# TRB61

## Rectifier Diode

### APPLICATIONS

- Rectification
- Freewheel Diode
- DC Motor Control
- Power Supplies
- Welding
- Battery Chargers

### KEY PARAMETERS

| | |
|---|---|
| $V_{RRM}$ | 2500V |
| $I_{F(AV)}$ | 2880A |
| $I_{FSM}$ | 32000A |

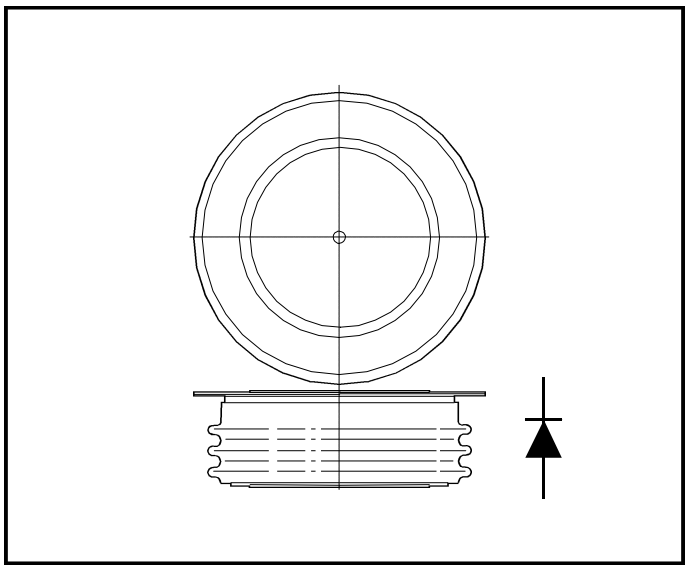
### FEATURES

- Double Side Cooling
- High Surge Capability

### VOLTAGE RATINGS

| Type Number | Repetitive Peak Reverse Voltage $V_{RRM}$ V | Conditions |
|---|---|---|
| TRB61 25 | 2500 | $V_{RSM} = V_{RRM} + 100V$ |
| TRB61 24 | 2400 | |
| TRB61 22 | 2200 | |
| TRB61 20 | 2000 | |
| TRB61 18 | 1800 | |
| TRB61 16 | 1600 | |

Lower voltage grades available.



**Outline type code: DO200AD.**
**See Package Details for further information.**

### CURRENT RATINGS

| Symbol | Parameter | Conditions | Max. | Units |
|---|---|---|---|---|
| **Double Side Cooled** | | | | |
| $I_{F(AV)}$ | Mean forward current | Half wave resistive load, $T_{case}$ = 100°C | 2880 | A |
| $I_{F(RMS)}$ | RMS value | $T_{case}$ = 100°C | 4520 | A |
| $I_F$ | Continuous (direct) forward current | $T_{case}$ = 100°C | 4100 | A |
| **Single Side Cooled (Anode side)** | | | | |
| $I_{F(AV)}$ | Mean forward current | Half wave resistive load, $T_{case}$ = 100°C | 1870 | A |
| $I_{F(RMS)}$ | RMS value | $T_{case}$ = 100°C | 2940 | A |
| $I_F$ | Continuous (direct) forward current | $T_{case}$ = 100°C | 2550 | A |

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## SURGE RATINGS

| Symbol | Parameter | Conditions | Max. | Units |
|---|---|---|---|---|
| $I_{FSM}$ | Surge (non-repetitive) forward current | 10ms half sine; $T_{case}$ = 175°C | 25.5 | kA |
| $I^2t$ | $I^2t$ for fusing | $V_R$ = 50% $V_{RRM}$ - 1/4 sine | 3.25 x $10^6$ | $A^2s$ |
| $I_{FSM}$ | Surge (non-repetitive) forward current | 10ms half sine; $T_{case}$ = 175°C | 32.0 | kA |
| $I^2t$ | $I^2t$ for fusing | $V_R$ = 0 | 5.12 x $10^6$ | $A^2s$ |

