



BAS116DY-Q

Low-leakage dual switching diode

19 April 2023

Product data sheet

1. General description

Epitaxial, medium-speed switching, electrically isolated dual diode in an ultra small SOT363 Surface-Mounted Device (SMD) plastic package.

2. Features and benefits

- Low leakage current: maximum 5 nA
- Switching time: typical 0.8 μ s
- Continuous reverse voltage: maximum 75 V
- Repetitive peak reverse voltage: maximum 85 V
- Repetitive peak forward current: maximum 1 A
- Qualified according to AEC-Q101 and recommended for use in automotive applications

3. Applications

- Low-leakage current applications in surface mounted circuits

4. Quick reference data

Table 1. Quick reference data

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Per diode						
V_R	reverse voltage	$T_j = 25\text{ }^\circ\text{C}$	-	-	75	V
I_R	reverse current	$V_R = 75\text{ V}$; pulsed; $T_j = 25\text{ }^\circ\text{C}$	-	-	5	nA

5. Pinning information

Table 2. Pinning information

Pin	Symbol	Description	Simplified outline	Graphic symbol
1	A1	anode (diode 1)	<p>TSSOP6 (SOT363)</p>	<p>aaa-033905</p>
2	n.c.	not connected		
3	K2	cathode (diode 2)		
4	A2	anode (diode 2)		
5	n.c.	not connected		
6	K1	cathode (diode 1)		

6. Ordering information

Table 3. Ordering information

Type number	Package		
	Name	Description	Version
BAS116DY-Q	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]
BAS116DY-Q	2H%

[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	$T_j = 25\text{ °C}$		-	85	V
V_R	reverse voltage			-	75	V
I_F	forward current	$T_{amb} = 25\text{ °C}$	[1]	-	200	mA
I_{FSM}	non-repetitive peak forward current	$t_p = 50\text{ }\mu\text{s}$; square wave; $T_{j(\text{init})} = 25\text{ °C}$		-	10	A
		$t_p = 10\text{ ms}$; square wave; $T_{j(\text{init})} = 25\text{ °C}$		-	1.5	A
I_{FRM}	repetitive peak forward current	$t_p \leq 1\text{ ms}$; $\delta \leq 0.25$; $T_j = 25\text{ °C}$		-	1	A
P_{tot}	total power dissipation	$T_{amb} \leq 25\text{ °C}$	[1]	-	270	mW
Per device						
T_j	junction temperature			-	150	°C
T_{amb}	ambient temperature			-55	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

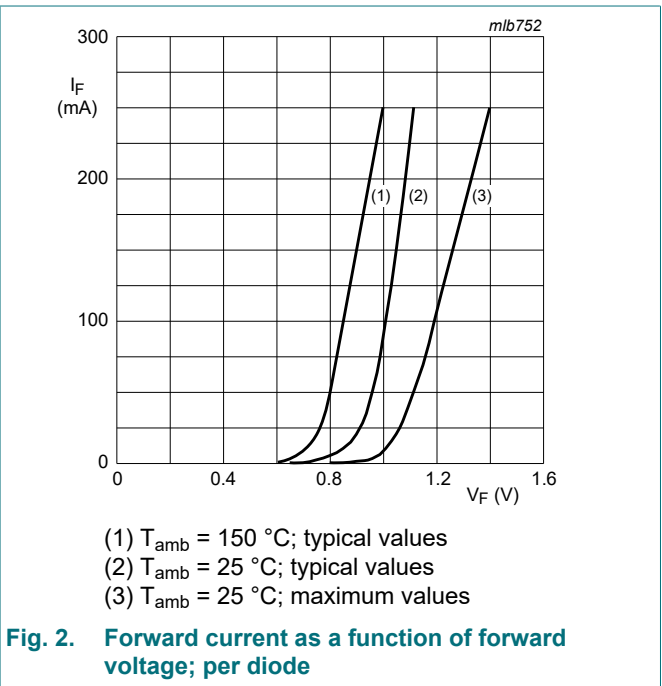
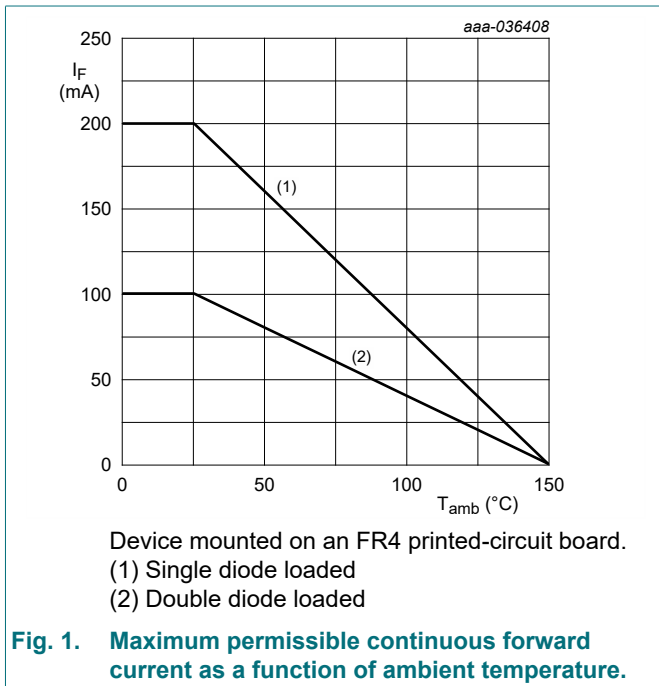
Symbol	Parameter	Conditions		Min	Typ	Max	Unit
$R_{th(j-a)}$	thermal resistance from junction to ambient	in free air	[1]	-	-	475	K/W

