BAS32L

High-speed switching diode

Rev. 06 — 29 October 2008

Product data sheet

1. Product profile

1.1 General description

Single high-speed switching diode, fabricated in planar technology, and encapsulated in a small hermetically sealed glass SOD80C Surface-Mounted Device (SMD) package.

1.2 Features

■ High switching speed: $t_{rr} \leq 4$ ns
■ Reverse voltage: $V_R \leq 75$ V
■ Repetitive peak reverse voltage: $V_{RRM} \leq 100$ V
■ Repetitive peak forward current: $I_{FRM} \leq 450$ mA
■ Small hermetically sealed glass SMD package

1.3 Applications

■ High-speed switching
■ Reverse polarity protection
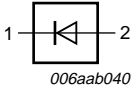
1.4 Quick reference data

Table 1. Quick reference data

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
I_F	forward current	[1]	-	-	200	mA
I_{FRM}	repetitive peak forward current		-	-	450	mA
V_R	reverse voltage		-	-	75	V
V_F	forward voltage	$I_F = 100$ mA	-	-	1000	mV
t_{rr}	reverse recovery time	[2]	-	-	4	ns

[1] Device mounted on an FR4 Printed-Circuit Board (PCB), single-sided copper, tin-plated and standard footprint.

[2] When switched from $I_F = 10$ mA to $I_R = 10$ mA; $R_L = 100$ Ω; measured at $I_R = 1$ mA.

2. Pinning information

Table 2.   Pinning

Pin	Description	Simplified outline	Graphic symbol
1	cathode [1]		
2	anode		

006aab040

[1]   The marking band indicates the cathode.

3. Ordering information

Table 3.   Ordering information

Type number	Package		Version
	Name	**Description**	
BAS32L	-	hermetically sealed glass surface-mounted package; 2 connectors	SOD80C

4. Marking

Table 4.   Marking codes

Type number	Marking code[1]
BAS32L	marking band

[1]   black: made in Philippines
       brown: made in China

5. Limiting values

Table 5.   Limiting values
In accordance with the Absolute Maximum Rating System (IEC 60134).

Symbol	Parameter	Conditions	Min	Max	Unit
V_{RRM}	repetitive peak reverse voltage		-	100	V
V_R	reverse voltage		-	75	V
I_F	forward current	[1]	-	200	mA
I_{FRM}	repetitive peak forward current		-	450	mA
I_{FSM}	non-repetitive peak forward current	square wave [2]			
		t_p = 1 µs	-	4	A
		t_p = 1 ms	-	1	A
		t_p = 1 s	-	0.5	A
P_{tot}	total power dissipation	T_{amb} = 25 °C [1]	-	500	mW

Table 5. **Limiting values** *…continued*
In accordance with the Absolute Maximum Rating System (IEC 60134).

Symbol	Parameter	Conditions	Min	Max	Unit
T_j	junction temperature		-	200	°C
T_{amb}	ambient temperature		−65	+200	°C
T_{stg}	storage temperature		−65	+200	°C

[1] Device mounted on an FR4 PCB, single-sided copper, tin-plated and standard footprint.

[2] T_j = 25 °C prior to surge.

6. Thermal characteristics

Table 6. **Thermal characteristics**

| Symbol	Parameter	Conditions		Min	Typ	Max	Unit
$R_{th(j-a)}$	thermal resistance from junction to ambient	in free air	[1]	-	-	350	K/W
$R_{th(j-sp)}$	thermal resistance from junction to solder point			-	-	300	K/W

[1] Device mounted on an FR4 PCB, single-sided copper, tin-plated and standard footprint.

