



BAS16TH-Q

High-speed switching diode

18 March 2025

Product data sheet

1. General description

High-speed switching diode, encapsulated in a small SOT23 Surface-Mounted Device (SMD) plastic package.

2. Features and benefits

- High switching speed: $t_{rr} \leq 4$ ns
- Low leakage current
- Repetitive peak reverse voltage $V_{RRM} \leq 100$ V
- Low capacitance
- Small SMD plastic package
- High-temperature applications up to 175 °C
- 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

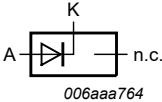
Symbol	Parameter	Conditions		Min	Typ	Max	Unit
V_{RRM}	repetitive peak reverse voltage	$T_j = 25$ °C		-	-	100	V
I_F	forward current		[1]	-	-	215	mA
V_R	reverse voltage			-	-	100	V
V_F	forward voltage	$I_F = 150$ mA	[2]	-	-	1.25	V
I_R	reverse current	$V_R = 80$ V; $T_j = 25$ °C		-	-	0.5	µA
t_{rr}	reverse 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

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

[2] Pulsed test: $t_p \leq 300$ µs; $\delta \leq 0.02$

5. Pinning information

Table 2. Pinning information

Pin	Symbol	Description	Simplified outline	Graphic symbol
1	A	anode	 SOT23	
2	n.c.	not connected		
3	K	cathode		

6. Ordering information

Table 3. Ordering information

Type number	Package		
	Name	Description	Version
BAS16TH-Q	SOT23	plastic, surface-mounted package; 3 terminals; 1.9 mm pitch; 2.9 mm x 1.3 mm x 1 mm body	SOT23

7. Marking

Table 4. Marking codes

Type number	Marking code[1]
BAS16TH-Q	SP%

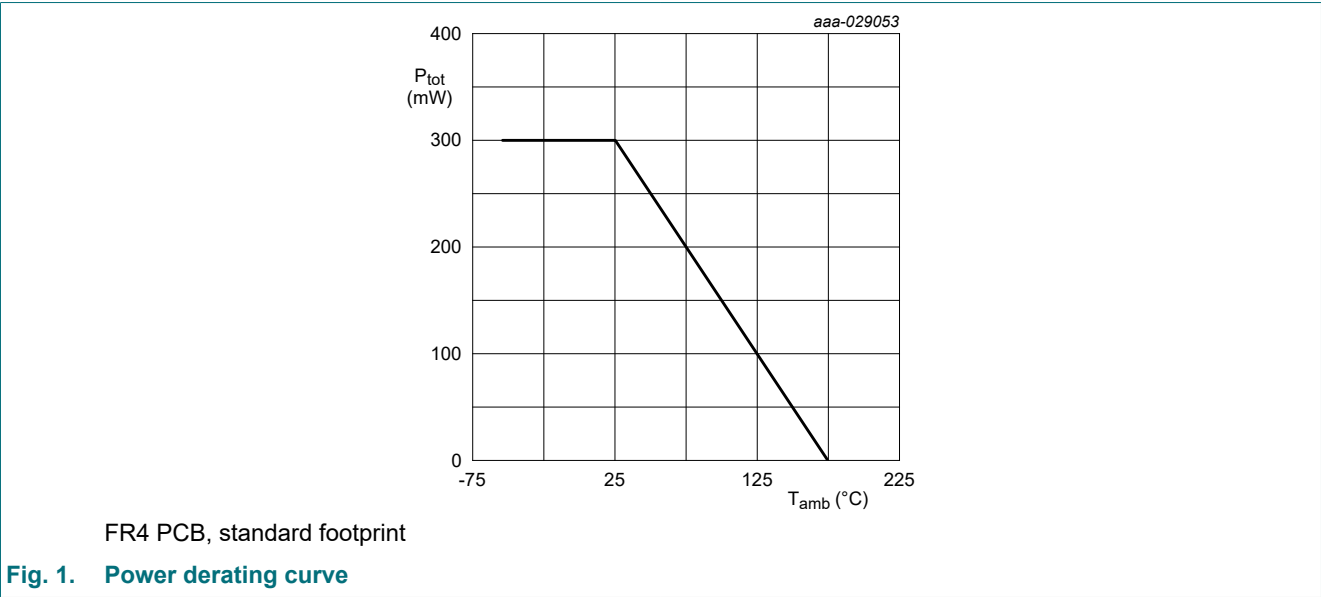
[1] % = placeholder for manufacturing site code

8. Limiting values

Table 5. Limiting values
In accordance with the Absolute Maximum Rating System (IEC 60134).

