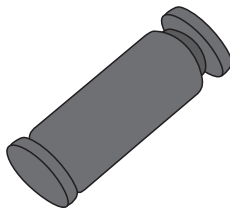


## Diac in SMD MINIMELF package


**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	$V_{BO}$
<b>TMMDB3</b>	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 <sup>(1)</sup>	$C = 10\text{ nF}^{(2)}$	Min.	28	V
			Typ.	32	
			Max.	36	
$ V_{BO1} - V_{BO2} $	Breakover voltage symmetry	$C = 10\text{ nF}^{(2)}$	Max.	3	V
$\Delta V$	Dynamic breakover voltage <sup>(1)</sup>	$V_{BO}$ and $V_F$ at 10 mA	Min.	5	V
$V_O$	Output voltage <sup>(1)</sup>	See Figure 2. Test circuit , ( $R = 20\ \Omega$ )	Min.	5	V
$I_{BO}$	Breakover current <sup>(1)</sup>	$C = 10\text{ nF}^{(2)}$	Max.	50	$\mu A$
$t_r$	Rise time <sup>(1)</sup>	See Figure 3. Rise time measurement	Max.	2	$\mu s$
$I_R$	Leakage current <sup>(1)</sup>	$V_R = 0.5 \times V_{BO}\text{ max}$	Max.	10	$\mu A$
$I_P$	Peak current <sup>(1)</sup>	See Figure 2. Test circuit	Min.	0.30	A

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

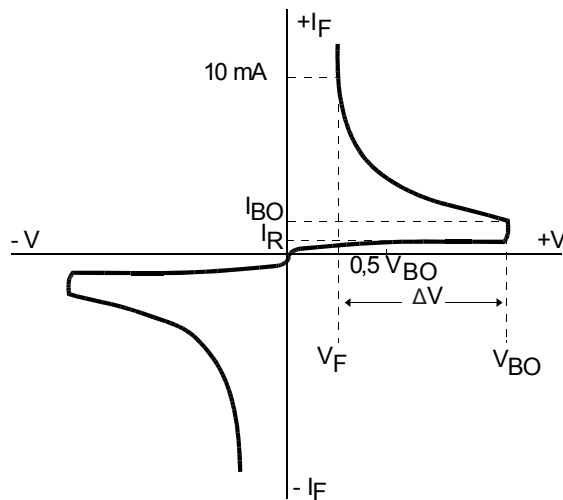
**Figure 1. Voltage - current characteristic curve.**


Figure 2. Test circuit

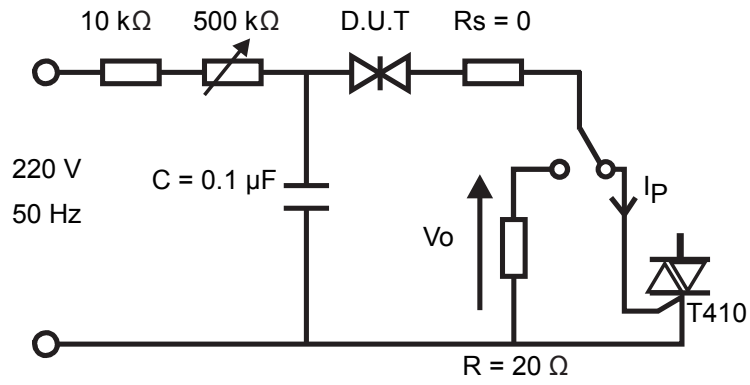
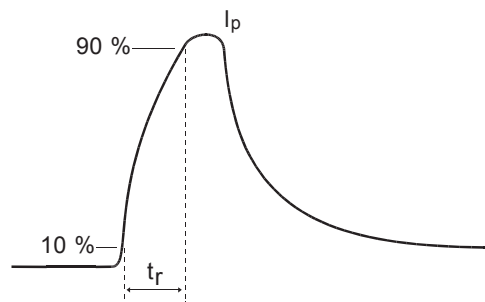
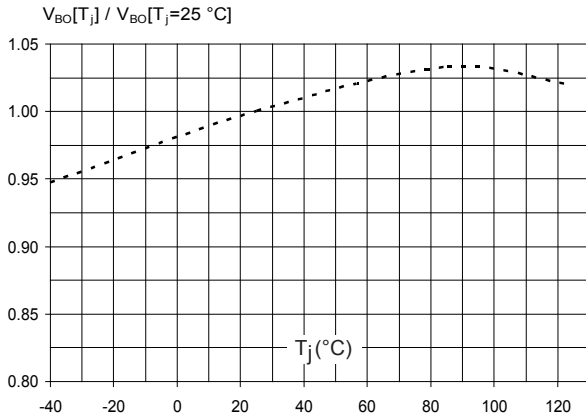


