



BAT120S-Q

Schottky barrier double diodes

4 April 2025

Product data sheet

1. General description

Planar Schottky barrier double diodes encapsulated in a SOT223 Surface-Mounted Device (SMD) plastic package.

2. Features and benefits

- Low switching losses
- Capability of absorbing very high surge current
- Fast recovery time
- Guard ring protected
- Plastic SMD package
- Qualified according to AEC-Q101 and recommended for use in automotive applications

3. Applications

- Low power switched-mode power supplies
- Rectification
- Polarity protection

4. Quick reference data

Table 1. Quick reference data

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Per diode						
V_R	reverse voltage		-	-	25	V
I_R	reverse current	$V_R = 20\text{ V}$; pulsed; $t_p \leq 300\text{ }\mu\text{s}$; $\delta \leq 0.02$; $T_j = 100\text{ }^\circ\text{C}$	-	-	10	mA

5. Pinning information

Table 2. Pinning information

Pin	Symbol	Description	Simplified outline	Graphic symbol
1	A1	anode (diode 1)	 SC-73 (SOT223)	 n.c. mgl173
2	n.c.	not connected		
3	K2	cathode (diode 2)		
4	K1, A2	cathode (diode1) and anode (diode2)		

6. Ordering information

Table 3. Ordering information

Type number	Package		
	Name	Description	Version
BAT120S-Q	SC-73	plastic, surface-mounted package with increased heatsink; 4 leads; 2.3 mm pitch; 6.5 mm x 3.5 mm x 1.65 mm body	SOT223

7. Marking

Table 4. Marking codes

Type number	Marking code
BAT120S-Q	AT120S

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 _R	reverse voltage			-	25	V
I _F	forward current			-	1	A
I _{FSM}	non-repetitive peak forward current	half sine-wave pulse; t _p ≤ 10 ms; JEDEC method; T _j (init) = 25 °C		-	10	A
I _{RSM}	non-repetitive peak reverse current	t _p = 100 μs		-	0.5	A
T _j	junction temperature			-	125	°C
T _{amb}	ambient temperature			-65	125	°C
T _{stg}	storage temperature			-65	150	°C

9. Thermal characteristics

Table 6. Thermal characteristics

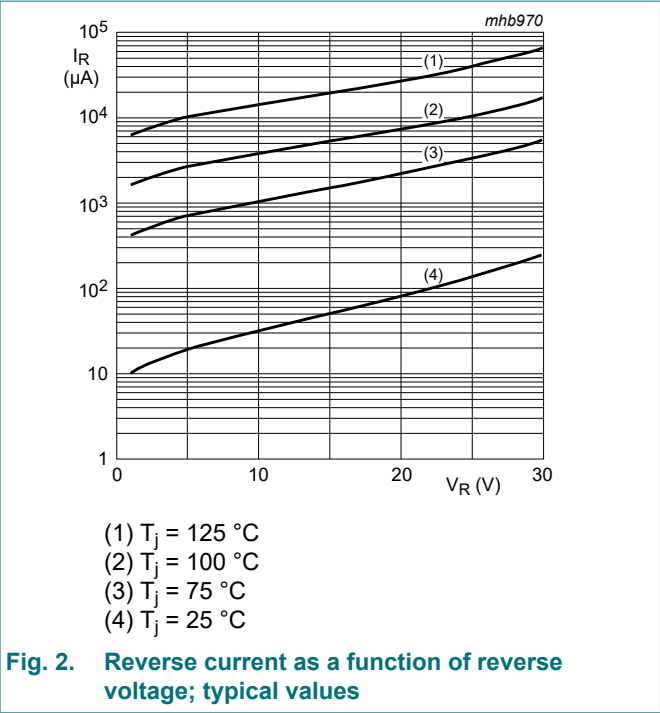
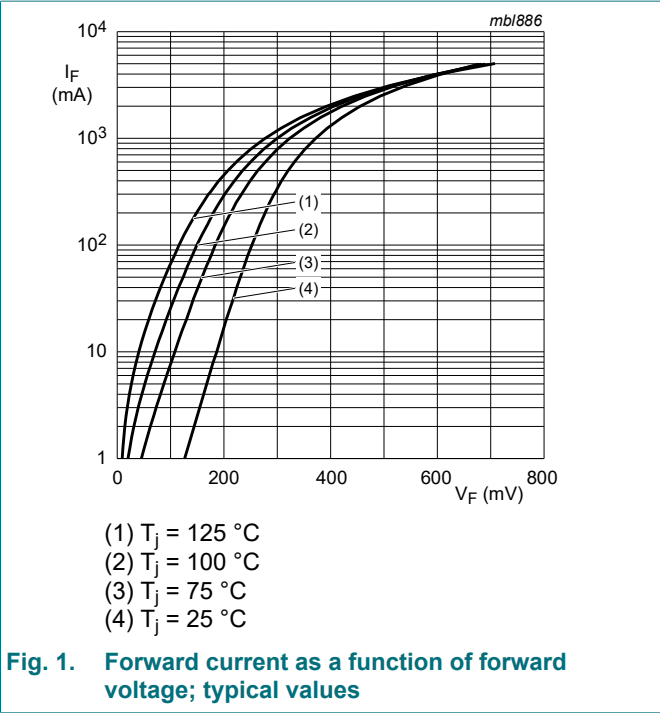
Symbol	Parameter	Conditions		Min	Typ	Max	Unit
Per diode							
R _{th(j-a)}	thermal resistance from junction to ambient	in free air	[1] [2]	-	-	100	K/W

