BAS116DY

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 µs
- Continuous reverse voltage: maximum 75 V
- Repetitive peak reverse voltage: maximum 85 V
- Repetitive peak forward current: maximum 1 A

3. Applications

- Low-leakage current applications in surface mounted circuits

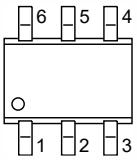
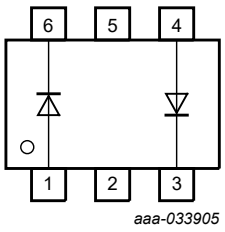
4. Quick reference data

Table 1. Quick reference data

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
Per diode							
V_R	reverse voltage	T_j = 25 °C		-	-	75	V
I_R	reverse current	V_R = 75 V; pulsed; T_j = 25 °C		-	-	5	nA

5. Pinning information

Table 2. Pinning information

Pin	Symbol	Description	Simplified outline	Graphic symbol
1	A1	anode (diode 1)	 TSSOP6 (SOT363)	 aaa-033905
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	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	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 °C		-	85	V
V_R	reverse voltage			-	75	V
I_F	forward current	T_{amb} = 25 °C	[1]	-	200	mA
I_{FSM}	non-repetitive peak forward current	t_p = 50 µs; square wave; $T_{j(init)}$ = 25 °C		-	10	A
		t_p = 10 ms; square wave; $T_{j(init)}$ = 25 °C		-	1.5	A
I_{FRM}	repetitive peak forward current	$t_p \leq$ 1 ms; $\delta \leq$ 0.25; T_j = 25 °C		-	1	A
P_{tot}	total power dissipation	$T_{amb} \leq$ 25 °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

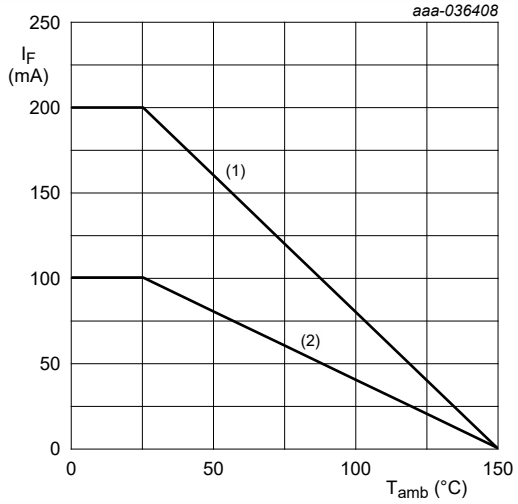
Symbol	Parameter	Conditions		Min	Typ	Max	Unit
$R_{th(j-a)}$	thermal resistance from junction to ambient	in free air	[1]	-	-	475	K/W

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

10. Characteristics

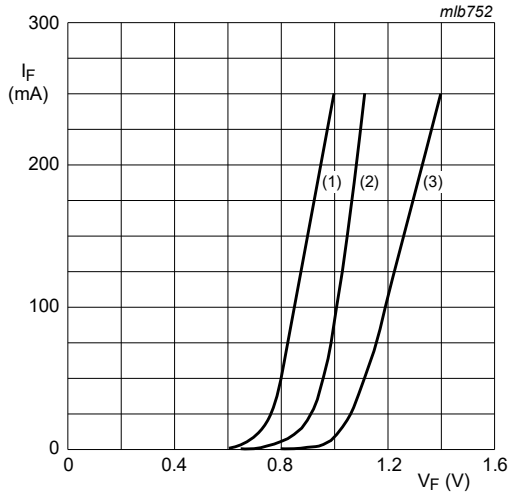
Table 7. Characteristics

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



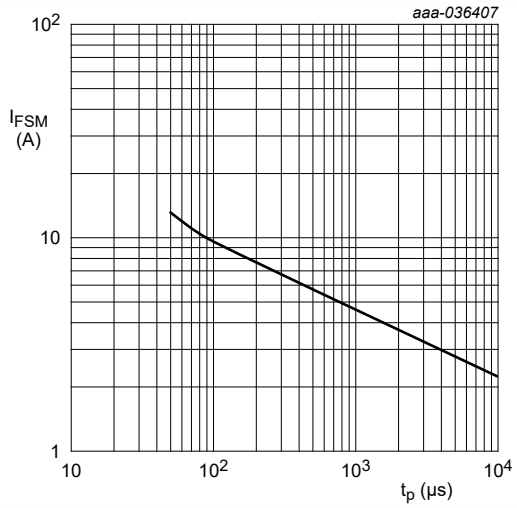
Device mounted on an FR4 printed-circuit board.
(1) Single diode loaded
(2) Double diode loaded

Fig. 1. Maximum permissible continuous forward current as a function of ambient temperature.



