



BAV99S-Q

High-speed switching diode

14 July 2026

Product data sheet

1. General description

High-speed switching diode, encapsulated in a very small SOT363-3 (SC-88) 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
- Very small SMD plastic packages
- Qualified according to AEC-Q101 and recommended for use in automotive applications

3. Applications

- High-speed switching
- Reverse polarity protection
- General-purpose switching

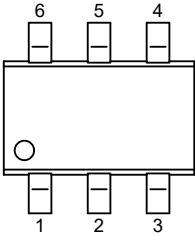
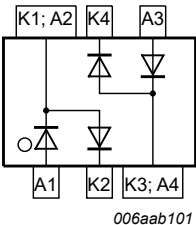
4. Quick reference data

Table 1. Quick reference data

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Per diode						
I_R	reverse current	$V_R = 80$ V; $T_{amb} = 25$ °C	-	-	0.5	μ 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; $R_L = 100$ Ω ; $T_{amb} = 25$ °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 TSSOP6 (SOT363-3)	 006aab101
2	K2	cathode (diode 2)		
3	K3; A4	cathode (diode 3), anode (diode 4)		
4	A3	anode (diode 3)		
5	K4	cathode (diode 4)		
6	K1; A2	cathode (diode 1), anode (diode 2)		

6. Ordering information

Table 3. Ordering information

Type number	Package		
	Name	Description	Version
BAV99S-Q	TSSOP6	Plastic surface-mounted package; 6 leads	SOT363-3

7. Marking

Table 4. Marking codes

Type number	Marking code[1]
BAV99S-Q	K1%

[1] % = placeholder for manufacturing site code

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 _R	reverse voltage			-	100	V
V _{RRM}	repetitive peak reverse voltage			-	100	V
I _F	forward current	single diode loaded	[1]	-	200	mA
I _{FRM}	repetitive peak forward current			-	500	mA
I _{FSM}	non-repetitive peak forward current	t _p = 1 µs; square wave; T _{j(init)} = 25 °C		-	4	A
		t _p = 1 ms; square wave; T _{j(init)} = 25 °C		-	1	A
		t _p = 1 s; square wave; T _{j(init)} = 25 °C		-	0.5	A
P _{tot}	total power dissipation	T _{sp} ≤ 85 °C	[2]	-	250	mW
Per device						
T _j	junction temperature			-	150	°C
T _{amb}	ambient temperature			-65	150	°C
T _{stg}	storage temperature			-65	150	°C

[1] Single diode loaded.
[2] Soldering points at pins 2, 3, 5 and 6.

9. Thermal characteristics

Table 6. Thermal characteristics

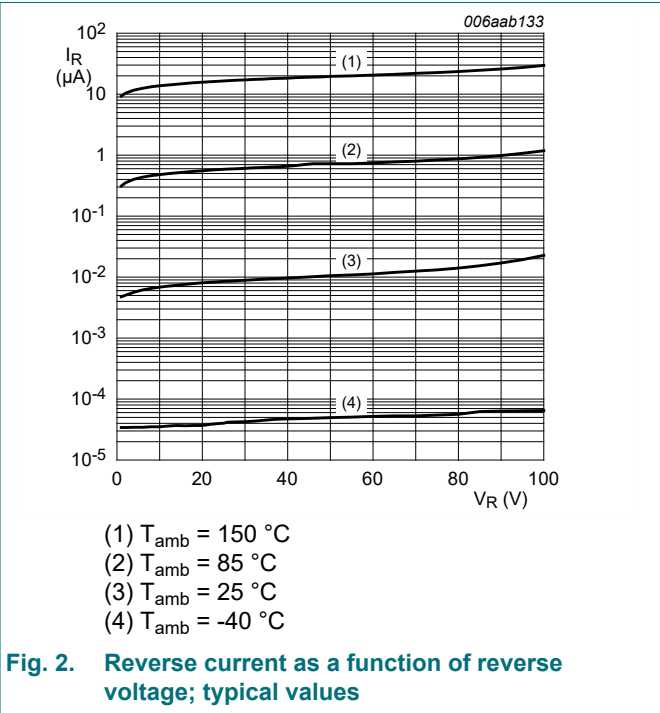
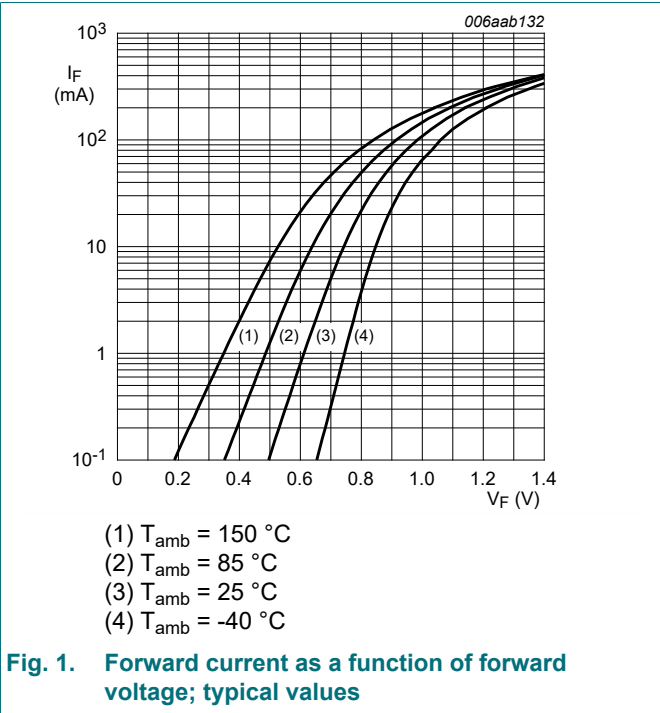
Symbol	Parameter	Conditions		Min	Typ	Max	Unit
R _{th(j-sp)}	thermal resistance from junction to solder point		[1]	-	-	260	K/W

