



High-end Power Semiconductor Manufacturer

## ZP1600A 2000-2400V 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		$I_{FAV}$	1600 A	
Repetitive peak reverse voltage		$V_{RRM}$	2000 – 2400 V	
$V_{RRM}$ , V	2000	2200	2400	
Voltage code	20	22	24	
$T_j$ , °C	-60 – 190			

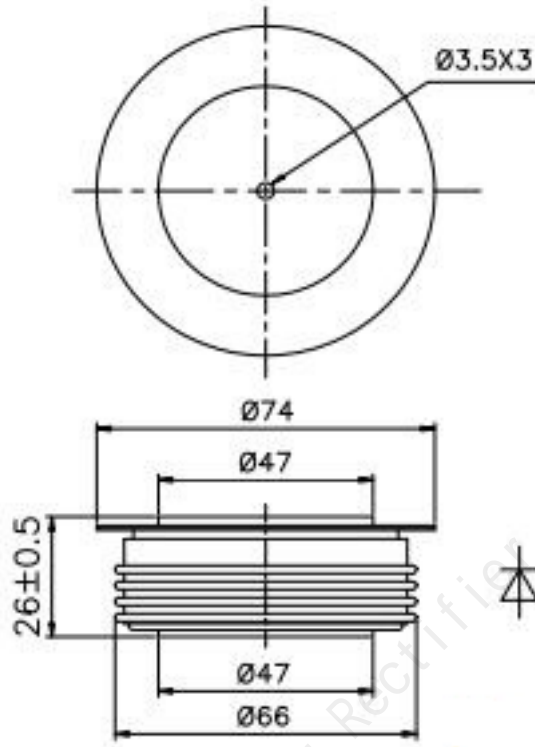
### MAXIMUM ALLOWABLE RATINGS

Symbols and parameters		Units	Values	Test conditions
<b>ON-STATE</b>				
$I_{FAV}$	Average forward current	A	1600	$T_c=100\text{ }^\circ\text{C}$ ; Double side cooled; 180° half-sine wave; 50 Hz
$I_{FRMS}$	RMS forward current	A	2512	$T_c=147\text{ }^\circ\text{C}$ ; Double side cooled; 180° half-sine wave; 50 Hz
$I_{FSM}$	Surge forward current	kA	35.0 40.0	$T_j=T_{j\max}$ $T_j=25\text{ }^\circ\text{C}$ 180° half-sine wave; 50 Hz ( $t_p=10\text{ ms}$ ); single pulse; $V_R=0\text{ V}$ ;
			37.0 43.0	$T_j=T_{j\max}$ $T_j=25\text{ }^\circ\text{C}$ 180° half-sine wave; 60 Hz ( $t_p=8.3\text{ ms}$ ); single pulse; $V_R=0\text{ V}$ ;
$I^2t$	Safety factor	$A^2s\cdot 10^3$	6125 8000	$T_j=T_{j\max}$ $T_j=25\text{ }^\circ\text{C}$ 180° half-sine wave; 50 Hz ( $t_p=10\text{ ms}$ ); single pulse; $V_R=0\text{ V}$ ;
			5680 7670	$T_j=T_{j\max}$ $T_j=25\text{ }^\circ\text{C}$ 180° half-sine wave; 60 Hz ( $t_p=8.3\text{ ms}$ ); single pulse; $V_R=0\text{ V}$ ;
<b>BLOCKING</b>				
$V_{RRM}$	Repetitive peak reverse voltages	V	2000–2400	$T_{j\min} < T_j < T_{j\max}$ ; 180° half-sine wave; 50 Hz;
$V_{RSM}$	Non-repetitive peak reverse voltages	V	2100–2500	$T_{j\min} < T_j < T_{j\max}$ ; 180° half-sine wave; 50 Hz; single pulse;
$V_R$	Reverse continuous voltages	V	$0.75\cdot V_{RRM}$	$T_j=T_{j\max}$ ;
<b>THERMAL</b>				
$T_{stg}$	Storage temperature	°C	-60–190	
$T_j$	Operating junction temperature	°C	-60–190	
<b>MECHANICAL</b>				
F	Mounting force	kN	24.0–28.0	
a	Acceleration	$m/s^2$	50	Device unclamped
			100	Device clamped

## CHARACTERISTICS

Symbols and parameters		Units	Values	Conditions	
<b>ON-STATE</b>					
$V_{FM}$	Peak forward voltage, max	V	1.51	$T_j=25\text{ }^\circ\text{C}; I_{FM}=5024\text{ A}$	
$V_{F(TO)}$	Forward threshold voltage, max	V	1.02	$T_j=T_{j\text{ max}};$	
$r_T$	Forward slope resistance, max	m $\Omega$	0.130	$0.5\pi I_{FAV} < I_T < 1.5\pi I_{FAV}$	
<b>BLOCKING</b>					
$I_{RRM}$	Repetitive peak reverse current, max	mA	100	$T_j=T_{j\text{ max}};$ $V_R=V_{RRM}$	
<b>THERMAL</b>					
$R_{thjc}$	Thermal resistance, junction to case, max	$^\circ\text{C/W}$	0.0180	Direct current	Double side cooled
$R_{thjc-A}$			0.0396		Anode side cooled
$R_{thjc-K}$			0.0324		Cathode side cooled
$R_{thck}$	Thermal resistance, case to heatsink, max	$^\circ\text{C/W}$	0.0040	Direct current	
<b>MECHANICAL</b>					
w	Weight, typ	g	510		
$D_s$	Surface creepage distance	mm (inch)	38.84 (1.529)		
$D_a$	Air strike distance	mm (inch)	22.50 (0.886)		

OVERALL DIMENSIONS



ZT55

All dimensions in millimeters