



# BAT754 series

## Schottky barrier diodes

Rev. 3 — 9 October 2012

Product data sheet

## 1. Product profile

### 1.1 General description

Planar Schottky barrier diodes with an integrated guard ring for stress protection, encapsulated in a small SOT23 (TO-236AB) Surface-Mounted Device (SMD) plastic package.

### 1.2 Features and benefits

- Low forward voltage
- Low capacitance
- AEC-Q101 qualified

### 1.3 Applications

- Ultra high-speed switching
- Line termination
- Voltage clamping
- Reverse polarity protection

### 1.4 Quick reference data

Table 1. Quick reference data

$T_{amb} = 25\text{ }^{\circ}\text{C}$  unless otherwise specified.

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
<b>Per diode</b>						
$V_R$	reverse voltage		-	-	30	V
$V_F$	forward voltage	$I_F = 100\text{ mA}$	[1]	-	600	mV
$I_R$	reverse current	$V_R = 25\text{ V}$	[1]	-	2	$\mu\text{A}$

[1] Pulse test:  $t_p \leq 300\text{ }\mu\text{s}$ ;  $\delta \leq 0.02$ .

## 2. Pinning information

Table 2. Pinning

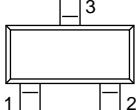
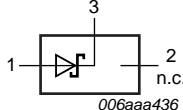
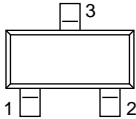
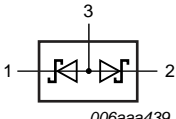
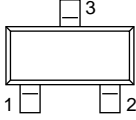
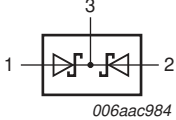
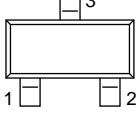
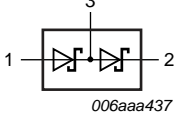
Pin	Description	Simplified outline	Graphic symbol
<b>BAT754</b>			
1	anode		
2	not connected		
3	cathode		

Table 2. Pinning ...continued

Pin	Description	Simplified outline	Graphic symbol
<b>BAT754A</b>			
1	cathode (diode 1)		 006aaa439
2	cathode (diode 2)		
3	common anode		
<b>BAT754C</b>			
1	anode (diode 1)		 006aac984
2	anode (diode 2)		
3	common cathode		
<b>BAT754S</b>			
1	anode (diode 1)		 006aaa437
2	cathode (diode 2)		
3	cathode (diode 1), anode (diode 2)		

### 3. Ordering information

Table 3. Ordering information

Type number	Package		Version
	Name	Description	
BAT754 series	-	plastic surface-mounted package; 3 leads	SOT23

### 4. Marking

Table 4. Marking codes

Type number	Marking code <sup>[1]</sup>
BAT754	2K*
BAT754A	2L*
BAT754C	2M*
BAT754S	2N*

[1] \* = placeholder for manufacturing site code.

## 5. 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		-	30	V
$I_F$	forward current		-	200	mA
$I_{FRM}$	repetitive peak forward current	$t_p \leq 1$ s; $\delta \leq 0.5$		300	mA
$I_{FSM}$	non-repetitive peak forward current	sine wave; $t_p < 8.3$ ms	[1] -	600	mA
<b>Per device; one diode loaded</b>					
$T_j$	junction temperature		-	125	°C
$T_{amb}$	ambient temperature		-55	+125	°C
$T_{stg}$	storage temperature		-65	+150	°C

[1]  $T_j = 25$  °C before surge.

## 6. Thermal characteristics

**Table 6. Thermal characteristics**

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
<b>Per device; one diode loaded</b>						
$R_{th(j-a)}$	thermal resistance from junction to ambient	in free air	[1] -	-	500	K/W

