



## DB3 DB4 SMDB3

DIAC

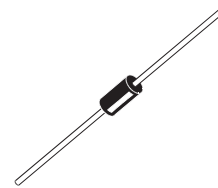
### FEATURES

- $V_{BO}$  : 32V and 40V
- LOW BREAKOVER CURRENT

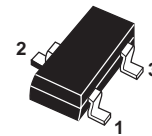
### DESCRIPTION

Functioning as a trigger diode with a fixed voltage reference, the DB3/DB4 series can be used in conjunction with triacs for simplified gate control circuits or as a starting element in fluorescent lamp ballasts.

A new surface mount version is now available in SOT-23 package, providing reduced space and compatibility with automatic pick and place equipment.



DO-35  
(DB3 and DB4)



SOT-23  
(SMDB3)\*  
Pin 1 and 3 must be shorted together

### ABSOLUTE MAXIMUM RATINGS (limiting values)

| Symbol             | Parameter   | Value         | Unit        |
|--------------------|---|---------------|-------------|
| $I_{TRM}$          | Repetitive peak on-state current<br>$t_p = 20 \mu s$ $F = 120 \text{ Hz}$ | SMDB3         | 1.00        |
|                    |   | DB3 / DB4     | 2.00        |
| $T_{stg}$<br>$T_j$ | Storage temperature range<br>Operating junction temperature range         | - 40 to + 125 | $^{\circ}C$ |

Note: \* SMDB3 indicated as Preliminary spec as product is still in development stage.

## DB3 DB4 SMDB3

### ELECTRICAL CHARACTERISTICS (Tj = 25°C unless otherwise specified)

| Symbol                              | Parameter                   | Test Conditions                            | SMDB3 | DB3  | DB4  | Unit |   |
|-------------------------------------|-----------------------------|--|-------|------|------|------|---|
| V <sub>BO</sub>                     | Breakover voltage *         | C = 22nF **                                | MIN.  | 28   | 28   | 35   | V |
|                                     |                             |  | TYP.  | 32   | 32   | 40   |   |
|                                     |                             |  | MAX.  | 36   | 36   | 45   |   |
| V <sub>BO1</sub> - V <sub>BO2</sub> | Breakover voltage symmetry  | C = 22nF **                                | MAX.  | 3    |      | V    |   |
| ΔV                                  | Dynamic breakover voltage * | V <sub>BO</sub> and V <sub>F</sub> at 10mA | MIN.  | 10   | 5    | V    |   |
| V <sub>O</sub>                      | Output voltage *            | see diagram 2 (R=20Ω)                      | MIN.  | 10   | 5    | V    |   |
| I <sub>BO</sub>                     | Breakover current *         | C = 22nF **                                | MAX.  | 10   | 50   | μA   |   |
| t <sub>r</sub>                      | Rise time *                 | see diagram 3                              | MAX.  | 0.50 | 2    | μs   |   |
| I <sub>R</sub>                      | Leakage current *           | V <sub>R</sub> = 0.5 V <sub>BO</sub> max   | MAX.  | 1    | 10   | μA   |   |
| I <sub>P</sub>                      | Peak current *              | see diagram 2 (Gate)                       | MIN.  | 1    | 0.30 | A    |   |

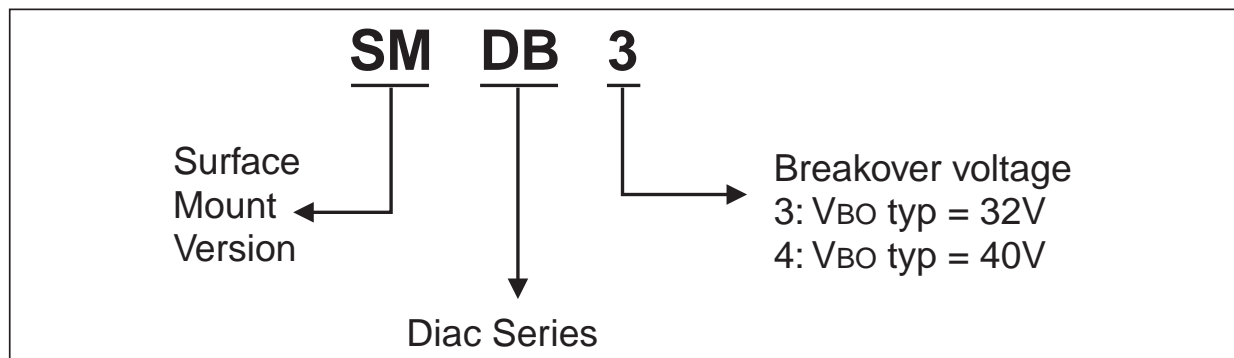
\* Applicable to both forward and reverse directions.

\*\* Connected in parallel to the device.