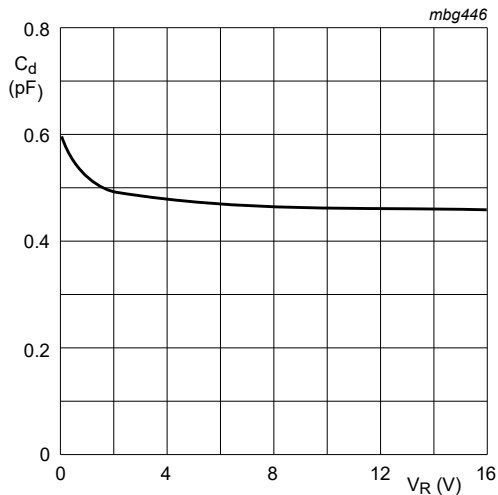
[1] Soldering points at pins 2, 3, 5 and 6.

10. Characteristics

Table 7. Characteristics

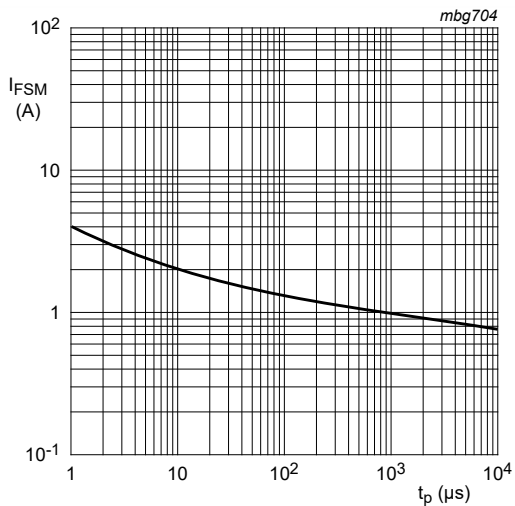
Symbol	Parameter	Conditions		Min	Typ	Max	Unit
Per diode							
V _F	forward voltage	I _F = 1 mA; T _{amb} = 25 °C		-	-	715	mV
		I _F = 10 mA; T _{amb} = 25 °C		-	-	855	mV
		I _F = 50 mA; T _{amb} = 25 °C		-	-	1	V
		I _F = 150 mA; T _{amb} = 25 °C		-	-	1.25	V
I _R	reverse current	V _R = 25 V; T _{amb} = 25 °C		-	-	30	nA
		V _R = 80 V; T _{amb} = 25 °C		-	-	0.5	µA
		V _R = 25 V; T _j = 150 °C		-	-	30	µA
		V _R = 80 V; T _j = 150 °C		-	-	50	µA
C _d	diode capacitance	V _R = 0 V; f = 1 MHz; T _{amb} = 25 °C		-	-	1.5	pF
t _{rr}	reverse recovery time	I _F = 10 mA; I _R = 10 mA; I _{R(meas)} = 1 mA; R _L = 100 Ω; T _{amb} = 25 °C		-	-	4	ns
V _{FRM}	peak forward recovery voltage	I _F = 10 mA; t _r = 20 ns; T _{amb} = 25 °C		-	-	1.75	V





