

# BYY53 / BYY54

## 25A Silicon Power Rectifier Diode

### Description

The BYY53/54 are hermetically sealed 25A-diodes, which are available in different reverse voltage classes up to 1500V.

The diodes can be delivered with limited forward voltage and reverse current differences for parallel connecting in rectifier stacks and back-off-diodes

### Features

- Forward current 25A
- Reverse voltage 75V – 1500V
- Hermetic press-fit package
- Available in different modifications of the package

### Applications

- Power supplies
- Rectifier diode in car generators
- Rectifier bridges/stacks
- Back-off-diodes

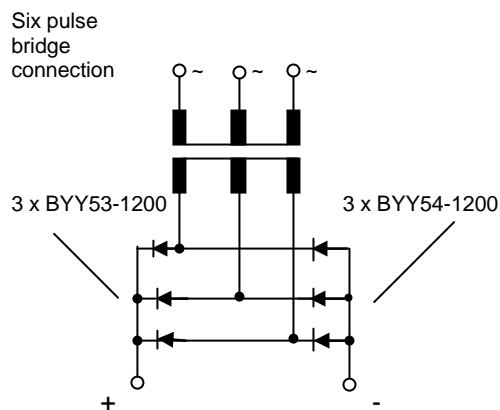
### Pinout details



BYY53: 1 – cathode; 2 - anode

BYY54: 1 – anode; 2 - cathode

### Typical application circuit

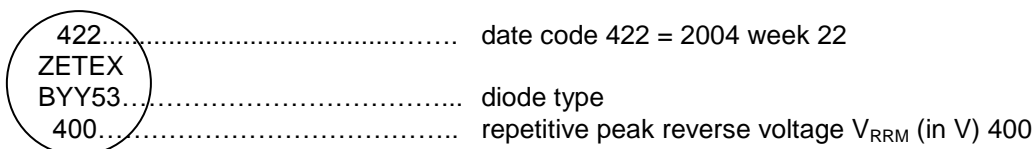


### Ordering information

| Device                    | Quantity per box | Options   |
|---------------------------|------------------|---|
| BYY53-75; ...; BYY53-1500 | 500              | The package quantities for the different package modifications are included in "PressFitPackageModifications.pdf" |
| BYY54-75; ...; BYY54-1500 | 500              |   |

### Device marking

Devices are identified by type. Colour of marking: BYY53- black, BYY54 – red



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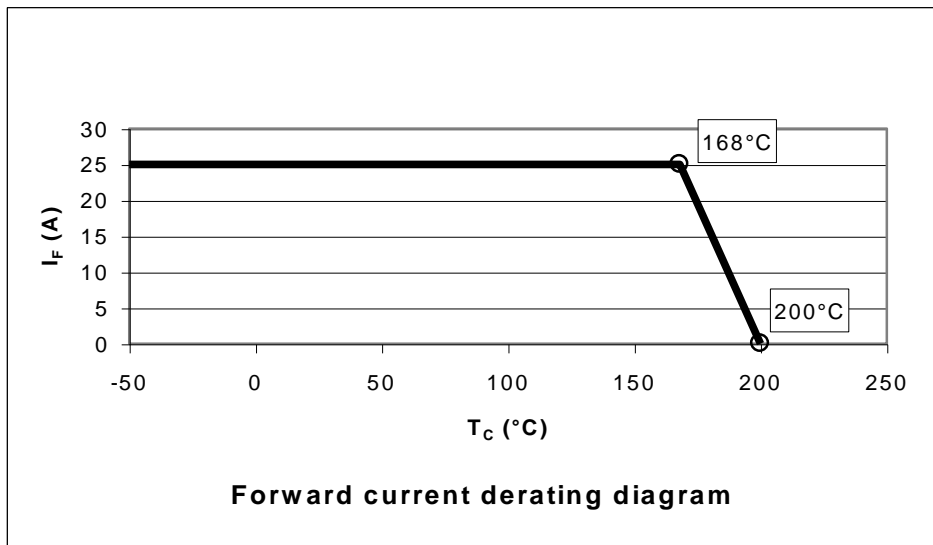
**Absolute maximum ratings** (at  $T_{amb} = 25^{\circ}\text{C}$  unless otherwise stated)