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

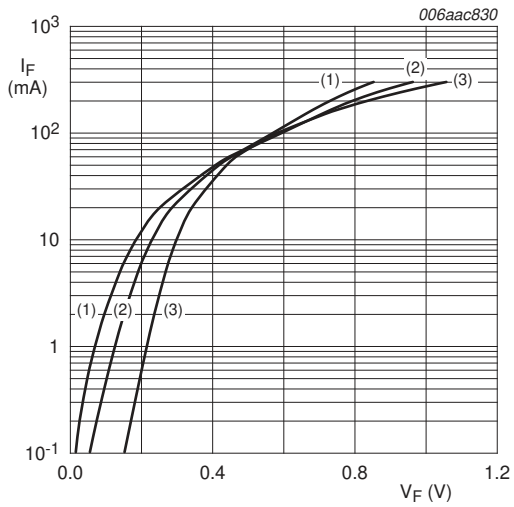
## 7. Characteristics

**Table 7. Characteristics**

$T_{amb} = 25$  °C unless otherwise specified.

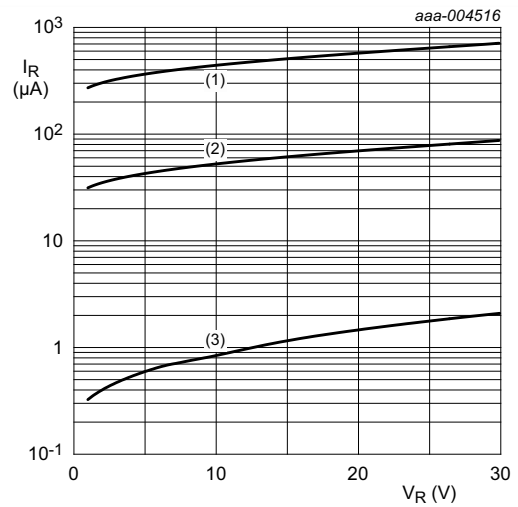
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
$V_F$	forward voltage		[1]			
		$I_F = 0.1$ mA	-	-	200	mV
		$I_F = 1$ mA	-	-	260	mV
		$I_F = 10$ mA	-	-	340	mV
		$I_F = 30$ mA	-	-	420	mV
		$I_F = 100$ mA	-	600	-	mV
$I_R$	reverse current	$V_R = 25$ V	[1] -	-	2	μA
$C_d$	diode capacitance	$f = 1$ MHz; $V_R = 1$ V	-	-	10	pF

[1] Pulse test:  $t_p \leq 300$  μs;  $\delta \leq 0.02$ .



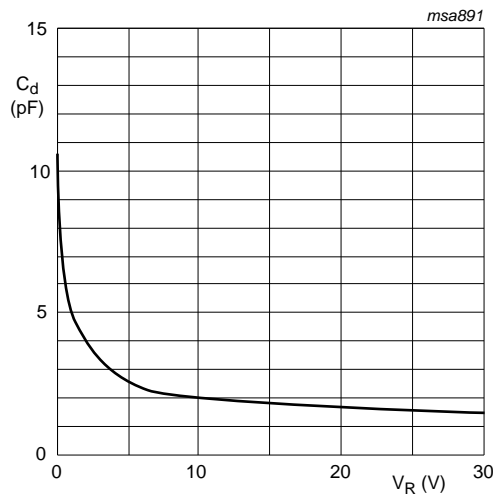
- (1)  $T_{amb} = 125\text{ °C}$
- (2)  $T_{amb} = 85\text{ °C}$
- (3)  $T_{amb} = 25\text{ °C}$

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



- (1)  $T_{amb} = 125\text{ °C}$
- (2)  $T_{amb} = 85\text{ °C}$
- (3)  $T_{amb} = 25\text{ °C}$

