



# BAT160S

Schottky barrier double diode

22 September 2022

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
- AEC-Q101 qualified

## 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
<b>Per diode</b>						
$V_R$	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)	<p>SC-73 (SOT223)</p>	<p>n.c. mg1173</p>
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
<b>Per diode</b>					
$V_R$	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	$t_p = 100$ $\mu$ s	-	0.5	A
$T_j$	junction temperature		-	150	°C
$T_{\text{amb}}$	ambient temperature		-55	150	°C
$T_{\text{stg}}$	storage temperature		-65	150	°C

## 9. Thermal characteristics

Table 6. Thermal characteristics

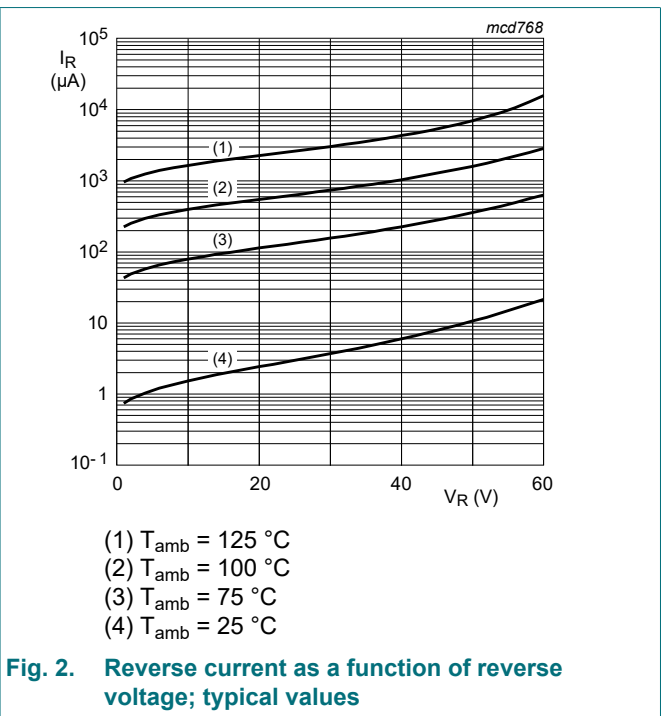
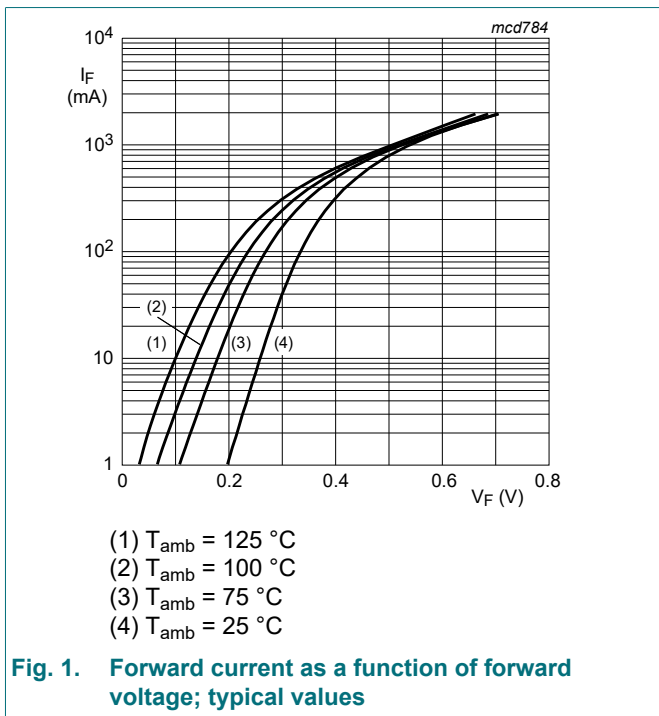
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
$R_{\text{th}(j-a)}$	thermal resistance from junction to ambient	[1]	-	-	100	K/W

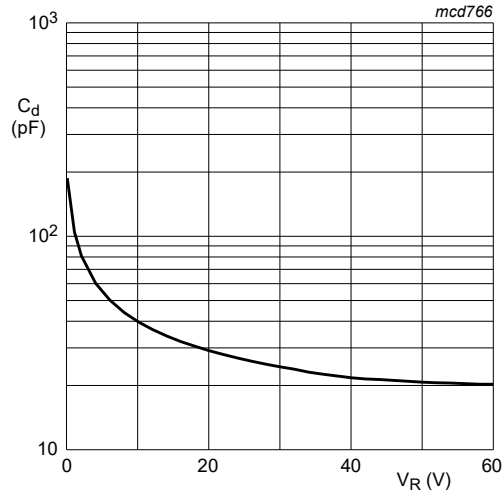
[1] Device mounted on an FR4 Printed-Circuit Board (PCB), single-sided copper, tin-plated and standard footprint.

