

### APPLICATIONS

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

### KEY PARAMETERS

|             |        |
|-------------|--------|
| $V_{RRM}$   | 2800V  |
| $I_{F(AV)}$ | 1960A  |
| $I_{FSM}$   | 31250A |

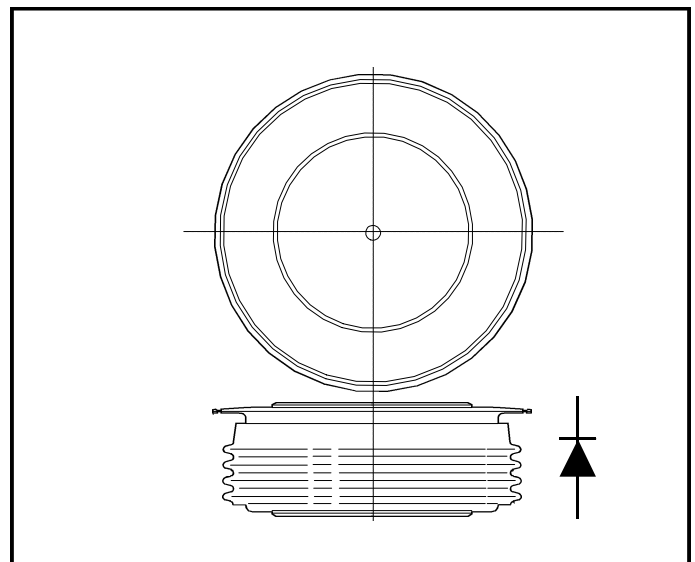
### FEATURES

- Double Side Cooling
- High Surge Capability

### VOLTAGE RATINGS

| Type Number | Repetitive Peak Reverse Voltage<br>$V_{RRM}$<br>V | Conditions                 |
|-------------|---------------------------------------------------|----------------------------|
| TR2004SF28  | 2800                                              | $V_{RSM} = V_{RRM} + 100V$ |
| TR2004SF27  | 2700                                              |                            |
| TR2004SF26  | 2600                                              |                            |
| TR2004SF25  | 2500                                              |                            |
| TR2004SF24  | 2400                                              |                            |

Lower voltage grades available.



Outline type code: F.  
See Package Details for further information.

### CURRENT RATINGS

| Symbol                                 | Parameter                           | Conditions                                          | Max. | Units |
|----------------------------------------|-------------------------------------|-----------------------------------------------------|------|-------|
| <b>Double Side Cooled</b>              |                                     |                                                     |      |       |
| $I_{F(AV)}$                            | Mean forward current                | Half wave resistive load, $T_{case} = 100^{\circ}C$ | 1960 | A     |
| $I_{F(RMS)}$                           | RMS value                           | $T_{case} = 100^{\circ}C$                           | 3077 | A     |
| $I_F$                                  | Continuous (direct) forward current | $T_{case} = 100^{\circ}C$                           | 2750 | A     |
| <b>Single Side Cooled (Anode side)</b> |                                     |                                                     |      |       |
| $I_{F(AV)}$                            | Mean forward current                | Half wave resistive load, $T_{case} = 100^{\circ}C$ | 1300 | A     |
| $I_{F(RMS)}$                           | RMS value                           | $T_{case} = 100^{\circ}C$                           | 2040 | A     |
| $I_F$                                  | Continuous (direct) forward current | $T_{case} = 100^{\circ}C$                           | 1600 | A     |

# TR2004SF

## SURGE RATINGS

| Symbol    | Parameter                              | Conditions                                                                   | Max.               | Units  |
|-----------|----------------------------------------|------------------------------------------------------------------------------|--------------------|--------|
| $I_{FSM}$ | Surge (non-repetitive) forward current | 10ms half sine; $T_{case} = 175^{\circ}C$<br>$V_R = 50\% V_{RRM} - 1/4$ sine | 25.0               | kA     |
| $I^2t$    | $I^2t$ for fusing                      |                                                                              | $3.12 \times 10^6$ | $A^2s$ |
| $I_{FSM}$ | Surge (non-repetitive) forward current | 10ms half sine; $T_{case} = 175^{\circ}C$<br>$V_R = 0$                       | 31.25              | kA     |
| $I^2t$    | $I^2t$ for fusing                      |                                                                              | $4.88 \times 10^6$ | $A^2s$ |

