



BAS21H-Q

High-voltage switching diode

17 April 2024

Product data sheet

1. General description

High-voltage switching diode, encapsulated in a SOD123F small and flat lead Surface-Mounted Device (SMD) plastic package.

2. Features and benefits

- Small and flat lead SMD plastic package
- Reverse voltage: $V_R \leq 200$ V
- Qualified according to AEC-Q101 and recommended for use in automotive applications

3. Applications

- General-purpose switching

4. Quick reference data

Table 1. Quick reference data

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
I_F	forward current	pulsed; $t_p \leq 300 \mu\text{s}$; $\delta \leq 0.02$	-	-	200	mA
V_R	reverse voltage		-	-	200	V
I_R	reverse current	$V_R = 200$ V; $T_{\text{amb}} = 25$ °C	-	-	100	nA
t_{rr}	reverse recovery time	$I_F = 30$ mA; $I_R = 30$ mA; $R_L = 100 \Omega$; $I_{R(\text{meas})} = 3$ mA; $T_{\text{amb}} = 25$ °C	-	-	50	ns

5. Pinning information

Table 2. Pinning information

Pin	Symbol	Description	Simplified outline	Graphic symbol
1	K	cathode[1]	 SOD123F	 aaa-028035
2	A	anode		

[1] The marking bar indicates the cathode.

6. Ordering information

Table 3. Ordering information

Type number	Package		
	Name	Description	Version
BAS21H-Q	SOD123F	plastic, surface-mounted package; 2 leads; 2.6 mm x 1.6 mm x 1.1 mm body	SOD123F

7. Marking

Table 4. Marking codes

Type number	Marking code
BAS21H-Q	B2

8. 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		-	250	V
V_R	reverse voltage		-	200	V
I_F	forward current	pulsed; $t_p \leq 300 \mu\text{s}$; $\delta \leq 0.02$	-	200	mA
I_{FSM}	non-repetitive peak forward current	$t_p = 1 \mu\text{s}$; square wave; $T_{j(\text{init})} = 25 \text{ }^\circ\text{C}$	-	9	A
		$t_p = 100 \mu\text{s}$; square wave; $T_{j(\text{init})} = 25 \text{ }^\circ\text{C}$	-	3	A
		$t_p = 10 \text{ ms}$; square wave; $T_{j(\text{init})} = 25 \text{ }^\circ\text{C}$	-	1.7	A
I_{FRM}	repetitive peak forward current	$t_p = 1 \text{ ms}$; $\delta = 0.25$	-	625	mA
P_{tot}	total power dissipation	$T_{\text{amb}} \leq 25 \text{ }^\circ\text{C}$	[1]	375	mW
T_j	junction temperature		-	150	$^\circ\text{C}$
T_{amb}	ambient temperature		-65	150	$^\circ\text{C}$
T_{stg}	storage temperature		-65	150	$^\circ\text{C}$

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

9. Thermal characteristics

Table 6. Thermal characteristics

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
$R_{\text{th}(j-a)}$	thermal resistance from junction to ambient	in free air	[1] [2]	-	330	K/W
$R_{\text{th}(j-sp)}$	thermal resistance from junction to solder point		[3]	-	70	K/W

