



BAS28

High-speed double diode

Rev. 3 — 22 July 2010

Product data sheet

1. Product profile

1.1 General description

Two high-speed switching diodes fabricated in planar technology, and encapsulated in a small SOT143B Surface-Mounted Device (SMD) plastic package. The diodes are not connected.

1.2 Features and benefits

- High switching speed: $t_{rr} \leq 4$ ns
- Reverse voltage: $V_R \leq 75$ V
- Repetitive peak reverse voltage: $V_{RRM} \leq 85$ V
- Repetitive peak forward current: $I_{FRM} \leq 500$ mA
- AEC-Q101 qualified
- Small SMD package

1.3 Applications

- High-speed switching in e.g. surface-mounted circuits

1.4 Quick reference data

Table 1. Quick reference data

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Per diode						
I_F	forward current		[1] -	-	215	mA
I_R	reverse current	$V_R = 75$ V	-	-	1	μ A
V_R	reverse voltage		-	-	75	V
t_{rr}	reverse recovery time		[2] -	-	4	ns

[1] Device mounted on an FR4 Printed-Circuit Board (PCB).

[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 (diode 1)		
2	cathode (diode 2)		
3	anode (diode 2)		
4	anode (diode 1)		

006aab100

3. Ordering information

Table 3. Ordering information

Type number	Package		Version
	Name	Description	
BAS28	-	plastic surface-mounted package; 4 leads	SOT143B

4. Marking

Table 4. Marking codes

Type number	Marking code ^[1]
BAS28	JT*

- [1] * = -: made in Hong Kong
* = p: made in Hong Kong
* = t: made in Malaysia
* = W: 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
Per diode					
V_{RRM}	repetitive peak reverse voltage		-	85	V
V_R	reverse voltage		-	75	V
I_F	forward current		[1]	215	mA
I_{FRM}	repetitive peak forward current		-	500	mA
I_{FSM}	non-repetitive peak forward current	square wave	[3]		
		$t_p = 1 \mu s$	-	4	A
		$t_p = 1 ms$	-	1	A
		$t_p = 1 s$	-	0.5	A
Per device					
P_{tot}	total power dissipation	$T_{amb} = 25 \text{ }^\circ\text{C}$	[1][2]	250	mW
T_j	junction temperature		-	150	$^\circ\text{C}$
T_{stg}	storage temperature		-65	+150	$^\circ\text{C}$

[1] Device mounted on an FR4 PCB.

[2] One diode loaded.

[3] $T_j = 25 \text{ }^\circ\text{C}$ prior to surge.

6. Thermal characteristics

Table 6. Thermal characteristics

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Per device; one diode loaded						
$R_{th(j-a)}$	thermal resistance from junction to ambient	in free air	[1]	-	500	K/W
$R_{th(j-t)}$	thermal resistance from junction to tie-point		-	-	360	K/W

[1] Device mounted on an FR4 PCB.

7. Characteristics

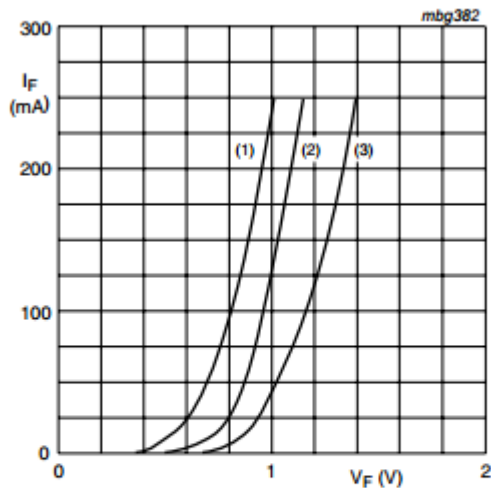
Table 7. Characteristics

$T_{amb} = 25\text{ °C}$ unless otherwise specified.