## THERMAL AND MECHANICAL DATA

| Symbol        | Parameter                             | Conditions                                   |             | Min. | Max.  | Units         |
|---------------|---------------------------------------|----------------------------------------------|-------------|------|-------|---------------|
| $R_{th(j-c)}$ | Thermal resistance - junction to case | Double side cooled                           | dc          | -    | 0.022 | $^{\circ}C/W$ |
|               |                                       | Single side cooled                           | Anode dc    | -    | 0.038 | $^{\circ}C/W$ |
|               |                                       |                                              | Cathode dc  | -    | 0.052 | $^{\circ}C/W$ |
| $R_{th(c-h)}$ | Thermal resistance - case to heatsink | Clamping force 19.5kN with mounting compound | Double side | -    | 0.004 | $^{\circ}C/W$ |
|               |                                       |                                              | Single side | -    | 0.008 | $^{\circ}C/W$ |
| $T_{vj}$      | Virtual junction temperature          | Forward (conducting)                         |             | -    | 185   | $^{\circ}C$   |
|               |                                       | Reverse (blocking)                           |             | -    | 175   | $^{\circ}C$   |
| $T_{stg}$     | Storage temperature range             |                                              |             | -55  | 180   | $^{\circ}C$   |
| -             | Clamping force                        |                                              |             | 18.0 | 22.0  | kN            |

## CHARACTERISTICS

| Symbol    | Parameter             | Conditions                                                                    | Min. | Max. | Units      |
|-----------|-----------------------|-------------------------------------------------------------------------------|------|------|------------|
| $V_{FM}$  | Forward voltage       | At 3400A peak, $T_{case} = 25^{\circ}C$                                       | -    | 1.3  | V          |
| $I_{RRM}$ | Peak reverse current  | At $V_{RRM}$ , $T_{case} = 175^{\circ}C$                                      | -    | 50   | mA         |
| $Q_S$     | Total stored charge   | $I_F = 2000A$ , $dI_{RR}/dt = 3A/\mu s$ ,<br>$T_{case} = 175C$ , $V_R = 100V$ | -    | 2500 | $\mu C$    |
| $I_{RR}$  | Peak recovery current |                                                                               | -    | 105  | A          |
| $V_{TO}$  | Threshold voltage     | At $T_{vj} = 175C$                                                            | -    | 0.82 | V          |
| $r_T$     | Slope resistance      | At $T_{vj} = 175C$                                                            | -    | 0.16 | m $\Omega$ |