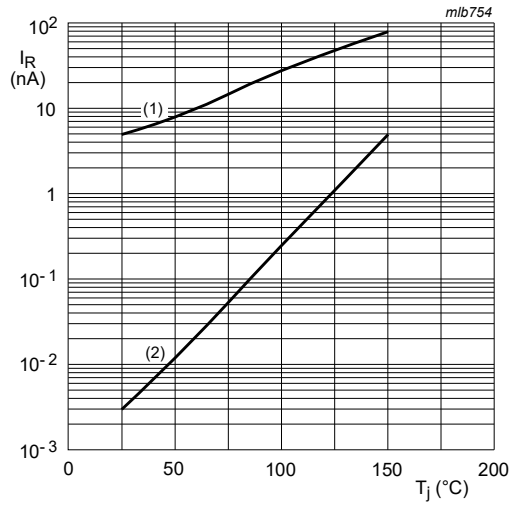
(1) T_{amb} = 150 °C; typical values
(2) T_{amb} = 25 °C; typical values
(3) T_{amb} = 25 °C; maximum values

Fig. 2. Forward current as a function of forward voltage; per diode



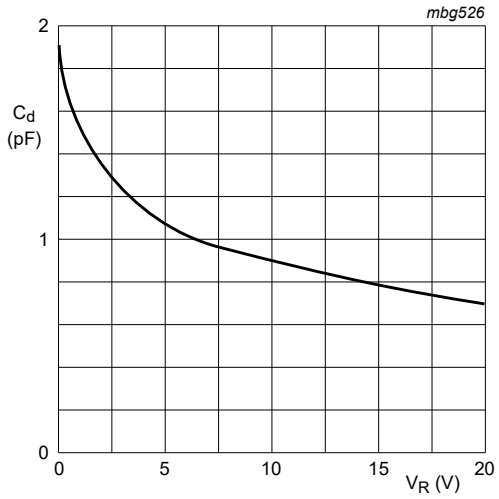
Based on square wave currents.
$T_{j(init)}$ = 25 °C

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



V_R = 75 V
(1) Maximum values
(2) Typical values

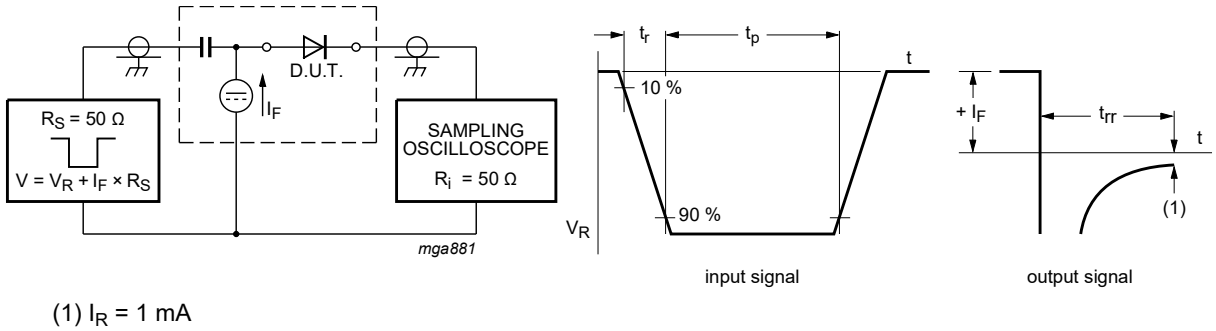
Fig. 4. Reverse current as a function of junction temperature