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Per diode						
V_F	forward voltage	$I_F = 1\text{ mA}$	-	-	715	mV
		$I_F = 10\text{ mA}$	-	-	855	mV
		$I_F = 50\text{ mA}$	-	-	1	V
		$I_F = 150\text{ mA}$	-	-	1.25	V
I_R	reverse current	$V_R = 25\text{ V}$	-	-	30	nA
		$V_R = 75\text{ V}$	-	-	1	μA
		$V_R = 25\text{ V}; T_J = 150\text{ °C}$	-	-	30	μA
		$V_R = 75\text{ V}; T_J = 150\text{ °C}$	-	-	50	μA
C_d	diode capacitance	$f = 1\text{ MHz}; V_R = 0\text{ V}$	-	-	1.5	pF
t_{rr}	reverse recovery time		[1]	-	4	ns
V_{FR}	forward recovery voltage		[2]	-	1.75	V

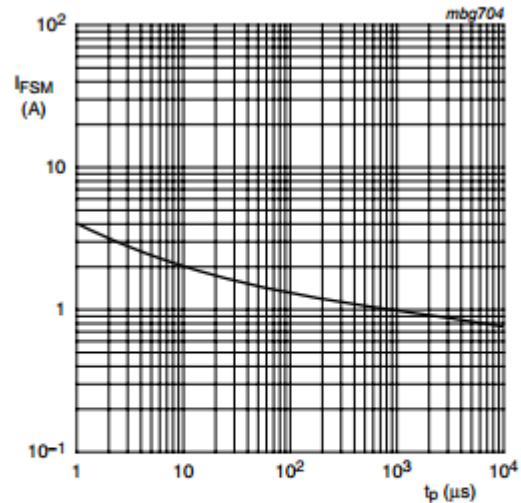
[1] When switched from $I_F = 10\text{ mA}$ to $I_R = 10\text{ mA}$; $R_L = 100\ \Omega$; measured at $I_R = 1\text{ mA}$.

[2] When switched from $I_F = 10\text{ mA}$; $t_r = 20\text{ ns}$.



- (1) $T_j = 150\text{ °C}$; typical values
- (2) $T_j = 25\text{ °C}$; typical values
- (3) $T_j = 25\text{ °C}$; maximum values

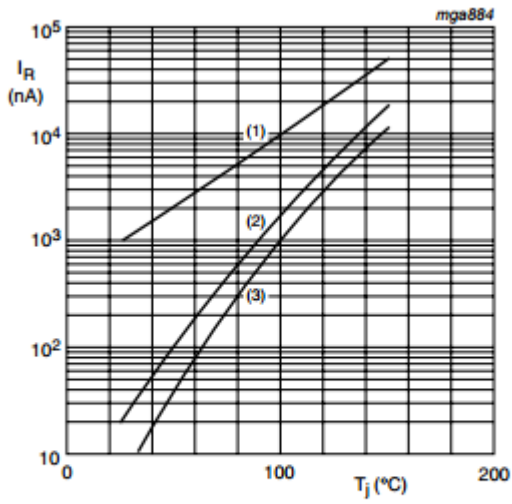
Fig 1. Forward current as a function of forward voltage



Based on square wave currents.

$T_j = 25\text{ °C}$; prior to surge

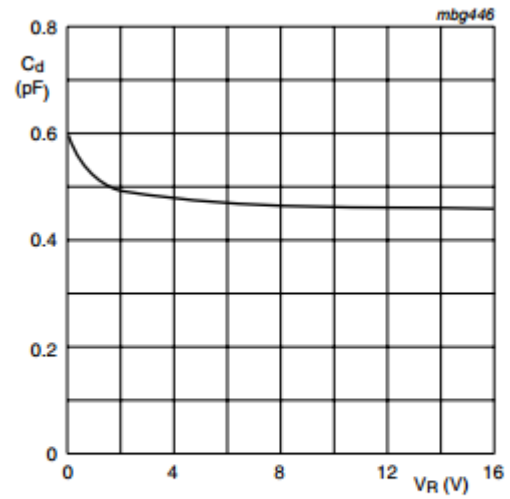
Fig 2. Non-repetitive peak forward current as a function of pulse duration; maximum values



$$V_R = V_{Rmax}$$

- (1) $V_R = 75$ V; maximum values
 (2) $V_R = 75$ V; typical values
 (3) $V_R = 25$ V; typical values