## CURVES

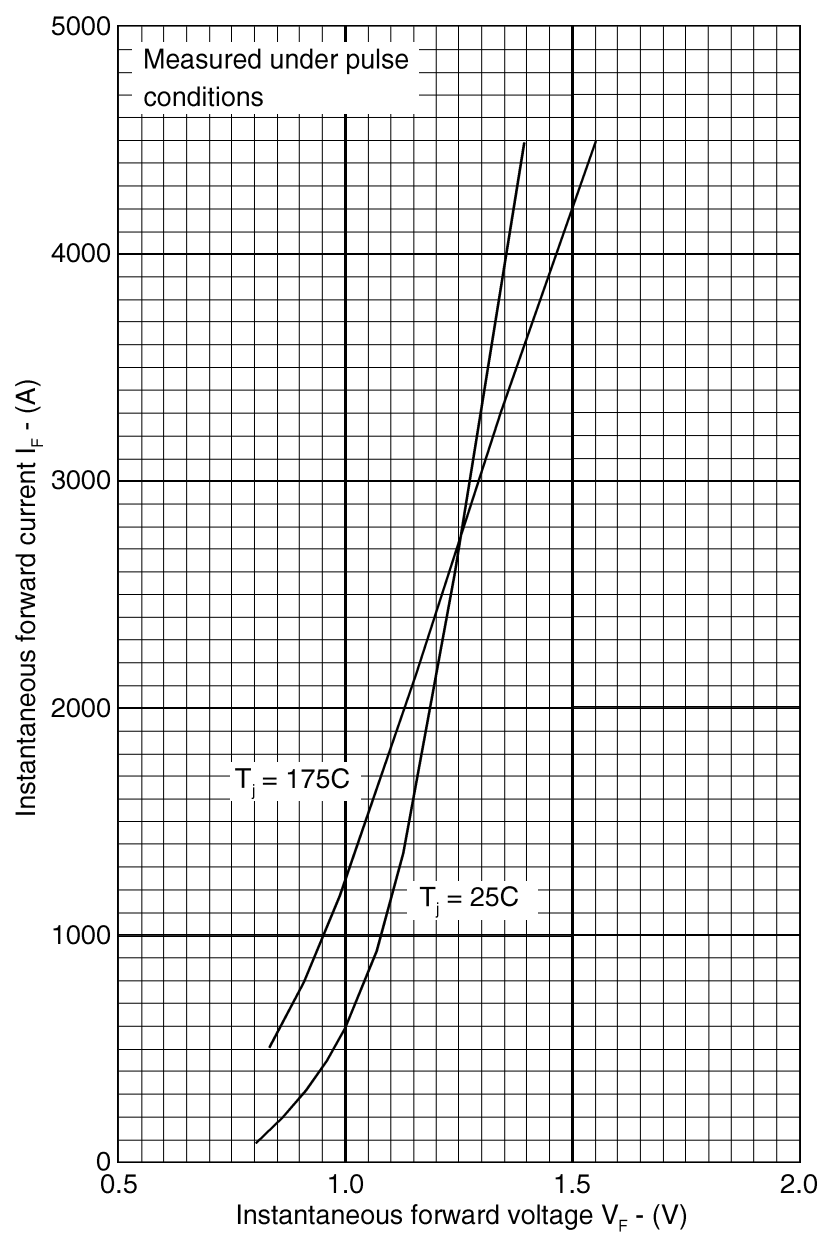


Fig.1 Maximum (limit) forward characteristics

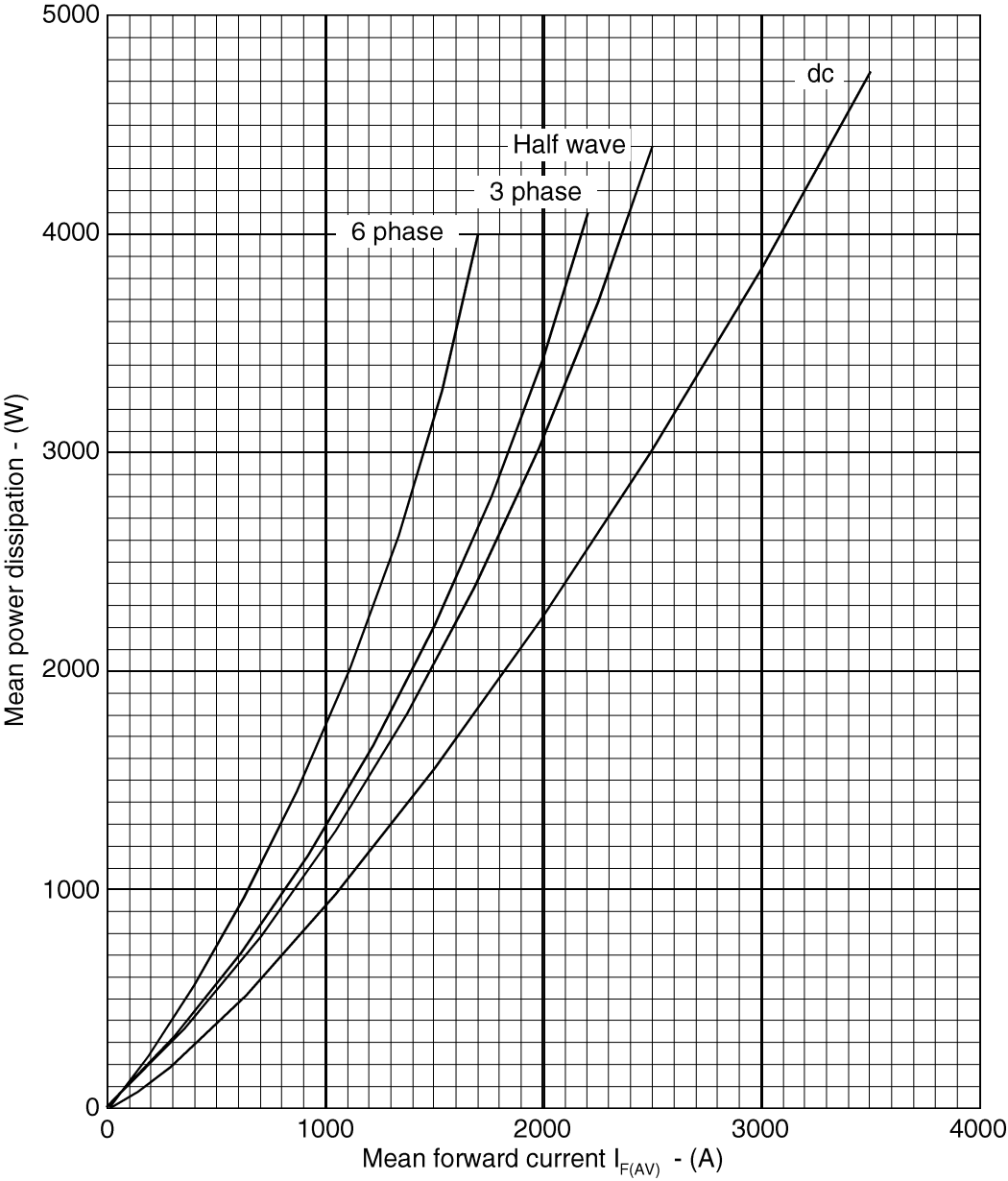