## 10. Characteristics

Table 7. Characteristics

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
<b>Per diode</b>						
$V_F$	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	$V_R = 60 \text{ V}; t_p \leq 300 \text{ } \mu\text{s}; \delta \leq 0.02;$ pulsed; $T_{\text{amb}} = 25 \text{ }^\circ\text{C}$	-	-	350	$\mu\text{A}$
		$V_R = 60 \text{ V}; t_p \leq 300 \text{ } \mu\text{s}; \delta \leq 0.02;$ $T_j = 100 \text{ }^\circ\text{C}$	-	-	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 MHz; T<sub>amb</sub> = 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

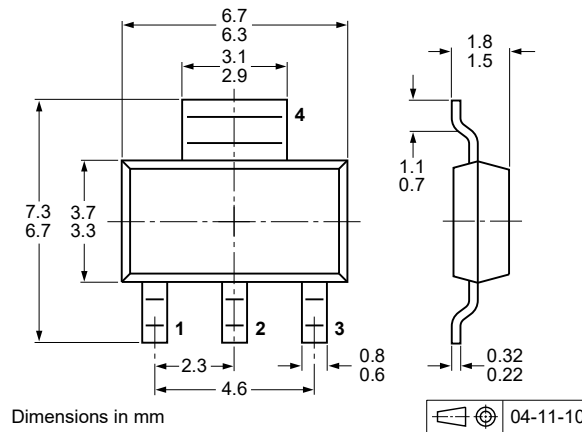


Fig. 4. Package outline SC-73 (SOT23)