7. Characteristics

**Table 7.** **Characteristics**
T_{amb} = 25 °C unless otherwise specified.

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
V_F	forward voltage	I_F = 5 mA		620	-	750	mV
		I_F = 100 mA		-	-	1000	mV
		I_F = 100 mA; T_j = 100 °C		-	-	930	mV
I_R	reverse current	V_R = 20 V		-	-	25	nA
		V_R = 75 V		-	-	5	μA
		V_R = 20 V; T_j = 150 °C		-	-	50	μA
		V_R = 75 V; T_j = 150 °C		-	-	100	μA
C_d	diode capacitance	V_R = 0 V; f = 1 MHz		-	-	2	pF
t_{rr}	reverse recovery time		[1]	-	-	4	ns
V_{FR}	forward recovery voltage		[2]	-	-	2.5	V

[1] When switched from I_F = 10 mA to I_R = 10 mA; R_L = 100 Ω; measured at I_R = 1 mA.

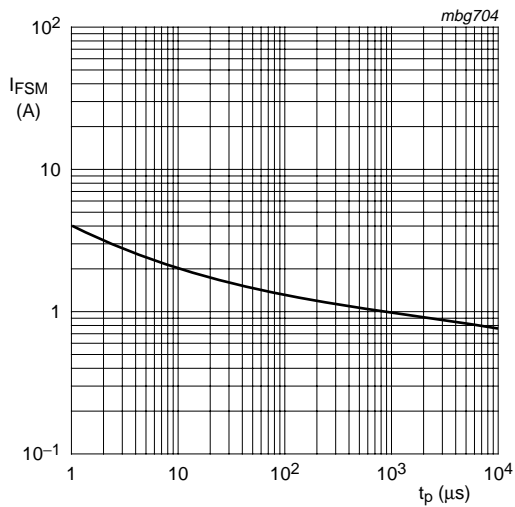[2] When switched from I_F = 50 mA; t_r = 20 ns.

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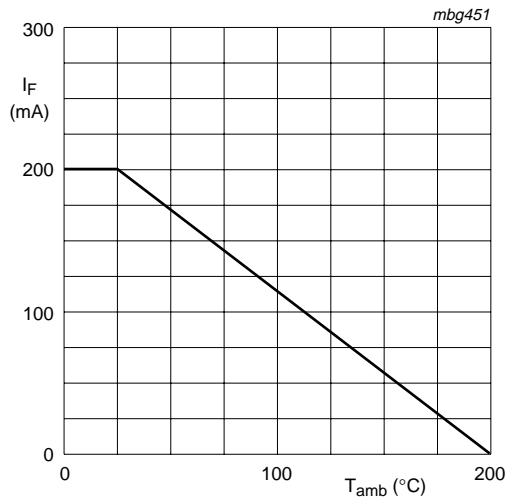
FR4 PCB, standard footprint

Fig 1. Forward current as a function of ambient temperature; derating curve
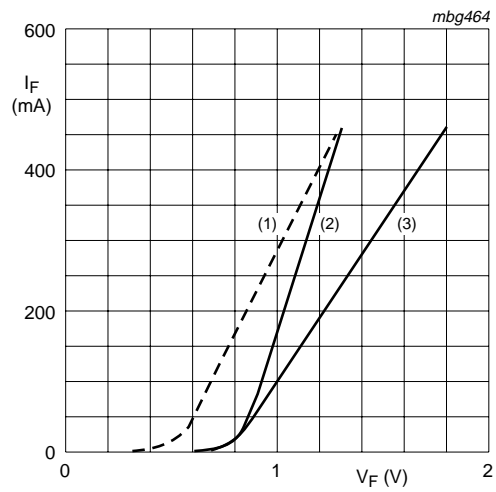
(1) T_j = 175 °C; typical values

(2) T_j = 25 °C; typical values

(3) T_j = 25 °C; maximum values
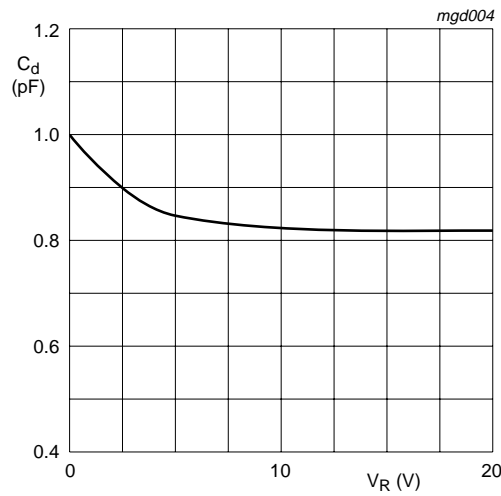
Fig 2. Forward current as a function of forward voltage

Based on square wave currents.