Fig.2 Dissipation curves

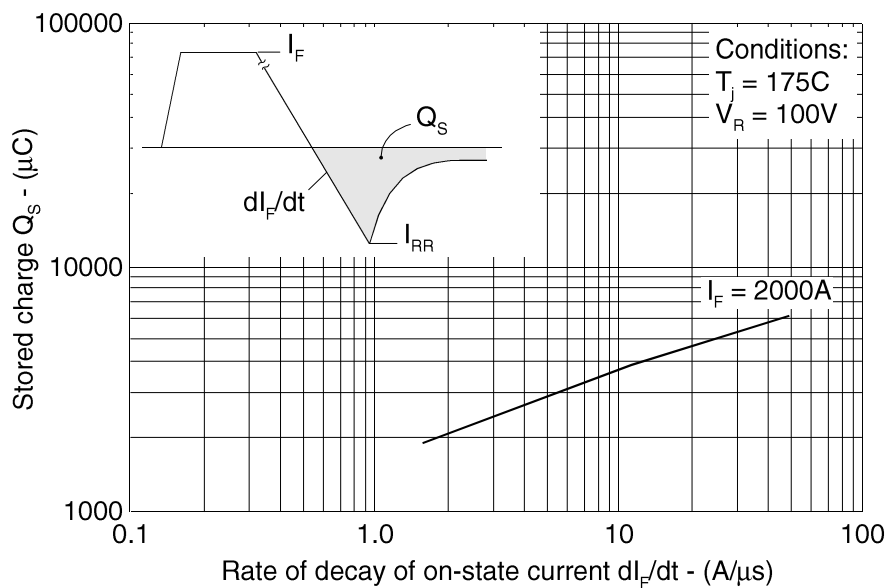


Fig.3 Maximum total stored charge

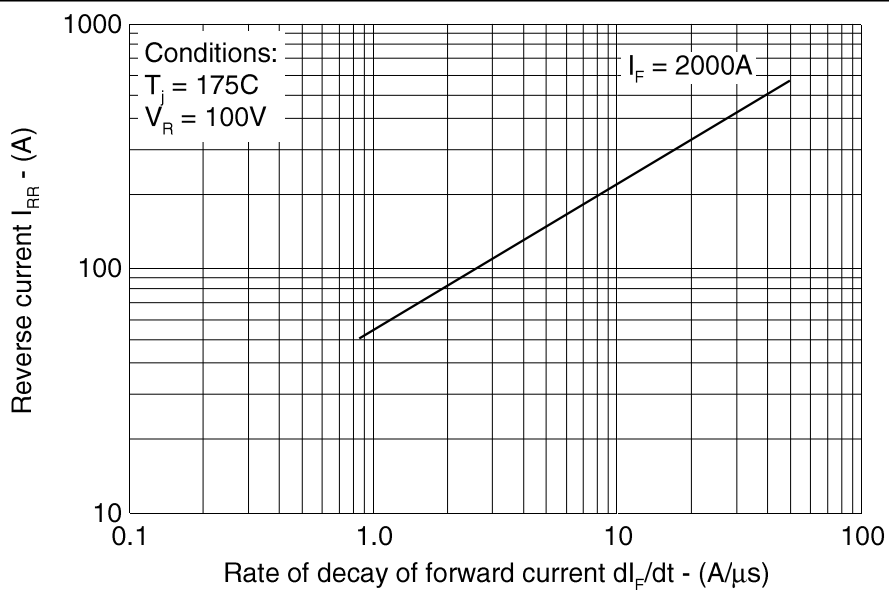


