

# BAT754L

Schottky barrier triple diode

22 November 2012

Product data sheet

## 1. Product profile

### 1.1 General description

Three internal isolated planar Schottky barrier diodes with an integrated guard ring for stress protection, encapsulated in very small SOT363 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

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
<b>Per diode</b>						
$V_R$	reverse voltage		-	-	30	V
<b>Per diode</b>						
$V_F$	forward voltage	$I_F = 100 \text{ mA}$ ; pulsed; $t_p \leq 300 \mu\text{s}$ ; $\delta \leq 0.02$ ; $T_{\text{amb}} = 25 \text{ }^\circ\text{C}$	-	-	750	mV
$I_R$	reverse current	$V_R = 25 \text{ V}$ ; pulsed; $t_p \leq 300 \mu\text{s}$ ; $\delta \leq 0.02$ ; $T_{\text{amb}} = 25 \text{ }^\circ\text{C}$	-	-	2	$\mu\text{A}$

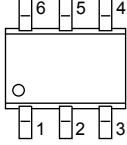
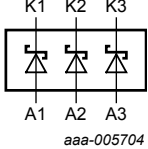


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## 2. Pinning information

Table 2. Pinning information

Pin	Symbol	Description	Simplified outline	Graphic symbol
1	A1	anode (diode 1)	 <p>TSSOP6 (SOT363)</p>	 <p>aaa-005704</p>
2	A2	anode (diode 2)		
3	A3	anode (diode 3)		
4	K3	cathode (diode 3)		
5	K2	cathode (diode 2)		
6	K1	cathode (diode 1)		

## 3. Ordering information

Table 3. Ordering information

Type number	Package		Version
	Name	Description	
BAT754L	TSSOP6	plastic surface-mounted package; 6 leads	SOT363

## 4. Marking

Table 4. Marking codes

Type number	Marking code [1]
BAT754L	L1%

[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	$t_p < 1$ s; $\delta < 0.5$	-	300	mA
$I_{FSM}$	non-repetitive peak forward current	$t_p < 10$ ms; $T_{j(\text{init})} = 25$ °C	-	600	mA
$T_j$	junction temperature		-	125	°C
$T_{\text{amb}}$	ambient temperature		-55	125	°C

Symbol	Parameter	Conditions	Min	Max	Unit
$T_{stg}$	storage temperature		-65	150	°C

## 6. Thermal characteristics

Table 6. Thermal characteristics

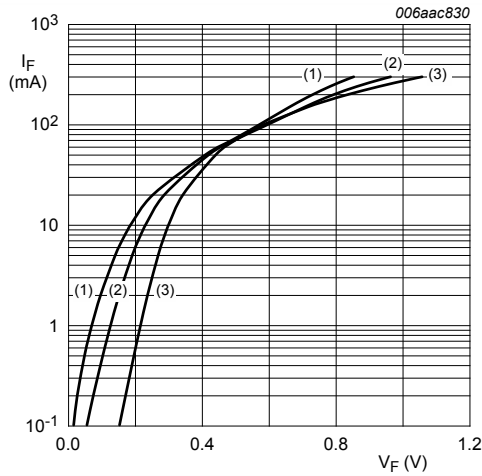
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
$R_{th(j-a)}$	thermal resistance from junction to ambient	in free air [1]	-	-	416	K/W