**Fig 2. Reverse current as a function of reverse voltage; typical values**



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

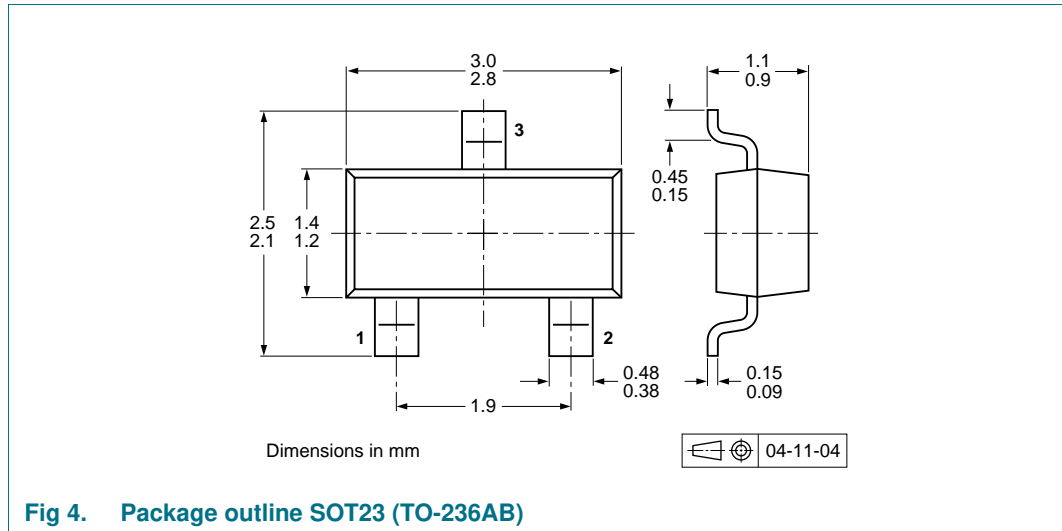
**Fig 3. Diode capacitance as a function of reverse voltage; typical values**

