

BAT160S

Schottky barrier double diode

27 September 2023

Product data sheet

1. General description

Planar Schottky barrier double diode encapsulated in a SOT223 (SC73) 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

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		-	-	60	V
V_F	forward voltage	$I_F = 2\text{ A}$; $T_{\text{amb}} = 25\text{ °C}$	-	-	850	mV
I_R	reverse current	$V_R = 60\text{ V}$; $t_p \leq 300\text{ }\mu\text{s}$; $\delta \leq 0.02$; $T_j = 100\text{ °C}$	-	-	8	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. mg1173
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
BAT160S	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
BAT160S	AT160S

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		-	60	V
I_F	forward current		-	1	A
I_{FSM}	non-repetitive peak forward current	$t_p = 8.3$ ms; half sinewave; JEDEC method; $T_{j(\text{init})} = 25$ °C	-	10	A
I_{RSM}	non-repetitive peak reverse current	$t_p = 100$ μ s	-	0.5	A
T_j	junction temperature		-	150	°C
T_{amb}	ambient temperature		-55	150	°C
T_{stg}	storage temperature		-65	150	°C

9. Thermal characteristics

Table 6. Thermal characteristics

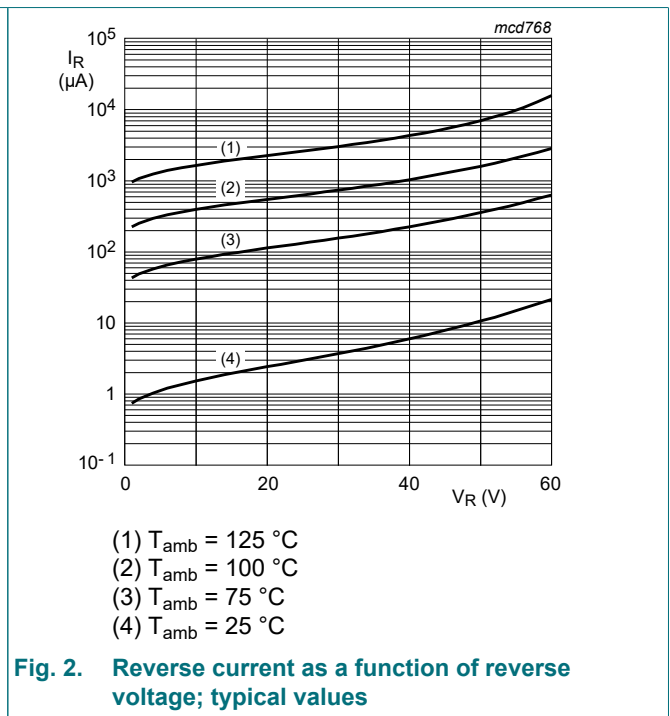
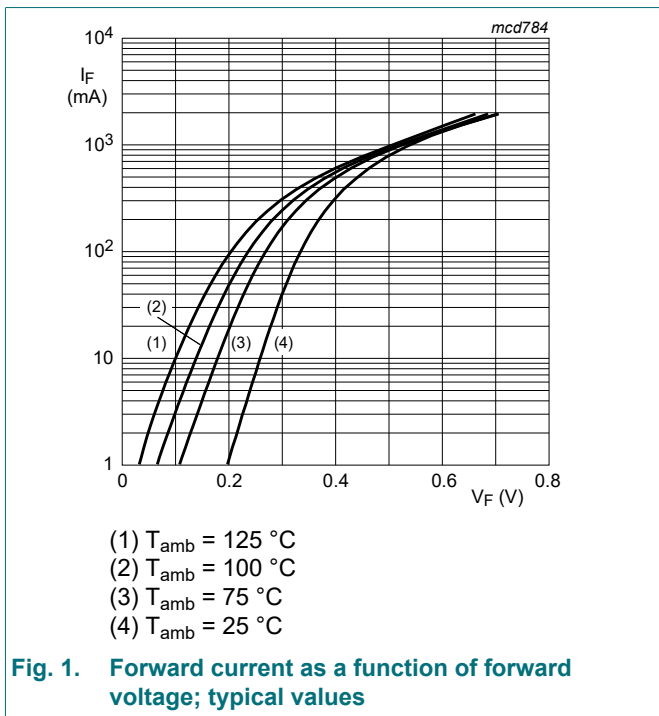
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
$R_{\text{th}(j-a)}$	thermal resistance from junction to ambient	[1]	-	-	100	K/W

