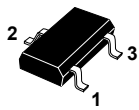


DO-35



SOT-23

Pin 1 and 3 must be shorted together

Features

- V_{BO} : 32 V and 40 V
- Low breakover current
- Breakover voltage symmetry : 3V
- ECOPACK[®]2 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 DB3/DB4 series can be used in conjunction with triacs for simplified gate control circuits or as a starting element in fluorescent lamp ballasts.

The surface mount SOT23-3L package allows compact, SMD based designs for automated manufacturing.

Product status link

[DB3](#)

[DB4](#)

[SMDB3](#)

Product summary

Part number	V_{BO}
SMDB3	28 - 36 V
DB3	28 - 36 V
DB4	35 - 45 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, $t_p = 20\ \mu\text{s}$, $F = 120\ \text{Hz}$	SMDB3	1.00	A
		DB3 / DB4	2.00	A
T_{stg}	Storage junction temperature range	-40 to +125	$^{\circ}\text{C}$	
T_j	Operating junction temperature range	-40 to +125	$^{\circ}\text{C}$	

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

Symbol	Parameter	Test conditions	SMDB3	DB3	DB4	Unit	
V_{BO}	Breakover voltage ⁽¹⁾	$C = 10\ \text{nF}$ ⁽²⁾	Min.	28	28	35	V
			Typ.	32	32	40	
			Max.	36	36	45	
$ V_{BO1} - V_{BO2} $	Breakover voltage symmetry	$C = 10\ \text{nF}$ ⁽²⁾	Max.	3	3	3	V
ΔV	Dynamic breakover voltage ⁽¹⁾	V_{BO} and V_F at 10 mA	Min.	10	5	5	V
V_O	Output voltage ⁽¹⁾	See Figure 2. Test circuit, ($R = 20\ \Omega$)	Min.	10	5	5	V
I_{BO}	Breakover current ⁽¹⁾	$C = 10\ \text{nF}$ ⁽²⁾	Max.	10	50	50	μA
t_r	Rise time ⁽¹⁾	See Figure 3. Rise time measurement	Max.	0.5	2	2	μs
I_R	Leakage current ⁽¹⁾	$V_R = 0.5 \times V_{BO}\ \text{max}$	Max.	1	10	10	μA
I_P	Peak current ⁽¹⁾	See Figure 2. Test circuit	Min.	1	0.30	0.30	A

1. Applicable to both forward and reverse directions.

2. Connected in parallel to the device

Figure 1. Voltage - current characteristic curve.

