



BAV756S

High-speed switching diode

28 October 2022

Product data sheet

1. General description

High-speed switching diode, encapsulated in a very small SOT363 (SC-88) Surface-Mounted Device (SMD) plastic package.

2. Features and benefits

- High switching speed: $t_{rr} \leq 4$ ns
- Low capacitance: $C_d \leq 2$ pF
- Low leakage current
- Reverse voltage: $V_R \leq 90$ V
- Very small SMD plastic packages
- AEC-Q101 qualified

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; $T_{amb} = 25$ °C	-	-	0.5	μ A
V_R	reverse voltage		-	-	90	V
t_{rr}	reverse recovery time	$I_F = 10$ mA; $I_R = 10$ mA; $R_L = 100$ Ω ; $I_{R(meas)} = 1$ mA; $T_{amb} = 25$ °C	-	-	4	ns

5. Pinning information

Table 2. Pinning information

Pin	Symbol	Description	Simplified outline	Graphic symbol
1	A1	anode (diode 1)	<p>TSSOP6 (SOT363)</p>	<p>006aab103</p>
2	K2	cathode (diode 2)		
3	A2; A3	common anode (diode 2 and diode 3)		
4	K3	cathode (diode 3)		
5	A4	anode (diode 4)		
6	K1; K4	common cathode (diode 1 and diode 4)		

6. Ordering information

Table 3. Ordering information

Type number	Package		
	Name	Description	Version
BAV756S	TSSOP6	plastic, surface-mounted package; 6 leads; 0.65 mm pitch; 2.1 mm x 1.25 mm x 0.95 mm body	SOT363

7. Marking

Table 4. Marking codes

Type number	Marking code[1]
BAV756S	A7%

[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_{RRM}	repetitive peak reverse voltage		-	90	V
V_R	reverse voltage		-	90	V
I_F	forward current	$T_s = 60\text{ °C}$	-	250	mA
I_{FSM}	non-repetitive peak forward current	$t_p = 1\ \mu\text{s}$; square wave; $T_{j(\text{init})} = 25\text{ °C}$	-	4	A
		$t_p = 1\ \text{ms}$; square wave; $T_{j(\text{init})} = 25\text{ °C}$	-	1	A
		$t_p = 1\ \text{s}$; square wave; $T_{j(\text{init})} = 25\text{ °C}$	-	0.5	A
I_{FRM}	repetitive peak forward current		-	500	mA
P_{tot}	total power dissipation	$T_s = 60\text{ °C}$	[1]	350	mW
Per device					
I_F	forward current	$T_s = 60\text{ °C}$	-	100	mA
T_j	junction temperature		-	150	°C
T_{amb}	ambient temperature		-65	150	°C
T_{stg}	storage temperature		-65	150	°C

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

9. Thermal characteristics

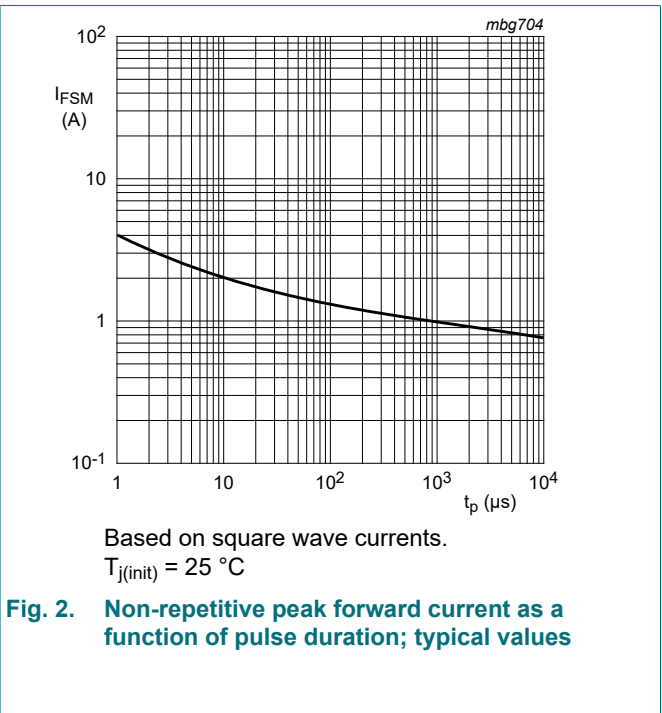
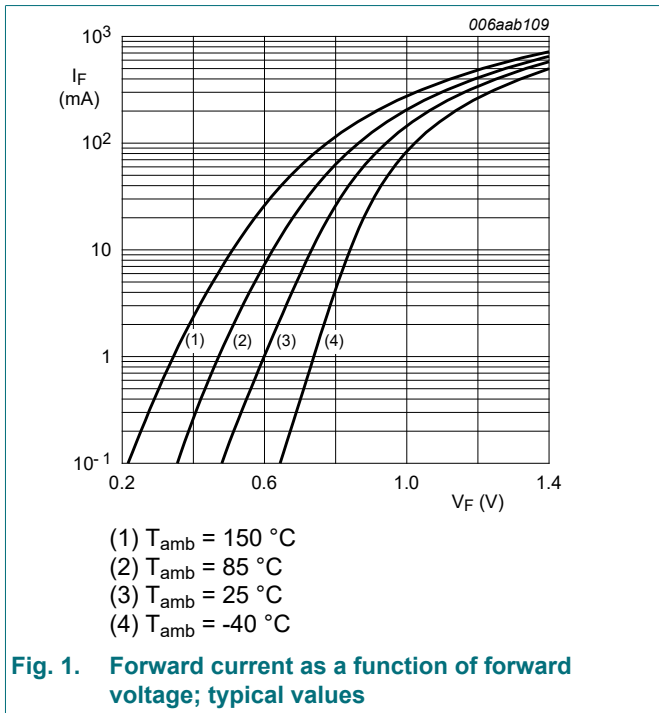
Table 6. Thermal characteristics

