



# BAV70M-Q

## High-speed switching diode

19 February 2025

Product data sheet

### 1. General description

High-speed switching diode, encapsulated in an ultra small SOT883 (SC-101) Surface-Mounted Device (SMD) plastic package.

### 2. Features and benefits

- High switching speed:  $t_{rr} \leq 4$  ns
- Low capacitance:  $C_d \leq 1.5$  pF
- Low leakage current
- Reverse voltage:  $V_R \leq 100$  V
- Ultra small SMD plastic package
- Qualified according to AEC-Q101 and recommended for use in automotive applications

### 3. Applications

- High-speed switching
- General-purpose switching

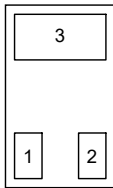
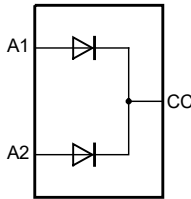
### 4. Quick reference data

Table 1. Quick reference data

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Per diode						
$I_R$	reverse current	$V_R = 80$ V	-	-	0.5	$\mu$ A
$V_R$	reverse voltage		-	-	100	V
$t_{rr}$	reverse recovery time	$I_F = 10$ mA; $I_R = 10$ mA; $I_{R(meas)} = 1$ mA; $R_L = 100$ $\Omega$ ; $T_{amb} = 25$ °C	-	-	4	ns

### 5. Pinning information

Table 2. Pinning information

Pin	Symbol	Description	Simplified outline	Graphic symbol
1	A1	anode (diode 1)	 Transparent top view DFN1006-3 (SOT883)	 aaa-021931
2	A2	anode (diode 2)		
3	CC	common cathode		

6. Ordering information

Table 3. Ordering information

Type number	Package		
	Name	Description	Version
BAV70M-Q	DFN1006-3	plastic, leadless ultra small package; 3 terminals; 0.35 mm pitch; 1 mm x 0.6 mm x 0.48 mm body	SOT883

7. Marking

Table 4. Marking codes

Type number	Marking code
BAV70M-Q	S4

8. 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 <sub>R</sub>	reverse voltage			-	100	V
V <sub>RRM</sub>	repetitive peak reverse voltage			-	100	V
I <sub>F</sub>	forward current	T <sub>S</sub> = 90 °C		-	150	mA
I <sub>FRM</sub>	repetitive peak forward current			-	500	mA
I <sub>FSM</sub>	non-repetitive peak forward current	t <sub>p</sub> = 1 µs; square wave	[1]	-	4	A
		t <sub>p</sub> = 1 ms; square wave	[1]	-	1	A
		t <sub>p</sub> = 1 s; square wave	[1]	-	0.5	A
P <sub>tot</sub>	total power dissipation	T <sub>amb</sub> ≤ 25 °C	[2] [3]	-	250	mW
Per device						
I <sub>F</sub>	forward current	T <sub>S</sub> = 90 °C		-	75	A
T <sub>j</sub>	junction temperature			-	150	°C
T <sub>amb</sub>	ambient temperature			-65	150	°C
T <sub>stg</sub>	storage temperature			-65	150	°C

[1] t<sub>j</sub> = 25 °C prior to surge  
[2] Device mounted on an FR4 Printed-Circuit Board (PCB), single-sided copper, tin-plated and standard footprint.  
[3] Reflow soldering is the only recommended soldering method.

## 9. 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] [2]	-	-	500	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.