f = 1 MHz; T_{amb} = 25 °C

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

11. Test information



(1) I_R = 1 mA

Fig. 6. Reverse recovery time test circuit and waveforms

12. Package outline

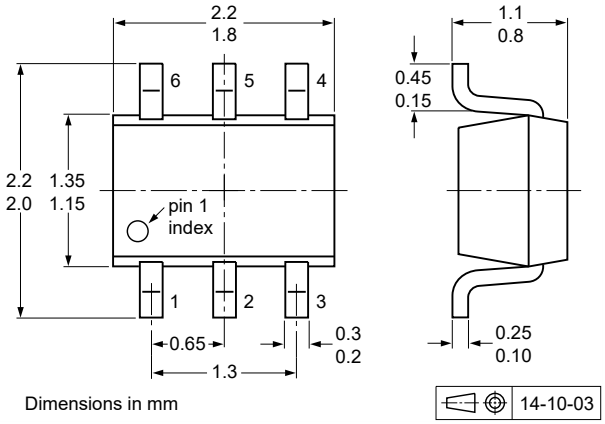


Fig. 7. Package outline TSSOP6 (SOT363)

13. Soldering

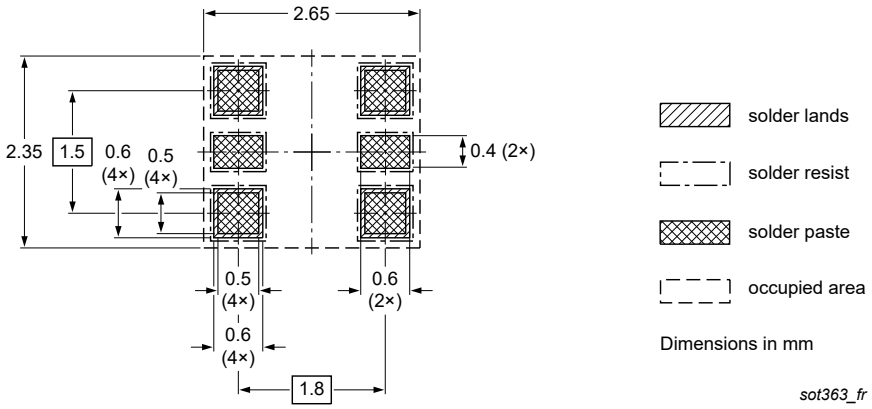


Fig. 8. Reflow soldering footprint for TSSOP6 (SOT363)

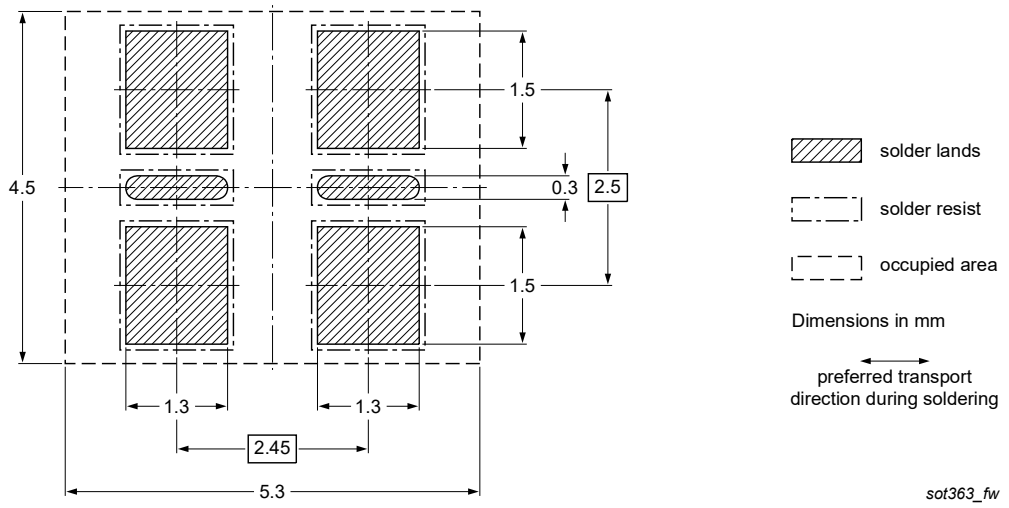


Fig. 9. Wave soldering footprint for TSSOP6 (SOT363)

14. Revision history

Table 8. Revision history

Data sheet ID	Release date	Data sheet status	Change notice	Supersedes
BAS116DY 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.

[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".
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