### 13. Soldering

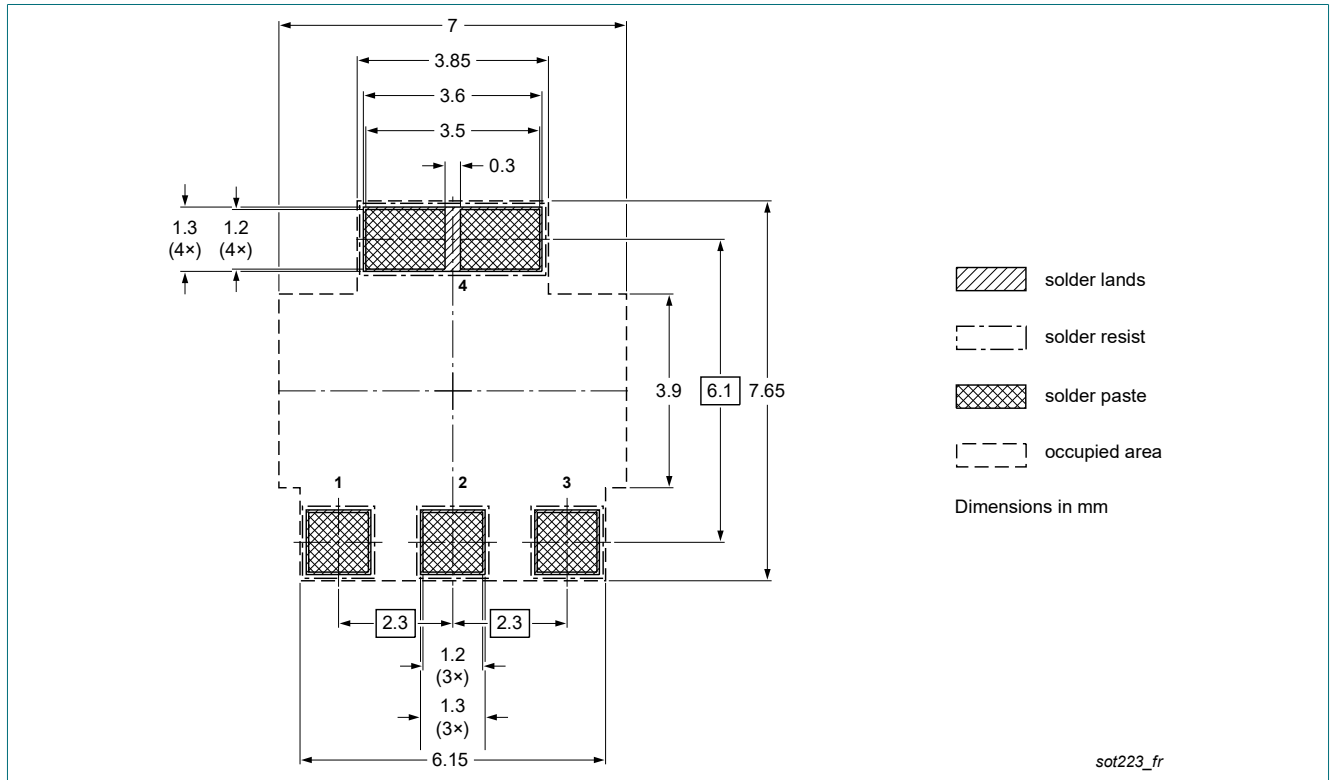


Fig. 5. Reflow soldering footprint for SC-73 (SOT223)

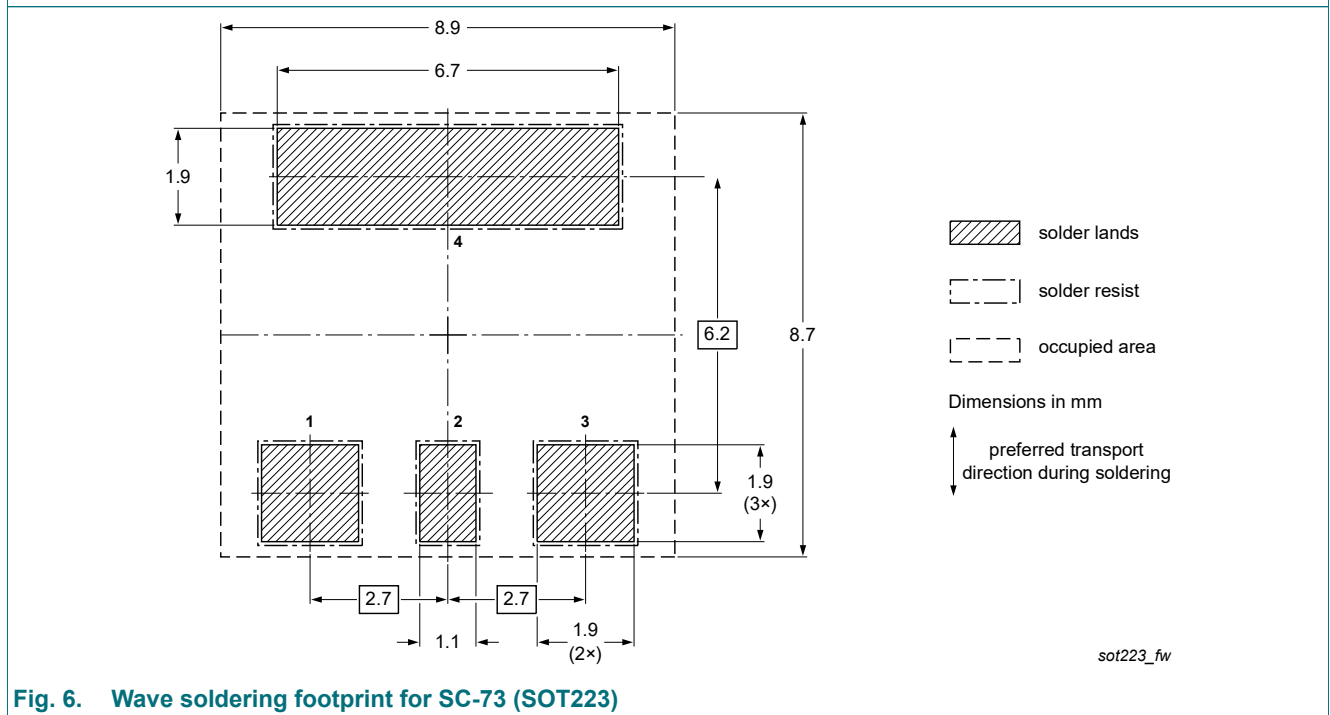


Fig. 6. Wave soldering footprint for SC-73 (SOT223)

## 14. Revision history

**Table 8. Revision history**

Data sheet ID	Release date	Data sheet status	Change notice	Supersedes
BAT160S v.3	20220922	Product data sheet	-	BAT160_SERIES v.2
Modifications:	<ul style="list-style-type: none"><li>• The format of this data sheet has been redesigned to comply with the identity guidelines of Nexperia.</li><li>• Legal texts have been adapted to the new company name where appropriate.</li><li>• Family data sheet splitted to single type data sheets.</li></ul>			
BAT160_SERIES v.2	19990920	Product data sheet	-	BAT160_SERIES v.1
BAT160_SERIES v.1	19990326	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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