BAT74V

Schottky barrier double diode

27 December 2022 **Product data sheet**

1. General description

Planar Schottky barrier double diode with an integrated guard ring for stress protection.

Two separate dies encapsulated in a SOT666 ultra small SMD plastic package.

2. Features and benefits

- Low forward voltage
- Low capacitance
- Ultra small SMD plastic package
- Flat leads: excellent coplanarity and improved thermal behaviour.

3. Applications

- Ultra high-speed switching
- Voltage clamping
- Line termination
- Inverse polarity protection.

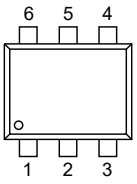
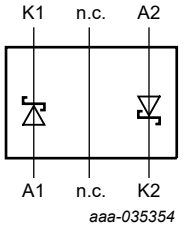
4. Quick reference data

Table 1. Quick reference data

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
Per diode							
V_R	reverse voltage			-	-	30	V
I_F	forward current			-	-	200	mA
V_F	forward voltage	I_F = 100 mA; t_p = 300 µs; δ = 0.02; pulsed; T_{amb} = 25 °C		-	-	800	mV
I_R	reverse current	V_R = 25 V; t_p = 300 µs; δ = 0.02; pulsed; T_{amb} = 25 °C		-	-	2	µA

5. Pinning information

Table 2. Pinning information

Pin	Symbol	Description	Simplified outline	Graphic symbol
1	A1	anode (diode 1)		
2	n.c.	not connected		
3	K2	cathode (diode 2)		
4	A2	anode (diode 2)		
5	n.c.	not connected		
6	K1	cathode (diode 1)		

SOT666

6. Ordering information

Table 3. Ordering information

Type number	Package		
	Name	Description	Version
BAT74V	SOT666	plastic, surface-mounted package; 6 leads; 0.5 mm pitch; 1.6 mm x 1.2 mm x 0.55 mm body	SOT666

7. Marking

Table 4. Marking codes

Type number	Marking code
BAT74V	74

8. 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	$t_p < 10$ ms; $T_{j(init)} = 25$ °C		-	600	mA
P_{tot}	total power dissipation	$T_{amb} \leq 25$ °C		-	230	mW
T_j	junction temperature			-	125	°C
T_{amb}	ambient temperature			-65	125	°C
T_{stg}	storage temperature			-65	150	°C

9. Thermal characteristics

Table 6. Thermal characteristics

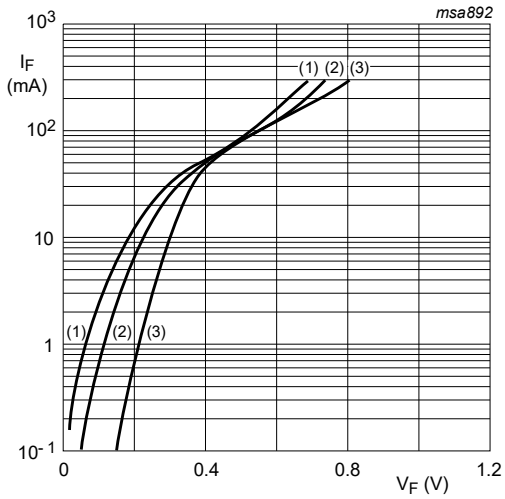
Symbol	Parameter	Conditions		Min	Typ	Max	Unit
Per diode							
$R_{th(j-a)}$	thermal resistance from junction to ambient	in free air	[1] [2]	-	-	416	K/W

[1] Device mounted on an FR4 Printed-Circuit Board (PCB), single-sided copper, tin-plated and standard footprint.
[2] The only recommended soldering method is reflow soldering.

10. Characteristics

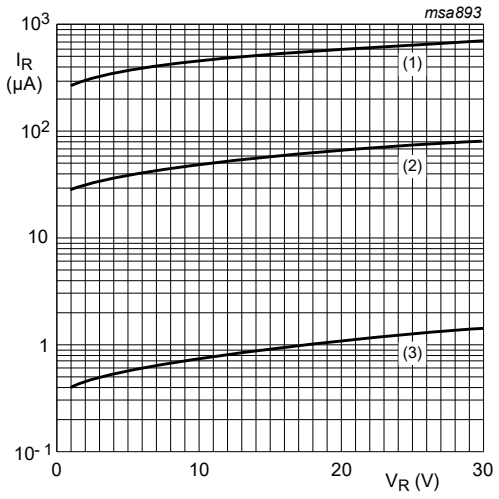
Table 7. Characteristics

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
Per diode							
V_F	forward voltage	I_F = 0.1 mA; t_p = 300 µs; δ = 0.02; pulsed; T_{amb} = 25 °C		-	-	240	mV
		I_F = 1 mA; t_p = 300 µs; δ = 0.02; pulsed; T_{amb} = 25 °C		-	-	320	mV
		I_F = 10 mA; t_p = 300 µs; δ = 0.02; pulsed; T_{amb} = 25 °C		-	-	400	mV
		I_F = 30 mA; t_p = 300 µs; δ = 0.02; pulsed; T_{amb} = 25 °C		-	-	500	mV
		I_F = 100 mA; t_p = 300 µs; δ = 0.02; pulsed; T_{amb} = 25 °C		-	-	800	mV
I_R	reverse current	V_R = 25 V; t_p = 300 µs; δ = 0.02; pulsed; T_{amb} = 25 °C		-	-	2	µA
C_d	diode capacitance	V_R = 1 V; f = 1 MHz; T_{amb} = 25 °C		-	-	10	pF