### PRODUCT SELECTOR

| Part Number | V <sub>BO</sub> | Package |
|-------------|-----------------|---------|
| SMDB3       | 28 - 36         | SOT-23  |
| DB3         | 28 - 36         | DO-35   |
| DB4         | 35 - 45         | DO-35   |

### ORDERING INFORMATION



OTHER INFORMATION

| Part Number | Marking              | Weight | Base Quantity | Packing Mode |
|-------------|----------------------|--------|---------------|--------------|
| SMDB3       | DB3                  | 0.01 g | 3000          | Tape & Reel  |
| DB3         | DB3 (Blue Body Coat) | 0.15 g | 5000          | Tape & Reel  |
| DB4         | DB4 (Blue Body Coat) | 0.15 g | 5000          | Tape & Reel  |

Diagram 1: Voltage - current characteristic curve.

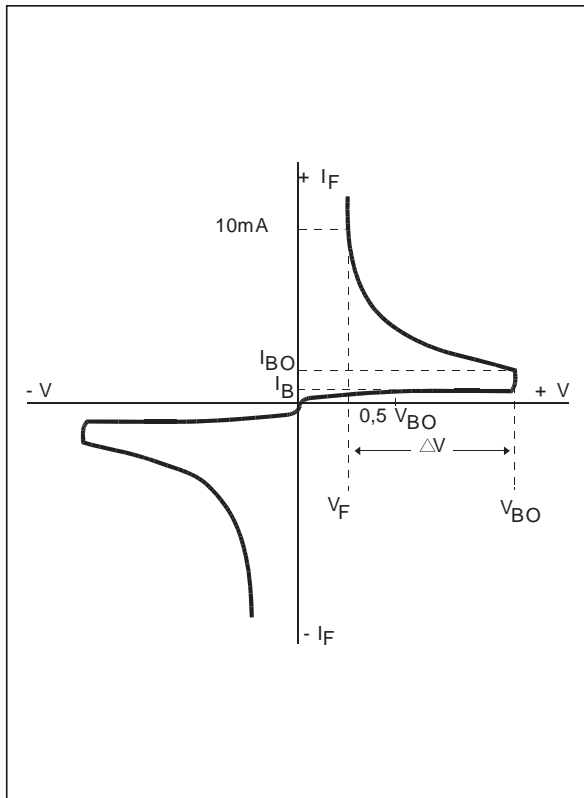


Diagram 2: Test circuit.

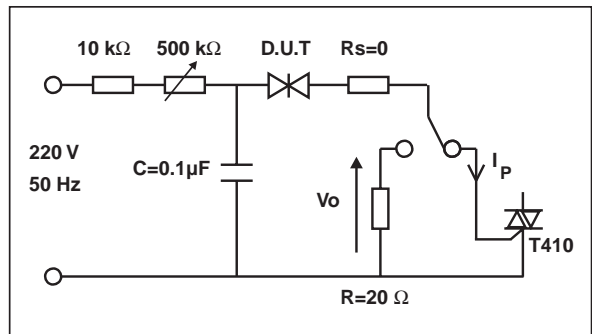
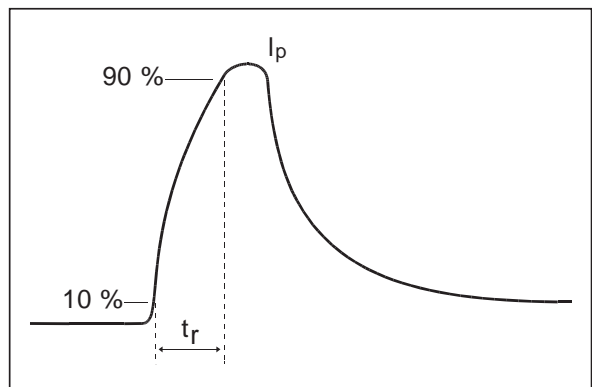
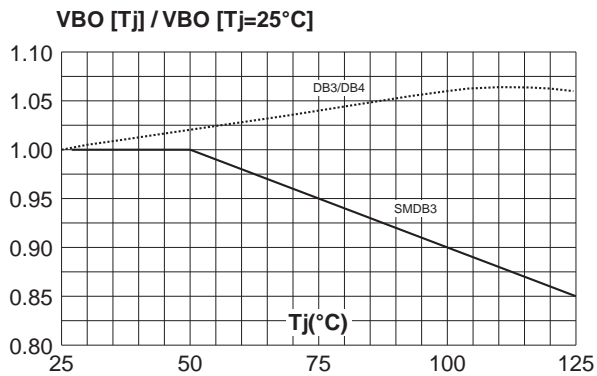


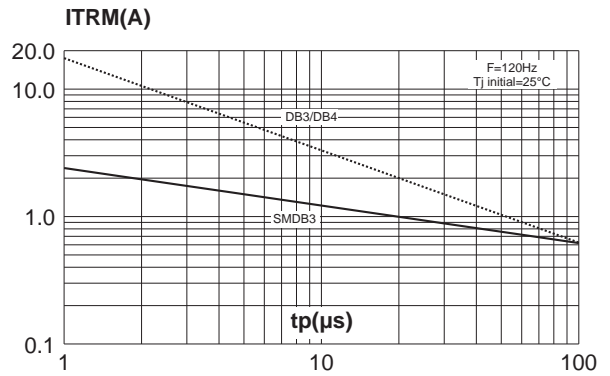
Diagram 3: Rise time measurement.



