



# BAT54XY

Schottky barrier quadruple diode

Rev. 3 — 8 October 2012

Product data sheet

## 1. Product profile

### 1.1 General description

Schottky barrier quadruple diode with an integrated guard ring for stress protection. Two electrically isolated dual Schottky barrier diodes series, encapsulated in a very small SOT363 (SC-88) 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

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

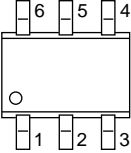
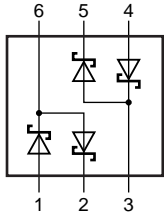
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
<b>Per diode</b>						
$V_R$	reverse voltage		-	-	30	V
$I_F$	forward current		-	-	200	mA
$V_F$	forward voltage	$I_F = 10\text{ mA}$	[1]	-	400	mV

[1] Pulse test:  $t_p \leq 30\text{ ms}$ ;  $\delta \leq 0.02$ .



## 2. Pinning information

**Table 2. Pinning**

Pin	Description	Simplified outline	Graphic symbol
1	anode 1		
2	cathode 2		
3	anode 3/cathode 4		
4	anode 4		
5	cathode 3		
6	cathode 1/anode 2		

006aaa256

## 3. Ordering information

**Table 3. Ordering information**

Type number	Package		
	Name	Description	Version
BAT54XY	SC-88	plastic surface-mounted package; 6 leads	SOT363

## 4. Marking

**Table 4. Marking codes**

Type number	Marking code <sup>[1]</sup>
BAT54XY	*C5

[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	$t_p < 10$ ms	-	600	mA
$T_j$	junction temperature		-	125	°C
$T_{amb}$	ambient temperature		-55	+125	°C
$T_{stg}$	storage temperature		-65	+150	°C

## 6. Thermal characteristics

**Table 6. Thermal characteristics**

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
$R_{th(j-sp)}$	thermal resistance from junction to solder point	in free air	[1]	-	260	K/W

[1] Soldering point at pins 2, 3, 5 and 6.

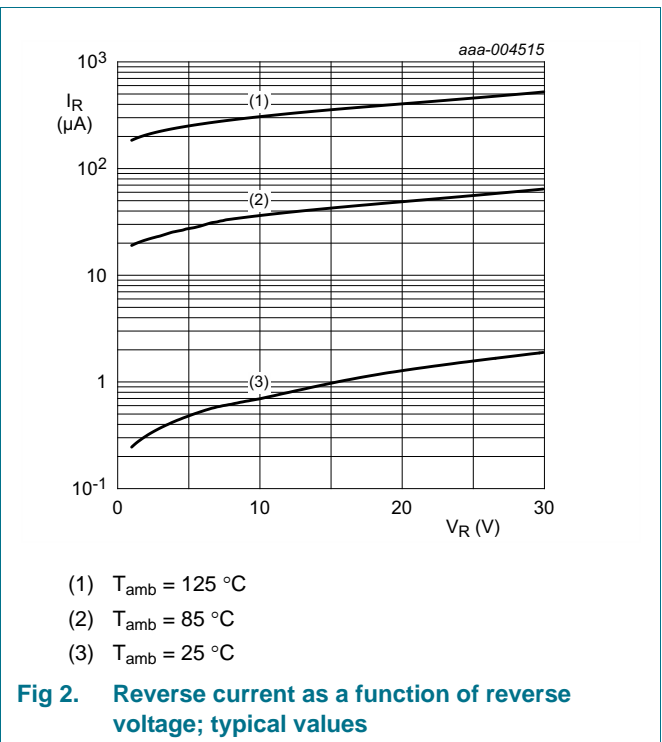
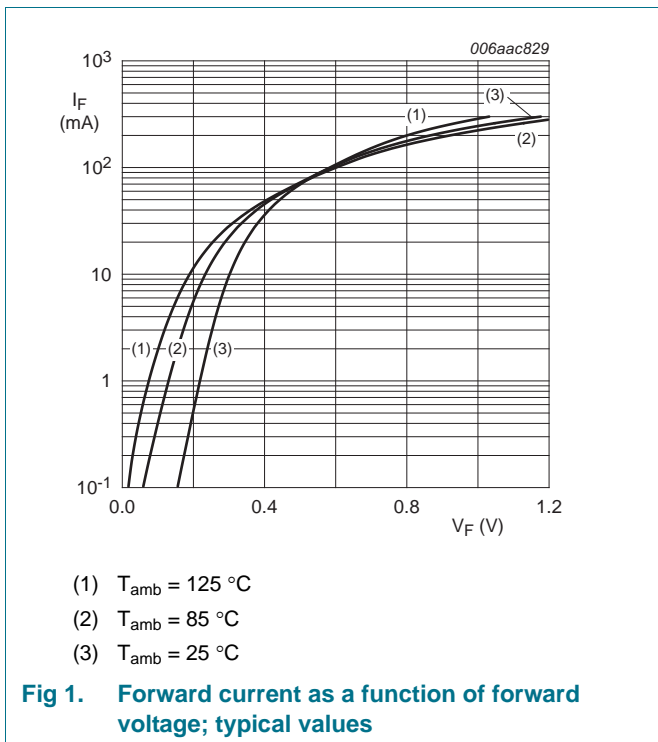
## 7. Characteristics