Fig 3. Reverse current as a function of junction temperature



$$f = 1 \text{ MHz}; T_j = 25 \text{ °C}$$

Fig 4. Diode capacitance as a function of reverse voltage; typical values

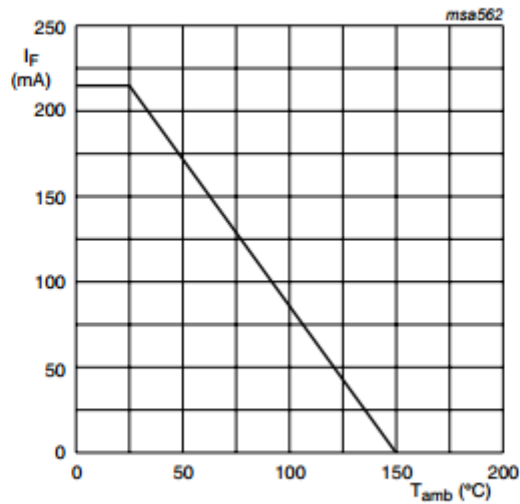
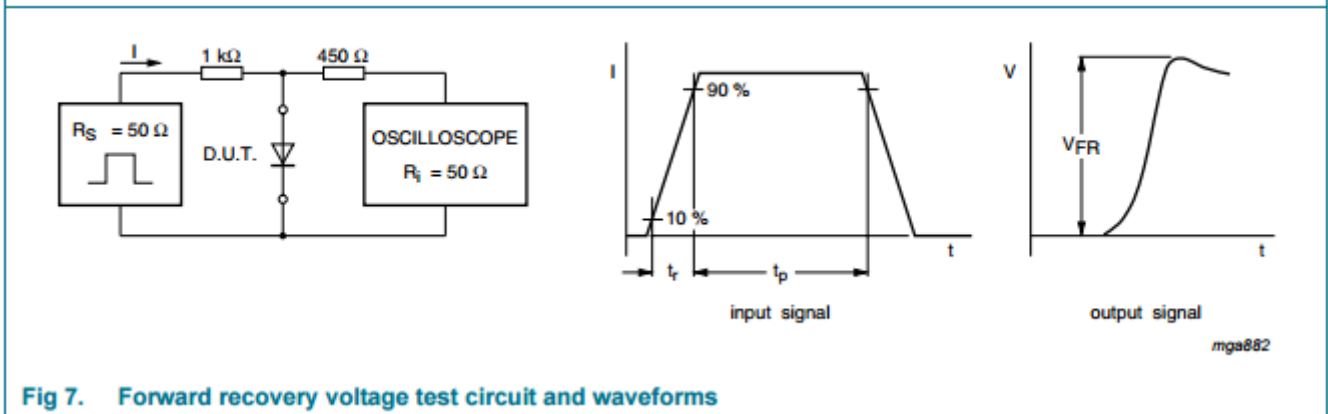
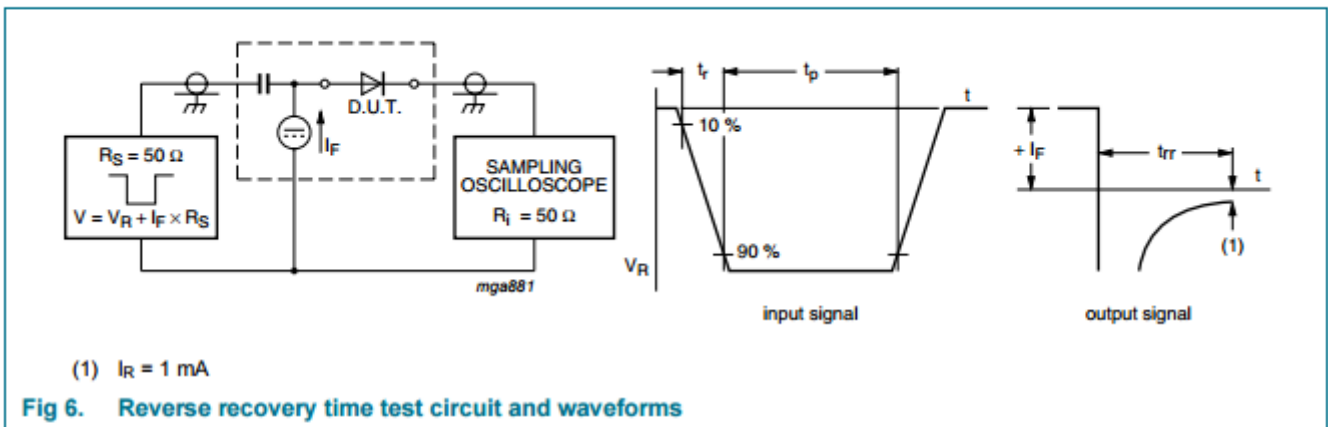