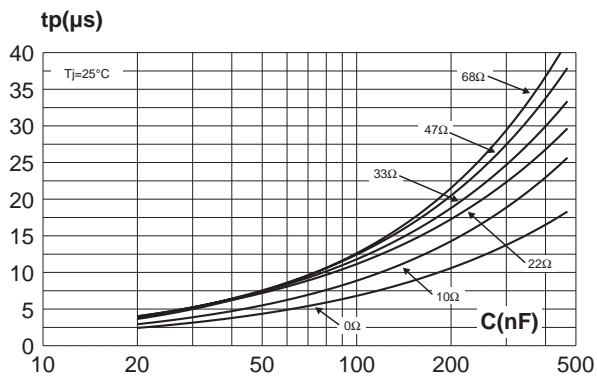
**Fig. 1:** Relative variation of VBO versus junction temperature (typical values).



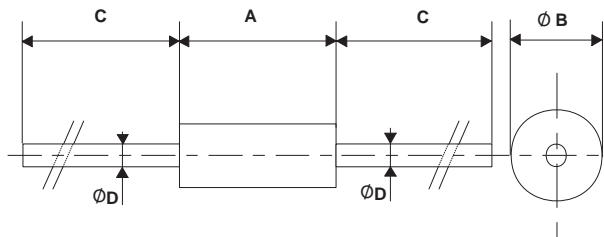
**Fig. 2:** Repetitive peak pulse current versus pulse duration (maximum values).



**Fig. 3:** Time duration while current pulse is higher 50mA versus C and Rs (typical values).



**PACKAGE MECHANICAL DATA (in millimeters)**  
DO-35



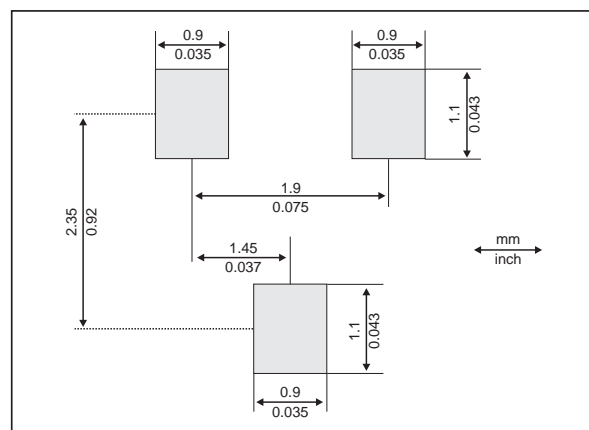
| REF. | DIMENSIONS  |       |        |       |
|------|-------------|-------|--------|-------|
|      | Millimeters |       | Inches |       |
|      | Min.        | Max.  | Min.   | Max.  |
| A    | 3.05        | 4.50  | 0.120  | 0.177 |
| B    | 1.53        | 2.00  | 0.060  | 0.079 |
| C    | 28.00       |       | 1.102  |       |
| D    | 0.458       | 0.558 | 0.018  | 0.022 |

## PACKAGE MECHANICAL DATA (in millimeters)

## SOT-23

| REF. | DIMENSIONS  |      |            |       |
|------|-------------|------|------------|-------|
|      | Millimeters |      | Inches     |       |
|      | Min.        | Max. | Min.       | Max.  |
| A    | 0.89        | 1.4  | 0.035      | 0.055 |
| A1   | 0           | 0.1  | 0          | 0.004 |
| B    | 0.3         | 0.51 | 0.012      | 0.02  |
| c    | 0.085       | 0.18 | 0.003      | 0.007 |
| D    | 2.75        | 3.04 | 0.108      | 0.12  |
| e    | 0.85        | 1.05 | 0.033      | 0.041 |
| e1   | 1.7         | 2.1  | 0.067      | 0.083 |
| E    | 1.2         | 1.6  | 0.047      | 0.063 |
| H    | 2.1         | 2.75 | 0.083      | 0.108 |
| L    | 0.6 typ.    |      | 0.024 typ. |       |
| S    | 0.35        | 0.65 | 0.014      | 0.026 |

## FOOTPRINT



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