



BAS16DY-Q

High-speed dual switching diode

20 April 2023

Product data sheet

1. General description

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

2. Features and benefits

- High switching speed: $t_{rr} \leq 4$ ns
- Low capacitance
- Low leakage current
- Reverse voltage: $V_R \leq 100$ V
- Repetitive peak reverse voltage: $V_{RRM} \leq 100$ V
- 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						
V_R	reverse voltage		-	-	100	V
I_R	reverse current	$V_R = 80$ V; $T_{amb} = 25$ °C	-	-	0.5	μ A
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)	 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
BAS16DY-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]
BAS16DY-Q	M3%

[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			-	100	V
V _R	reverse voltage			-	100	V
I _F	forward current		[1] [2]	-	110	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	A
I _{FRM}	repetitive peak forward current	t _p ≤ 0.5 ms; δ ≤ 0.25		-	700	mA
P _{tot}	total power dissipation	T _{amb} ≤ 25 °C	[1] [2]	-	260	mW
			[2] [3]	-	290	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.

[2] Single diode loaded.

[3] Device mounted on an FR4 PCB, single-sided copper, tin-plated, mounting pad for cathode 1 cm².

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]	-	-	480	K/W
			[2]	-	-	430	K/W
$R_{th(j-sp)}$	thermal resistance from junction to solder point		[3]	-	-	185	K/W

- [1] Device mounted on an FR4 PCB, single-sided copper, tin-plated and standard footprint.
[2] Device mounted on an FR4 PCB, single-sided copper, tin-plated, mounting pad for cathode 1cm².
[3] Soldering points at pins 3 and 6.

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; $T_{amb} = 25\text{ }^\circ\text{C}$		-	-	715	mV
		$I_F = 10\text{ mA}$; $t_p \leq 300\text{ }\mu\text{s}$; $\delta \leq 0.02$; pulsed; $T_{amb} = 25\text{ }^\circ\text{C}$		-	-	855	mV
		$I_F = 50\text{ mA}$; $t_p \leq 300\text{ }\mu\text{s}$; $\delta \leq 0.02$; pulsed; $T_{amb} = 25\text{ }^\circ\text{C}$		-	-	1	V
		$I_F = 150\text{ mA}$; $t_p \leq 300\text{ }\mu\text{s}$; $\delta \leq 0.02$; pulsed; $T_{amb} = 25\text{ }^\circ\text{C}$		-	-	1.25	V
I_R	reverse current	$V_R = 25\text{ V}$; $T_{amb} = 25\text{ }^\circ\text{C}$		-	-	30	nA
		$V_R = 80\text{ V}$; $T_{amb} = 25\text{ }^\circ\text{C}$		-	-	0.5	μA
		$V_R = 25\text{ V}$; $T_j = 150\text{ }^\circ\text{C}$		-	-	30	μA
		$V_R = 80\text{ V}$; $T_j = 150\text{ }^\circ\text{C}$		-	-	50	μA
C_d	diode capacitance	$V_R = 0\text{ V}$; $f = 1\text{ MHz}$; $T_{amb} = 25\text{ }^\circ\text{C}$		-	-	1.5	pF
t_{rr}	reverse recovery time	$I_F = 10\text{ mA}$; $I_R = 10\text{ mA}$; $R_L = 100\text{ }\Omega$; $I_{R(meas)} = 1\text{ mA}$; $T_{amb} = 25\text{ }^\circ\text{C}$		-	-	4	ns
V_{FRM}	peak forward recovery voltage	$I_F = 10\text{ mA}$; $t_r = 20\text{ ns}$; $T_{amb} = 25\text{ }^\circ\text{C}$		-	-	1.75	V