Fig.4 Maximum reverse recovery current

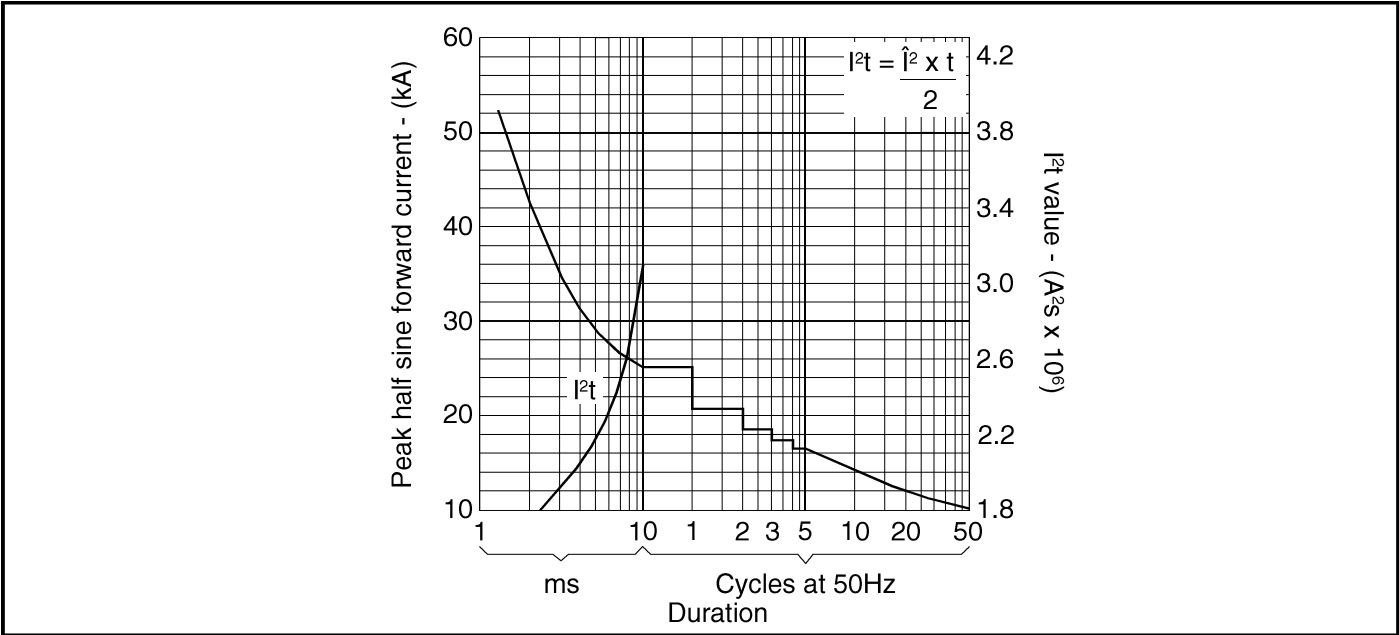


Fig.5 Surge (non-repetitive) forward current vs time ( $T_{case} = 175C$ )