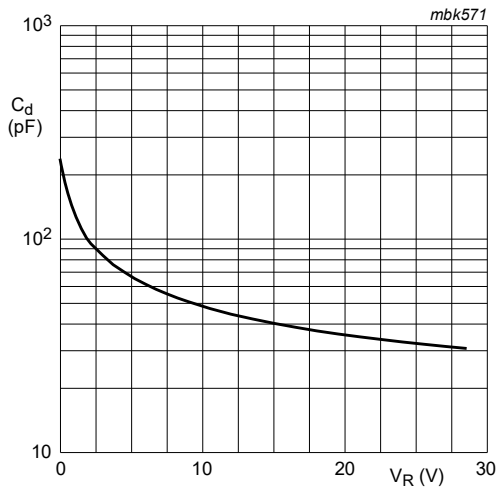
- [1] Device mounted on an FR4 Printed-Circuit Board (PCB), single-sided copper, tin-plated and standard footprint.
- [2] For Schottky barrier diodes thermal runaway has to be considered, as in some applications the reverse power losses P_R are a significant part of the total power losses.

10. Characteristics

Table 7. Characteristics

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
Per diode							
V_F	forward voltage	$I_F = 100\text{ mA}$; pulsed; $t_p \leq 300\text{ }\mu\text{s}$; $\delta \leq 0.02$; $T_{\text{amb}} = 25\text{ }^\circ\text{C}$		-	260	300	mV
		$I_F = 1\text{ A}$; pulsed; $t_p \leq 300\text{ }\mu\text{s}$; $\delta \leq 0.02$; $T_{\text{amb}} = 25\text{ }^\circ\text{C}$		-	400	450	mV
I_R	reverse current	$V_R = 20\text{ V}$; pulsed; $t_p \leq 300\text{ }\mu\text{s}$; $\delta \leq 0.02$; $T_{\text{amb}} = 25\text{ }^\circ\text{C}$		-	80	500	μA
		$V_R = 25\text{ V}$; pulsed; $t_p \leq 300\text{ }\mu\text{s}$; $\delta \leq 0.02$; $T_{\text{amb}} = 25\text{ }^\circ\text{C}$		-	-	1	mA
		$V_R = 20\text{ V}$; pulsed; $t_p \leq 300\text{ }\mu\text{s}$; $\delta \leq 0.02$; $T_j = 100\text{ }^\circ\text{C}$		-	-	10	mA
C_d	diode capacitance	$V_R = 4\text{ V}$; $f = 1\text{ MHz}$; $T_{\text{amb}} = 25\text{ }^\circ\text{C}$		-	100	-	pF