T_j = 25 °C prior to surge

Fig 3. Non-repetitive peak forward current as a function of pulse duration; maximum values
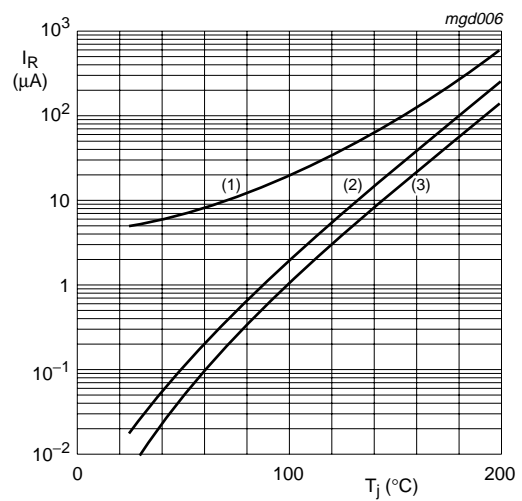
(1) V_R = 75 V; maximum values

(2) V_R = 75 V; typical values
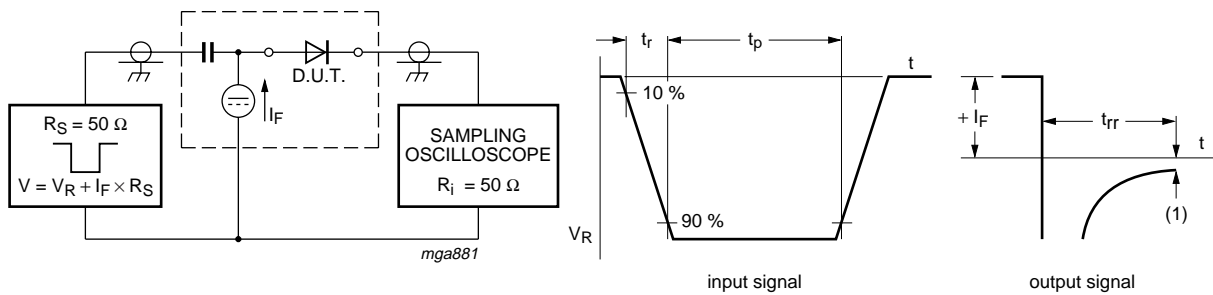
(3) V_R = 20 V; typical values

Fig 4. Reverse current as a function of junction temperature

f = 1 MHz; T_j = 25 °C

Fig 5.   Diode capacitance as a function of reverse voltage; typical values
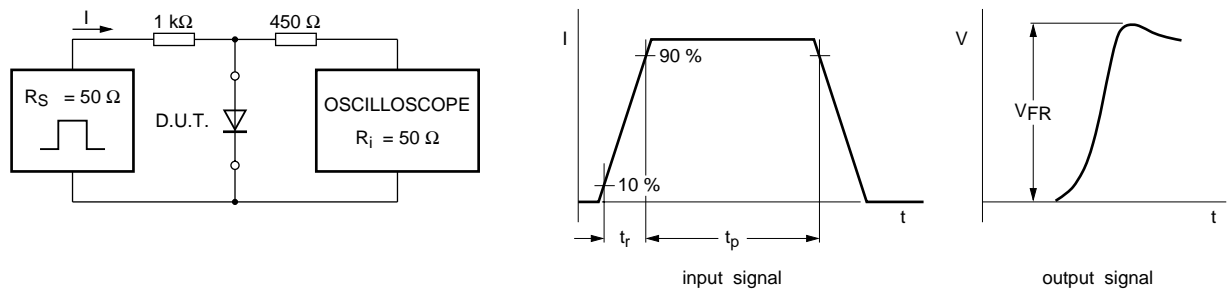
8.   Test information