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

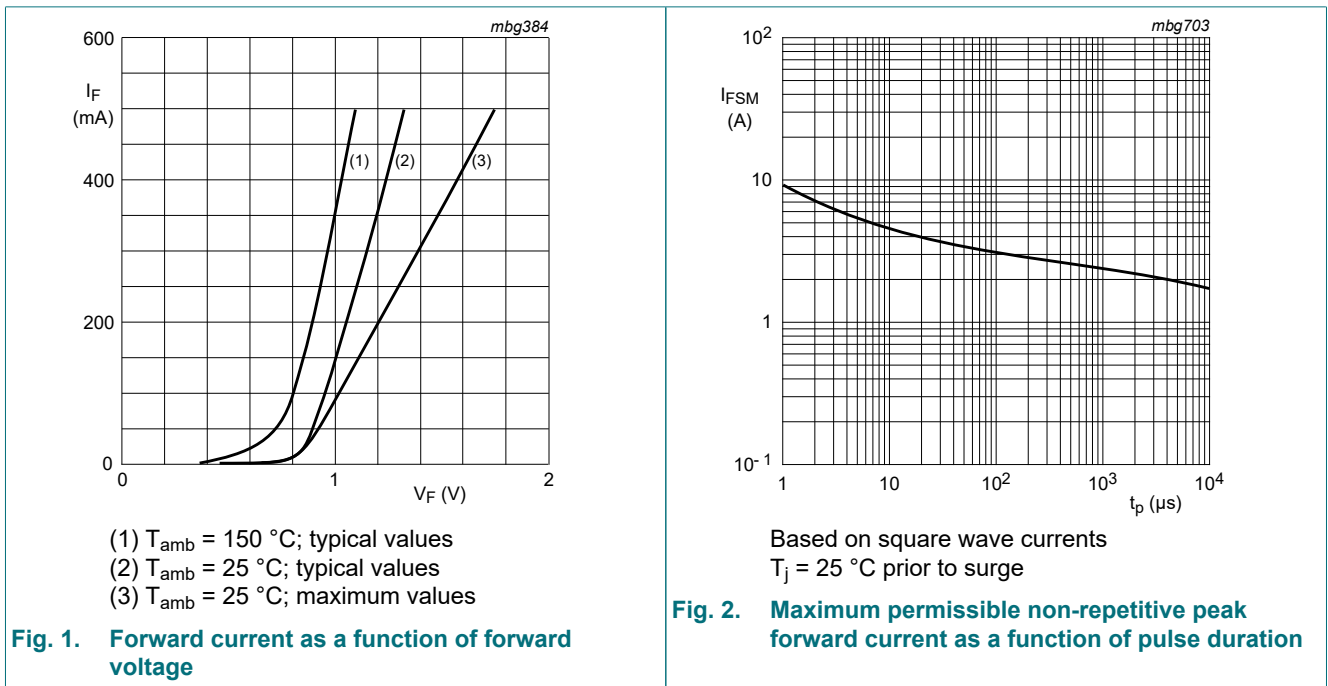
[2] Reflow soldering is the only recommended soldering method.

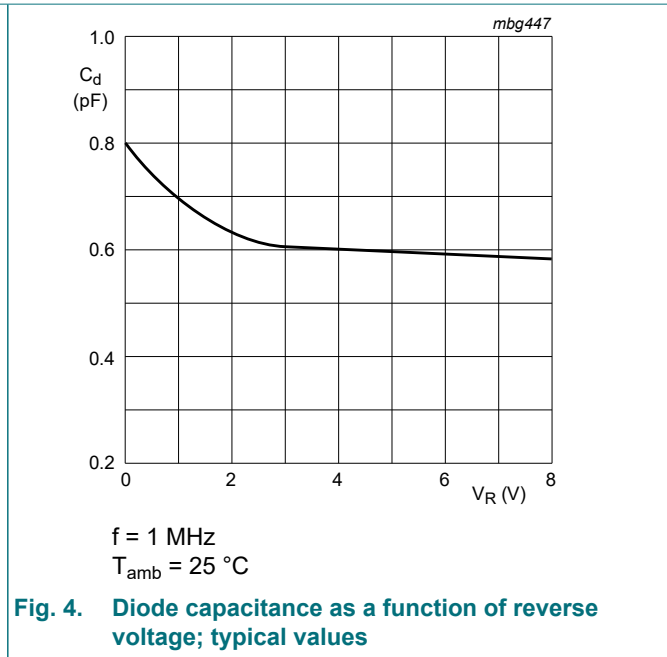
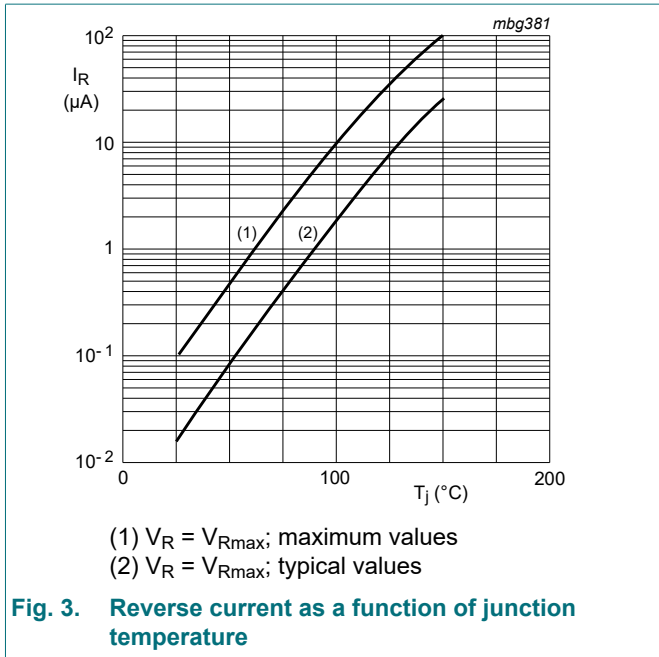
[3] Soldering point of cathode tab.