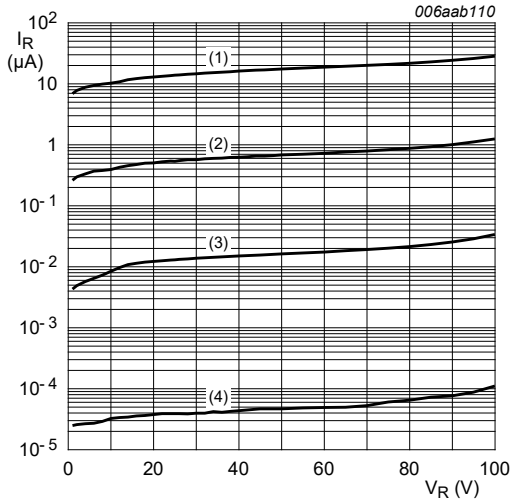
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Per diode						
$R_{\text{th}(j\text{-sp})}$	thermal resistance from junction to solder point		-	-	255	K/W

10. Characteristics

Table 7. Characteristics

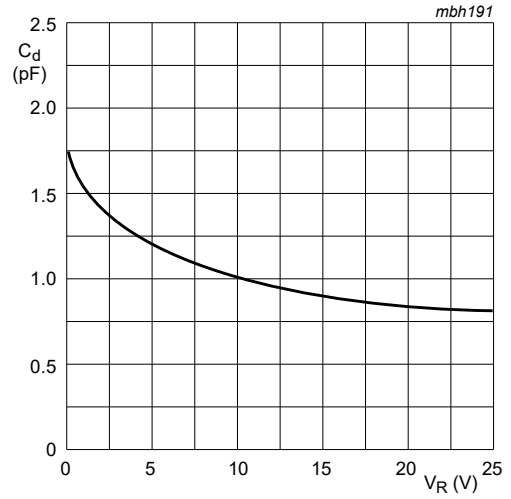
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Per diode						
V_F	forward voltage	$I_F = 1 \text{ mA}; t_p \leq 300 \text{ } \mu\text{s}; \delta \leq 0.02;$ pulsed; $T_{\text{amb}} = 25 \text{ } ^\circ\text{C}$	-	-	715	mV
		$I_F = 10 \text{ mA}; t_p \leq 300 \text{ } \mu\text{s}; \delta \leq 0.02;$ pulsed; $T_{\text{amb}} = 25 \text{ } ^\circ\text{C}$	-	-	855	mV
		$I_F = 50 \text{ mA}; t_p \leq 300 \text{ } \mu\text{s}; \delta \leq 0.02;$ pulsed; $T_{\text{amb}} = 25 \text{ } ^\circ\text{C}$	-	-	1	V
		$I_F = 150 \text{ mA}; t_p \leq 300 \text{ } \mu\text{s}; \delta \leq 0.02;$ pulsed; $T_{\text{amb}} = 25 \text{ } ^\circ\text{C}$	-	-	1.25	V
I_R	reverse current	$V_R = 25 \text{ V}; T_{\text{amb}} = 25 \text{ } ^\circ\text{C}$	-	-	30	nA
		$V_R = 80 \text{ V}; T_{\text{amb}} = 25 \text{ } ^\circ\text{C}$	-	-	0.5	μA
		$V_R = 25 \text{ V}; T_j = 150 \text{ } ^\circ\text{C}$	-	-	30	μA
		$V_R = 80 \text{ V}; T_j = 150 \text{ } ^\circ\text{C}$	-	-	150	μA
C_d	diode capacitance	$V_R = 0 \text{ V}; f = 1 \text{ MHz}; T_{\text{amb}} = 25 \text{ } ^\circ\text{C}$	-	-	2	pF
t_{rr}	reverse recovery time	$I_F = 10 \text{ mA}; I_R = 10 \text{ mA}; R_L = 100 \text{ } \Omega;$ $I_{R(\text{meas})} = 1 \text{ mA}; T_{\text{amb}} = 25 \text{ } ^\circ\text{C}$	-	-	4	ns
V_{FRM}	peak forward recovery voltage	$I_F = 10 \text{ mA}; t_r = 20 \text{ ns}; T_{\text{amb}} = 25 \text{ } ^\circ\text{C}$	-	-	1.75	V





