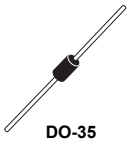
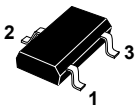
DB3, DB4, SMDB3

Datasheet

Diac



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 °C unless otherwise specified

Symbol	Parameter		Value	Unit
I_{TRM}	Repetitive peak on-state current, t_p = 20 µs, F = 120 Hz	SMDB3	1.00	A
		DB3 / DB4	2.00	A
T_{stg}	Storage junction temperature range		-40 to +125	°C
T_j	Operating junction temperature range		-40 to +125	°C

Table 2. Electrical characteristics (T_j = 25 °C unless otherwise specified)

Symbol	Parameter	Test conditions		SMDB3	DB3	DB4	Unit
V_{BO}	Breakover voltage (1)	C = 10 nF (2)	Min.	28	28	35	V
			Typ.	32	32	40	
			Max.	36	36	45	
I V_{BO1} - V_{BO2} I	Breakover voltage symmetry	C = 10 nF(2)	Max.	3	3	3	V
Δ V	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 Ω)	Min.	10	5	5	V
I_{BO}	Breakover current (1)	C = 10 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 x V_{BO} 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.**

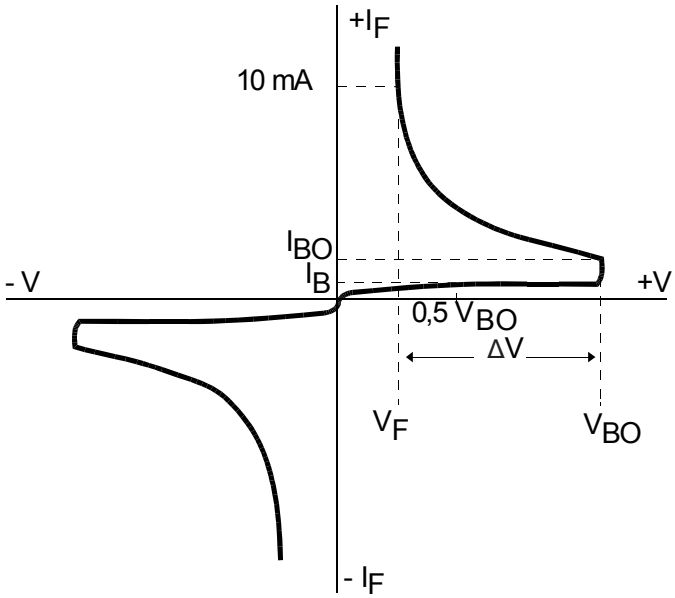


Figure 2. **Test circuit**

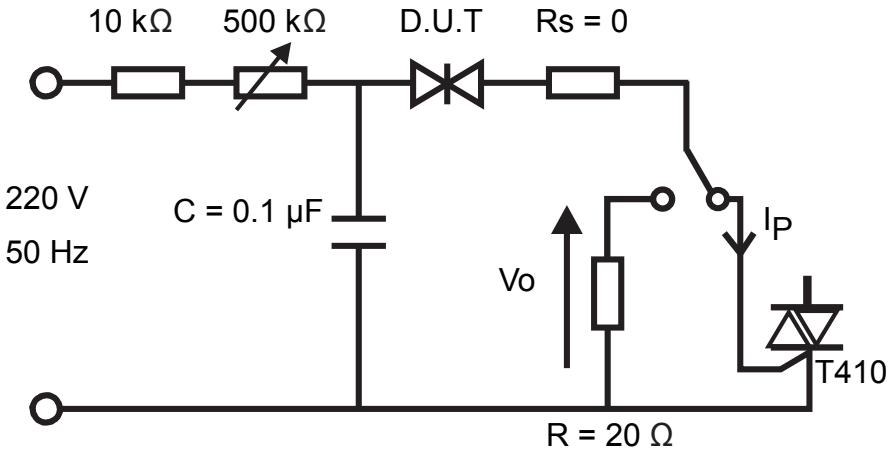
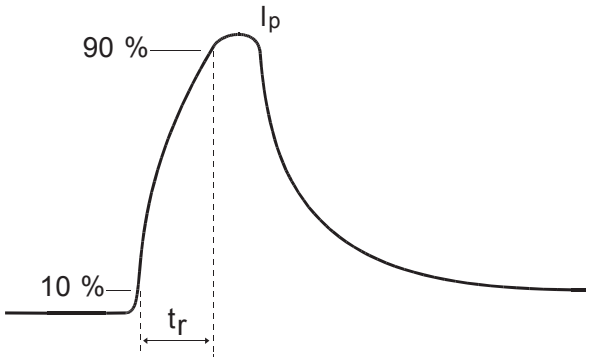


