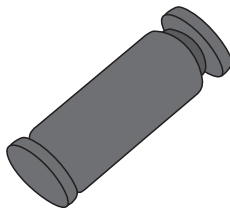


Diac in SMD MINIMELF package


MINIMELF

Features

- V_{BO} : 32 V
- Breakover voltage range : 28 V to 36 V
- ECOPACK compliant

Applications

- Triggering device for Triac or SCR based motor / light dimmer
- 32 V trigger device for oscillator circuit
- Start up triggering in lighting ballast for CFL, TL or LED lamps

Description

Functioning as a trigger diode with a fixed voltage reference, the **TMMDB3** can be used in conjunction with Triacs for simplified gate control circuits or as a starting element in fluorescent lamp ballasts.

Product status link

[TMMDB3](#)

Product summary

| Part number | V_{BO} |
|---------------|-----------|
| TMMDB3 | 28 - 36 V |

1 Characteristics

Table 1. Absolute maximum ratings (limiting values), $T_j = 25\text{ °C}$ unless otherwise specified

| Symbol | Parameter | Value | Unit |
|-----------|---|-------------|-------------|
| I_{TRM} | Repetitive peak on-state current, $t_p = 20\ \mu s$, $F = 120\text{ Hz}$ | 2 | A |
| T_{stg} | Storage junction temperature range | -40 to +125 | $^{\circ}C$ |
| T_j | Operating junction temperature range | -40 to +125 | $^{\circ}C$ |

Table 2. Electrical characteristics ($T_j = 25\text{ °C}$ unless otherwise specified)

| Symbol | Parameter | Test conditions | Value | Unit | |
|-----------------------|--|---|-------|------|---------|
| V_{BO} | Breakover voltage ⁽¹⁾ | $C = 10\text{ nF}^{(2)}$ | Min. | 28 | V |
| | | | Typ. | 32 | |
| | | | Max. | 36 | |
| $ V_{BO1} - V_{BO2} $ | Breakover voltage symmetry | $C = 10\text{ nF}^{(2)}$ | Max. | 3 | V |
| ΔV | Dynamic breakover voltage ⁽¹⁾ | V_{BO} and V_F at 10 mA | Min. | 5 | V |
| V_O | Output voltage ⁽¹⁾ | See Figure 2. Test circuit , ($R = 20\ \Omega$) | Min. | 5 | V |
| I_{BO} | Breakover current ⁽¹⁾ | $C = 10\text{ nF}^{(2)}$ | Max. | 50 | μA |
| t_r | Rise time ⁽¹⁾ | See Figure 3. Rise time measurement | Max. | 2 | μs |
| I_R | Leakage current ⁽¹⁾ | $V_R = 0.5 \times V_{BO}\text{ max}$ | Max. | 10 | μA |
| I_P | Peak current ⁽¹⁾ | See Figure 2. Test circuit | Min. | 0.30 | A |

1. Applicable to both forward and reverse directions.
2. Connected in parallel to the device

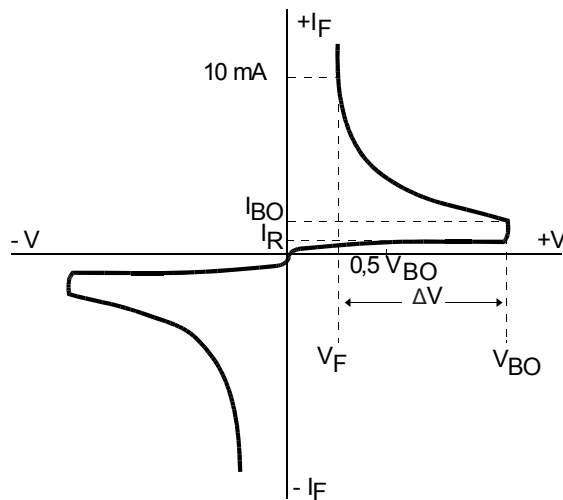
Figure 1. Voltage - current characteristic curve.


Figure 2. Test circuit

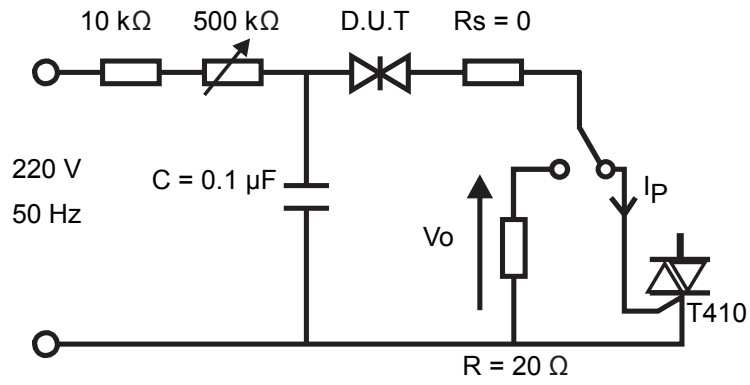
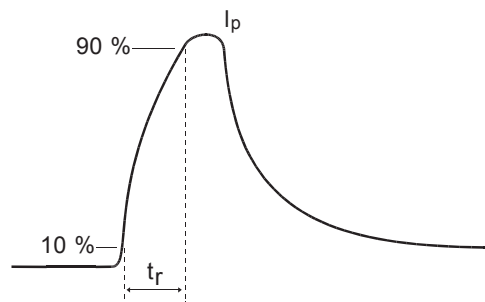