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

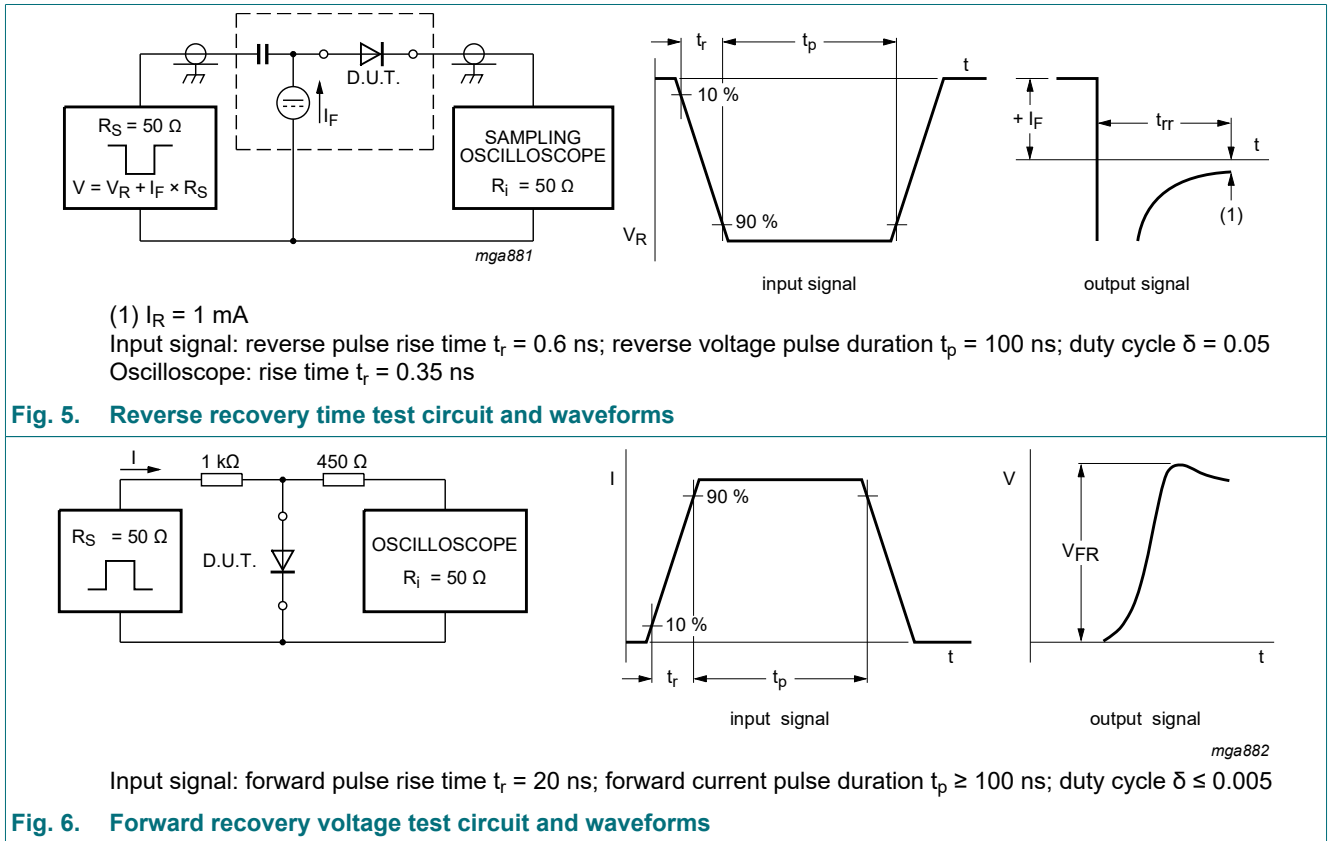
Fig. 3. Reverse current as a function of reverse voltage; typical values



