOWABLE RATINGS

Symbols and parameters		Units	Values	Test conditions	
ON-STATE					
I_{FAV}	Average forward current	A	800	$T_c=100\text{ }^{\circ}\text{C}$; Double side cooled; 180° half-sine wave; 50 Hz	
I_{FRMS}	RMS forward current	A	1256	$T_c=94\text{ }^{\circ}\text{C}$; Double side cooled; 180° half-sine wave; 50 Hz	
I_{FSM}	Surge forward current	kA	12.5 14.0	$T_j=T_{j\text{ max}}$ $T_j=25\text{ }^{\circ}\text{C}$	180° half-sine wave; 50 Hz ($t_p=10\text{ ms}$); single pulse; $V_R=0\text{ V}$;
			14.0 16.0	$T_j=T_{j\text{ max}}$ $T_j=25\text{ }^{\circ}\text{C}$	180° half-sine wave; 60 Hz ($t_p=8.3\text{ ms}$); single pulse; $V_R=0\text{ V}$;
I^2t	Safety factor	$A^2s\cdot 10^3$	780 980	$T_j=T_{j\text{ max}}$ $T_j=25\text{ }^{\circ}\text{C}$	180° half-sine wave; 50 Hz ($t_p=10\text{ ms}$); single pulse; $V_R=0\text{ V}$;
			810 1060	$T_j=T_{j\text{ max}}$ $T_j=25\text{ }^{\circ}\text{C}$	180° half-sine wave; 60 Hz ($t_p=8.3\text{ ms}$); single pulse; $V_R=0\text{ V}$;
BLOCKING					
V_{RRM}	Repetitive peak reverse voltages	V	3800–4400	$T_{j\text{ min}}<T_j<T_{j\text{ max}}$; 180° half-sine wave; 50 Hz;	
V_{RSM}	Non-repetitive peak reverse voltages	V	3900–4500	$T_{j\text{ min}}<T_j<T_{j\text{ max}}$; 180° half-sine wave; 50 Hz;single pulse;	
V_R	Reverse continuous voltages	V	$0.75\cdot V_{RRM}$	$T_j=T_{j\text{ max}}$;	
THERMAL					
T_{stg}	Storage temperature	$^{\circ}\text{C}$	-60 –150		
T_j	Operating junction temperature	$^{\circ}\text{C}$	-60 –150		
MECHANICAL					
F	Mounting force	kN	14.0 –16.0		
a	Acceleration	m/s^2	50 100	Device unclamped Device clamped	

CHARACTERISTICS

Symbols and parameters		Units	Values	Conditions	
ON-STATE					
V _{FM}	Peak forward voltage, max	V	1.97	T _j =25 °C; I _{FM} =2512 A	
V _{F(TO)}	Forward threshold voltage, max	V	1.02	T _j =T _{j max} ;	
r _T	Forward slope resistance, max	mΩ	0.510	0.5 π I _{FAV} < I _T < 1.5 π I _{FAV}	
BLOCKING					
I _{RRM}	Repetitive peak reverse current, max	mA	70	T _j =T _{j max} ; V _R =V _{RRM}	
THERMAL					
R _{thjc}	Thermal resistance, junction to case, max	°C/W	0.035	Direct current	Double side cooled
R _{thjc-A}			0.077		Anode side cooled
R _{thjc-K}			0.063		Cathode side cooled
R _{thck}	Thermal resistance, case to heatsink, max	°C/W	0.006	Direct current	
MECHANICAL					
w	Weight, typ	g	280		
D _s	Surface creepage distance	mm (inch)	33.30 (1.311)		
D _a	Air strike distance	mm (inch)	22.50 (0.886)		

OVERALL DIMENSIONS



ZT40

All dimensions in millimeters