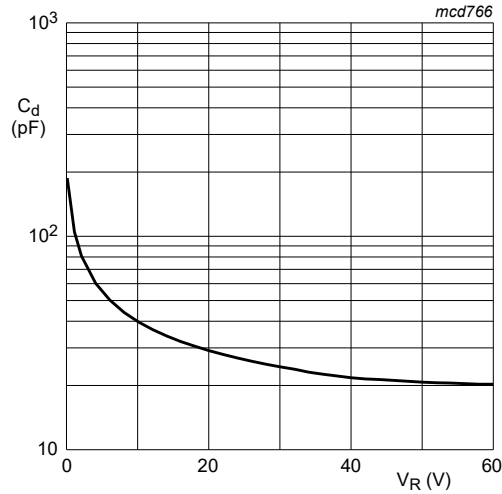
[1] Device mounted on an FR4 Printed-Circuit Board (PCB), single-sided copper, tin-plated and standard footprint.

10. Characteristics

Table 7. Characteristics

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Per diode						
V_F	forward voltage	$I_F = 100 \text{ mA}; T_{\text{amb}} = 25 \text{ }^\circ\text{C}$	-	-	400	mV
		$I_F = 1 \text{ A}; T_{\text{amb}} = 25 \text{ }^\circ\text{C}$	-	-	650	mV
		$I_F = 2 \text{ A}; T_{\text{amb}} = 25 \text{ }^\circ\text{C}$	-	-	850	mV
I_R	reverse current	$V_R = 60 \text{ V}; \text{pulsed}; t_p \leq 300 \text{ } \mu\text{s}; \delta \leq 0.02; T_{\text{amb}} = 25 \text{ }^\circ\text{C}$	-	-	350	μA
		$V_R = 60 \text{ V}; t_p \leq 300 \text{ } \mu\text{s}; \delta \leq 0.02; T_j = 100 \text{ }^\circ\text{C}$	-	-	8	mA
C_d	diode capacitance	$V_R = 4 \text{ V}; f = 1 \text{ MHz}; T_{\text{amb}} = 25 \text{ }^\circ\text{C}$	-	-	60	pF





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

Fig. 3. Diode capacitance as a function of reverse voltage; typical values

11. Package outline

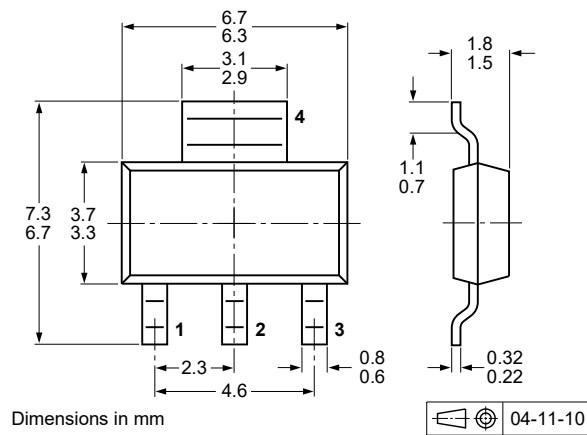


Fig. 4. Package outline SC-73 (SOT223)

13. Revision history

Table 8. Revision history

Data sheet ID	Release date	Data sheet status	Change notice	Supersedes
BAT160S v.4	20231012	Product data sheet	-	BAT160_SERIES v.3
Modifications:	<ul style="list-style-type: none">Product(s) changed to non-automotive qualification. Please refer to nexperia.com for automotive (-Q) product alternative(s).			
BAT160S v.3	20220922	Product data sheet	-	BAT160_SERIES v.2
BAT160_SERIES v.2	19990920	Product data sheet	-	BAT160_SERIES v.1
BAT160_SERIES v.1	19990326	Product data sheet	-	-

14. 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".
- [3] The product status of device(s) described in this document may have changed since this document was published and may differ in case of multiple devices. The latest product status information is available on the internet at <https://www.nexperia.com>.

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