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
Per diode							
V_R	reverse voltage			-	-	30	V
Per diode							
V_F	forward voltage	I_F = 100 mA; pulsed; $t_p \leq 300$ µs; $\delta \leq 0.02$; T_{amb} = 25 °C		-	-	750	mV
I_R	reverse current	V_R = 25 V; pulsed; $t_p \leq 300$ µs; $\delta \leq 0.02$; T_{amb} = 25 °C		-	-	2	µA

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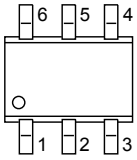
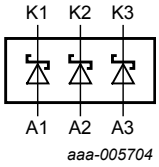
2. Pinning information

Table 2. Pinning information

Pin	Symbol	Description	Simplified outline	Graphic symbol
1	A1	anode (diode 1)	 TSSOP6 (SOT363)	
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		
	Name	Description	Version
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
Per diode						
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; $T_{j(init)} = 25$ °C		-	600	mA
T_j	junction temperature			-	125	°C
T_{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

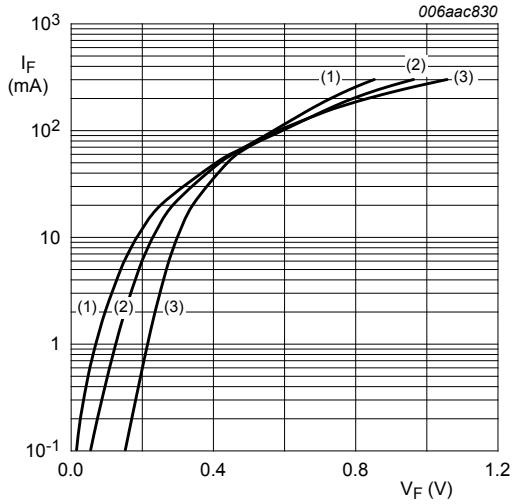
Symbol	Parameter	Conditions		Min	Typ	Max	Unit
$R_{th(j-a)}$	thermal resistance from junction to ambient	in free air	[1]	-	-	416	K/W

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

7. Characteristics

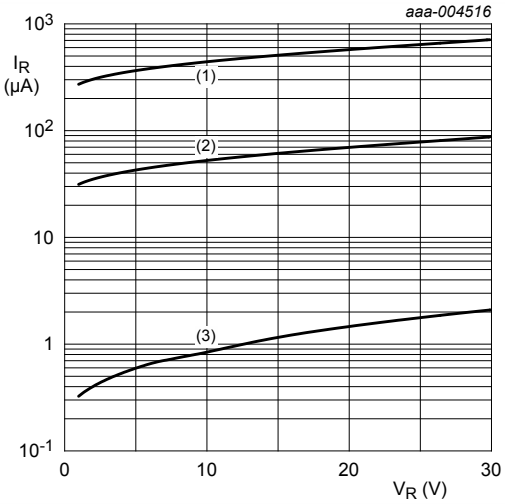
Table 7. Characteristics

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



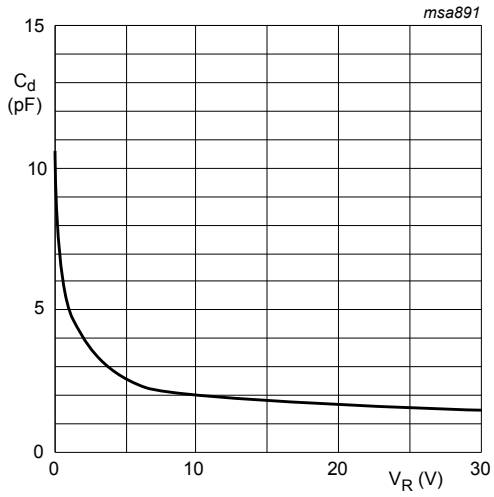
(1) T_{amb} = 125 °C
(2) T_{amb} = 85 °C
(3) T_{amb} = 25 °C

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.