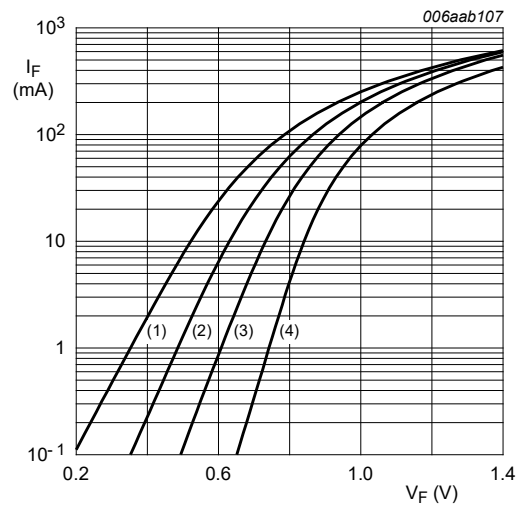
## 10. Characteristics

Table 7. Characteristics

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

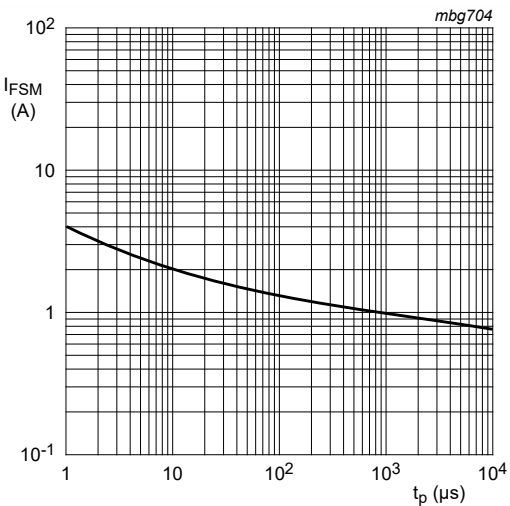
Symbol	Parameter	Conditions		Min	Typ	Max	Unit
Per diode							
$V_F$	forward voltage	$I_F = 1\text{ mA}$	[1]	-	-	715	mV
		$I_F = 10\text{ mA}$	[1]	-	-	855	mV
		$I_F = 50\text{ mA}$	[1]	-	-	1	V
		$I_F = 150\text{ mA}$	[1]	-	-	1.25	V
$I_R$	reverse current	$V_R = 25\text{ V}$		-	-	30	nA
		$V_R = 80\text{ V}$		-	-	0.5	μA
		$V_R = 25\text{ V}; T_j = 150\text{ °C}$		-	-	30	μA
		$V_R = 80\text{ V}; T_j = 150\text{ °C}$		-	-	100	μA
$C_d$	diode capacitance	$V_R = 0\text{ V}; f = 1\text{ MHz}$		-	-	1.5	pF
$t_{rr}$	reverse recovery time	$I_F = 10\text{ mA}; I_R = 10\text{ mA}; I_{R(meas)} = 1\text{ mA}; R_L = 100\text{ }\Omega; T_{amb} = 25\text{ °C}$		-	-	4	ns
$V_{FRM}$	peak forward recovery voltage	$I_F = 10\text{ mA}; t_r = 20\text{ ns}$		-	-	1.75	V

- [1] Pulse test:  $t_p \leq 300\text{ }\mu\text{s}; \delta \leq 0.02$ .



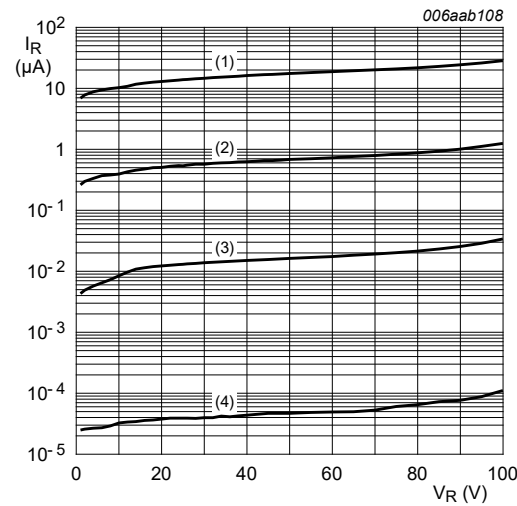
- (1)  $T_j = 150^\circ\text{C}$
- (2)  $T_j = 85^\circ\text{C}$
- (3)  $T_j = 25^\circ\text{C}$
- (4)  $T_j = -40^\circ\text{C}$

Fig. 1. Forward current as a function of forward voltage; typical values



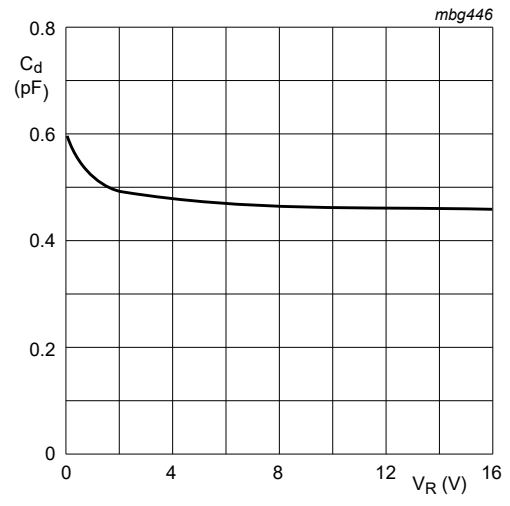
Based on square wave currents.  
 $T_{j(\text{init})} = 25^\circ\text{C}$