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

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

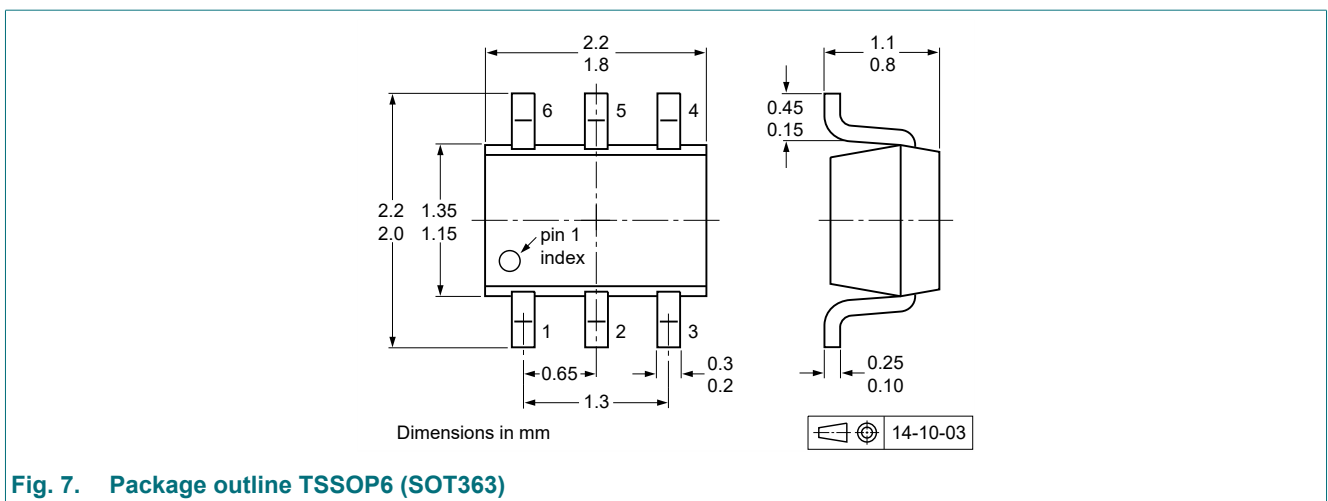
11. Test information



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



13. Soldering

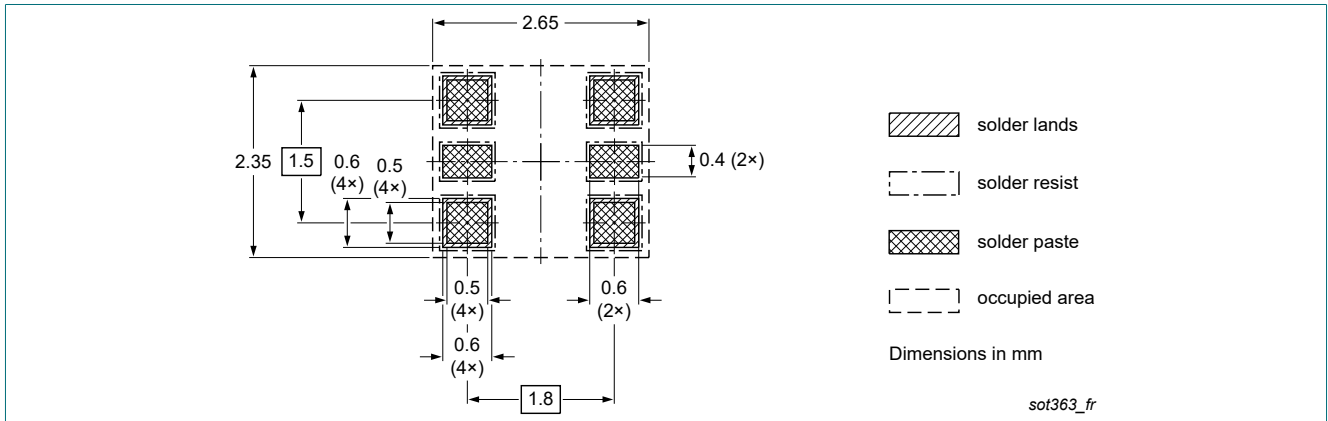


Fig. 8. Reflow soldering footprint for TSSOP6 (SOT363)