Figure 3. Rise time measurement

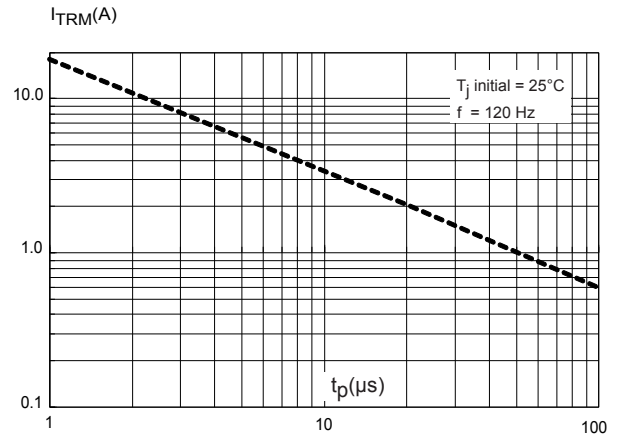


## 1.1 Characteristics curves

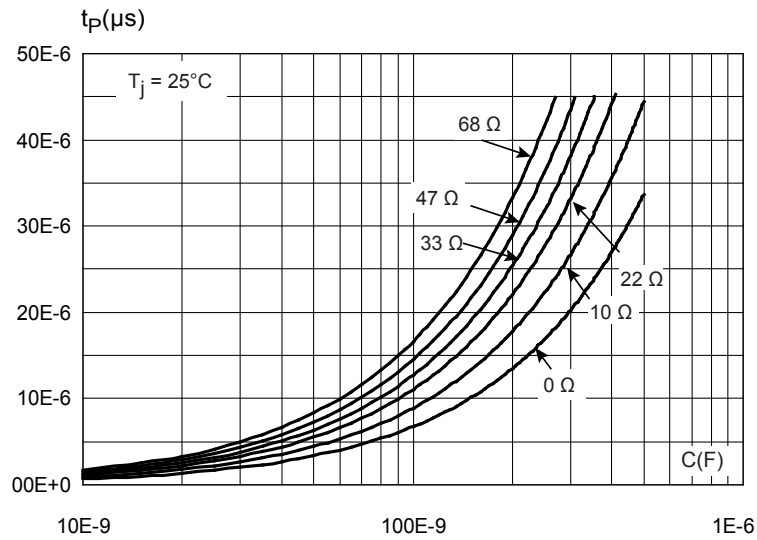
**Figure 4. Relative variation of VBO versus junction temperature (typical values)**



**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  $I_p > 50$  mA) versus  $R_s$  and  $C$  values (typical values)**



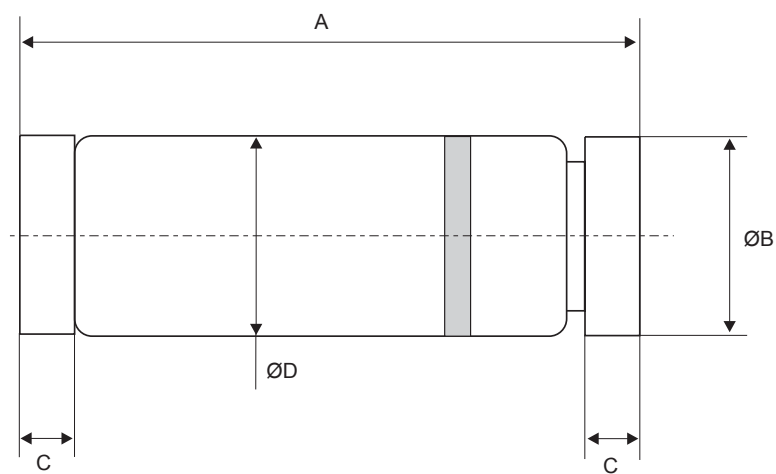
Note: according to Figure 2. Test circuit.

## 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](http://www.st.com). ECOPACK is an ST trademark.

### 2.1 MINIMELF package information

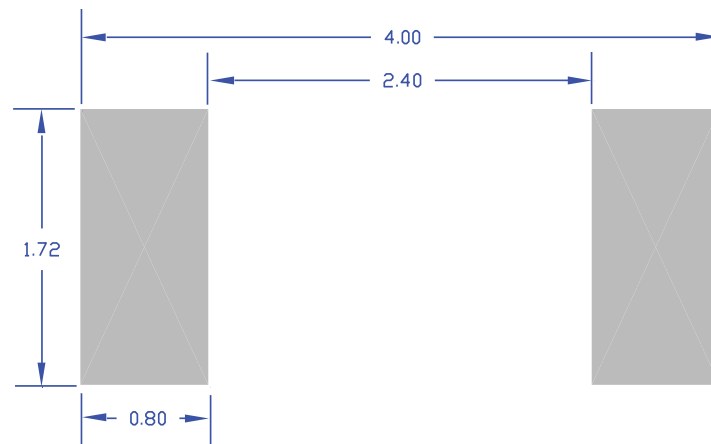
**Figure 7. MINIMELF package outline**



**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

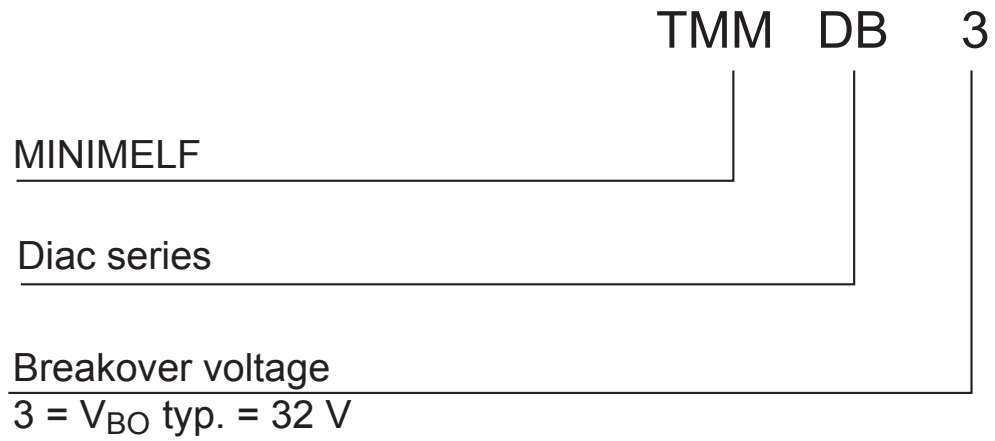


Table 4. Ordering information

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 <a href="#">Table 3</a> and <a href="#">Figure 8</a> . Minor text change to improve readability.



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