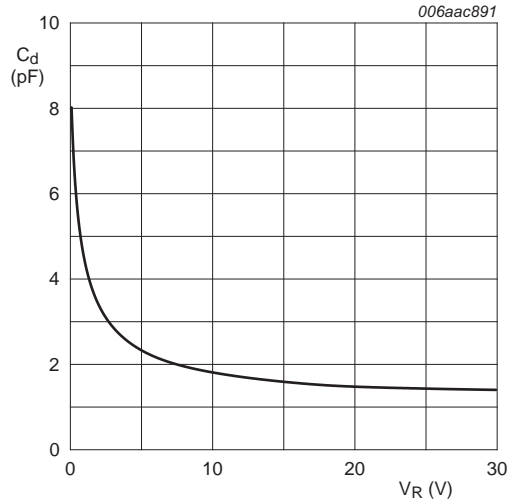
**Table 7. Characteristics**

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

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
<b>Per diode</b>						
$V_F$	forward voltage		[1]			
		$I_F = 0.1\text{ mA}$	-	-	240	mV
		$I_F = 1\text{ mA}$	-	-	320	mV
		$I_F = 10\text{ mA}$	-	-	400	mV
		$I_F = 30\text{ mA}$	-	-	500	mV
		$I_F = 100\text{ mA}$	-	-	800	mV
$I_R$	reverse current	$V_R = 25\text{ V}$	-	-	2	$\mu\text{A}$
$C_d$	diode capacitance	$V_R = 1\text{ V}; f = 1\text{ MHz}$	-	-	10	pF

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





T<sub>amb</sub> = 25 °C; f = 1 MHz

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

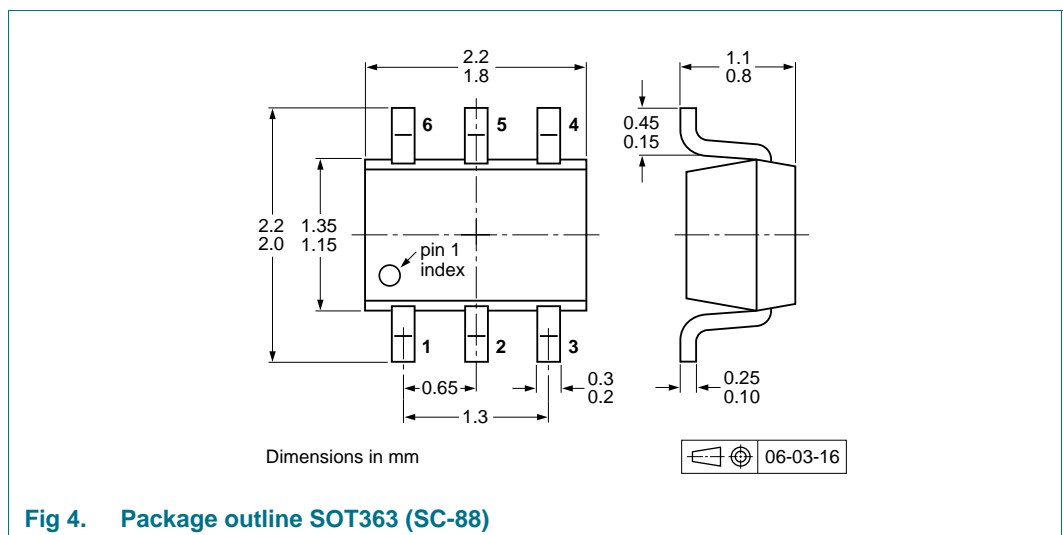


Fig 4. Package outline SOT363 (SC-88)

## 10. Packing information

**Table 8. Packing methods**

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

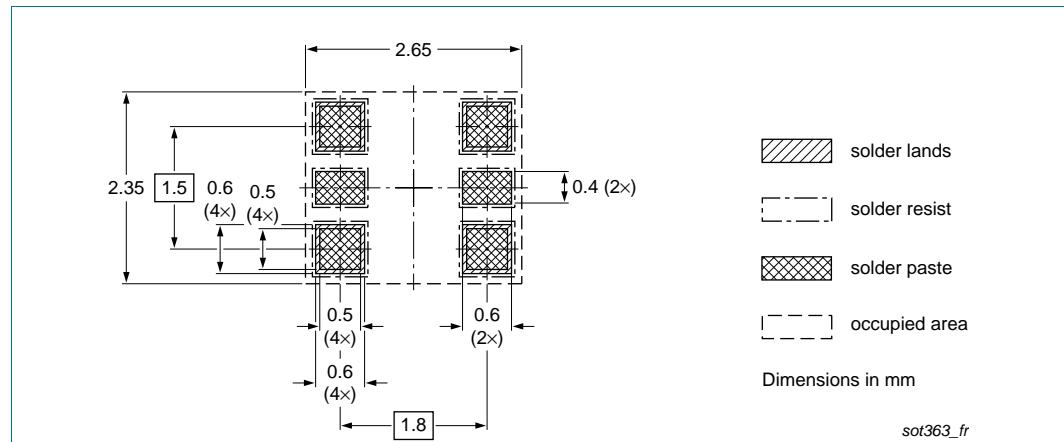
Type number	Package	Description	Packing quantity	
			3000	10000
BAT54XY	SOT363	4 mm pitch, 8 mm tape and reel; T1	[2] -115	-135
		4 mm pitch, 8 mm tape and reel; T2	[3] -125	-165