## THERMAL AND MECHANICAL DATA

| Symbol | Parameter | Conditions | | Min. | Max. | Units |
|---|---|---|---|---|---|---|
| $R_{th(j-c)}$ | Thermal resistance - junction to case | Double side cooled | dc | - | 0.013 | °C/W |
| | | Single side cooled | Anode dc | - | 0.025 | °C/W |
| | | | Cathode dc | - | 0.027 | °C/W |
| $R_{th(c-h)}$ | Thermal resistance - case to heatsink | Clamping force 44.0kN with mounting compound | Double side | - | 0.003 | °C/W |
| | | | Single side | - | 0.006 | °C/W |
| $T_{vj}$ | Virtual junction temperature | Forward (conducting) | | - | 185 | °C |
| | | Reverse (blocking) | | - | 175 | °C |
| $T_{stg}$ | Storage temperature range | | | -55 | 200 | °C |
| - | Clamping force | | | 40.0 | 48.0 | kN |

## CHARACTERISTICS

| Symbol | Parameter | Conditions | Typ. | Max. | Units |
|---|---|---|---|---|---|
| $V_{FM}$ | Forward voltage | At 1500A peak, $T_{case}$ = 25°C | - | 1.05 | V |
| $I_{RRM}$ | Peak reverse current | At $V_{RRM}$, $T_{case}$ = 175°C | - | 100 | mA |
| $Q_S$ | Total stored charge | $I_F$ = 1000A, $dI_{RR}/dt$ = 5A/µs<br>$T_{case}$ = 125C, $V_R$ = 100V | 3000 | - | µC |
| $I_{RR}$ | Peak recovery current | | 140 | - | A |
| $t_{rr}$ | Reverse recovery time | | 30 | - | µs |
| $V_{TO}$ | Threshold voltage | At $T_{vj}$ = 175C | - | 0.79 | V |
| $r_T$ | Slope resistance | At $T_{vj}$ = 175C | - | 0.15 | mΩ |