9. Package outline

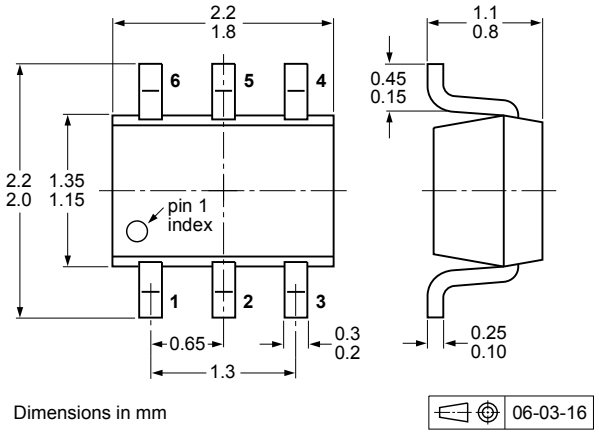


Fig. 4. Package outline TSSOP6 (SOT363)

10. Soldering

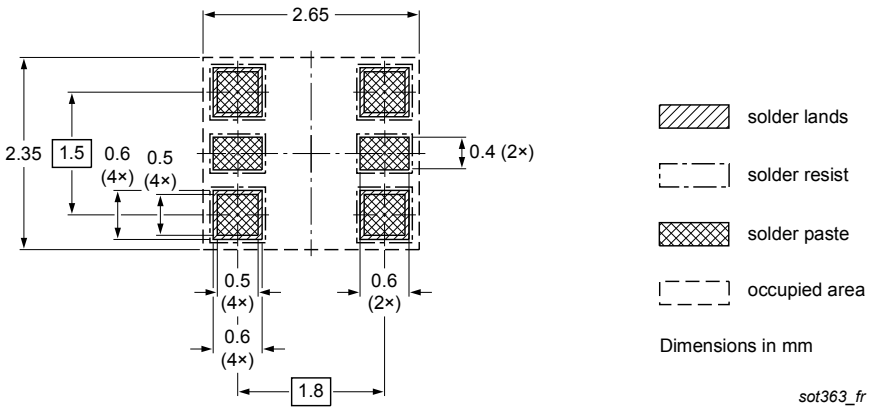


Fig. 5. Reflow soldering footprint for TSSOP6 (SOT363)

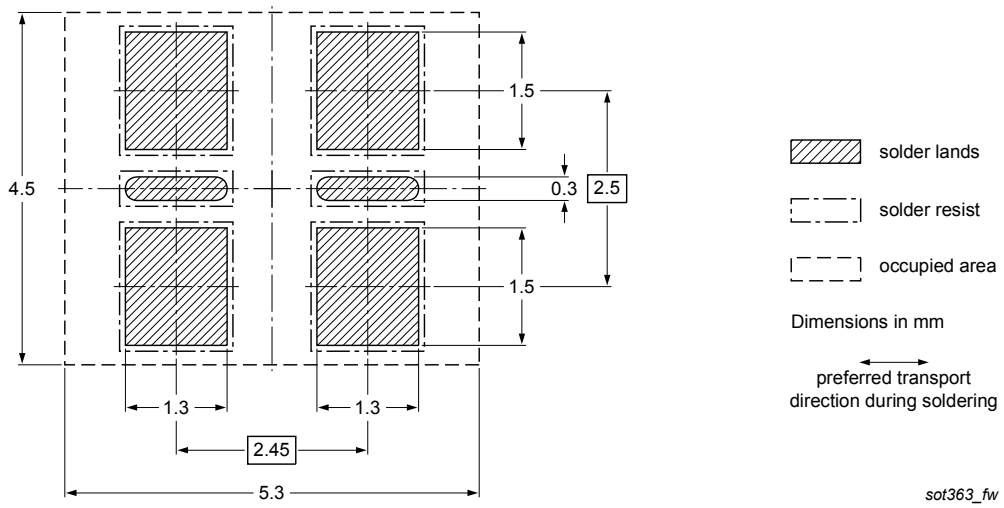


Fig. 6. Wave soldering footprint for TSSOP6 (SOT363)

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:	• 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 Product profile: updated • Section 4 Marking: updated • Table 5 Limiting values: changed T_{amb} minimum value to -55 °C according to AEC-Q101 • Figure 1 and 2: updated • Section 8 Test information: added • Figure 4: superseded by minimized package outline drawing • Section 10 Soldering: added • Section 11 Legal information: updated			
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".
[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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