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

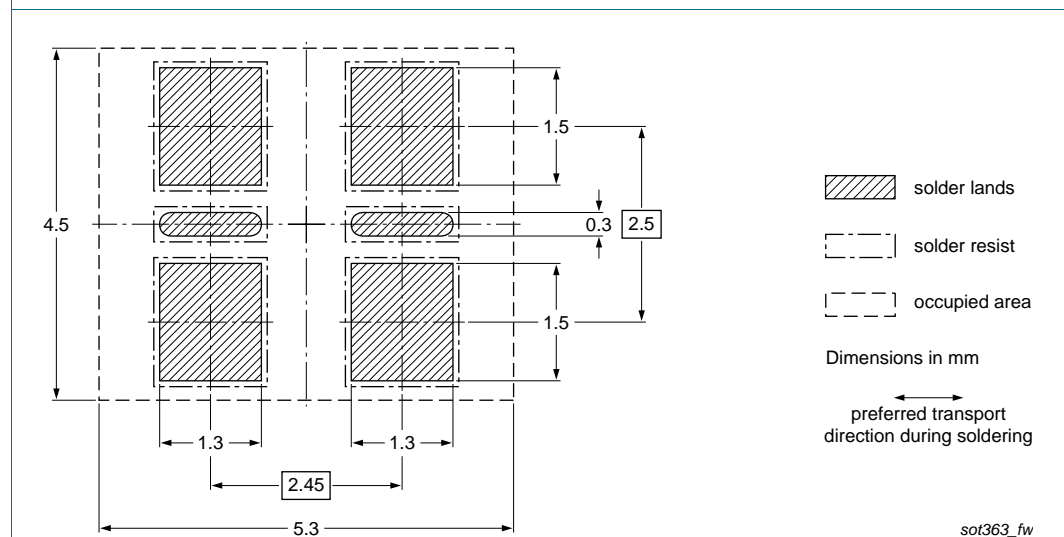
[2] T1: normal taping

[3] T2: reverse taping

## 11. Soldering



**Fig 5. Reflow soldering footprint SOT363 (SC-88)**



**Fig 6. Wave soldering footprint SOT363 (SC-88)**

## 12. Revision history

Table 9. Revision history

Document ID	Release date	Data sheet status	Change notice	Supersedes
BAT54XY v.3	20121008	Product data sheet	-	BAT54XY v.2
Modifications:	<ul style="list-style-type: none"><li>• <a href="#">Section 1</a>: updated</li><li>• <a href="#">Section 4</a>: updated</li><li>• <a href="#">Table 7</a>: updated</li><li>• <a href="#">Figure 1</a> to <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 11 "Soldering"</a>: added</li><li>• <a href="#">Section 13 "Legal information"</a>: updated</li></ul>			
BAT54XY v.2	20100113	Product data sheet	-	BAT54XY v.1
BAT54XY v.1	20050117	Product data sheet	-	-

## 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".

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## 15. Contents

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<b>1</b>	<b>Product profile</b> . . . . .	<b>1</b>
1.1	General description . . . . .	1
1.2	Features and benefits . . . . .	1
1.3	Applications . . . . .	1
1.4	Quick reference data . . . . .	1
<b>2</b>	<b>Pinning information</b> . . . . .	<b>2</b>
<b>3</b>	<b>Ordering information</b> . . . . .	<b>2</b>
<b>4</b>	<b>Marking</b> . . . . .	<b>2</b>
<b>5</b>	<b>Limiting values</b> . . . . .	<b>2</b>
<b>6</b>	<b>Thermal characteristics</b> . . . . .	<b>3</b>
<b>7</b>	<b>Characteristics</b> . . . . .	<b>3</b>
<b>8</b>	<b>Test information</b> . . . . .	<b>4</b>
8.1	Quality information . . . . .	4
<b>9</b>	<b>Package outline</b> . . . . .	<b>4</b>
<b>10</b>	<b>Packing information</b> . . . . .	<b>5</b>
<b>11</b>	<b>Soldering</b> . . . . .	<b>5</b>
<b>12</b>	<b>Revision history</b> . . . . .	<b>6</b>
<b>13</b>	<b>Legal information</b> . . . . .	<b>7</b>
13.1	Data sheet status . . . . .	7
13.2	Definitions . . . . .	7
13.3	Disclaimers . . . . .	7
13.4	Trademarks . . . . .	8
<b>14</b>	<b>Contact information</b> . . . . .	<b>8</b>
<b>15</b>	<b>Contents</b> . . . . .	<b>9</b>

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