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

## 7. Characteristics

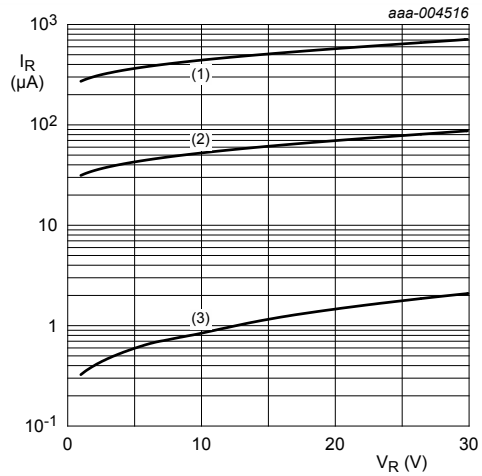
Table 7. Characteristics

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
<b>Per diode</b>						
$V_F$	forward voltage	$I_F = 0.1 \text{ mA}$ ; pulsed; $t_p \leq 300 \mu\text{s}$ ; $\delta \leq 0.02$ ; $T_{amb} = 25 \text{ }^\circ\text{C}$	-	-	200	mV
		$I_F = 1 \text{ mA}$ ; pulsed; $t_p \leq 300 \mu\text{s}$ ; $\delta \leq 0.02$ ; $T_{amb} = 25 \text{ }^\circ\text{C}$	-	-	260	mV
		$I_F = 10 \text{ mA}$ ; pulsed; $t_p \leq 300 \mu\text{s}$ ; $\delta \leq 0.02$ ; $T_{amb} = 25 \text{ }^\circ\text{C}$	-	-	340	mV
		$I_F = 30 \text{ mA}$ ; pulsed; $t_p \leq 300 \mu\text{s}$ ; $\delta \leq 0.02$ ; $T_{amb} = 25 \text{ }^\circ\text{C}$	-	-	420	mV
		$I_F = 100 \text{ mA}$ ; pulsed; $t_p \leq 300 \mu\text{s}$ ; $\delta \leq 0.02$ ; $T_{amb} = 25 \text{ }^\circ\text{C}$	-	-	750	mV
$I_R$	reverse current	$V_R = 25 \text{ V}$ ; pulsed; $t_p \leq 300 \mu\text{s}$ ; $\delta \leq 0.02$ ; $T_{amb} = 25 \text{ }^\circ\text{C}$	-	-	2	$\mu\text{A}$
$C_d$	diode capacitance	$V_R = 1 \text{ V}$ ; $f = 1 \text{ MHz}$ ; $T_{amb} = 25 \text{ }^\circ\text{C}$	-	-	10	pF



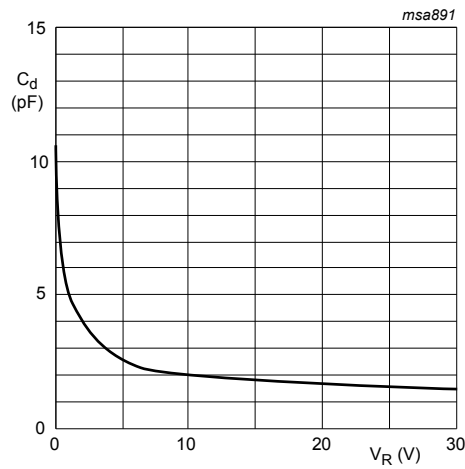
(1)  $T_{amb} = 125\text{ }^{\circ}\text{C}$   
 (2)  $T_{amb} = 85\text{ }^{\circ}\text{C}$   
 (3)  $T_{amb} = 25\text{ }^{\circ}\text{C}$

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



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

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



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

**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

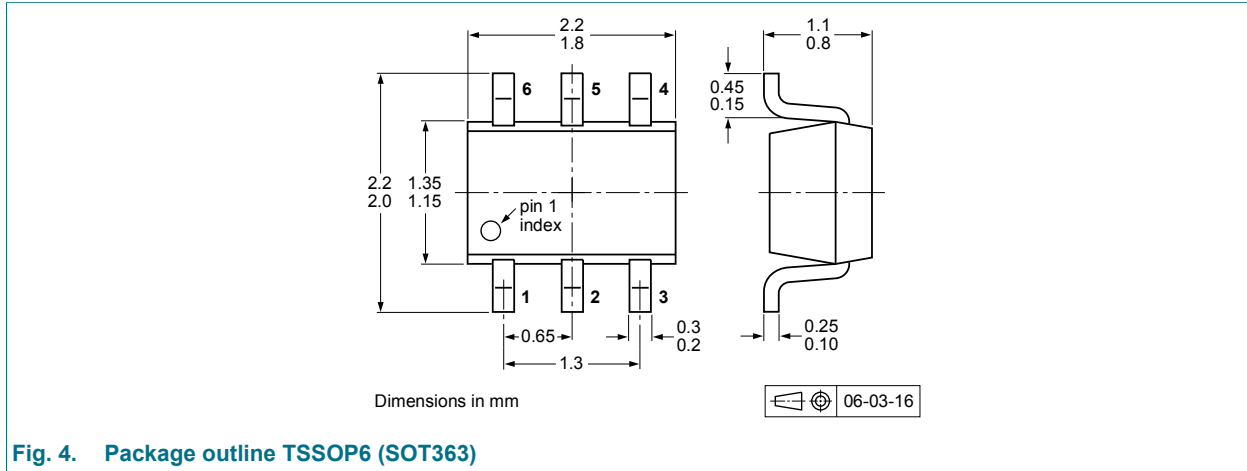


Fig. 4. Package outline TSSOP6 (SOT363)