f = 1 MHz; T_{amb} = 25 °C

Fig. 3. 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

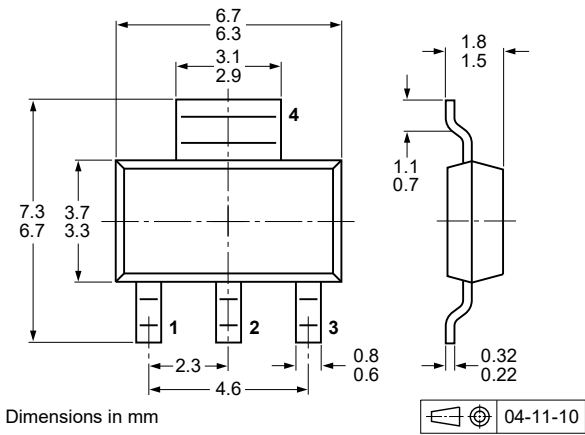
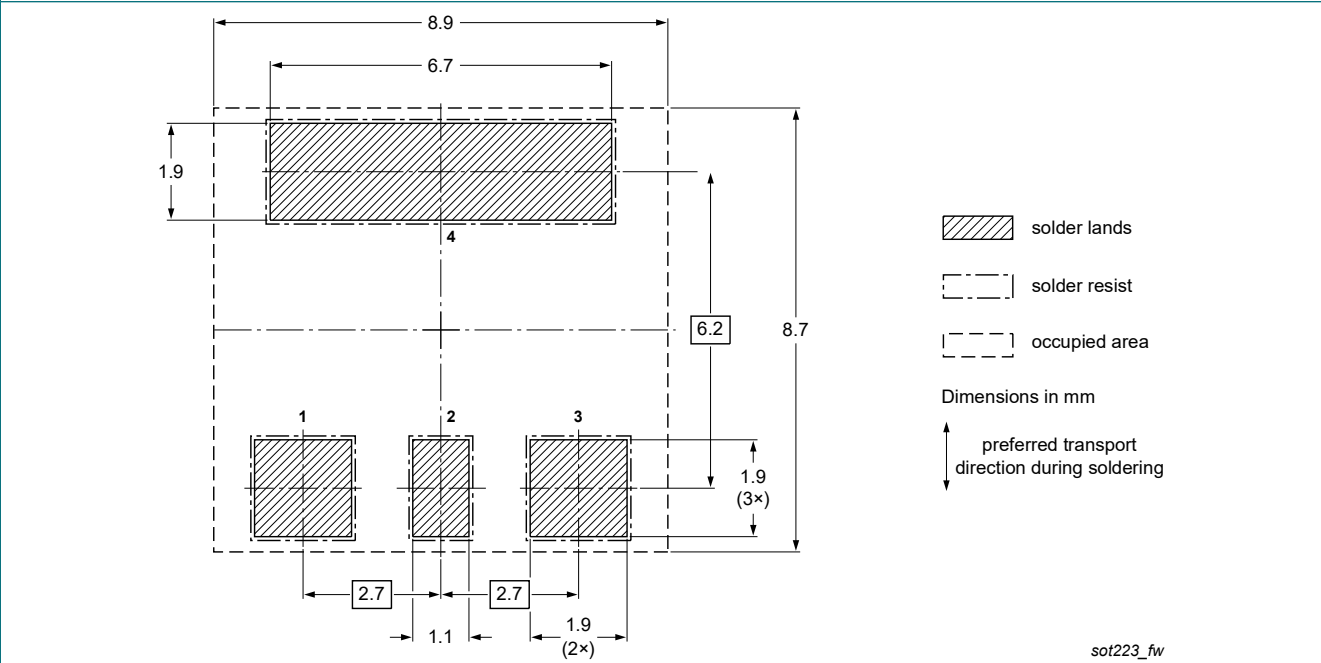
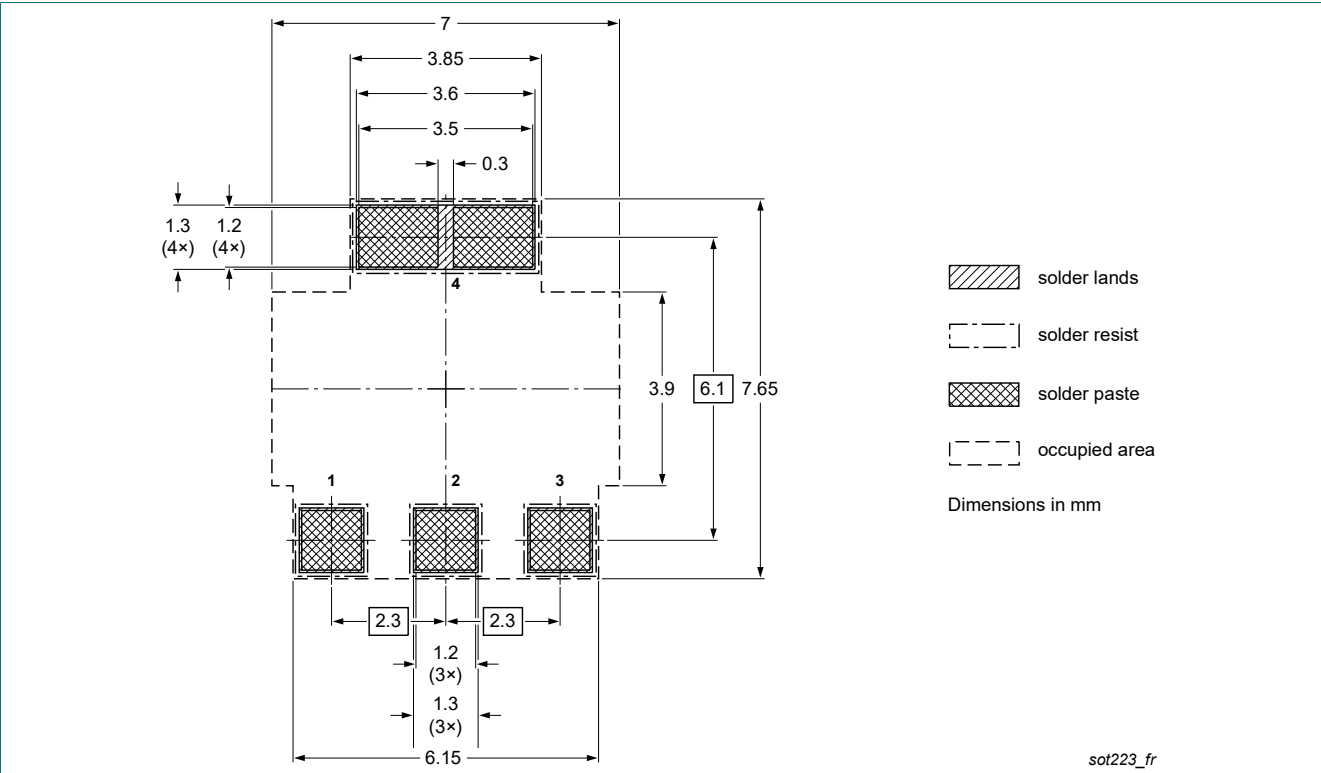


Fig. 4. Package outline SC-73 (SOT223)

13. Soldering



14. Revision history

Table 8. Revision history

Data sheet ID	Release date	Data sheet status	Change notice	Supersedes
BAT120S-Q v.1	20250404	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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