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



- (1)  $T_j = 150^\circ\text{C}$
- (2)  $T_j = 85^\circ\text{C}$
- (3)  $T_j = 25^\circ\text{C}$
- (4)  $T_j = -40^\circ\text{C}$

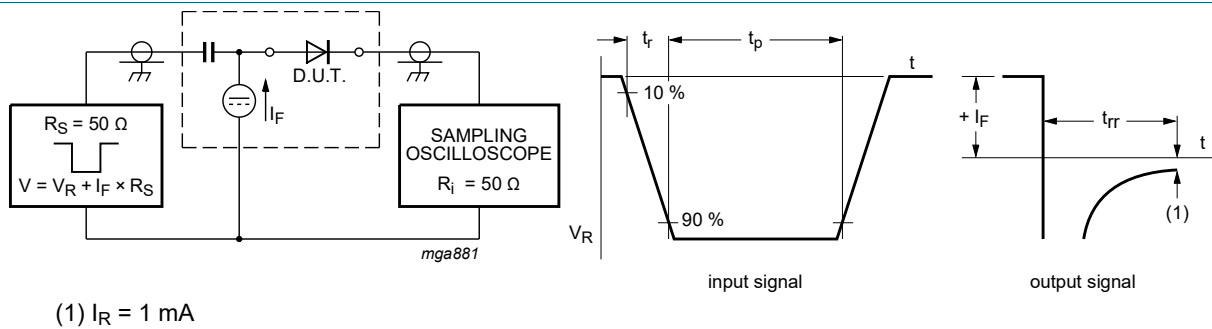
Fig. 3. Reverse current as a function of reverse voltage; typical values



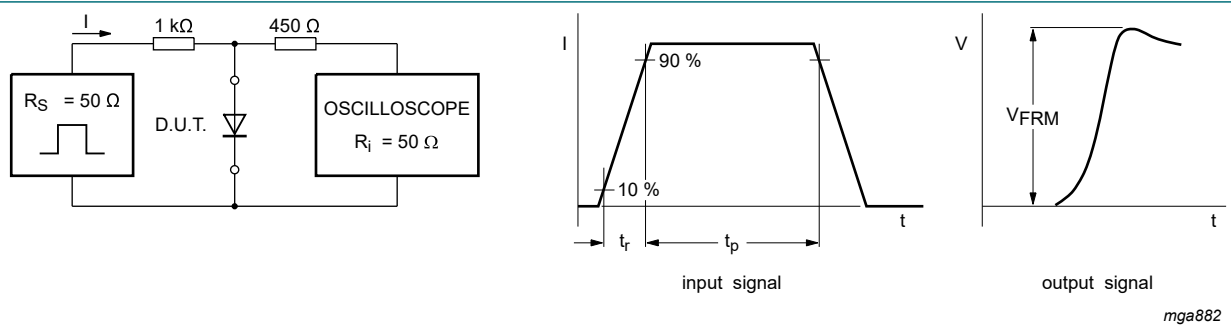
$f = 1\text{ MHz}$ ;  $T_{\text{amb}} = 25^\circ\text{C}$