| Parameter                         |            | Symbol                    |               | Unit                 | Test condition   |                             |
|-----------------------------------|------------|---------------------------|---------------|----------------------|--|-----------------------------|
| Repetitive peak reverse voltage   | BYY53-75   | BYY54-75                  | $V_{RRM}$     | 75                   | V  | $T_c = 150^{\circ}\text{C}$ |
|                                   | BYY53-100  | BYY54-100                 |               | 100                  |  |                             |
|                                   | BYY53-150  | BYY54-150                 |               | 150                  |  |                             |
|                                   | BYY53-200  | BYY54-200                 |               | 200                  |  |                             |
|                                   | BYY53-300  | BYY54-300                 |               | 300                  |  |                             |
|                                   | BYY53-400  | BYY54-400                 |               | 400                  |  |                             |
|                                   | BYY53-500  | BYY54-500                 |               | 500                  |  |                             |
|                                   | BYY53-600  | BYY54-600                 |               | 600                  |  |                             |
|                                   | BYY53-700  | BYY54-700                 |               | 700                  |  |                             |
|                                   | BYY53-800  | BYY54-800                 |               | 800                  |  |                             |
|                                   | BYY53-900  | BYY54-900                 |               | 900                  |  |                             |
|                                   | BYY53-1000 | BYY54-1000                |               | 1000                 |  |                             |
|                                   | BYY53-1100 | BYY54-1100                |               | 1100                 |  |                             |
|                                   | BYY53-1200 | BYY54-1200                |               | 1200                 |  |                             |
|                                   | BYY53-1300 | BYY54-1300                |               | 1300                 |  |                             |
| BYY53-1400                        | BYY54-1400 | 1400                      |               |                      |  |                             |
| BYY53-1500                        | BYY54-1500 | 1500                      |               |                      |  |                             |
| Forward current, arithmetic value |            | $I_{FAV}$                 | 25            | A                    |  |                             |
| Surge forward current             |            | $I_{FSM}$                 | 425           | A                    | half-sine wave, $\leq 10$ ms                             |                             |
|                                   |            |                           | 350           |                      | $T_J = 175^{\circ}\text{C}$ half-sine wave, $\leq 10$ ms |                             |
| Maximum rated value               |            | $\int i^2 dt$             | 900           | $\text{A}^2\text{s}$ | half-sine wave, $\leq 10$ ms                             |                             |
|                                   |            |                           | 780           |                      | $T_J = 175^{\circ}\text{C}$ half-sine wave, $\leq 10$ ms |                             |
| Repetitive peak forward current   |            | $I_{FRM} = \pi * I_{FAV}$ | 79            | A                    | $f = >15$ Hz   |                             |
| Effective forward current         |            | $I_{FRMS}$                | 45            | A                    |  |                             |
| Junction temperature              |            | $T_{Jmax}$                | 200           | $^{\circ}\text{C}$   |  |                             |
| Storage temperature range         |            | $T_{stg}$                 | - 50 to + 175 | $^{\circ}\text{C}$   |  |                             |