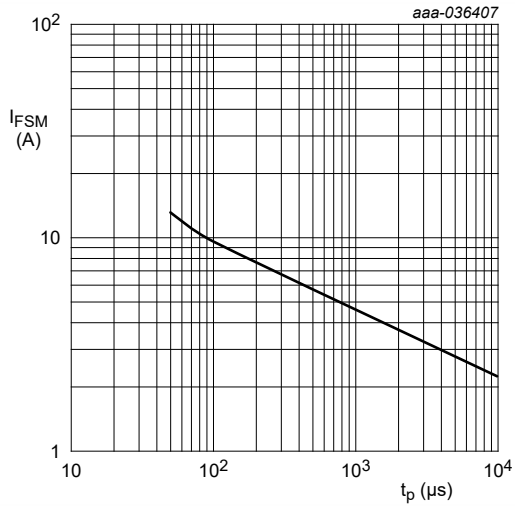
[1] Device mounted on an FR4 PCB, single-sided copper, tin-plated and standard footprint.

10. Characteristics

Table 7. Characteristics

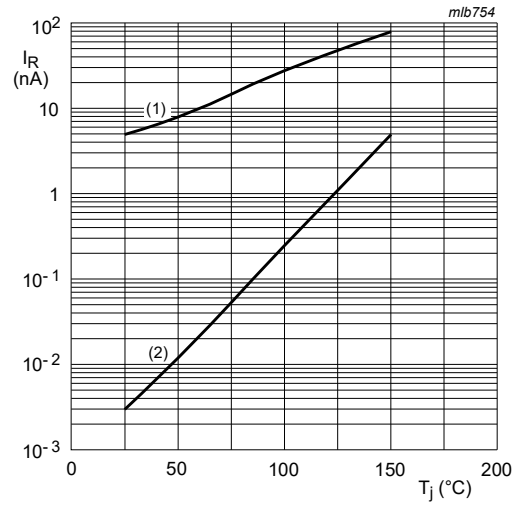
Symbol	Parameter	Conditions		Min	Typ	Max	Unit
Per diode							
V_F	forward voltage	$I_F = 1 \text{ mA}; T_j = 25 \text{ }^\circ\text{C}$		-	-	0.9	V
		$I_F = 10 \text{ mA}; T_j = 25 \text{ }^\circ\text{C}$		-	-	1	V
		$I_F = 50 \text{ mA}; T_j = 25 \text{ }^\circ\text{C}$		-	-	1.1	V
		$I_F = 150 \text{ mA}; T_j = 25 \text{ }^\circ\text{C}$		-	-	1.25	V
I_R	reverse current	$V_R = 75 \text{ V}; \text{pulsed}; T_j = 25 \text{ }^\circ\text{C}$		-	-	5	nA
		$V_R = 75 \text{ V}; \text{pulsed}; T_j = 150 \text{ }^\circ\text{C}$		-	3	80	nA
C_d	diode capacitance	$V_R = 0 \text{ V}; f = 1 \text{ MHz}; T_j = 25 \text{ }^\circ\text{C}$		-	2	-	pF
t_{rr}	reverse recovery time	$I_F = 10 \text{ mA}; I_R = 10 \text{ mA}; R_L = 100 \text{ }^\Omega;$ $I_{R(\text{meas})} = 1 \text{ mA}; T_j = 25 \text{ }^\circ\text{C}$		-	0.8	3	μs