10. Characteristics

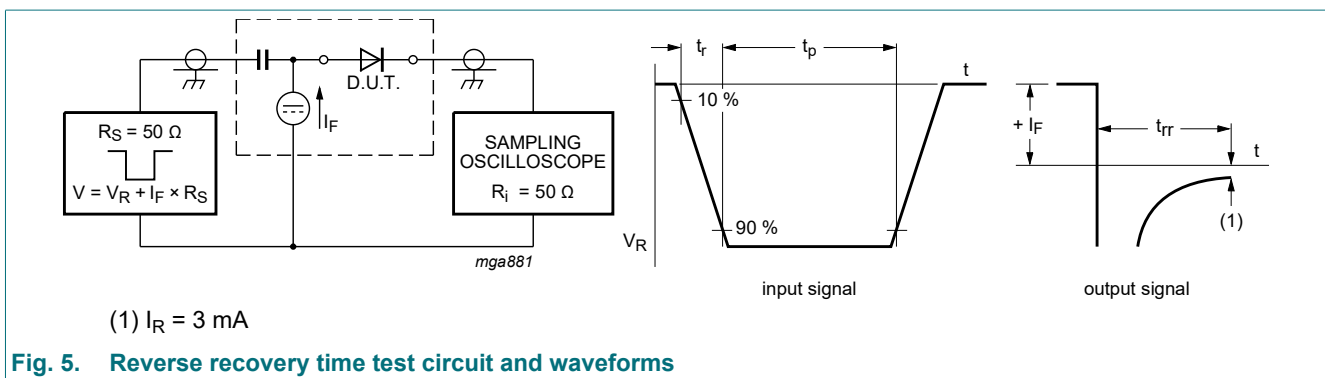
Table 7. Characteristics

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
V _F	forward voltage	I _F = 100 mA; t _p ≤ 300 μs; δ ≤ 0.02; pulsed; T _{amb} = 25 °C	-	-	1	V
		I _F = 200 mA; t _p ≤ 300 μs; δ ≤ 0.02; pulsed; T _{amb} = 25 °C	-	-	1.25	V
I _R	reverse current	V _R = 200 V; T _{amb} = 25 °C	-	-	100	nA
		V _R = 200 V; T _j = 150 °C	-	-	100	μA
C _d	diode capacitance	V _R = 0 V; f = 1 MHz; T _{amb} = 25 °C	-	-	5	pF
t _{rr}	reverse recovery time	I _F = 30 mA; I _R = 30 mA; R _L = 100 Ω; I _{R(meas)} = 3 mA; T _{amb} = 25 °C	-	-	50	ns





11. Test information



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.