Figure 3. **Rise time measurement**



1.1 Characteristics curves

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

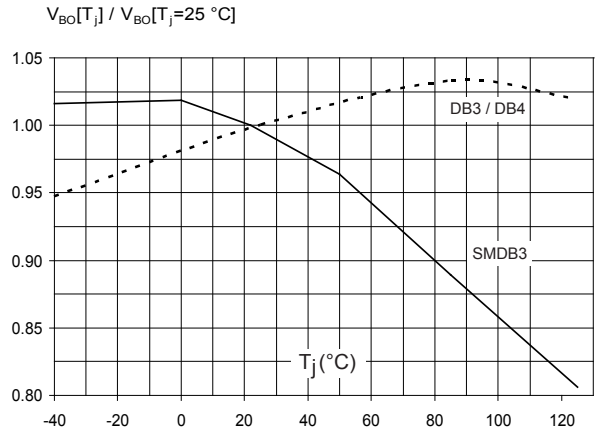


Figure 5. On-state RMS current versus Triac gate current pulse duration t_p

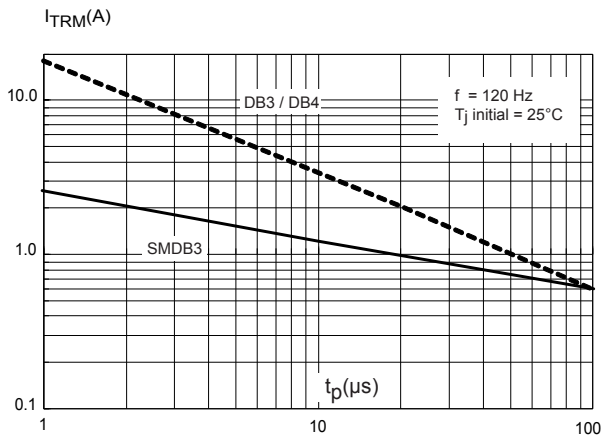
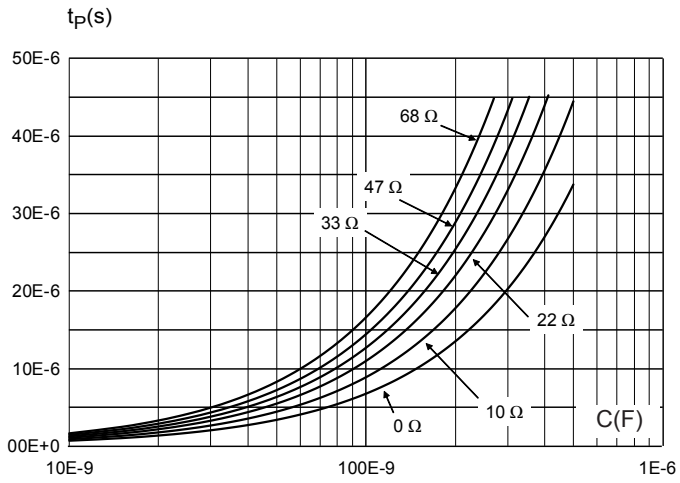


Figure 6. Triac gate current pulse duration t_p (to have I_P > 50 mA) versus Rs and C values (typical values)



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

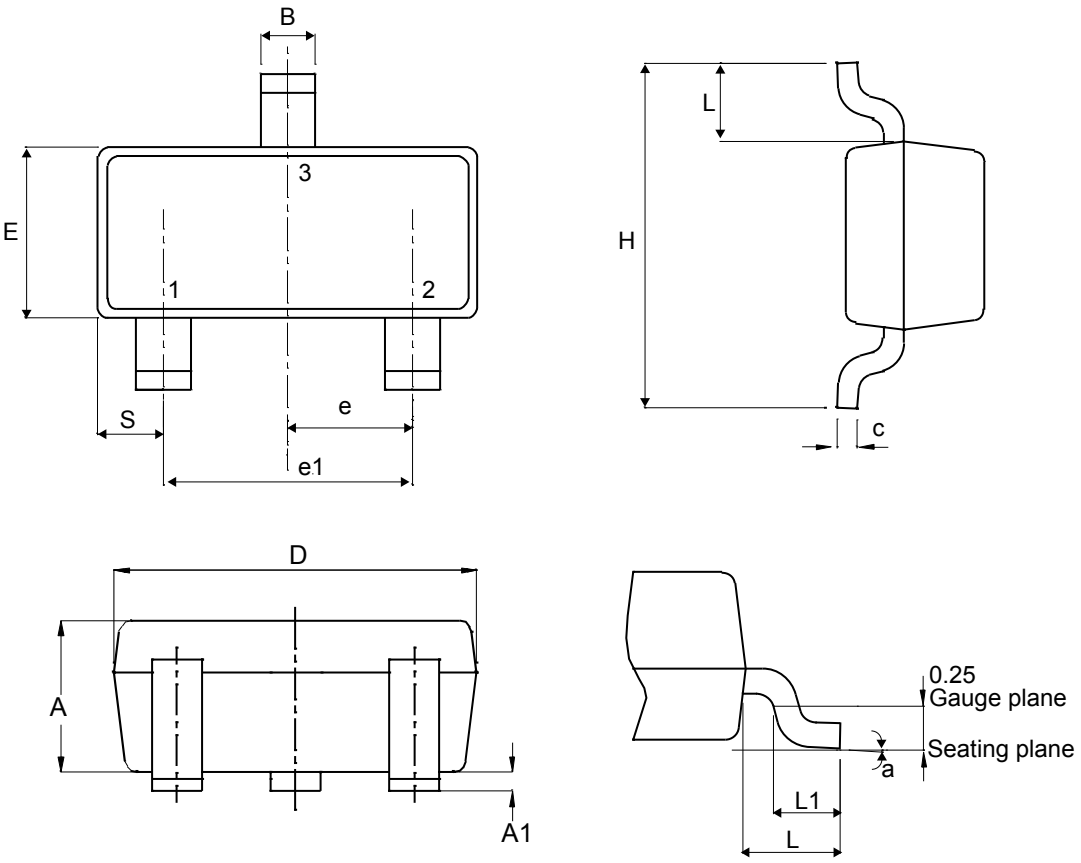
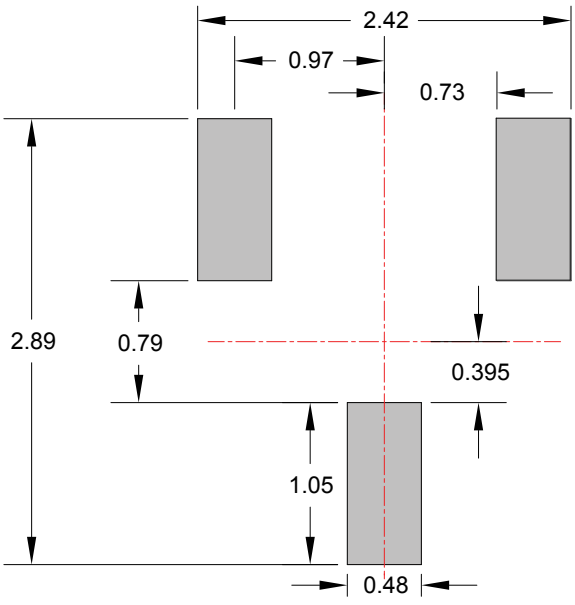