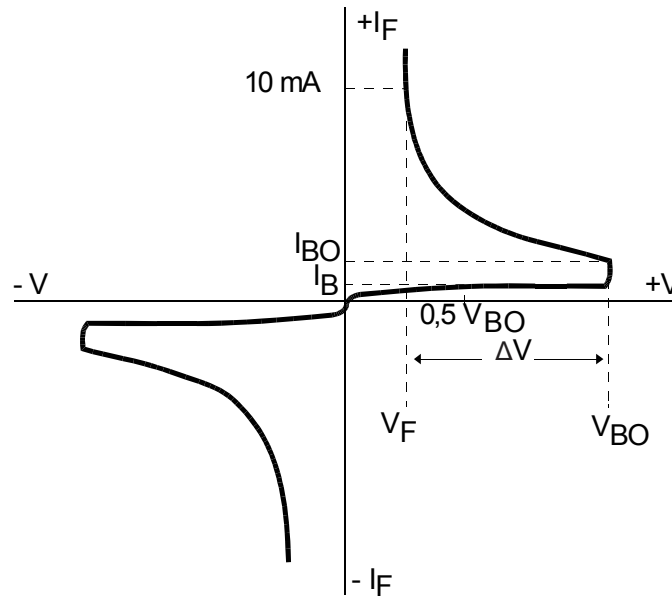


Figure 2. Test circuit

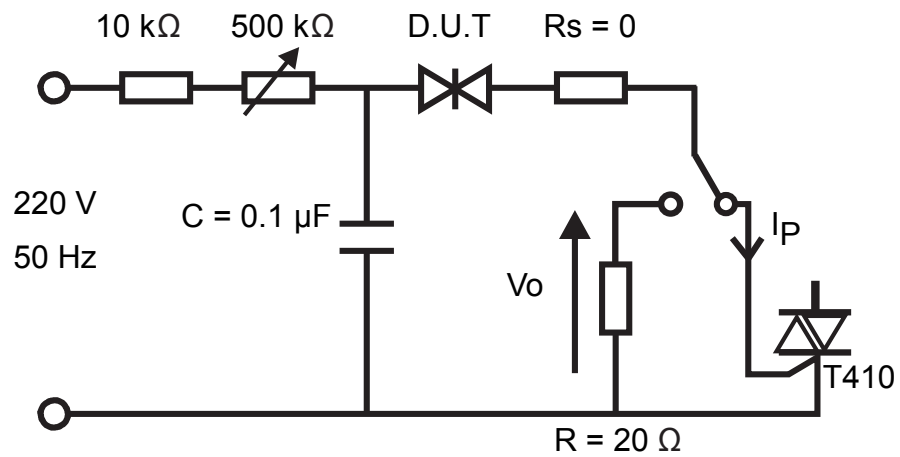
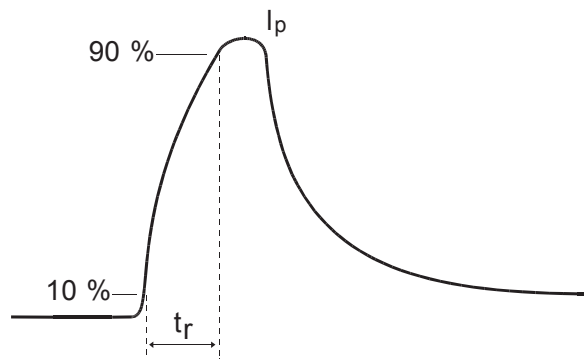


Figure 3. Rise time measurement



1.1 Characteristics curves

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

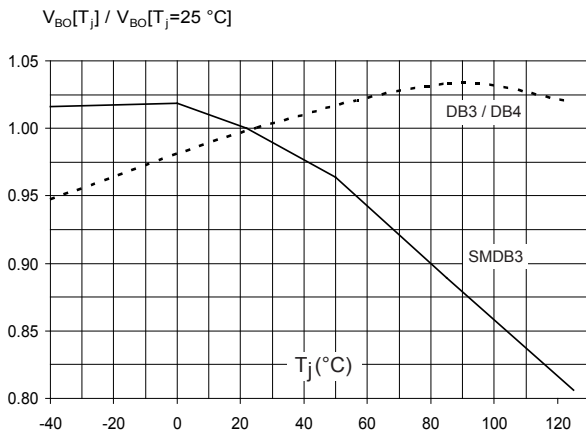


Figure 5. On-state RMS current versus Triac gate current pulse duration t_p

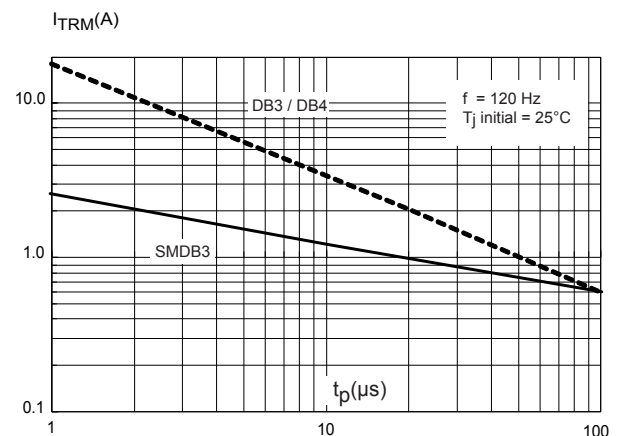
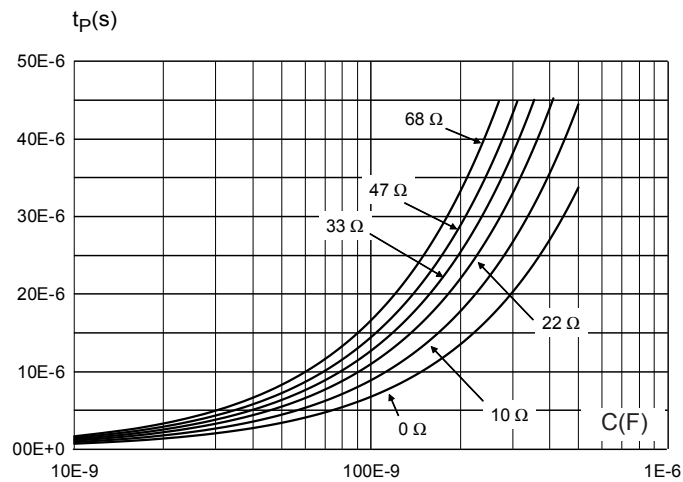