Symbol	Parameter	Conditions		Min	Max	Unit
V _{RRM}	repetitive peak reverse voltage	T _j = 25 °C		-	100	V
V _R	reverse voltage			-	100	V
I _F	forward current		[1]	-	215	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
I _{FRM}	repetitive peak forward current	t _p ≤ 0.5 ms; δ = 0.25		-	500	mA
P _{tot}	total power dissipation	T _{amb} ≤ 25 °C	[1]	-	300	mW
T _j	junction temperature			-	175	°C
T _{amb}	ambient temperature			-55	175	°C
T _{stg}	storage temperature			-65	175	°C

[1] Device mounted on an FR4 Printed-Circuit Board (PCB), single-side 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]	-	-	500	K/W
R _{th(j-sp)}	thermal resistance from junction to solder point		[2]	-	-	330	K/W

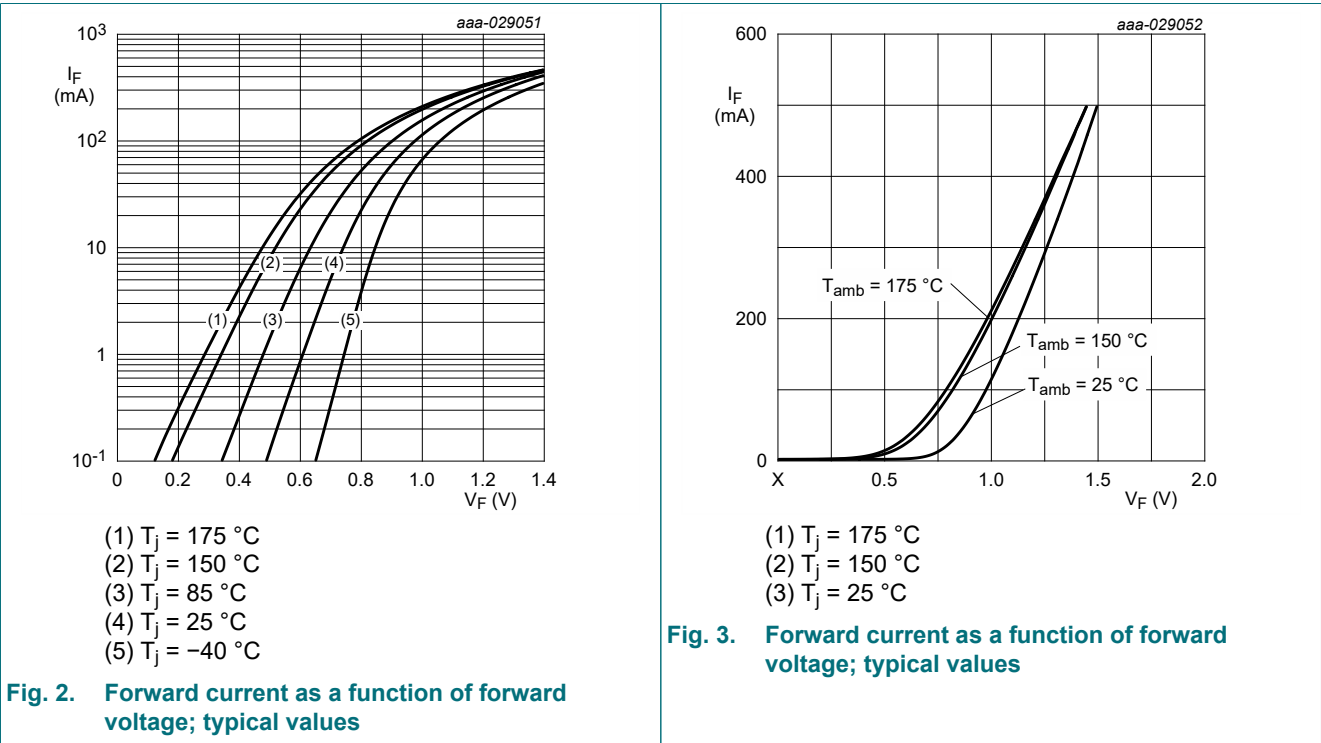
[1] Device mounted on an FR4 Printed-Circuit Board (PCB), single-side copper, tin-plated and standard footprint.
[2] Soldering point of cathode tab.