Fig 5. Forward current as a function of ambient temperature; derating curve

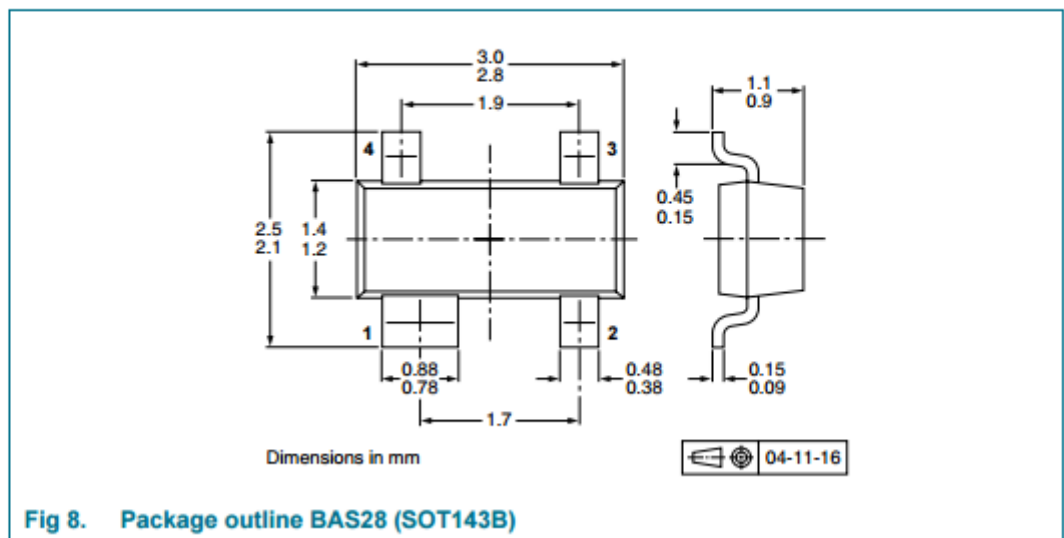
8. Test information



8.1 Quality information

This product has been qualified in accordance with the Automotive Electronics Council (AEC) standard Q101 - *Stress test qualification for discrete semiconductors*, and is suitable for use in automotive applications.

9. Package outline



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	
			3000	10000
BAS28	SOT143B	4 mm pitch, 8 mm tape and reel	-215	-235

[1] For further information and the availability of packing methods, see [Section 14](#).