Figure 6. Triac gate current pulse duration t_p (to have $I_p > 50\text{ mA}$) versus R_s and C values (typical values)



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 SOT23 package information

Figure 7. SOT23-3L package outline

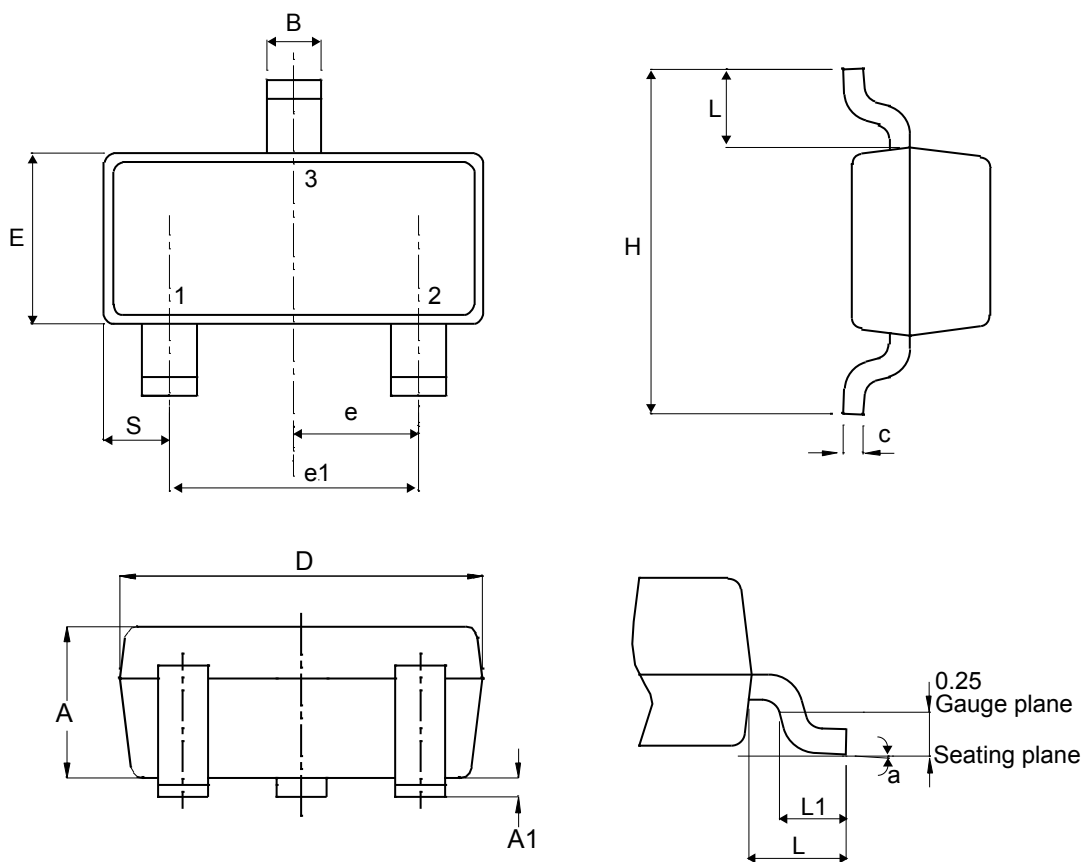
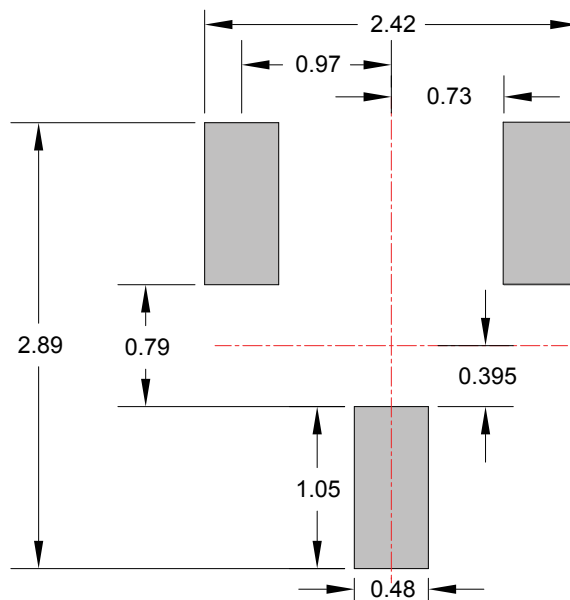