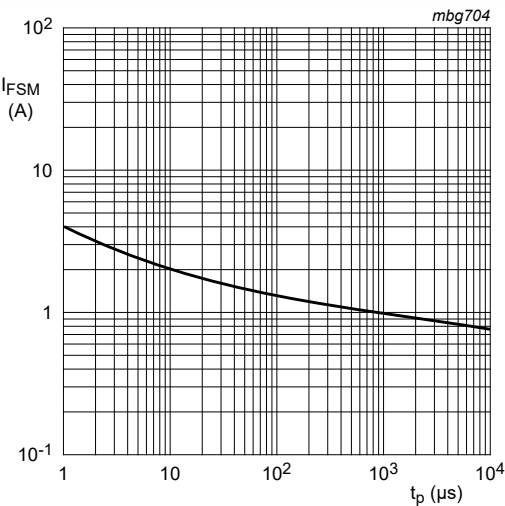
10. Characteristics

Table 7. Characteristics

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
V _F	forward voltage	I _F = 1 mA	[1]	-	-	715	mV
		I _F = 10 mA	[1]	-	-	855	mV
		I _F = 50 mA	[1]	-	-	1	V
		I _F = 150 mA	[1]	-	-	1.25	V
I _R	reverse current	V _R = 25 V; T _j = 25 °C		-	-	30	nA
		V _R = 80 V; T _j = 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 _j = 25 °C		-	-	1.5	pF
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
V _{FRM}	peak forward recovery voltage	I _F = 10 mA; t _r = 20 ns		-	-	1.75	V

[1] Pulsed test: t_p ≤ 300 μs; δ ≤ 0.02





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

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

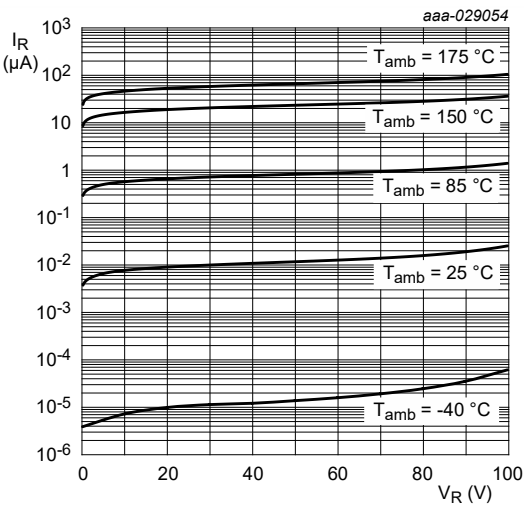
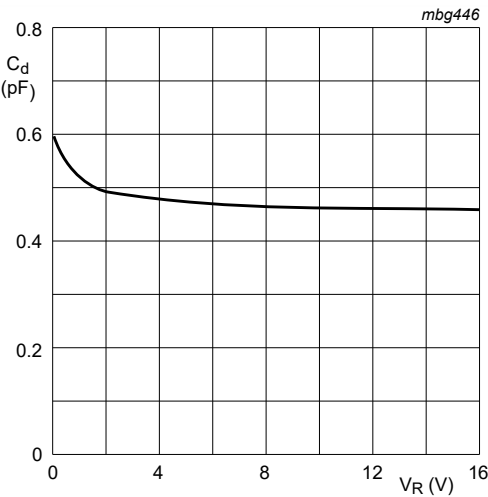