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

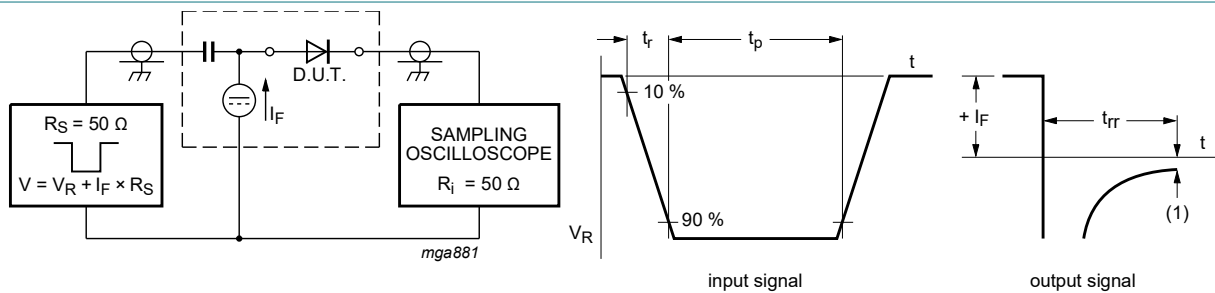
Fig. 3. Diode capacitance as a function of reverse voltage; typical values



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

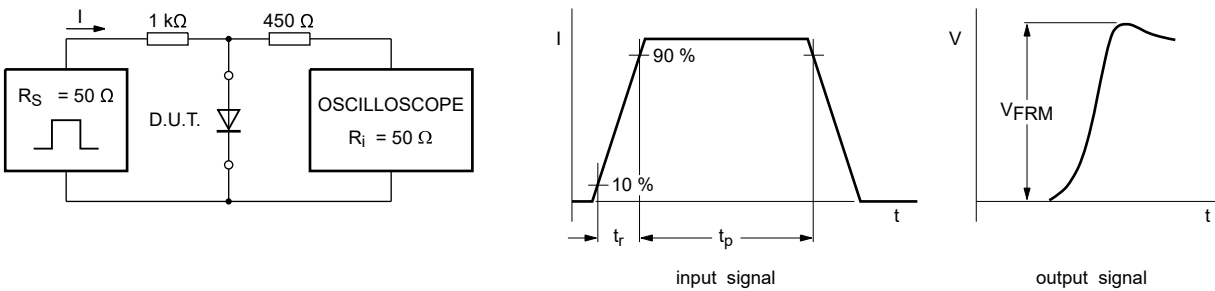
Fig. 4. Non-repetitive peak forward current as a function of pulse duration; typical values

11. Test information



(1) $I_R = 1\text{ mA}$
Input signal: reverse pulse rise time $t_r = 0.6\text{ ns}$; reverse voltage pulse duration $t_p = 100\text{ ns}$; duty cycle $\delta = 0.05$
Oscilloscope: rise time $t_r = 0.35\text{ ns}$

Fig. 5. Reverse recovery time test circuit and waveforms



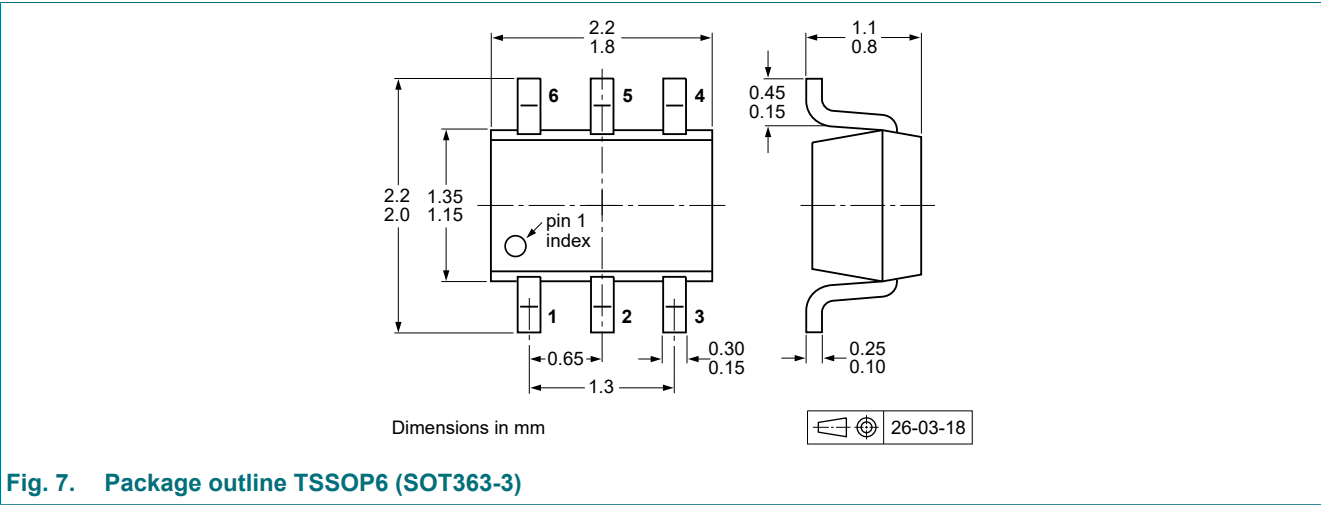
Input signal: forward pulse rise time $t_r = 20\text{ ns}$; forward current pulse duration $t_p \geq 100\text{ ns}$; duty cycle $\delta \leq 0.005$