## 8. Test information

### 8.1 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.

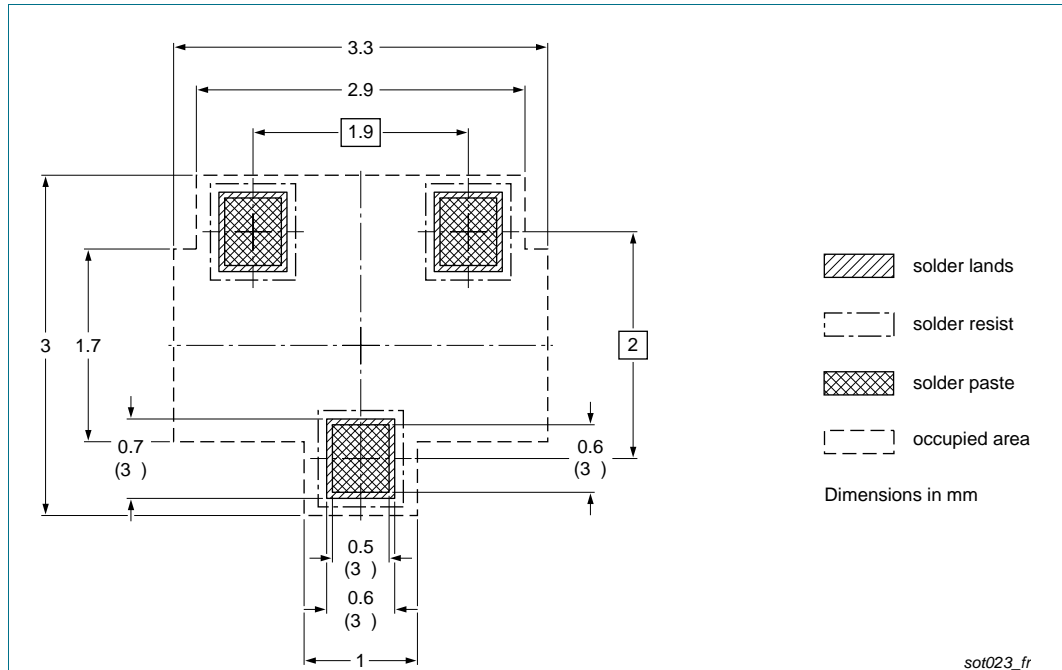
## 9. Package outline



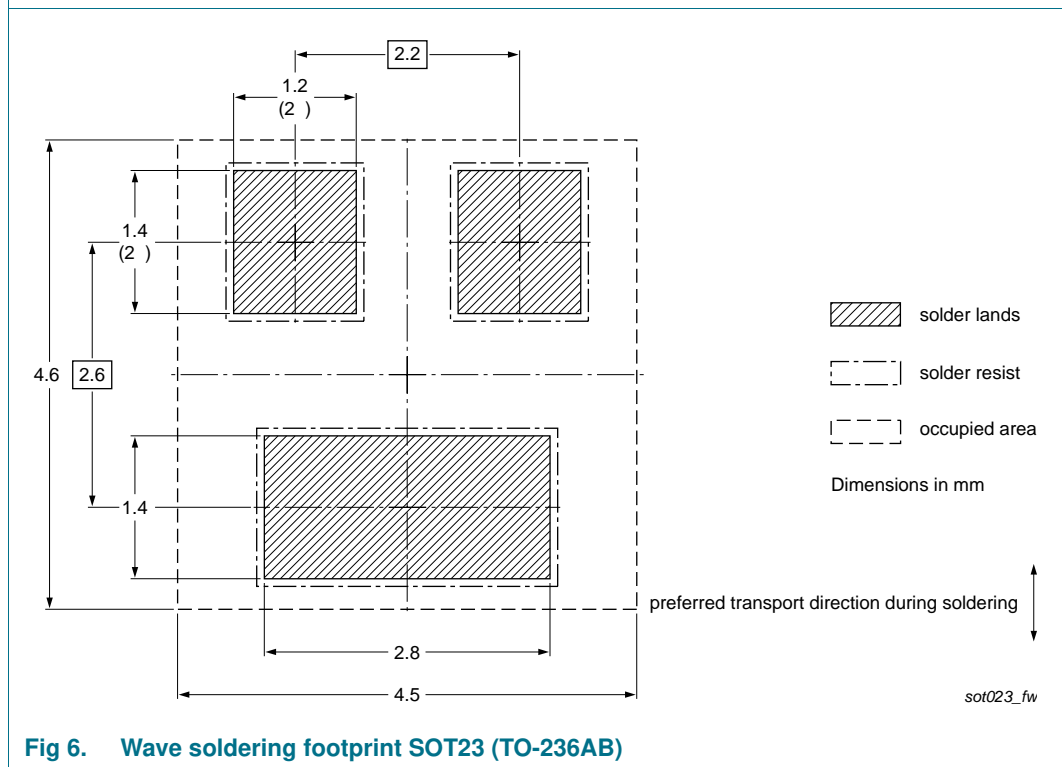
## 10. Packing information

Please refer to packing information on [www.nexperia.com](http://www.nexperia.com).

**11. Soldering**



**Fig 5. Reflow soldering footprint SOT23 (TO-236AB)**



**Fig 6. Wave soldering footprint SOT23 (TO-236AB)**

## 12. Revision history

Table 9. Revision history

Document ID	Release date	Data sheet status	Change notice	Supersedes
BAT754_SER v.3	20121009	Product data sheet	-	BAT754_SERIES v.2
Modifications:	<ul style="list-style-type: none"> <li>• The format of this document has been redesigned to comply with the new identity guidelines of NXP Semiconductors.</li> <li>• Legal texts have been adapted to the new company name where appropriate.</li> <li>• <a href="#">Section 1</a>: updated</li> <li>• <a href="#">Section 4</a>: updated</li> <li>• <a href="#">Table 5</a>: I<sub>FSM</sub> conditions updated; changed T<sub>amb</sub> minimum value to comply with AEC-Q101</li> <li>• <a href="#">Figure 1</a> and <a href="#">2</a>: updated</li> <li>• <a href="#">Section 8 "Test information"</a>: added</li> <li>• <a href="#">Figure 4</a>: replaced by minimized package outline drawing</li> <li>• <a href="#">Section 10 "Packing information"</a>: added</li> <li>• <a href="#">Section 11 "Soldering"</a>: added</li> <li>• <a href="#">Section 13 "Legal information"</a>: updated</li> </ul>			
BAT754_SERIES v.2	20030325	Product data sheet	-	BAT754_SERIES v.1
BAT754_SERIES v.1	19990805	Product specification	-	-

## 13. Legal information

### 13.1 Data sheet status

Document status <sup>[1][2]</sup>	Product status <sup>[3]</sup>	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 URL <http://www.nexperia.com>.

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Notice: All referenced brands, product names, service names and trademarks are the property of their respective owners.

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