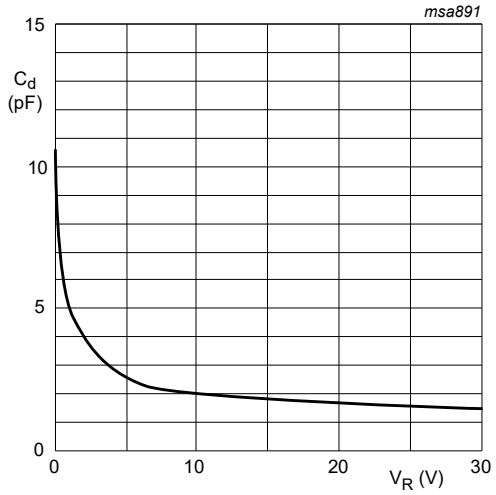
(1) T_{amb} = 125 °C
(2) T_{amb} = 85 °C
(3) T_{amb} = 25 °C

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

11. Package outline

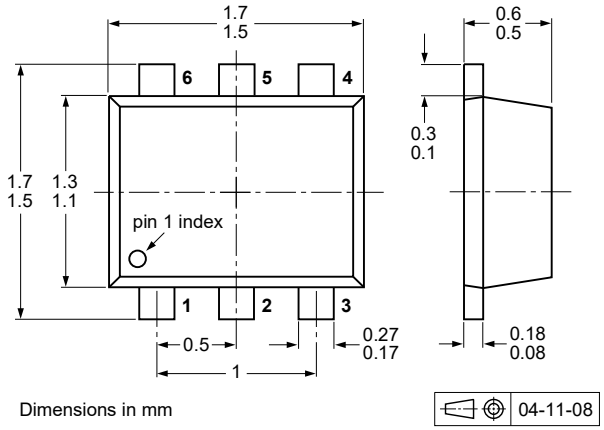


Fig. 4. Package outline SOT666

12. Soldering

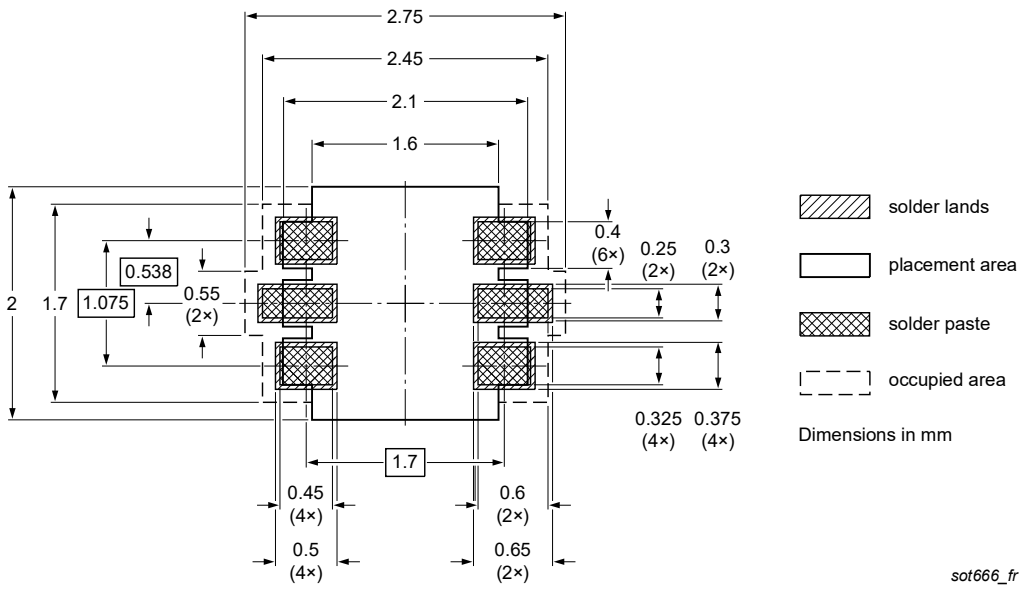


Fig. 5. Reflow soldering footprint for SOT666

13. Revision history

Table 8. Revision history

Data sheet ID	Release date	Data sheet status	Change notice	Supersedes
BAT74V v.2	20221227	Product data sheet	-	BAT74V v.1
Modifications:	• The format of this data sheet has been redesigned to comply with the identity guidelines of Nexperia. • Legal texts have been adapted to the new company name where appropriate. • Product(s) changed to non-automotive qualification.			
BAT74V v.1	20020902	Product data sheet	-	-

14. Legal information

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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