Fig. 6. Forward recovery voltage test circuit and waveforms

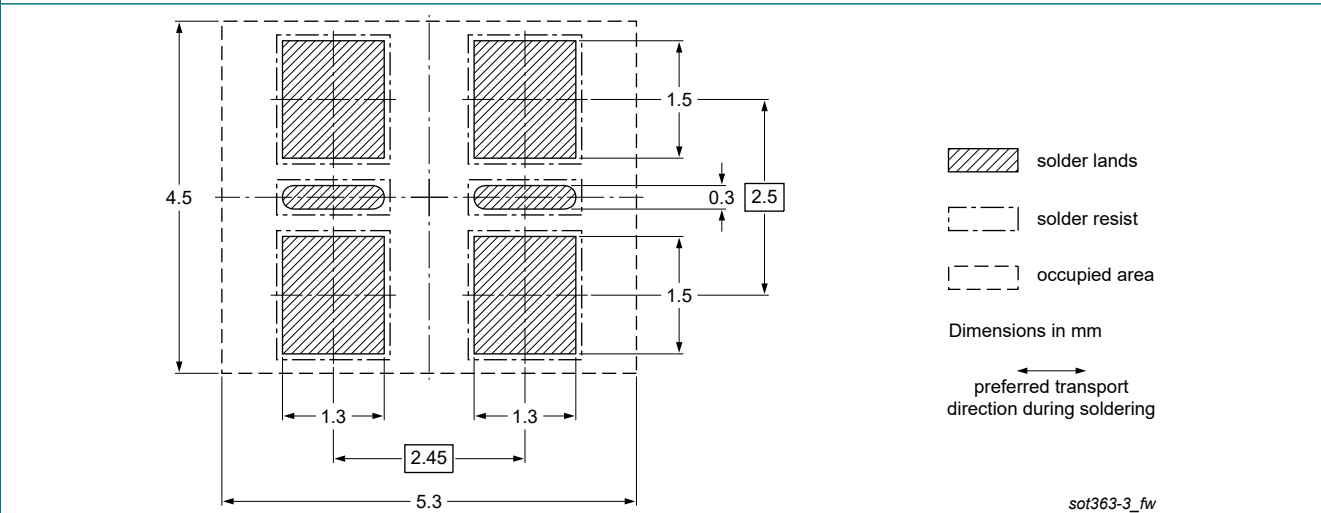
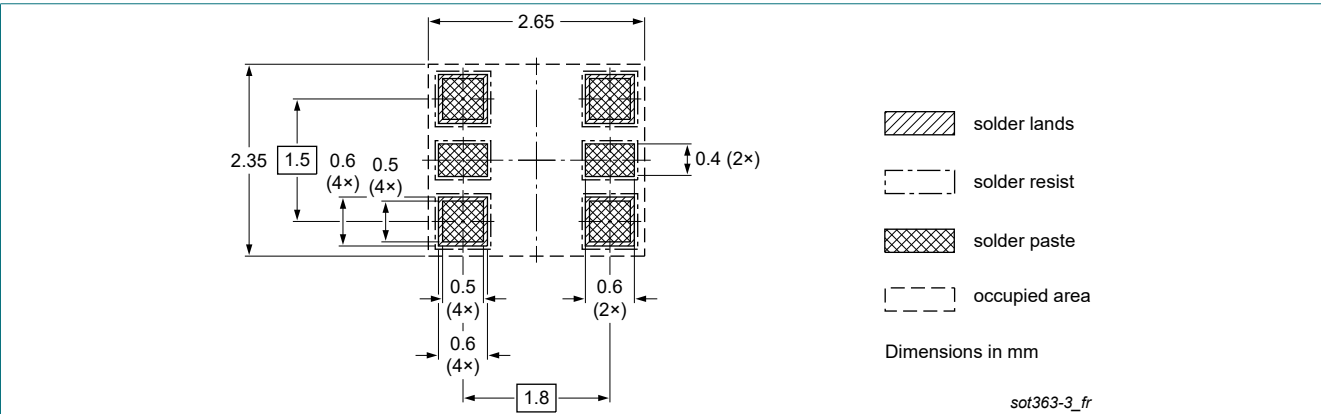
Quality information

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



13. Soldering



14. Revision history

Table 8. Revision history

Data sheet ID	Release date	Data sheet status	Change notice	Supersedes
BAV99S-Q v.2	20260714	Product data sheet	-	BAV99S-Q v.1
Modification:	• Package changed from SOT363 to SOT363-3			
BAV99S-Q v.1	20220202	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.

- [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 <https://www.nexperia.com>.

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