12. Package outline

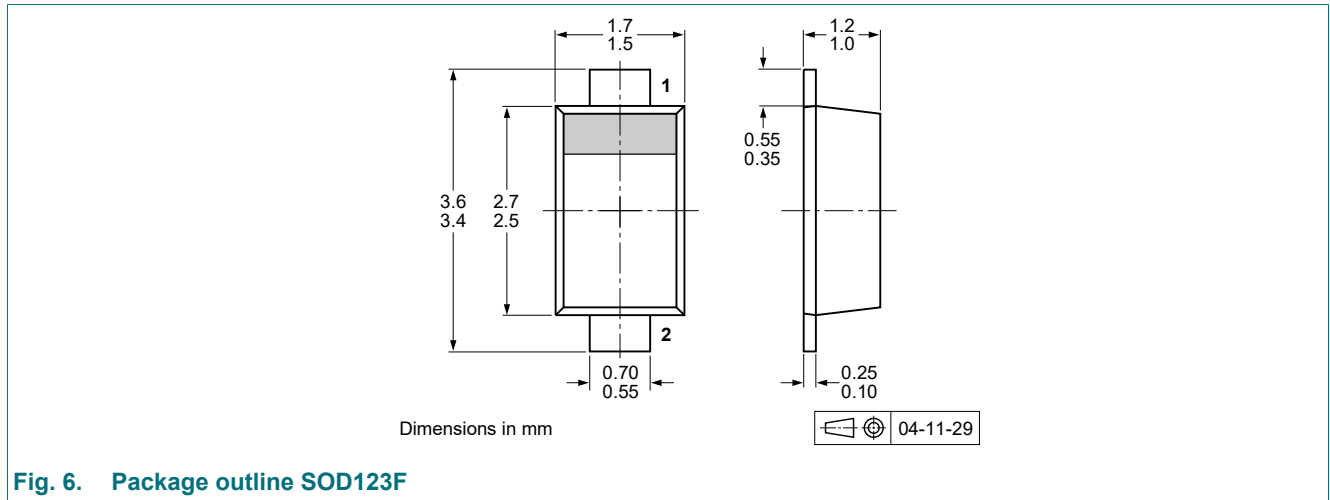


Fig. 6. Package outline SOD123F

13. Soldering

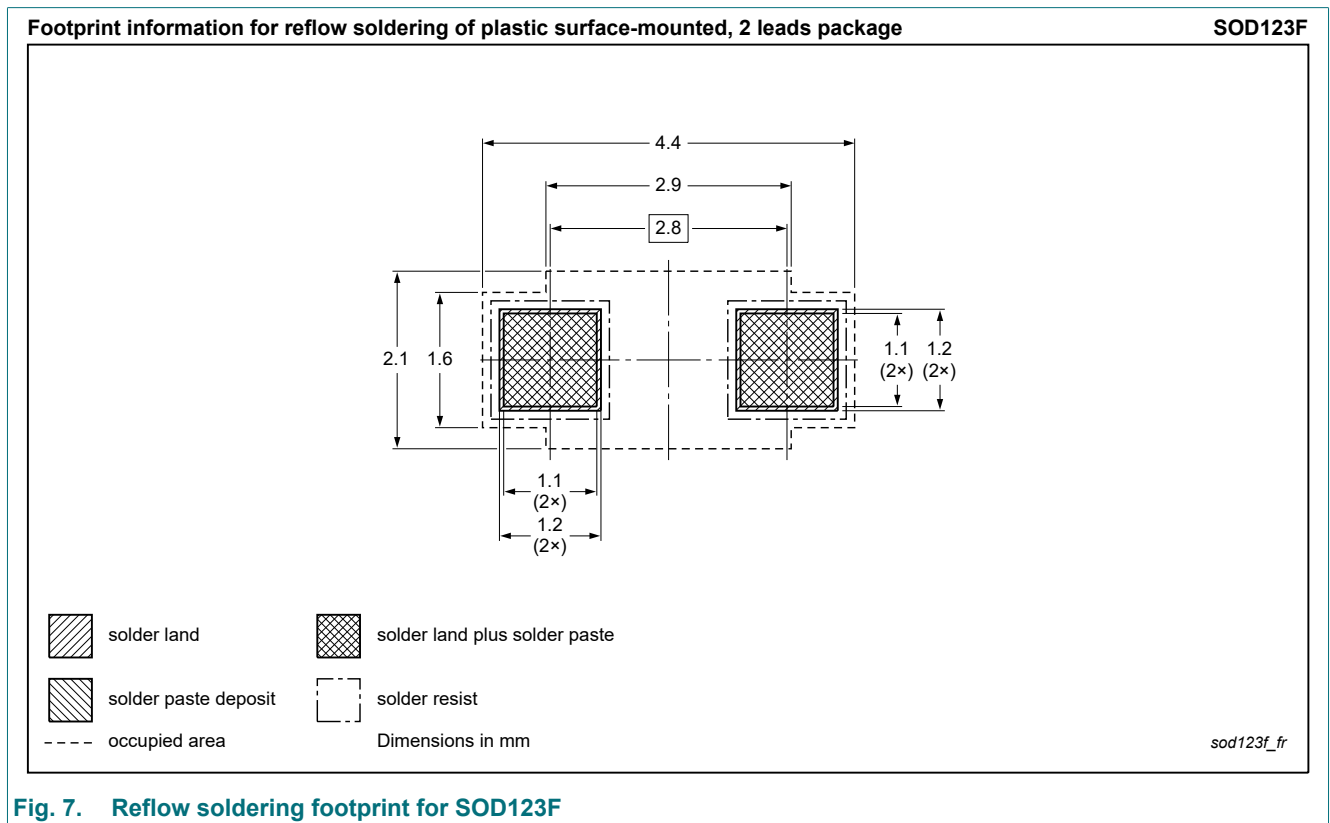
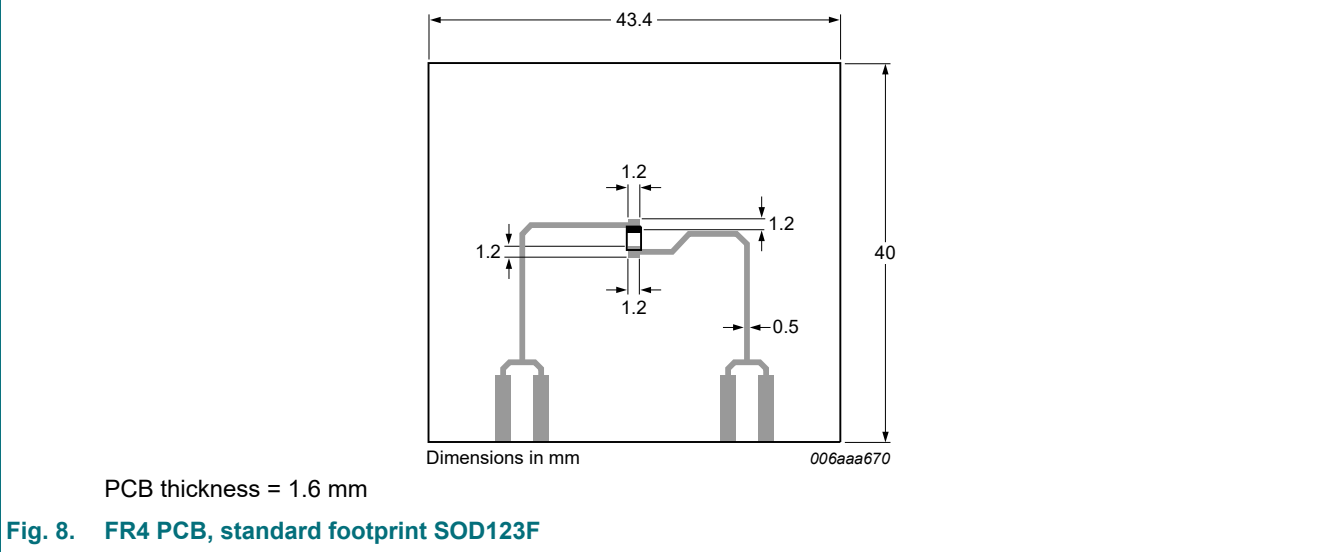


Fig. 7. Reflow soldering footprint for SOD123F

14. Mounting



15. Revision history

Table 8. Revision history

Data sheet ID	Release date	Data sheet status	Change notice	Supersedes
BAS21H-Q v.1	20240417	Product data sheet	-	-

16. Legal information

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.

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