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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 °C unless otherwise specified.

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
Per diode							
V_R	reverse voltage			-	-	30	V
V_F	forward voltage	I_F = 100 mA	[1]	-	600	-	mV
I_R	reverse current	V_R = 25 V	[1]	-	-	2	µA

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

2. Pinning information

Table 2. Pinning

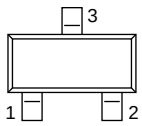
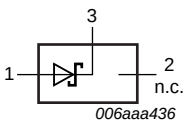
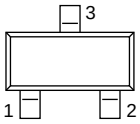
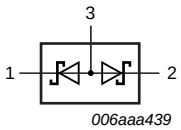
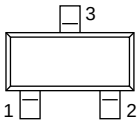
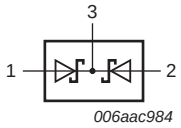
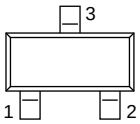
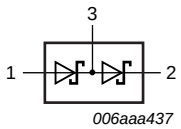
Pin	Description	Simplified outline	Graphic symbol
BAT754			
1	anode		
2	not connected		
3	cathode		

Table 2. Pinning *...continued*

Pin	Description	Simplified outline	Graphic symbol
BAT754A			
1	cathode (diode 1)		
2	cathode (diode 2)		
3	common anode		
BAT754C			
1	anode (diode 1)		
2	anode (diode 2)		
3	common cathode		
BAT754S			
1	anode (diode 1)		
2	cathode (diode 2)		
3	cathode (diode 1), anode (diode 2)		

3. Ordering information

Table 3. Ordering information

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

4. Marking

Table 4. Marking codes

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

[1] * = placeholder for manufacturing site code.

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5. 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			-	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
Per device; one diode loaded						
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
Per device; one diode loaded							
$R_{th(j-a)}$	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; $\delta \leq 0.02$.

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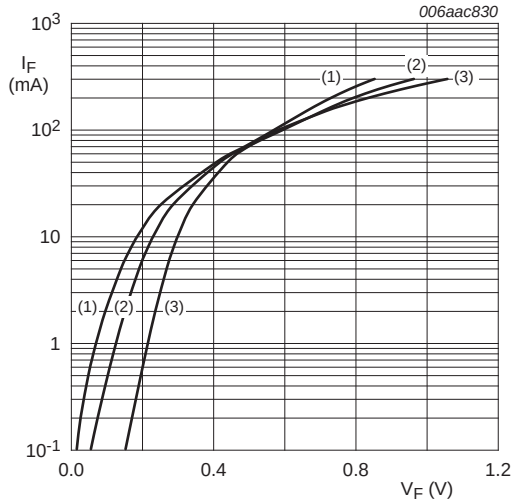
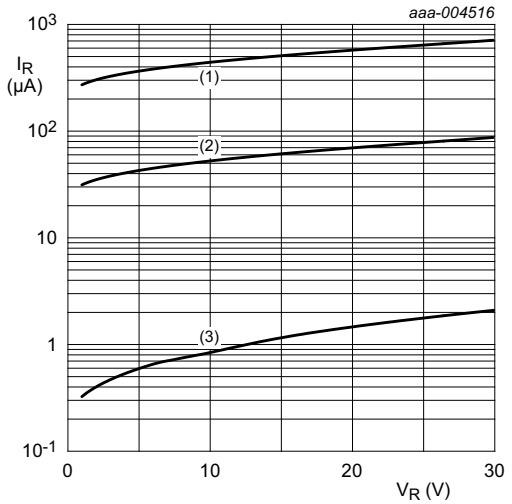


(1) T_{amb} = 125 °C

(2) T_{amb} = 85 °C

(3) T_{amb} = 25 °C

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

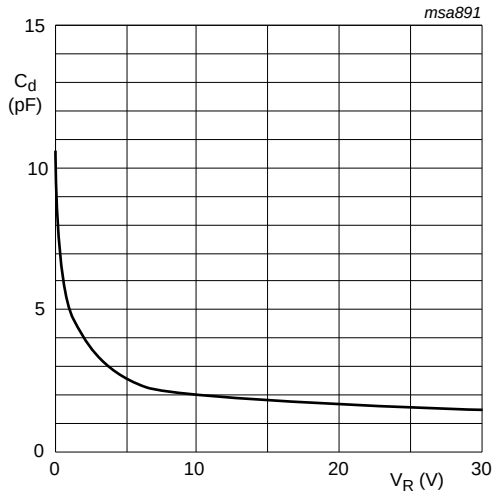


(1) T_{amb} = 125 °C

(2) T_{amb} = 85 °C

(3) T_{amb} = 25 °C

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



f = 1 MHz; T_{amb} = 25 °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.

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9. Package outline

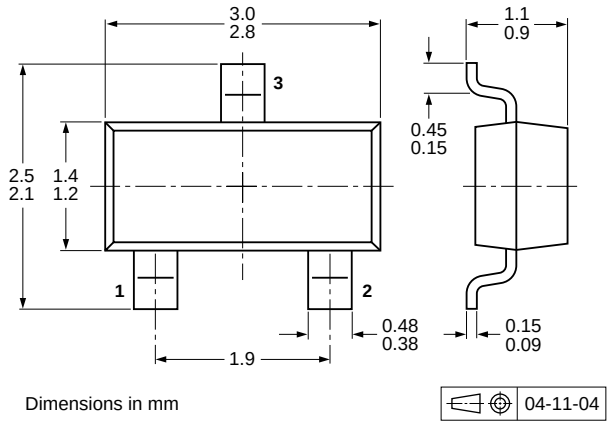

Fig 4. Package outline SOT23 (TO-236AB)

10. Packing information

Table 8. Packing methods

The indicated -xxx are the last three digits of the 12NC ordering code.[1]

Type number	Package	Description	Packing quantity	
			3000	10000
BAT754 series	SOT23	4 mm pitch, 8 mm tape and reel	-215	-235

[1] For further information and the availability of packing methods, see Section 14.