## CURVES

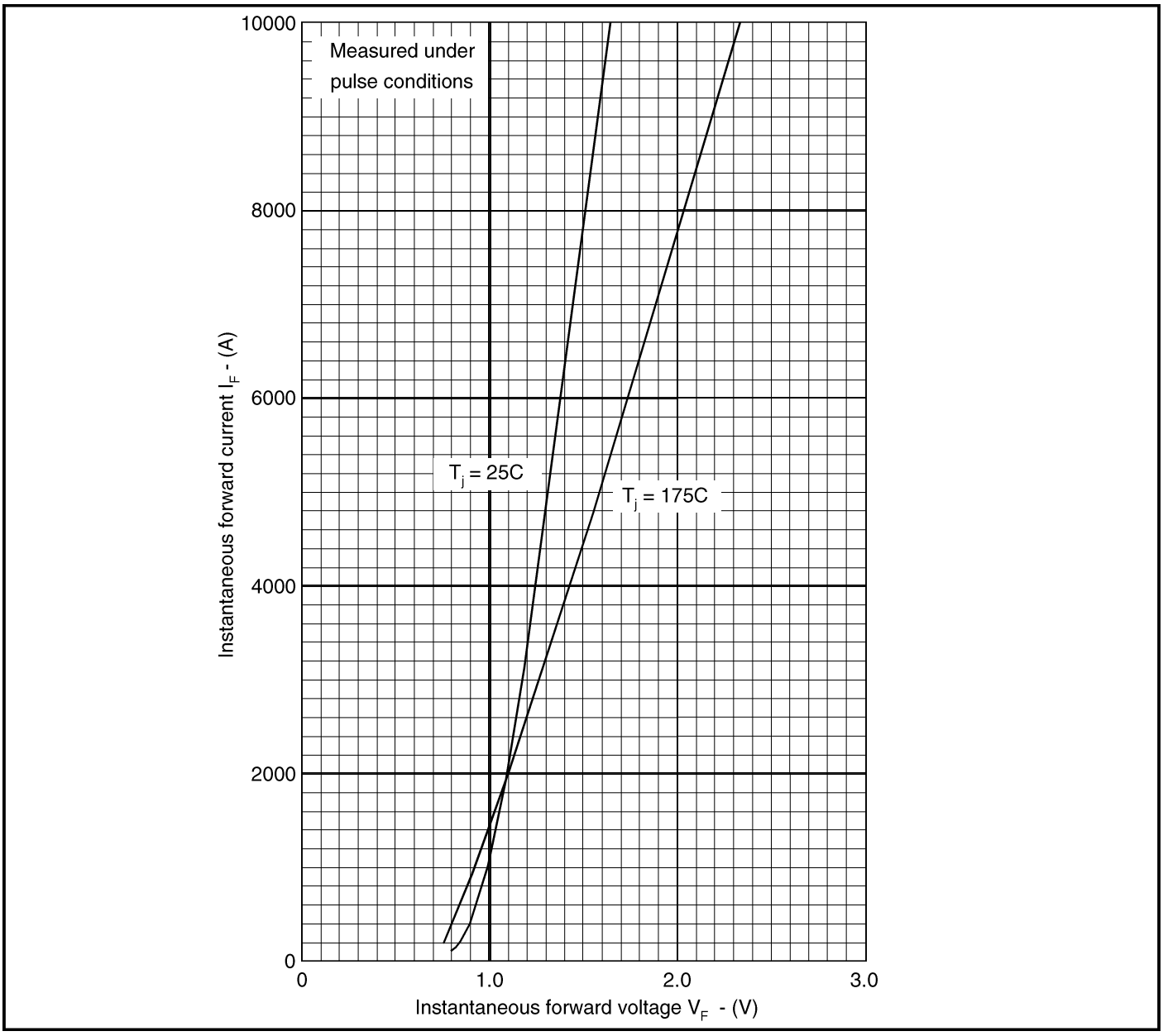



**Fig.1 Maximum (limit) forward characteristics**

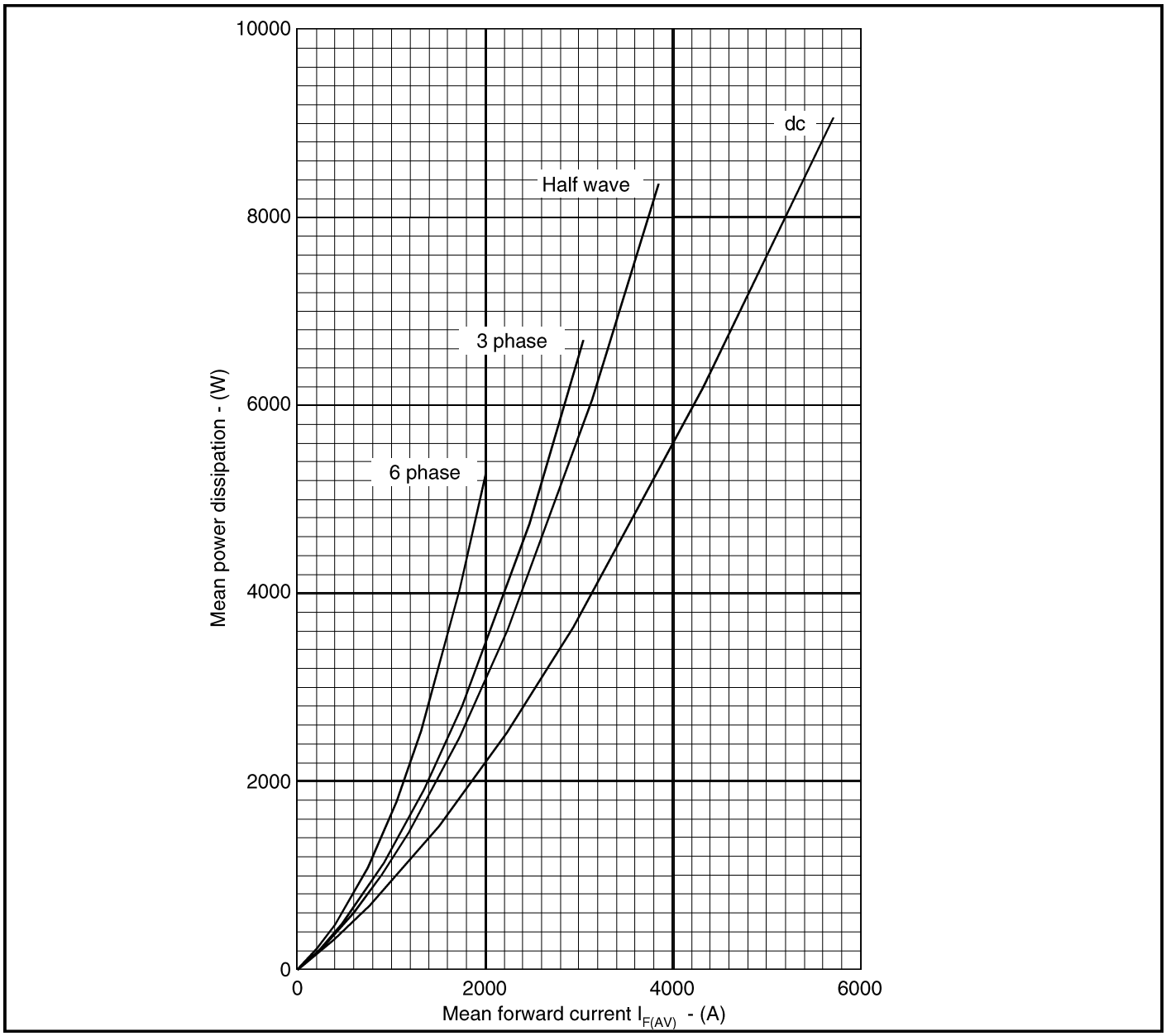