Input signal: Reverse pulse rise time t_r = 0.6 ns; reverse voltage pulse duration t_p = 100 ns; duty factor δ ≤ 0.05

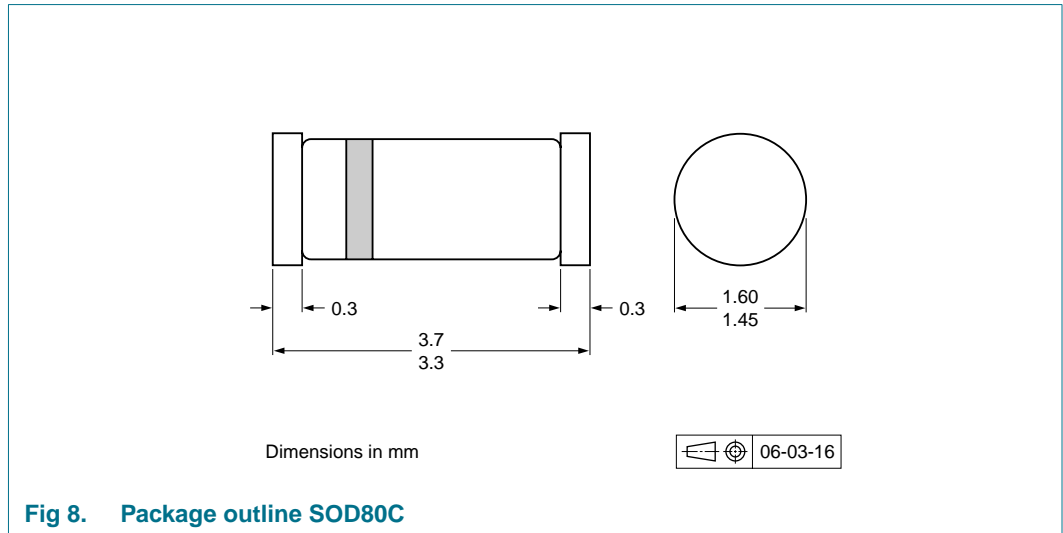Oscilloscope: Rise time t_r = 0.35 ns

(1) I_R = 1 mA

Fig 6.   Reverse recovery time test circuit and waveforms

Input signal: Forward pulse rise time t_r = 20 ns; forward current pulse duration t_p ≥ 100 ns; duty factor δ ≤ 0.005

Fig 7.   Forward recovery voltage test circuit and waveforms

9. Package outline

Dimensions in mm   06-03-16

Fig 8.   Package outline SOD80C

10. Packing information

Table 8.   Packing methods
The indicated -xxx are the last three digits of the 12NC ordering code.[1]

Type number	Package	Description	Packing quantity	
			2500	**10000**
BAS32L	SOD80C	4 mm pitch, 8 mm tape and reel	-115	-135