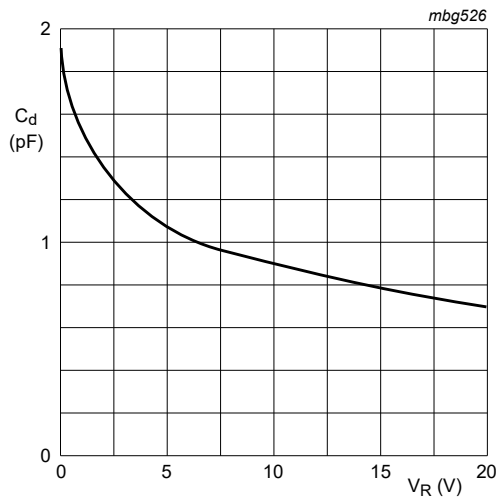
Based on square wave currents.
 $T_{j(\text{init})} = 25\text{ }^\circ\text{C}$

Fig. 3. Non-repetitive peak forward current as a function of pulse duration; typical values



$V_R = 75\text{ V}$
 (1) Maximum values
 (2) Typical values

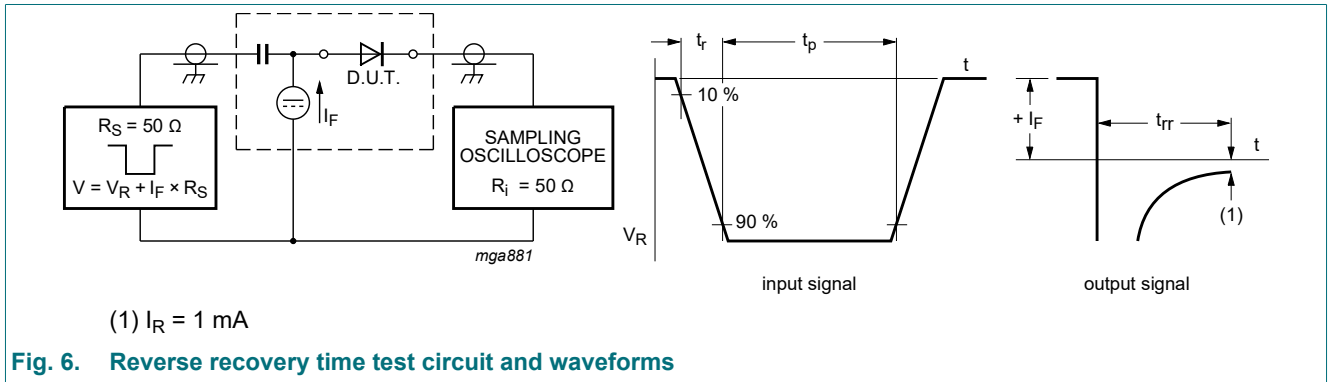
Fig. 4. Reverse current as a function of junction temperature