Table 3. SOT23-3L package mechanical data

Ref.	Dimensions					
	Millimeters			Inches (for reference only)		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	0.89		1.40	0.0350		0.0551
A1	0.00		0.10	0.0000		0.0039
B	0.30		0.51	0.0118		0.0201
C	0.085		0.18	0.0033		0.0071
D	2.75		3.04	0.1083		0.1197
e	0.85		1.05	0.0335		0.0413
e1	1.70		2.10	0.0669		0.0827
E	1.20		1.75	0.0472		0.0689
H	2.10		3.00	0.0827		0.1181
L		0.60			0.0236	
S	0.35		0.65	0.0138		0.256
L1	0.25		0.55	0.0098		0.0217
a	0°		8°	0°		8°

Figure 8. SOT23-3L footprint in mm


2.2 DO-35 package information

Figure 9. DO-35 package outline

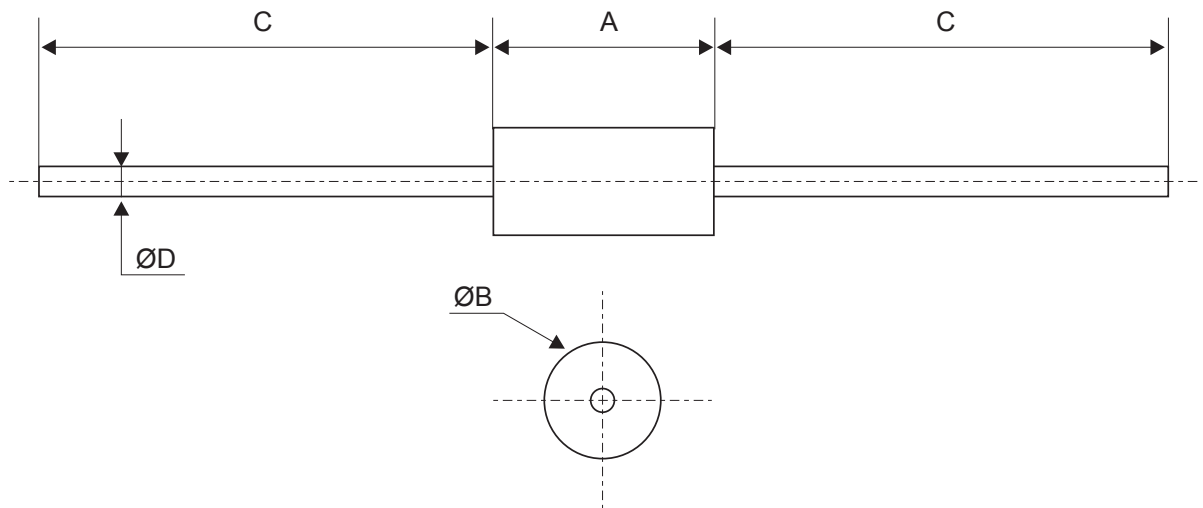
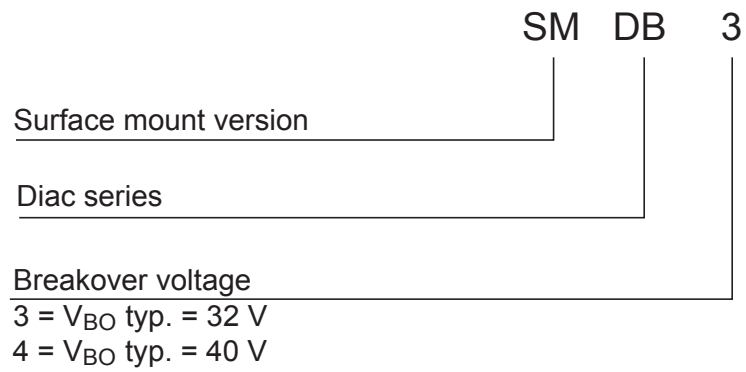


Table 4. DO-35 package mechanical data

Ref.	Dimensions			
	Millimeters		Inches (for reference only)	
	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	31.00	1.102	1.220
D	0.46	0.55	0.018	0.022

3 Ordering information

Figure 10. Ordering information scheme

Table 5. Ordering information

Order code	Marking	Package	Weight	Base qty.	Delivery mode
SMDB3	DB3	SOT-23	0.01 g	3000	Tape and reel
DB3	DB3 (Blue Body Coat)	DO-35	0.15 g	5000	Tape and reel
DB4	DB4 (Blue Body Coat)		0.15 g	5000	Tape and reel

Revision history

Table 6. Document revision history

Date	Version	Changes
18-Jun-2018	2	First release.
14-Dec-2018	3	Minor text change to improve readability.

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