**Fig.2 Dissipation curves**

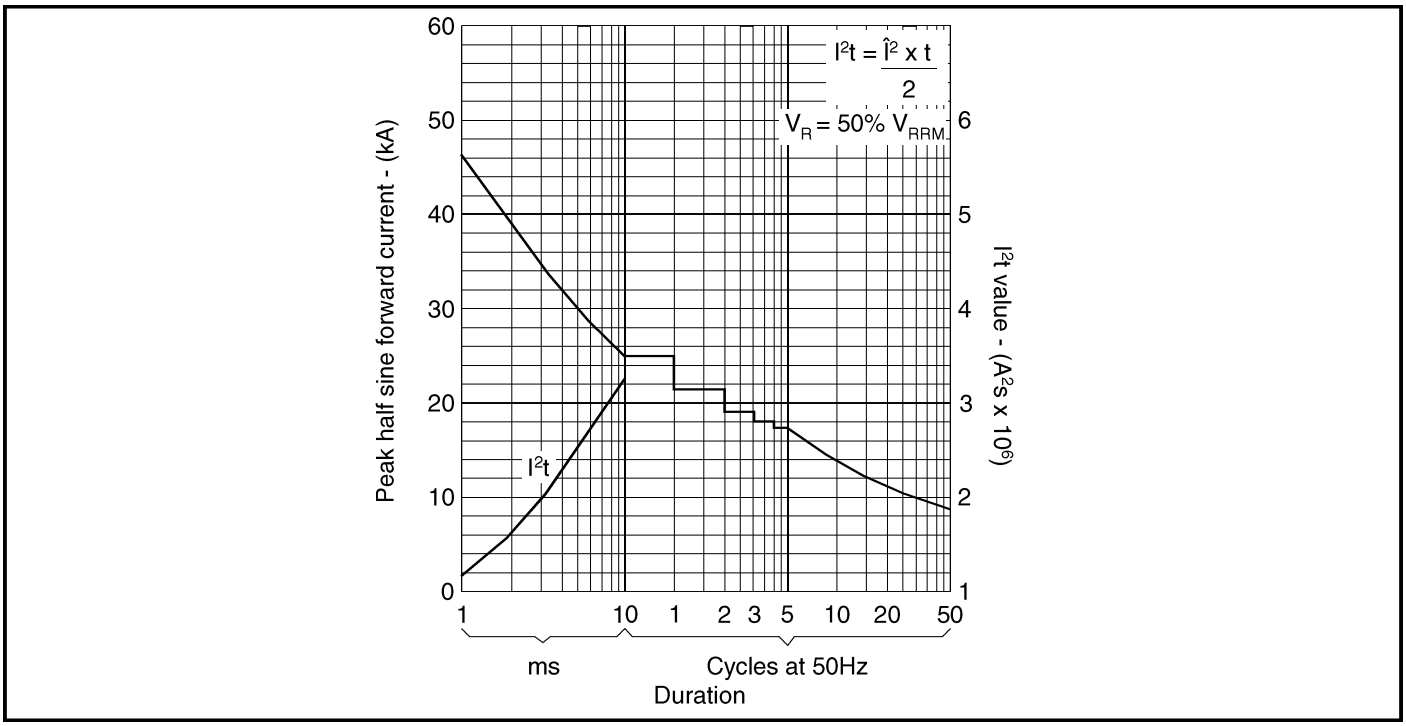



**Fig.3 Surge (non-repetitive) forward current vs time ($T_{case}$ = 175C)**

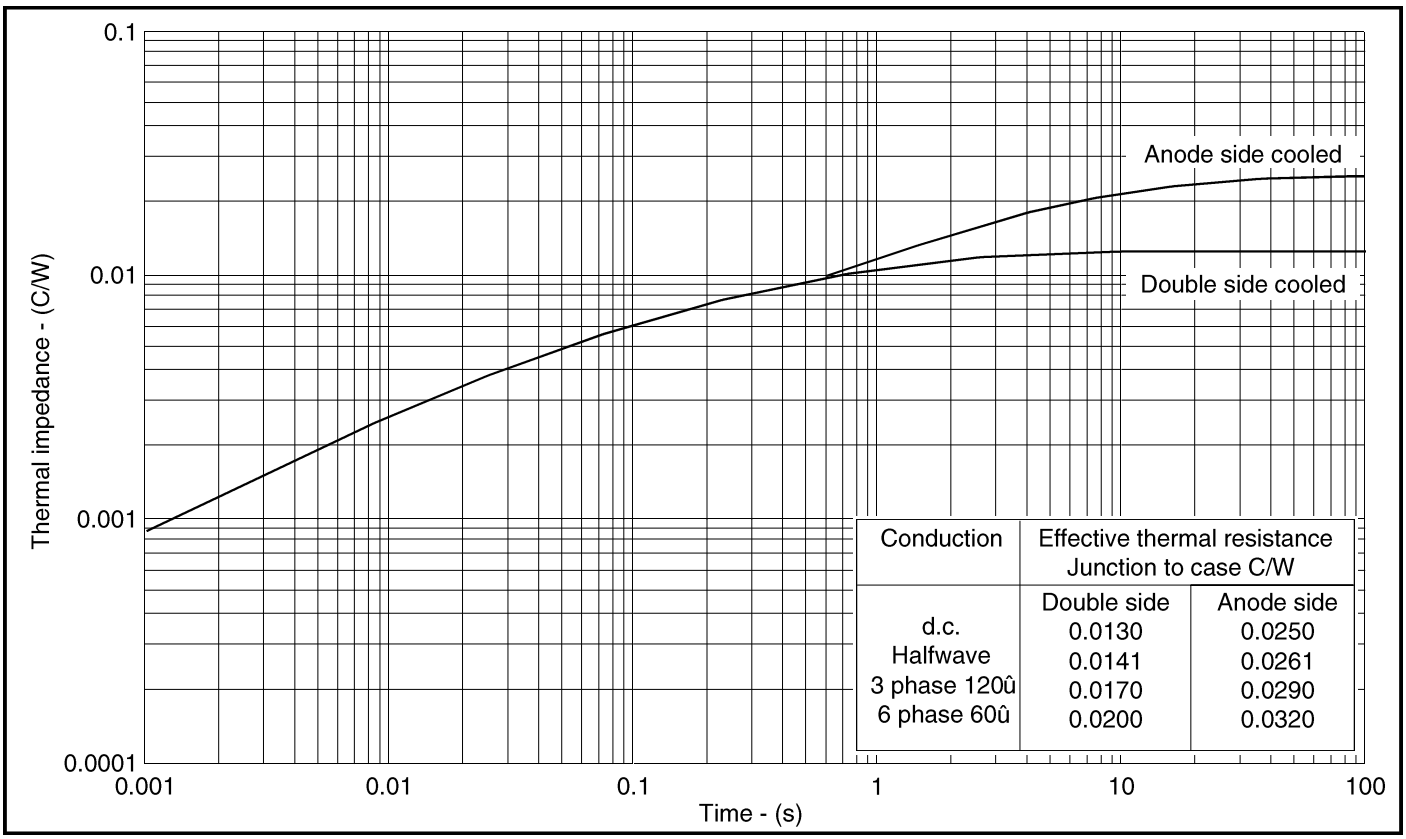



**Fig.4 Maximum (limit) transient thermal impedance - junction to case - (C/W)**