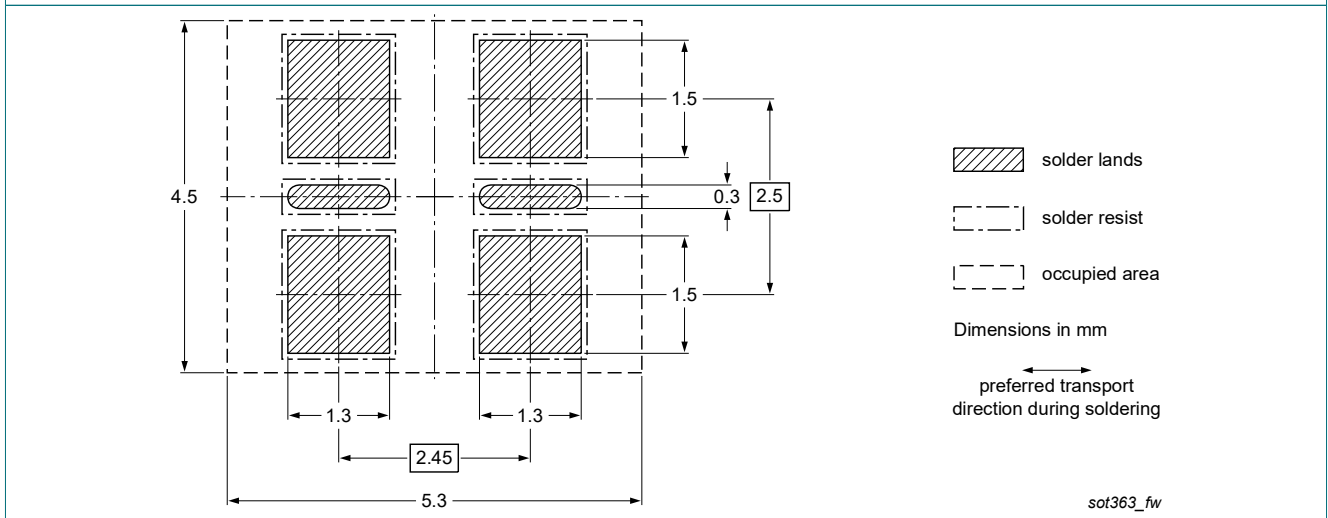


Fig. 9. Wave soldering footprint for TSSOP6 (SOT363)

14. Revision history

Table 8. Revision history

Data sheet ID	Release date	Data sheet status	Change notice	Supersedes
BAV756S v.7	20221028	Product data sheet	-	BAV756S_BAW56_SERv.6
Modification:	<ul style="list-style-type: none"> Family data sheet reduced to single type data sheet. Packing information removed. 			
BAV756S_BAW56_SERv.6	20150318	Product data sheet	-	BAV756S_BAW56_SER_5
BAV756S_BAW56_SER_5	20071126	Product data sheet	-	BAV756S_2 BAW56_4 BAW56S_2 BAW56T_2 BAW56W_4
BAV756S_2	19971021	Product specification	-	BAV756S_1
BAW56_4	20030325	Product specification	-	BAW56_3
BAW56S_2	19971021	Product specification	-	BAW56S_1
BAW56T_2	19971219	Product specification	-	-
BAW56W_4	19990511	Product specification	-	BAW56W_3

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

1. General description.....	1
2. Features and benefits.....	1
3. Applications.....	1
4. Quick reference data.....	1
5. Pinning information.....	1
6. Ordering information.....	2
7. Marking.....	2
8. Limiting values.....	2
9. Thermal characteristics.....	2
10. Characteristics.....	3
11. Test information.....	5
12. Package outline.....	5
13. Soldering.....	6
14. Revision history.....	7
15. Legal information.....	8

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Date of release: 28 October 2022

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