11. Soldering

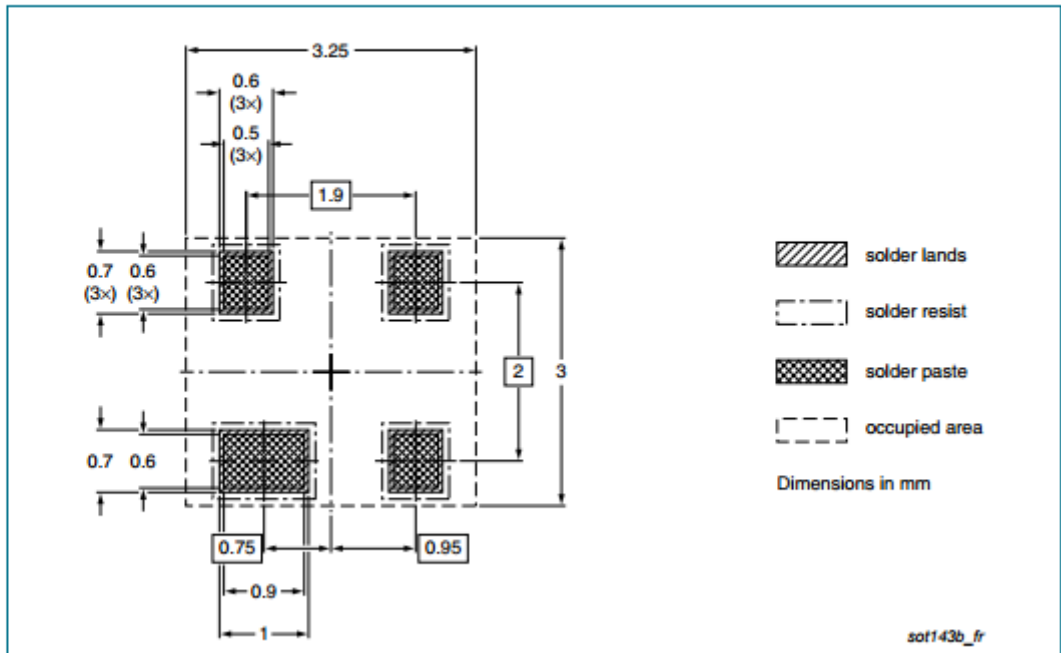


Fig 9. Reflow soldering footprint BAS28 (SOT143B)

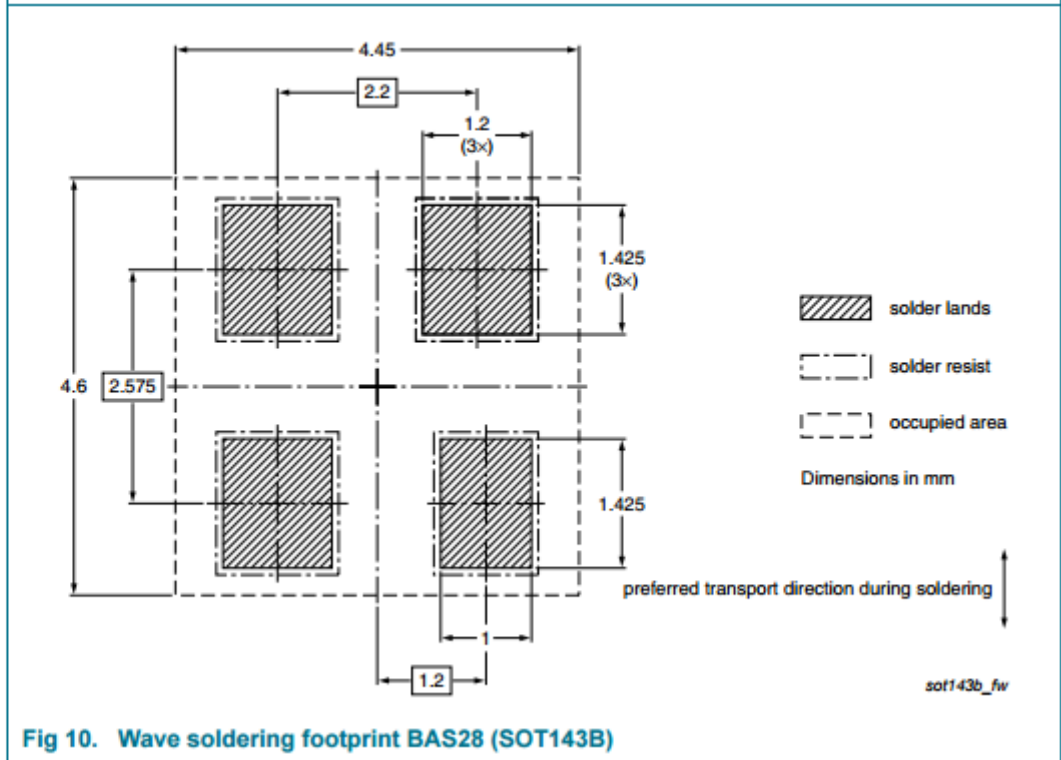


Fig 10. Wave soldering footprint BAS28 (SOT143B)