Fig. 5. Reverse current as a function of reverse voltage; typical values



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

Fig. 6. Diode capacitance as a function of reverse voltage; typical values

13. Soldering

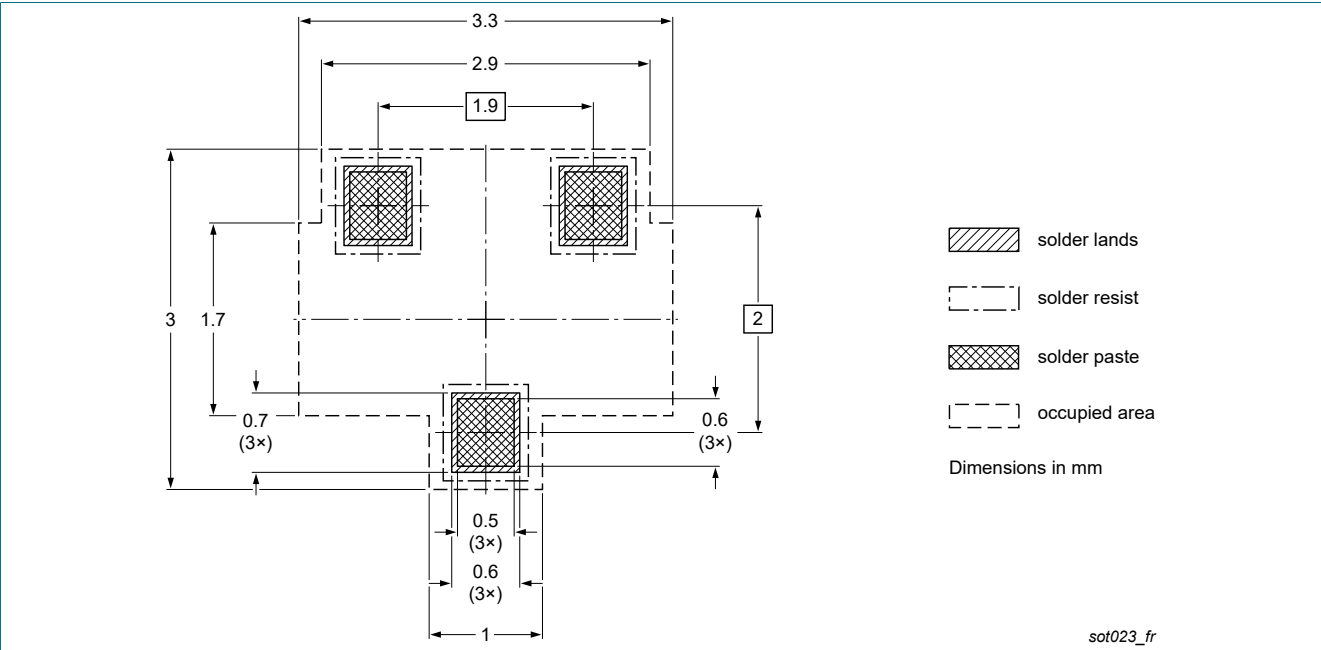


Fig. 10. Reflow soldering footprint for SOT23

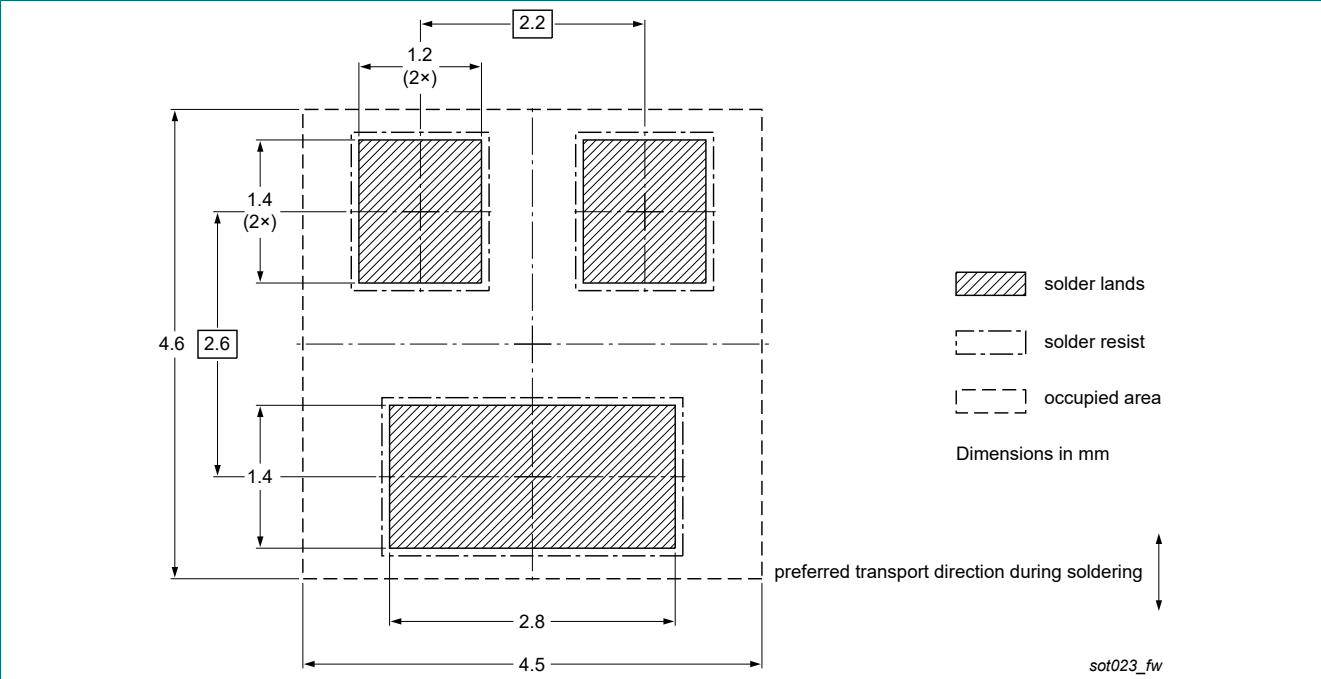


Fig. 11. Wave soldering footprint for SOT23

14. Revision history

Table 8. Revision history

Data sheet ID	Release date	Data sheet status	Change notice	Supersedes
BAS16TH-Q v.1	20250318	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.
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Product [short] data sheet	Production	This document contains the product specification.

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