Table 3. SOT23-3L package mechanical data

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**

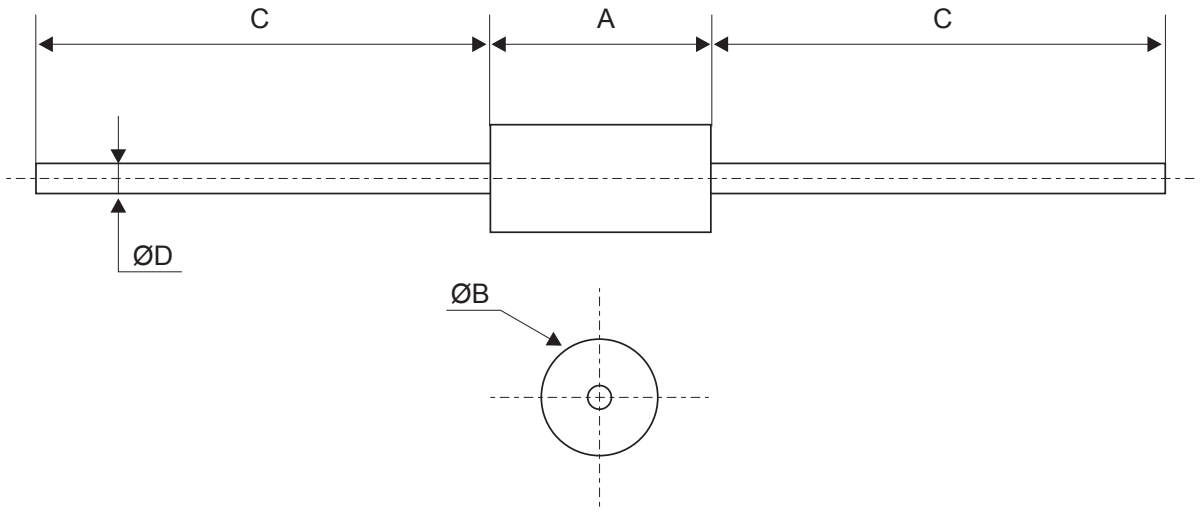


Table 4. **DO-35 package mechanical data**

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**

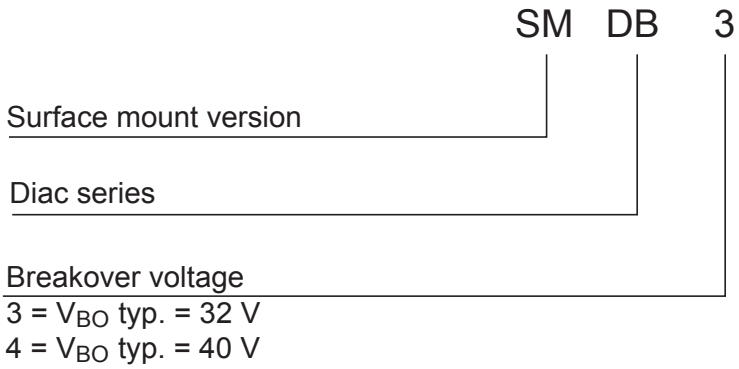


Table 5. **Ordering information**

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.