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

## 11. Test information



**Fig. 5. Reverse recovery time test circuit and waveforms**

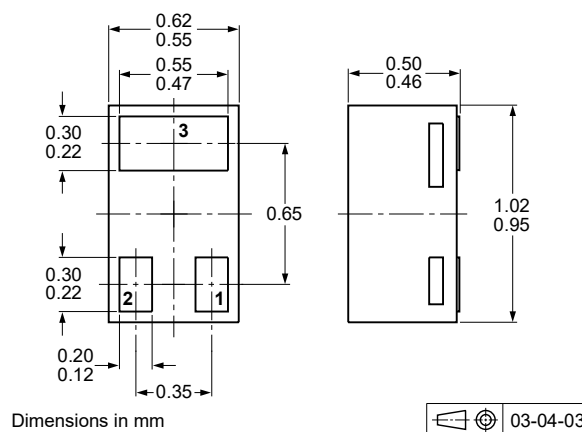


**Fig. 6. Forward recovery voltage test circuit and waveforms**

## Quality information

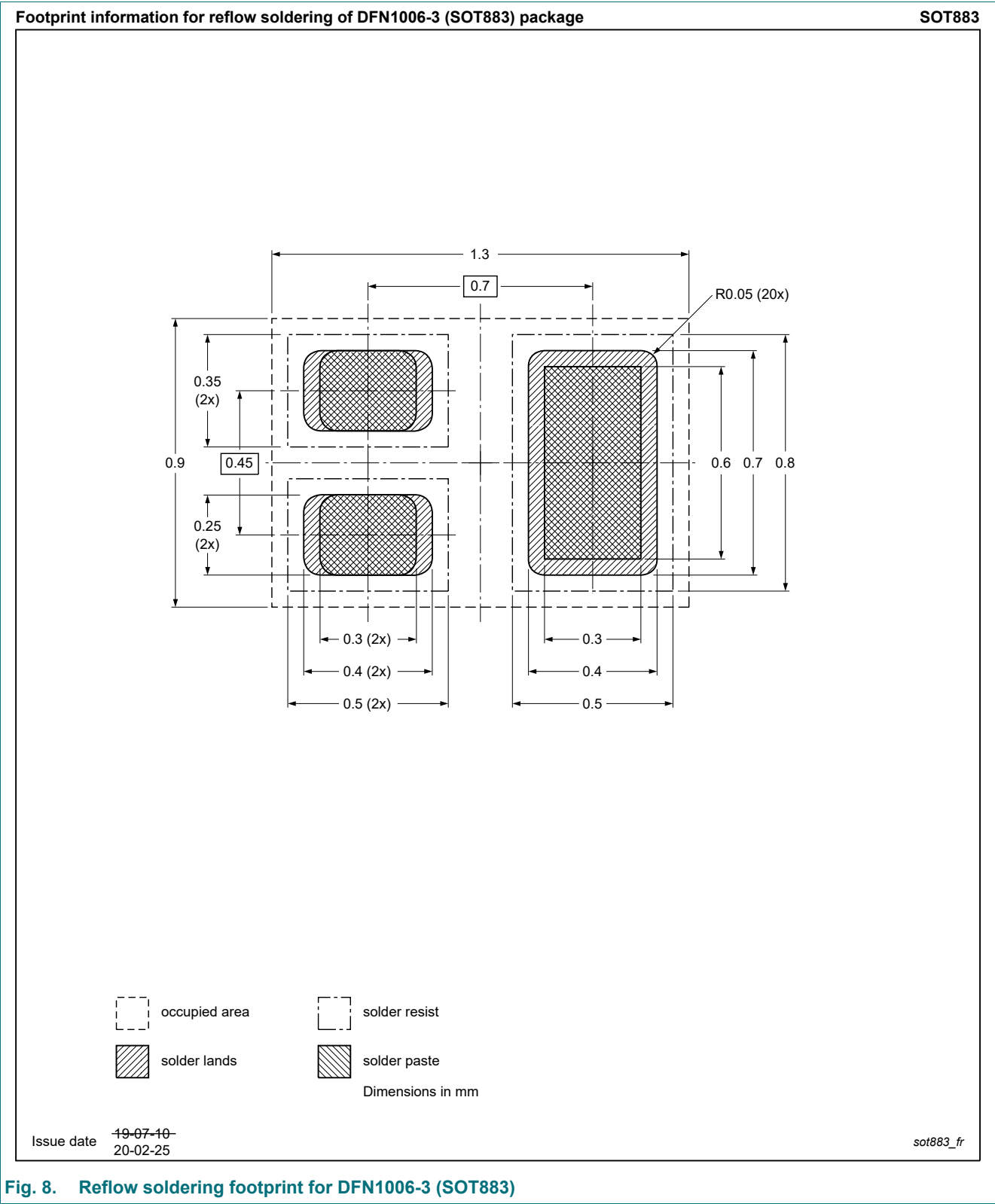
This product has been qualified in accordance with the Automotive Electronics Council (AEC) standard *Q101 - Stress test qualification for discrete semiconductors*, and is suitable for use in automotive applications.

## 12. Package outline



**Fig. 7. Package outline DFN1006-3 (SOT883)**

13. Soldering



## 14. Revision history

Table 8. Revision history

Data sheet ID	Release date	Data sheet status	Change notice	Supersedes
BAV70M-Q v.1	20250219	Product data sheet	-	-

## 15. 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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