

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

## Rectifier Diode Type D173-3200-36

Average forward current		$I_{FAV}$	3200 A	
Repetitive peak reverse voltage		$V_{RRM}$	3000 ÷ 3600 V	
$V_{RRM}$ , V	3000	3200	3400	3600
Voltage code	30	32	34	36
$T_j$ , °C	-60 ÷ 160			

### MAXIMUM ALLOWABLE RATINGS

Symbols and parameters		Units	Values	Test conditions
<b>ON-STATE</b>				
$I_{FAV}$	Average forward current	A	3200 4240	$T_c=109\text{ °C}$ ; Double side cooled; $T_c=85\text{ °C}$ ; Double side cooled; 180° half-sine wave; 50 Hz
$I_{FRMS}$	RMS forward current	A	5024	$T_c=109\text{ °C}$ ; Double side cooled; 180° half-sine wave; 50 Hz
$I_{FSM}$	Surge forward current	kA	50.0 58.0	$T_j=T_{j\max}$ $T_j=25\text{ °C}$ 180° half-sine wave; 50 Hz ( $t_p=10\text{ ms}$ ); single pulse; $V_R=0\text{ V}$ ;
			53.0 61.0	$T_j=T_{j\max}$ $T_j=25\text{ °C}$ 180° half-sine wave; 60 Hz ( $t_p=8.3\text{ ms}$ ); single pulse; $V_R=0\text{ V}$ ;
$I^2t$	Safety factor	$A^2s \cdot 10^3$	12500 16820	$T_j=T_{j\max}$ $T_j=25\text{ °C}$ 180° half-sine wave; 50 Hz ( $t_p=10\text{ ms}$ ); single pulse; $V_R=0\text{ V}$ ;
			11655 15440	$T_j=T_{j\max}$ $T_j=25\text{ °C}$ 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	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; 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÷50	
$T_j$	Operating junction temperature	°C	-60÷160	
<b>MECHANICAL</b>				
F	Mounting force	kN	40÷50	
a	Acceleration	$m/s^2$	50	Device unclamped
			100	Device clamped

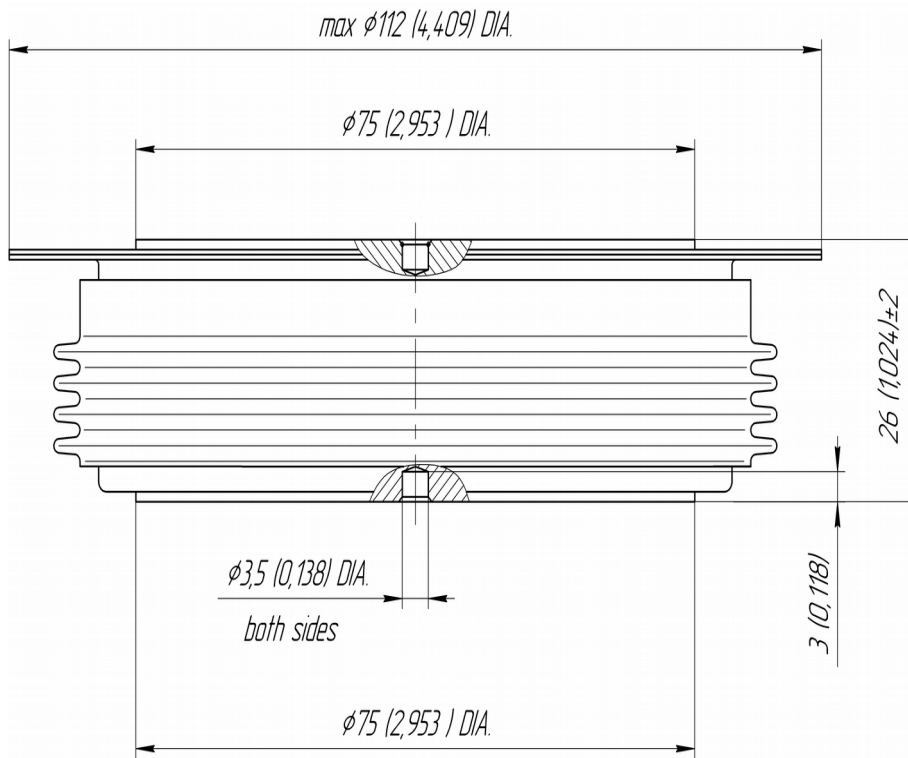
## CHARACTERISTICS

Symbols and parameters		Units	Values	Conditions
<b>ON-STATE</b>				
$V_{FM}$	Peak forward voltage, max	V	1.80	$T_j=25\text{ }^\circ\text{C}; I_{FM}=10048\text{ A}$
$V_{F(TO)}$	Forward threshold voltage, max	V	1.25	$T_j=T_{j\text{ max}};$
$r_T$	Forward slope resistance, max	m $\Omega$	0.080	$0.5\pi I_{FAV} < I_T < 1.5\pi I_{FAV}$
<b>BLOCKING</b>				
$I_{RRM}$	Repetitive peak reverse current, max	mA	150	$T_j=T_{j\text{ max}};$ $V_R=V_{RRM}$
<b>SWITCHING</b>				
$Q_{rr}$	Total recovered charge, max	$\mu\text{C}$	6750	$T_j=T_{j\text{ max}}; I_{TM}=2000\text{ A};$
$t_{rr}$	Reverse recovery time, max	$\mu\text{s}$	75	$di_R/dt=-5\text{ A}/\mu\text{s};$
$I_{rrM}$	Peak reverse recovery current, max	A	180	$V_R=100\text{ V}$
<b>THERMAL</b>				
$R_{thjc}$	Thermal resistance, junction to case, max	$^\circ\text{C}/\text{W}$	0.0085	Double side cooled
$R_{thjc-A}$			0.0187	Anode side cooled
$R_{thjc-K}$			0.0153	Cathode side cooled
$R_{thck}$	Thermal resistance, case to heatsink, max	$^\circ\text{C}/\text{W}$	0.0020	Direct current
<b>MECHANICAL</b>				
w	Weight, typ	g	1500	
$D_s$	Surface creepage distance	mm (inch)	41.40 (1.630)	
$D_a$	Air strike distance	mm (inch)	23.10 (0.909)	

### PART NUMBERING GUIDE

D	173	3200	36	N
1	2	3	4	5

1. D — Rectifier Diode
2. Design version
3. Average forward current, A
4. Voltage code
5. Ambient conditions: N – normal; T – tropical



All dimensions in millimeters (inches)