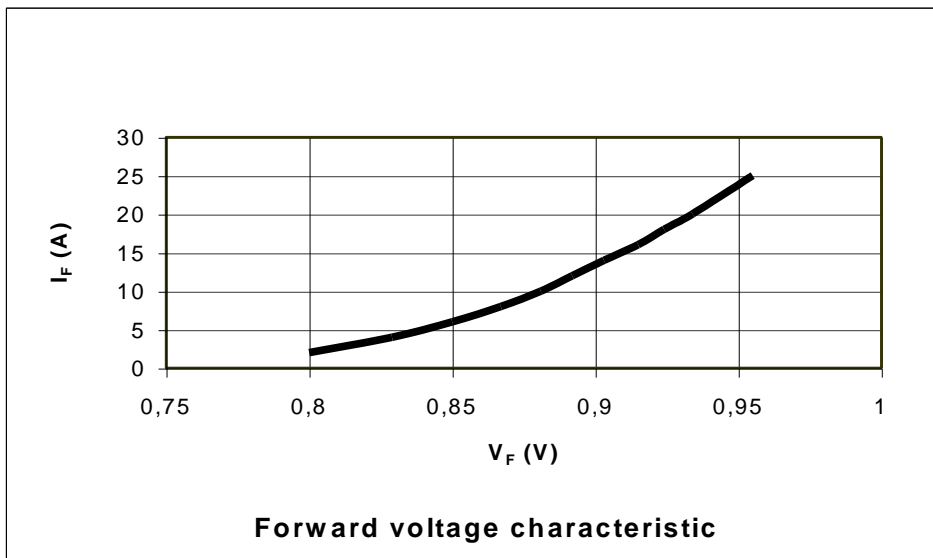
## Thermal resistance

| Parameter        | Symbol          | Value | Unit          |
|------------------|-----------------|-------|---------------|
| Junction to case | $R_{\theta JC}$ | 1.2   | $^{\circ}C/W$ |

## Thermal characteristics



## Electrical characteristics (at $T_{amb} = 25^{\circ}C$ unless otherwise stated)



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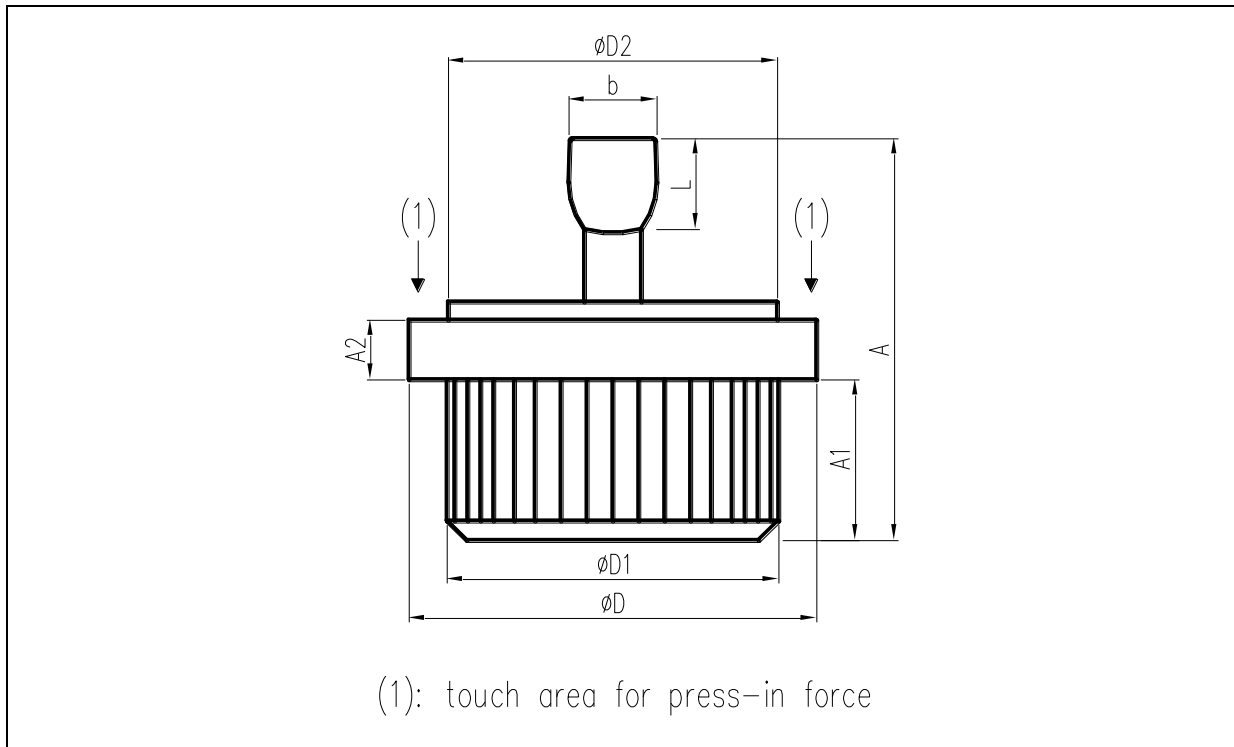
| Parameter                                  |  | Symbol     | Min. | Typ. | Max. | Unit       | Test conditions  |
|--|--|------------|------|------|------|------------|--|
| Forward voltage                            | BYY53-75...1200<br>BYY54-75...1200     | $V_F$      | -    | 0.95 | 1.1  | V          | $I_F = 25\text{ A}$ ,<br>measuring time<br>10ms (half-sine<br>wave)                              |
|  | BYY53-1300...1500<br>BYY54-1300...1500 |            | -    | 1.1  | 1.15 |            |  |
| Forward voltage<br>(information<br>values) | BYY53-75...1200<br>BYY54-75...1200     | $V_F$      | -    | 0.82 | -    | V          | $I_F = 20\text{ A}$ ,<br>measuring time<br>10ms (half-sine<br>wave), $T_J = 150^{\circ}\text{C}$ |
|  | BYY53-1300...1500<br>BYY54-1300...1500 |            | -    | 0.85 | -    |            |  |
|  | BYY53-75...1200<br>BYY54-75...1200     | $V_F$      | -    | -    | 1.20 | V          | $I_F = 35\text{ A}$ ,  |
|  | BYY53-1300...1500<br>BYY54-1300...1500 |            | -    | -    | 1.25 |            |  |
| Reverse<br>current                         | BYY53-75...150<br>BYY54-75...150       | $I_{RRM}$  | -    | -    | 3    | mA         | $T_J = 150^{\circ}\text{C}$ , at<br>$V_{RRM}$  |
|  | BYY53-200...1500<br>BYY54-200...1500   |            | -    | -    | 1.5  |            |  |
|  | BYY53-75...400<br>BYY54-75...400       | $I_{RRM}$  | -    | -    | 0.25 | mA         | at $V_{RRM}$   |
|  | BYY53-500...1500<br>BYY54-500...1500   |            | -    | -    | 0.1  |            |  |
| Threshold voltage (information value)      |  | $V_{(FO)}$ | -    | 0.66 | -    | V          | $T_J = 175^{\circ}\text{C}$  |
| Slope resistance (information value)       |  | $r_F$      | -    | 5.75 | -    | m $\Omega$ | $T_J = 175^{\circ}\text{C}$  |