Figure 3. Rise time measurement



1.1 Characteristics curves

Figure 4. Relative variation of VBO versus junction temperature (typical values)

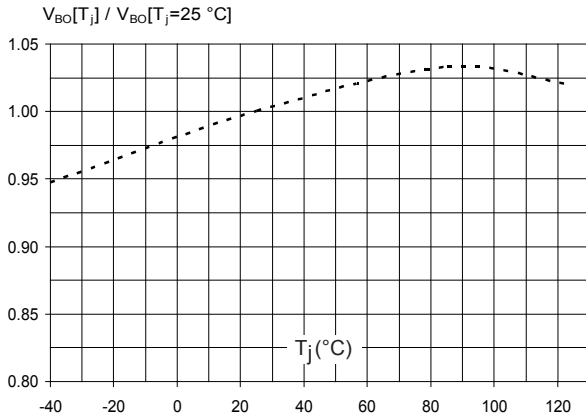


Figure 5. Peak on-state current versus Triac gate current pulse duration t_p

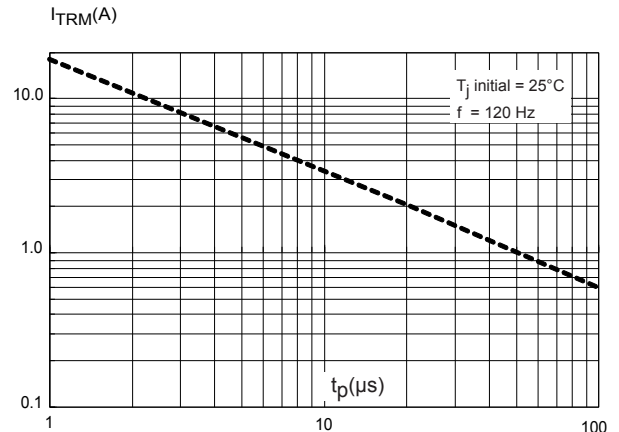
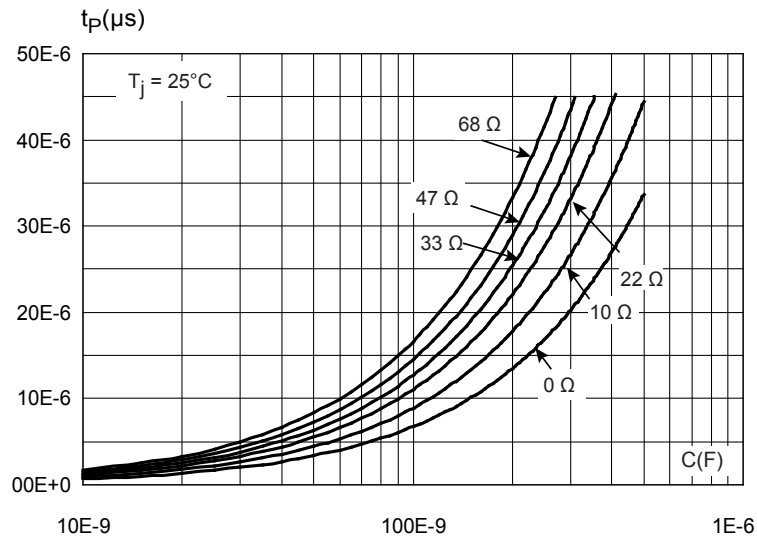


Figure 6. Triac gate current pulse duration t_p (to have $I_p > 50\text{ mA}$) versus R_s and C values (typical values)



Note: according to Figure 2. Test circuit.

2 Package information

In order to meet environmental requirements, ST offers these devices in different grades of **ECOPACK** packages, depending on their level of environmental compliance. ECOPACK specifications, grade definitions and product status are available at: www.st.com. ECOPACK is an ST trademark.