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11. Soldering

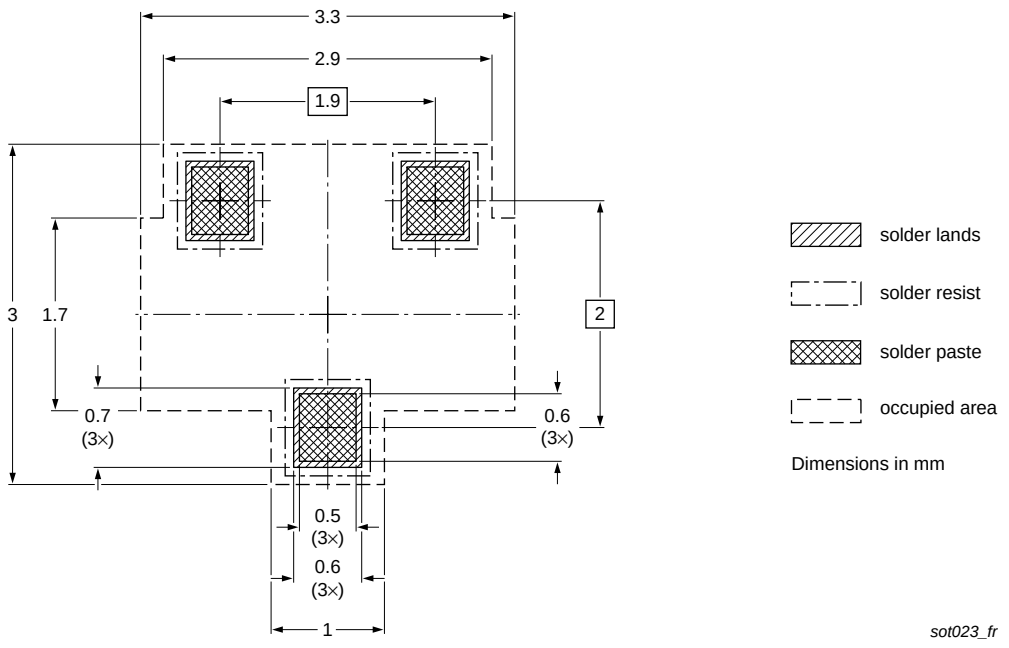

Fig 5. Reflow soldering footprint SOT23 (TO-236AB)

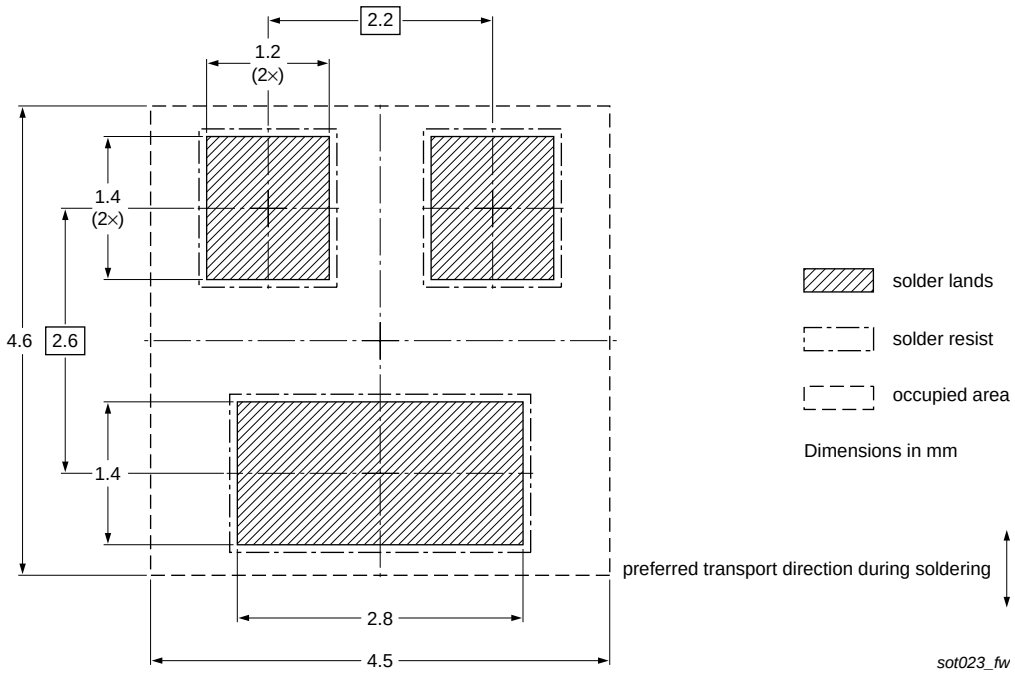

Fig 6. Wave soldering footprint SOT23 (TO-236AB)

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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:	• The format of this document has been redesigned to comply with the new identity guidelines of NXP Semiconductors. • Legal texts have been adapted to the new company name where appropriate. • Section 1: updated • Section 4: updated • Table 5: I_{FSM} conditions updated; changed T_{amb} minimum value to comply with AEC-Q101 • Figure 1 and 2: updated • Section 8 “Test information”: added • Figure 4: replaced by minimized package outline drawing • Section 10 “Packing information”: added • Section 11 “Soldering”: added • Section 13 “Legal information”: updated			
BAT754_SERIES v.2	20030325	Product data sheet	-	BAT754_SERIES v.1
BAT754_SERIES v.1	19990805	Product specification	-	-

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13. Legal information

13.1 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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