## Options: Electrical characteristics for parallel connecting

(at  $T_{amb} = 25^{\circ}\text{C}$  unless otherwise stated)

| Option | Parameter   | Symbol       | Min. | Typ. | Max. | Unit | Test conditions  |
|--------|---|--------------|------|------|------|------|--|
| 1      | Forward voltage difference in one category of forward voltage                                       | $\Delta V_F$ | -    | -    | 0.05 | V    | $I_F = 25\text{ A}$ , measuring time 10ms (half-sine wave) |
| 2      | Reverse current in one category of forward voltage (only for BYY53-300...1500 and BYY54-300...1500) | $I_R$        | -    | -    | 0.01 | mA   | at $V_{RRM}$   |

## Packaging details



## Package dimensions

Dimensions in millimeters are control dimensions, dimensions in inches are approximate

| DIM | Millimeters |       |       | Inches |       |       |
|-----|-------------|-------|-------|--------|-------|-------|
|     | MIN         | TYP   | MAX   | MIN    | TYP   | MAX   |
| A   | 15,00       | 15,50 | 16,00 | 0,591  | 0,610 | 0,630 |
| A1  | 5,90        | 6,10  | 6,30  | 0,232  | 0,240 | 0,248 |
| A2  | 2,10        | 2,30  | 2,50  | 0,083  | 0,091 | 0,098 |
| b   | 3,10        | 3,40  | 3,70  | 0,122  | 0,134 | 0,146 |
| D   | 15,50       | 15,70 | 15,90 | 0,610  | 0,618 | 0,626 |
| D1  | 12,75       | 12,80 | 12,85 | 0,502  | 0,504 | 0,506 |
| D2  | 12,30       | 12,50 | 12,70 | 0,484  | 0,492 | 0,500 |
| L   | 3,00        | 3,50  | 4,00  | 0,118  | 0,138 | 0,157 |

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