### 10. Soldering

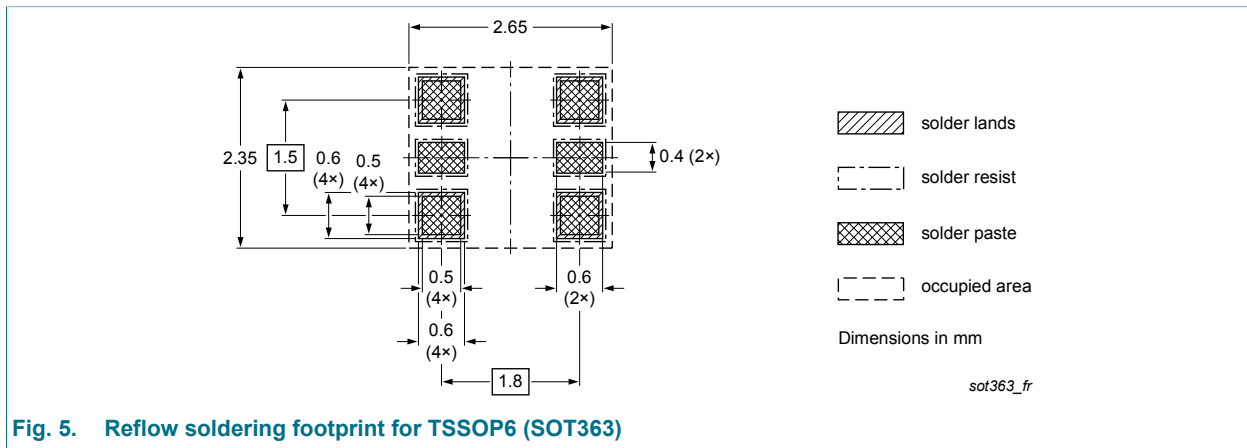
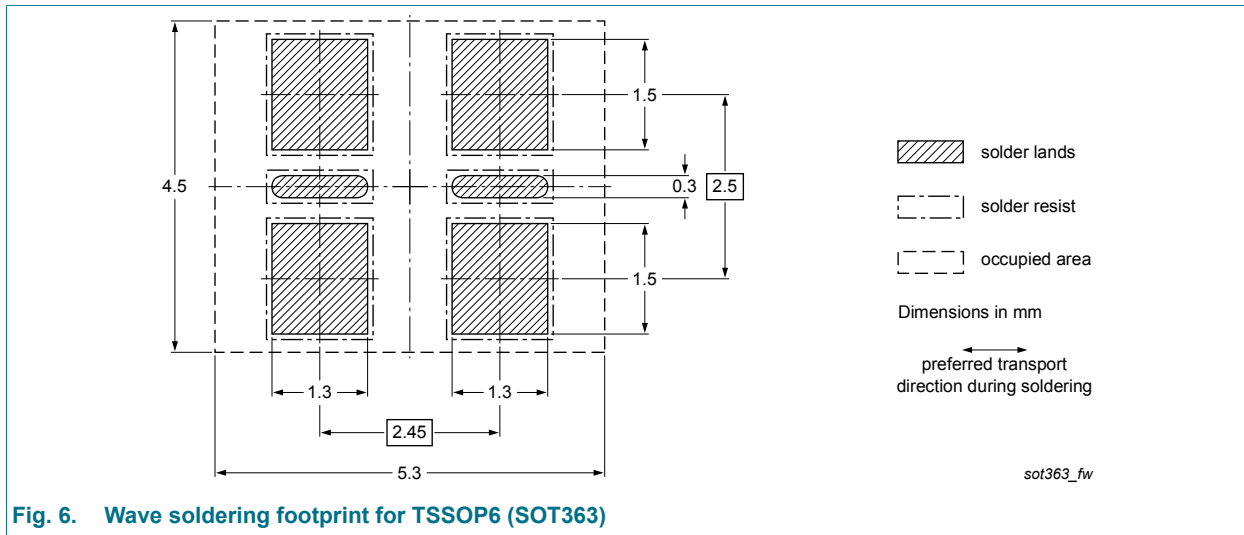


Fig. 5. Reflow soldering footprint for TSSOP6 (SOT363)



## 11. Revision history

Table 8. Revision history

Data sheet ID	Release date	Data sheet status	Change notice	Supersedes
BAT754L v.2	20121122	Product data sheet	-	BAT754L v.1
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>Section 1 Product profile: updated</li> <li>Section 4 Marking: updated</li> <li>Table 5 Limiting values: changed <math>T_{amb}</math> minimum value to -55 °C according to AEC-Q101</li> <li>Figure 1 and 2: updated</li> <li>Section 8 Test information: added</li> <li>Figure 4: superseded by minimized package outline drawing</li> <li>Section 10 Soldering: added</li> <li>Section 11 Legal information: updated</li> </ul>			
BAT754L v.1	20010118	Product specification	-	-

## 12. Legal information

### 12.1 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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