[1]   For further information and the availability of packing methods, see Section 14.
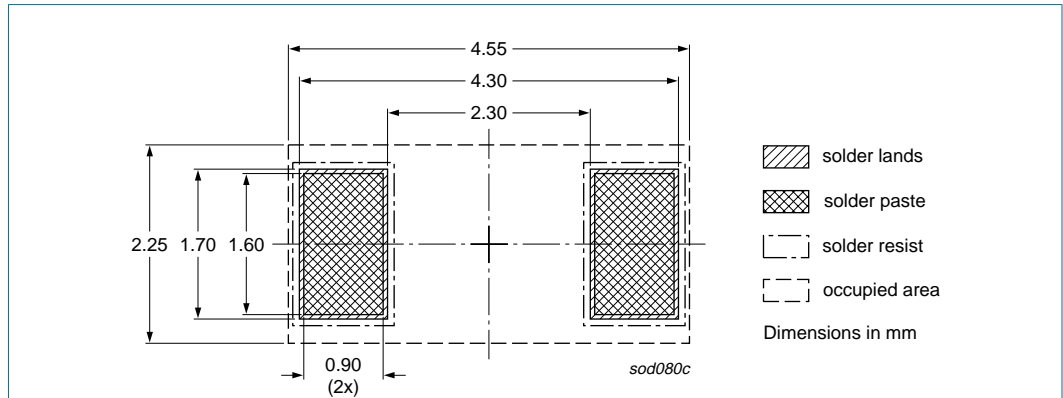
11. Soldering
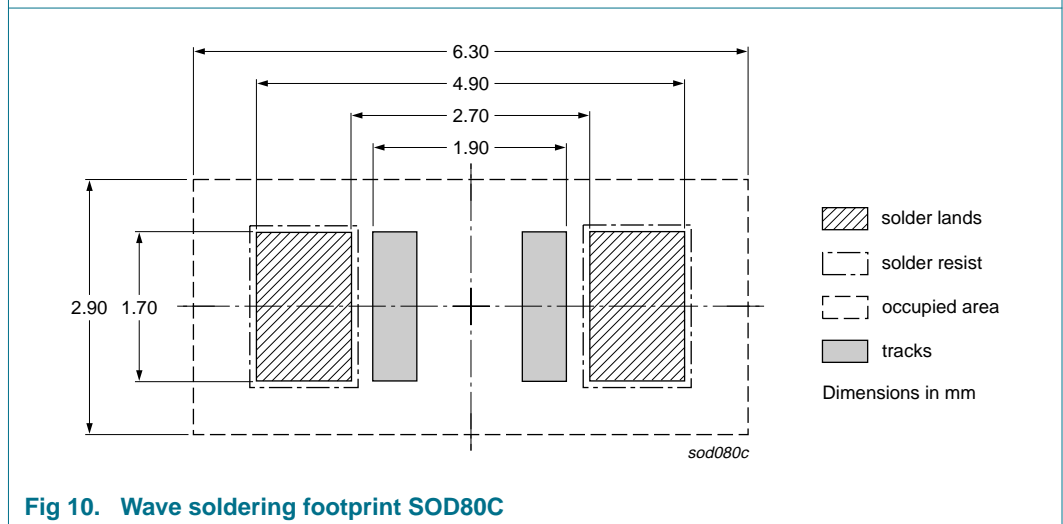
Fig 9.   **Reflow soldering footprint SOD80C**

Fig 10. **Wave soldering footprint SOD80C**

12. Revision history

Table 9.   Revision history

Document ID	Release date	Data sheet status	Change notice	Supersedes
BAS32L_6	20081029	Product data sheet	-	BAS32L_5
Modifications:	• Figure 8: amended • Section 13 "Legal information": updated			
BAS32L_5	20080103	Product data sheet	-	BAS32L_4
BAS32L_4	20050322	Product data sheet	-	BAS32L_3
BAS32L_3	20020123	Product specification	-	BAS32L_2
BAS32L_2	19960910	Product specification	-	BAS32L_1
BAS32L_1	19960423	Product specification	-	-

13. Legal information

13.1 Data sheet status

Document status[1][2]	Product status[3]	Definition
Objective [short] data sheet	Development	This document contains data from the objective specification for product development.
Preliminary [short] data sheet	Qualification	This document contains data from the preliminary specification.
Product [short] data sheet	Production	This document contains the product specification.

[1] Please consult the most recently issued document before initiating or completing a design.

[2] The term 'short data sheet' is explained in section "Definitions".

[3] The product status of device(s) described in this document may have changed since this document was published and may differ in case of multiple devices. The latest product status information is available on the Internet at URL http://www.nxp.com.

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