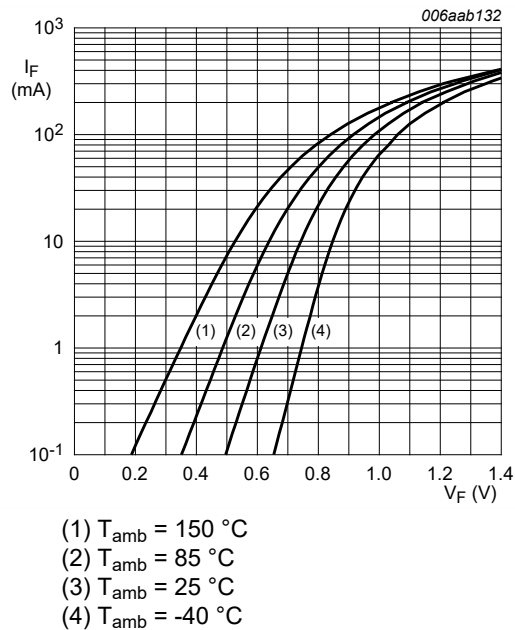


Fig. 1. Forward current as a function of forward voltage; typical values

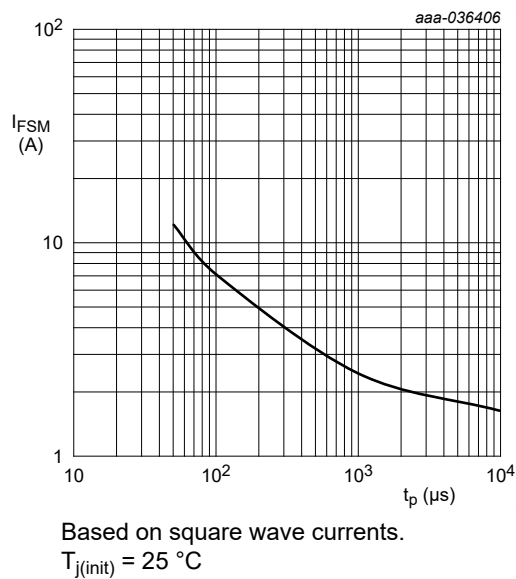


Fig. 2. Non-repetitive peak forward current as a function of pulse duration; typical values

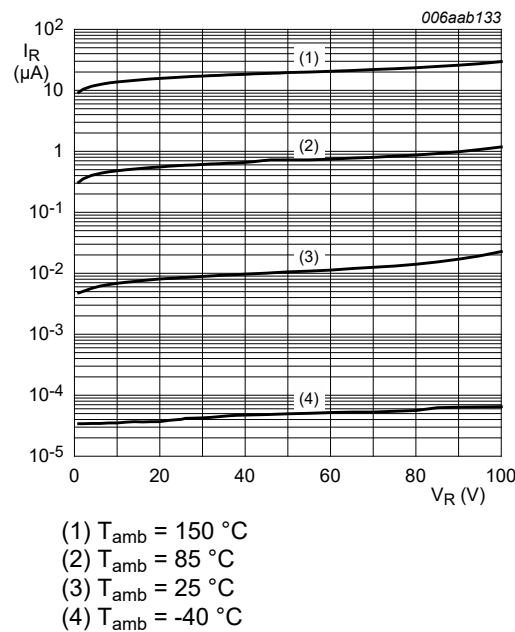


Fig. 3. Reverse current as a function of reverse voltage; typical values

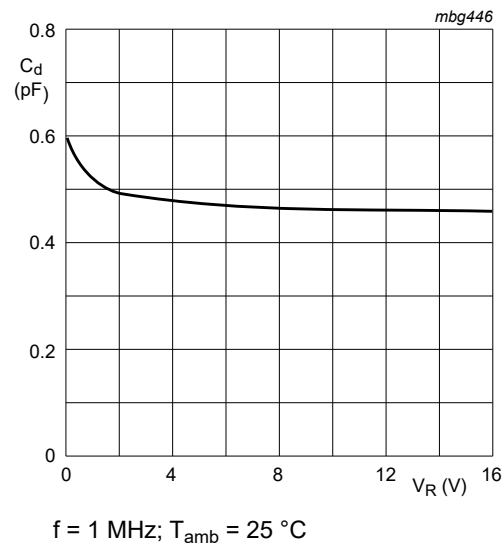


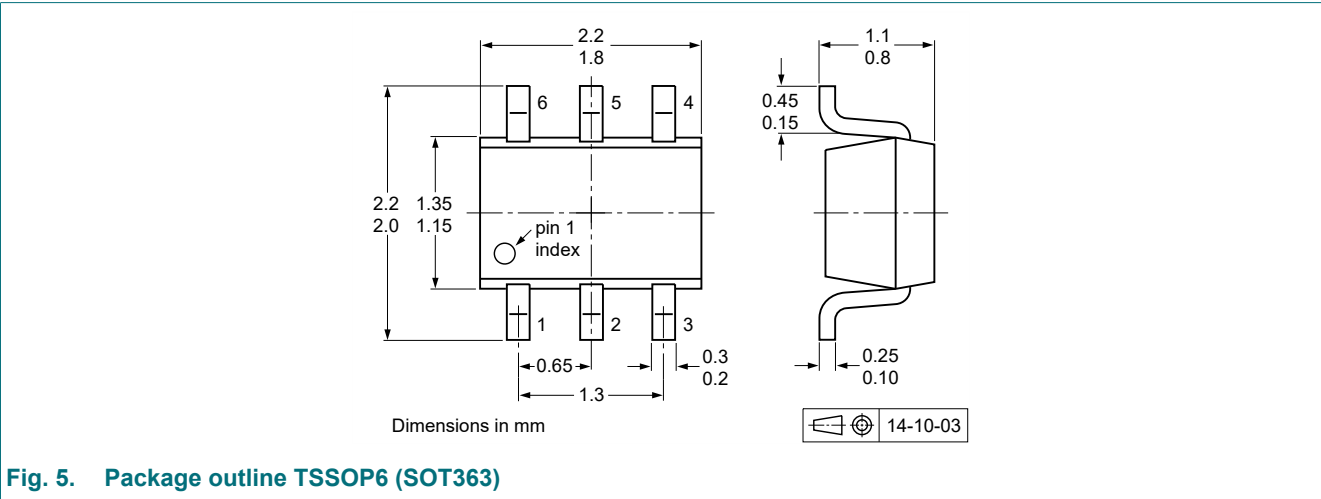
Fig. 4. Diode capacitance as a function of reverse voltage; typical values