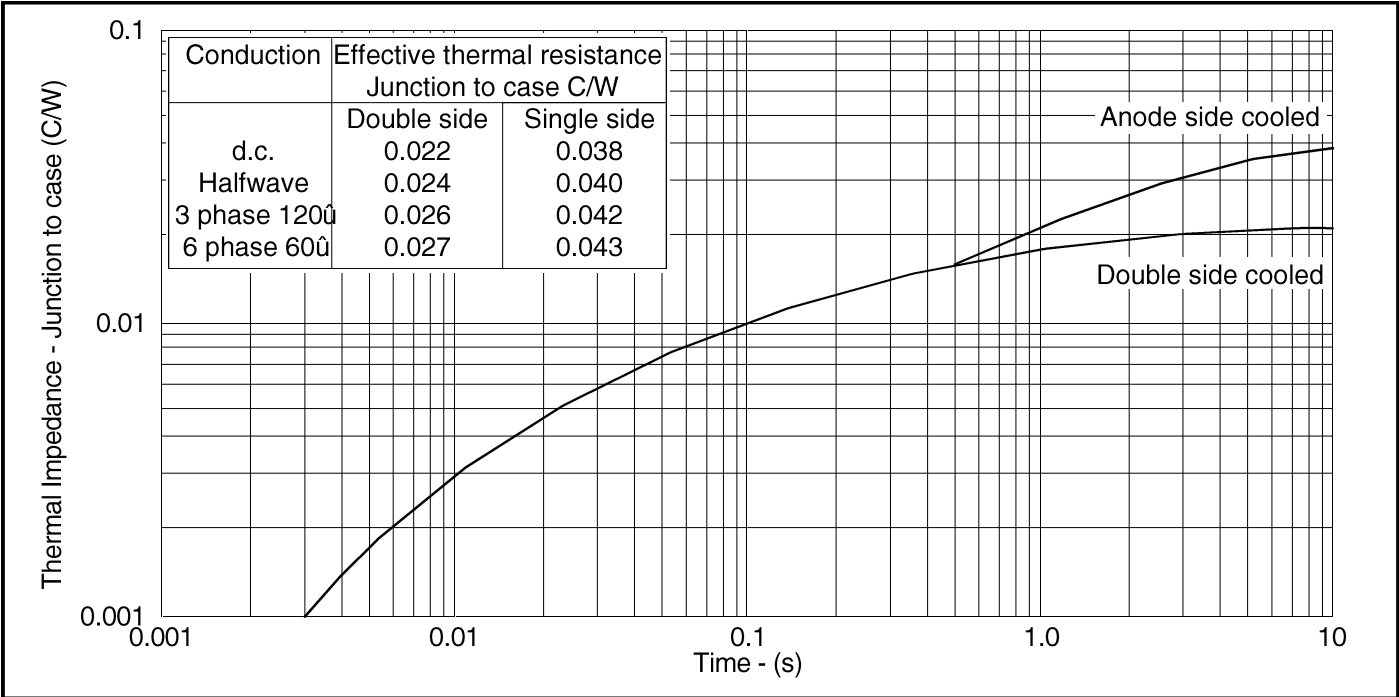
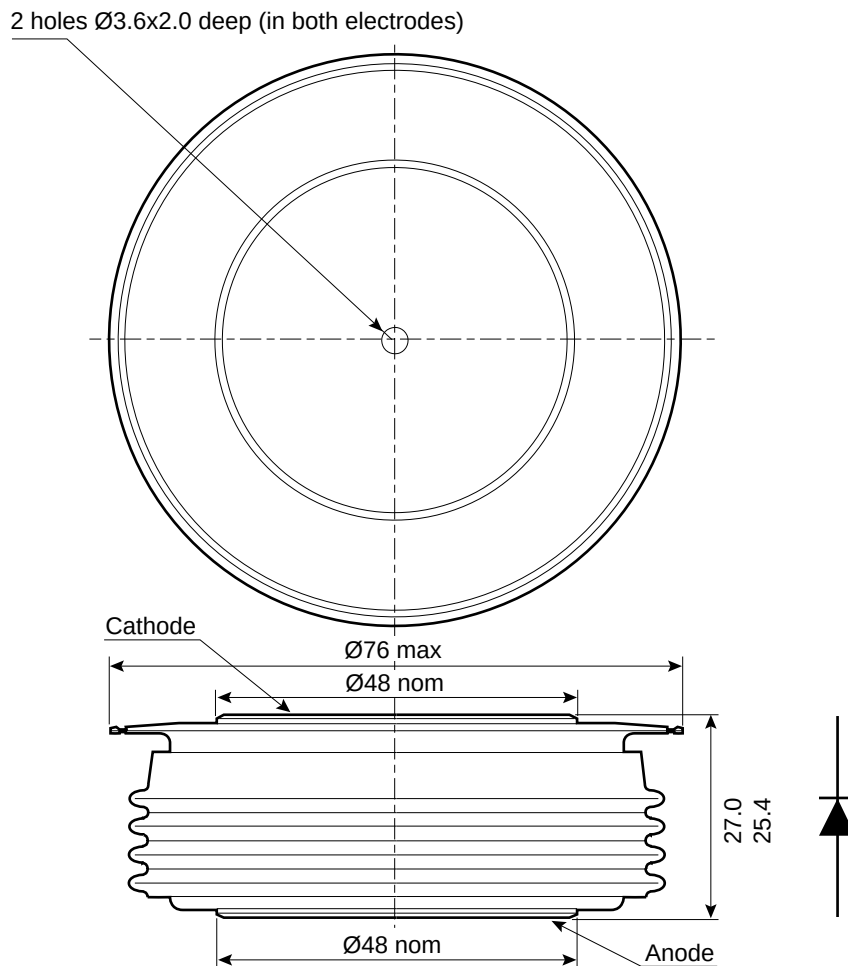


Fig.6 Maximum (limit) transient thermal impedance - junction to case - (C/W)

**PACKAGE DETAILS**

For further package information, please contact your local Customer Service Centre. All dimensions in mm, unless stated otherwise. DO NOT SCALE.



Nominal weight: 500g  
Clamping force: 19.6kN ± 10%

Package outline type code: F



**ООО «НИОКРсистемс»** - это оперативные поставки широкого спектра электронных компонентов отечественного и импортного производства напрямую от производителей и с крупнейших мировых складов. Реализуемая нашей компанией продукция насчитывает более полумиллиона наименований.

Благодаря этому наша компания предлагает к поставке практически не ограниченный ассортимент компонентов как оптовыми, мелкооптовыми партиями, так и в розницу.

Благодаря развитой сети поставщиков, помогаем в поиске и приобретении экзотичных или снятых с производства компонентов.

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