



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

Power Rectifier
Avalanche Diodes
Type DA153-1600-32

| | | | | | |
|---------------------------------|------------|-----------|------|---------------|------|
| Average forward current | | I_{FAV} | | 1600 A | |
| Repetitive peak reverse voltage | | V_{RRM} | | 2400 ÷ 3200 V | |
| V_{RRM} , V | 2400 | 2600 | 2800 | 3000 | 3200 |
| Voltage code | 24 | 26 | 28 | 30 | 32 |
| T_j , °C | - 60 ÷ 175 | | | | |

MAXIMUM ALLOWABLE RATINGS

| Symbols and parameters | | Units | Values | Test conditions | |
|------------------------|--------------------------------------|-------------------|----------------------|------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------|
| ON-STATE | | | | | |
| I_{FAV} | Average forward current | A | 1600 1775 | $T_c=111$ °C; Double side cooled; $T_c=100$ °C; Double side cooled; 180° half-sine wave; 50 Hz | |
| I_{FRMS} | RMS forward current | A | 2512 | $T_c=111$ °C; Double side cooled; 180° half-sine wave; 50 Hz | |
| I_{FSM} | Surge forward current | kA | 27.0 31.0 | $T_j=T_{j\max}$ $T_j=25$ °C | 180° half-sine wave; 50 Hz ($t_p=10$ ms); single pulse; $V_R=0$ V; |
| | | | 29.0 33.0 | $T_j=T_{j\max}$ $T_j=25$ °C | 180° half-sine wave; 60 Hz ($t_p=8.3$ ms); single pulse; $V_R=0$ V; |
| I^2t | Safety factor | $A^2s \cdot 10^3$ | 3645 4805 | $T_j=T_{j\max}$ $T_j=25$ °C | 180° half-sine wave; 50 Hz ($t_p=10$ ms); single pulse; $V_R=0$ V; |
| | | | 3490 4515 | $T_j=T_{j\max}$ $T_j=25$ °C | 180° half-sine wave; 60 Hz ($t_p=8.3$ ms); single pulse; $V_R=0$ V; |
| BLOCKING | | | | | |
| V_{RRM} | Repetitive peak reverse voltages | V | 2400÷3200 | $T_{j\min} < T_j < T_{j\max}$; 180° half-sine wave; 50 Hz; | |
| V_{RSM} | Non-repetitive peak reverse voltages | V | 2500÷3300 | $T_{j\min} < T_j < T_{j\max}$; 180° half-sine wave; 50 Hz; single pulse; | |
| V_R | Reverse continuous voltages | V | $0.75 \cdot V_{RRM}$ | $T_j = T_{j\max}$; | |
| P_{RSM} | Surge reverse power dissipation | kW | 16 | $T_j = T_{j\max}$; $t_p = 100$ μs; 180° half-sine wave, 50 Hz, single pulse | |
| THERMAL | | | | | |
| T_{stg} | Storage temperature | °C | - 60 ÷ 175 | | |
| T_j | Operating junction temperature | °C | - 60 ÷ 175 | | |
| MECHANICAL | | | | | |
| F | Mounting force | kN | 24.0 ÷ 28.0 | | |
| a | Acceleration | m/s^2 | 50 | Device unclamped | |
| | | | 100 | Device clamped | |

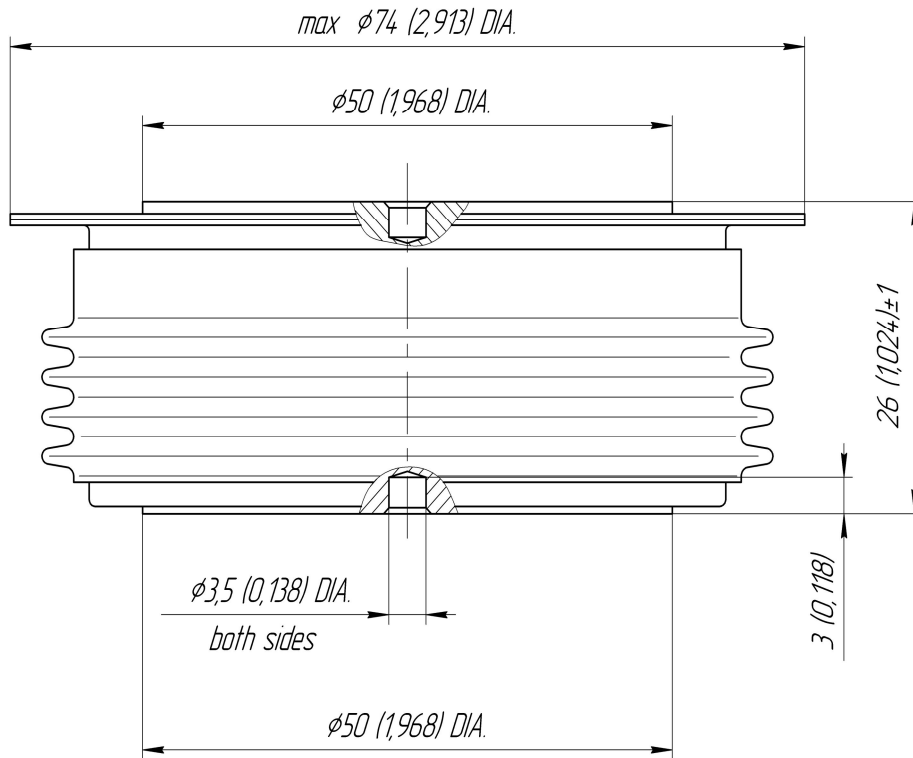
CHARACTERISTICS

| Symbols and parameters | | Units | Values | Conditions | |
|------------------------|-------------------------------------------|--------------------|------------------|------------------------------------------------------|---------------------|
| ON-STATE | | | | | |
| V_{FM} | Peak forward voltage, max | V | 2.00 | $T_j=25\text{ }^\circ\text{C}; I_{FM}=5024\text{ A}$ | |
| $V_{F(TO)}$ | Forward threshold voltage, max | V | 0.95 | $T_j=T_{j\text{ max}}$ | |
| r_T | Forward slope resistance, max | m Ω | 0.320 | $0.5\pi I_{FAV} < I_T < 1.5\pi I_{FAV}$ | |
| BLOCKING | | | | | |
| I_{RRM} | Repetitive peak reverse current, max | mA | 50 | $T_j=T_{j\text{ max}}$ $V_R=V_{RRM}$ | |
| THERMAL | | | | | |
| 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 | |
| MECHANICAL | | | | | |
| 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) | | |

PART NUMBERING GUIDE

| | | | | |
|----|-----|------|----|---|
| DA | 153 | 1600 | 32 | N |
| 1 | 2 | 3 | 4 | 5 |

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



All dimensions in millimeters (inches)