11. Test information

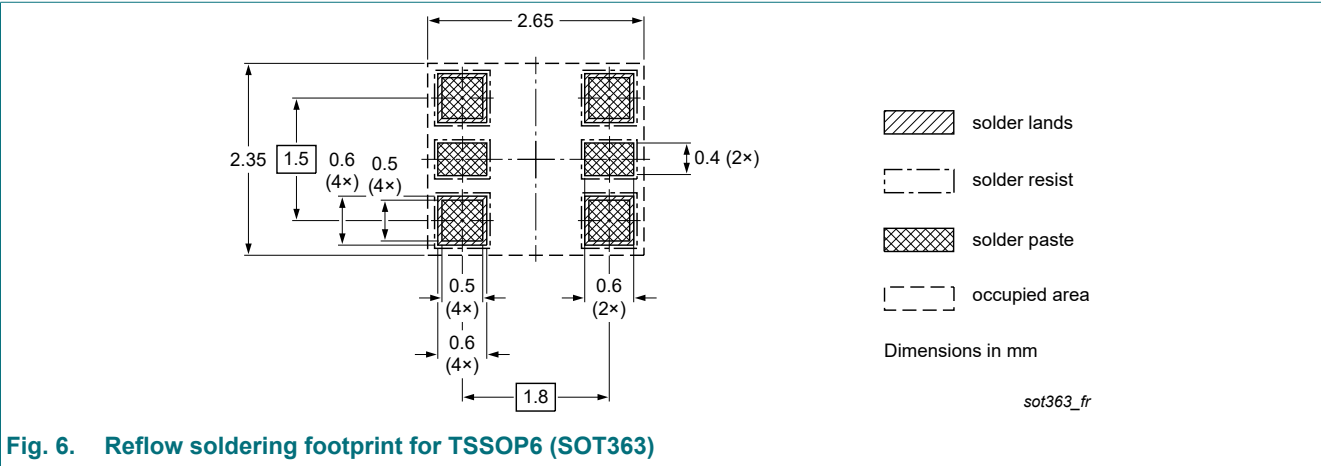
Quality information

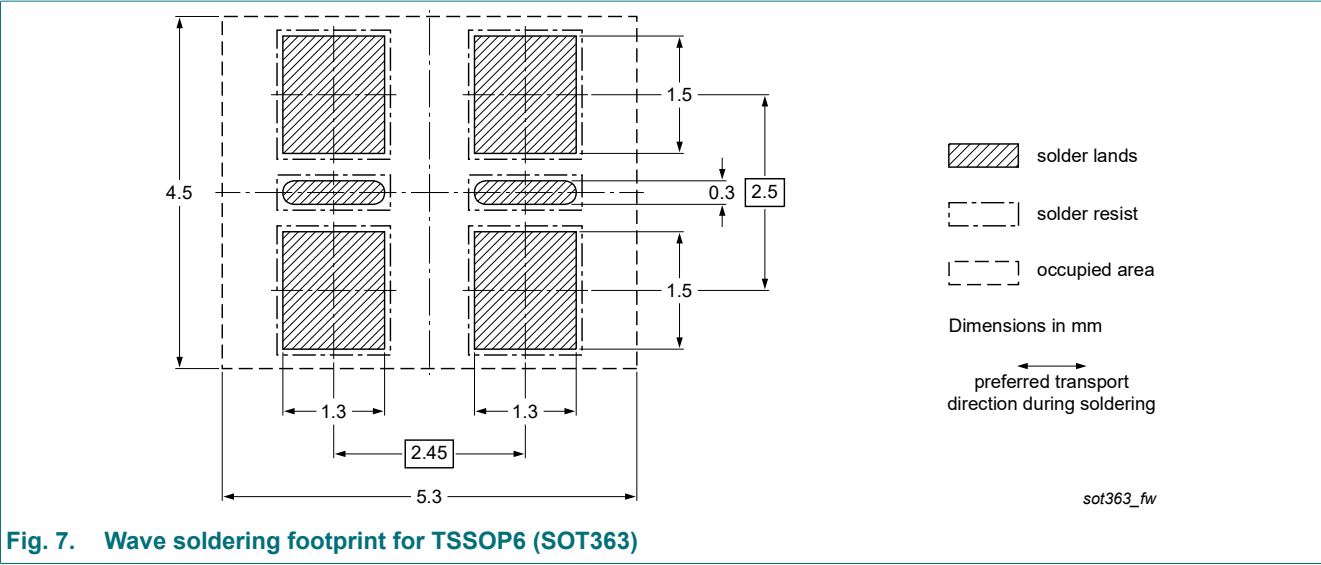
This product has been qualified in accordance with the Automotive Electronics Council (AEC) standard Q101 - *Stress test qualification for discrete semiconductors*, and is suitable for use in automotive applications.

12. Package outline



13. Soldering





14. Revision history

Table 8. Revision history

Data sheet ID	Release date	Data sheet status	Change notice	Supersedes
BAS16DY-Q v.1	20230420	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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