2.1 MINIMELF package information

Figure 7. MINIMELF package outline

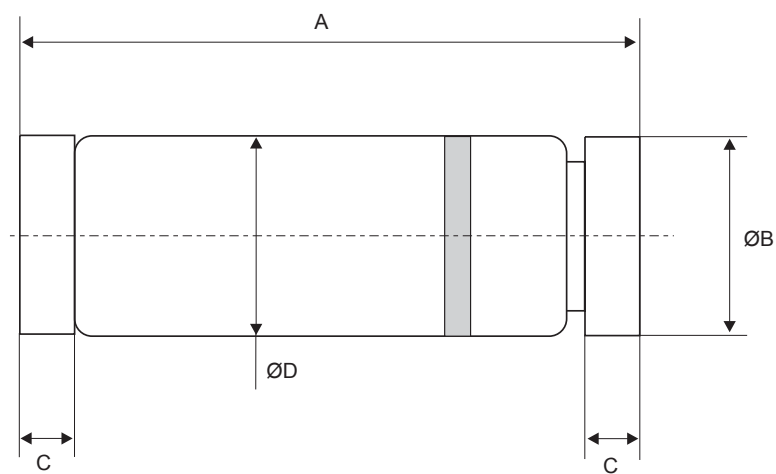
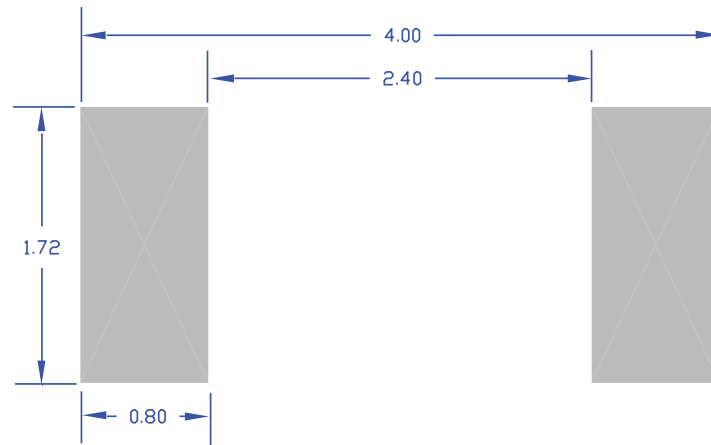


Table 3. MINIMELF package mechanical data

| Dim. | mm | | | | | |
|------|------|------|------|-------|-------|-------|
| | Min. | Typ. | Max. | Min. | Typ. | Max. |
| A | 3.30 | 3.50 | 3.70 | 0.130 | 0.138 | 0.146 |
| B | 1.59 | 1.65 | 1.70 | 0.063 | 0.065 | 0.067 |
| C | 0.40 | 0.50 | 0.60 | 0.016 | 0.020 | 0.024 |
| D | | 1.50 | | | 0.059 | |

Figure 8. MINIMELF recommended footprint (dimensions are in mm)



3 Ordering information

Figure 9. Ordering information scheme

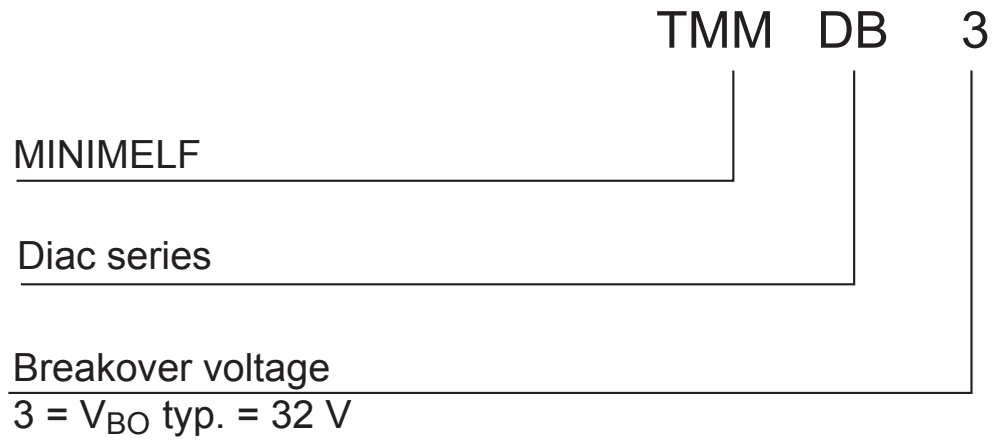


Table 4. Ordering information

| Order code | Marking | Package | Weight | Base qty. | Delivery mode |
|------------|---------|----------|---------|-----------|---------------|
| TMMDB3 | NA | MINIMELF | 0.049 g | 2500 | Tape and reel |

Revision history

Table 5. Document revision history

| Date | Version | Changes |
|-------------|---------|--|
| 29-Jan-2009 | 3 | First release. |
| 07-May-2019 | 4 | Updated Table 3 and Figure 8 . Minor text change to improve readability. |

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