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

Fig. 5. Diode capacitance as a function of reverse voltage; typical values

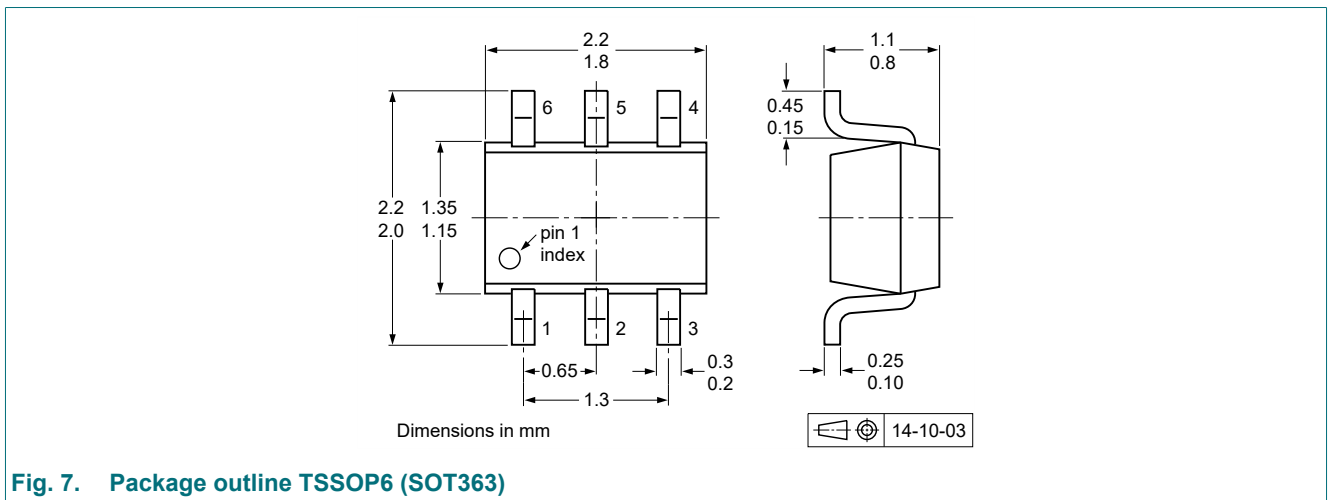
11. Test information



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

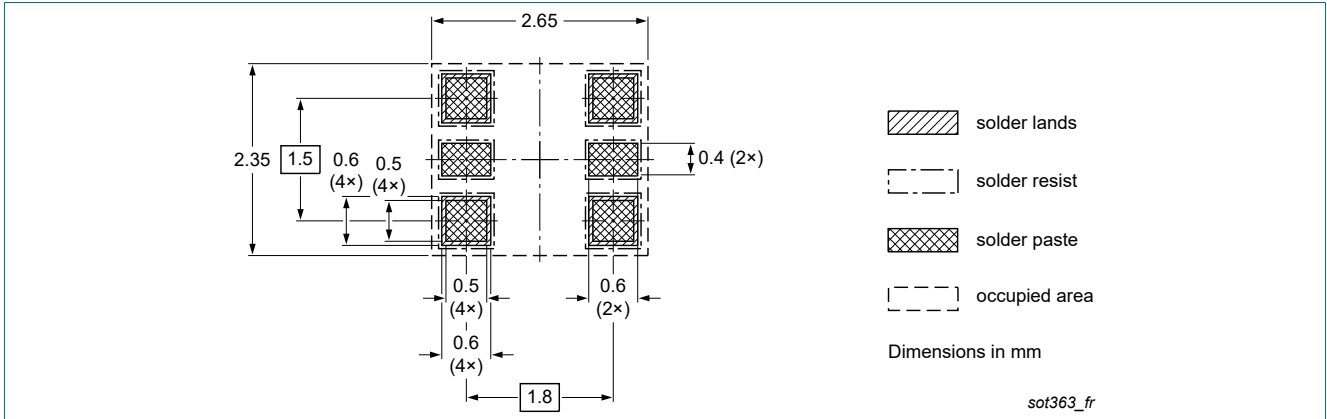


Fig. 8. Reflow soldering footprint for TSSOP6 (SOT363)

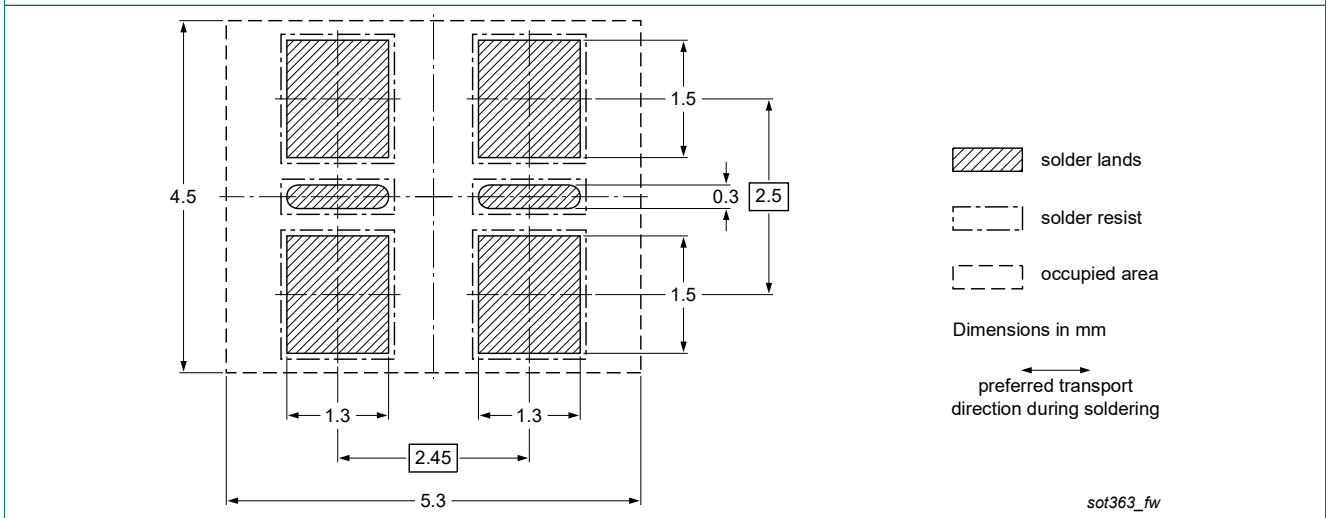


Fig. 9. Wave soldering footprint for TSSOP6 (SOT363)

14. Revision history

Table 8. Revision history

Data sheet ID	Release date	Data sheet status	Change notice	Supersedes
BAS116DY-Q v.1	20230419	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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