



BAT854W

40 V, 200 mA Schottky barrier diode

4 January 2023

Product data sheet

1. General description

Planar Schottky barrier diode with an integrated guard ring for stress protection, encapsulated in a very small SOT323 (SC-70) Surface-Mounted Device (SMD) plastic package.

2. Features and benefits

- Very low forward voltage
- Very low reverse current
- Guard ring protected
- Very small SMD plastic package
- AEC-Q101 qualified

3. Applications

- Ultra high-speed switching
- Voltage clamping
- Protection circuits
- Blocking diodes
- Low power consumption applications (e.g. hand-held applications)

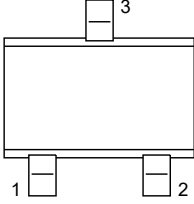
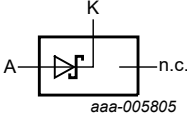
4. Quick reference data

Table 1. Quick reference data

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Per diode						
V_R	reverse voltage		-	-	40	V
I_F	forward current		-	-	200	mA
V_F	forward voltage	$I_F = 100 \text{ mA}$; $T_{\text{amb}} = 25 \text{ }^\circ\text{C}$	-	-	550	mV
I_R	reverse current	$V_R = 25 \text{ V}$; $t_p = 300 \text{ } \mu\text{s}$; $\delta = 0.02$; pulsed; $T_{\text{amb}} = 25 \text{ }^\circ\text{C}$	-	-	0.5	μA

5. Pinning information

Table 2. Pinning information

Pin	Symbol	Description	Simplified outline	Graphic symbol
1	A	anode	 SC-70 (SOT323)	 aaa-005805
2	n.c.	not connected		
3	K	cathode		

6. Ordering information

Table 3. Ordering information

Type number	Package		
	Name	Description	Version
BAT854W	SC-70	plastic, surface-mounted package; 3 leads; 1.3 mm pitch; 2 mm x 1.25 mm x 0.95 mm body	SOT323

7. Marking

Table 4. Marking codes

Type number	Marking code[1]
BAT854W	81%

[1] % = placeholder for manufacturing site code

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		-	40	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	$t_p = 8.3$ ms; half sinewave; JEDEC method; $T_{j(\text{init})} = 25$ °C	-	1	A
T_j	junction temperature		-	150	°C
T_{amb}	ambient temperature		-65	150	°C
T_{stg}	storage temperature		-65	150	°C

9. Thermal characteristics

Table 6. Thermal characteristics

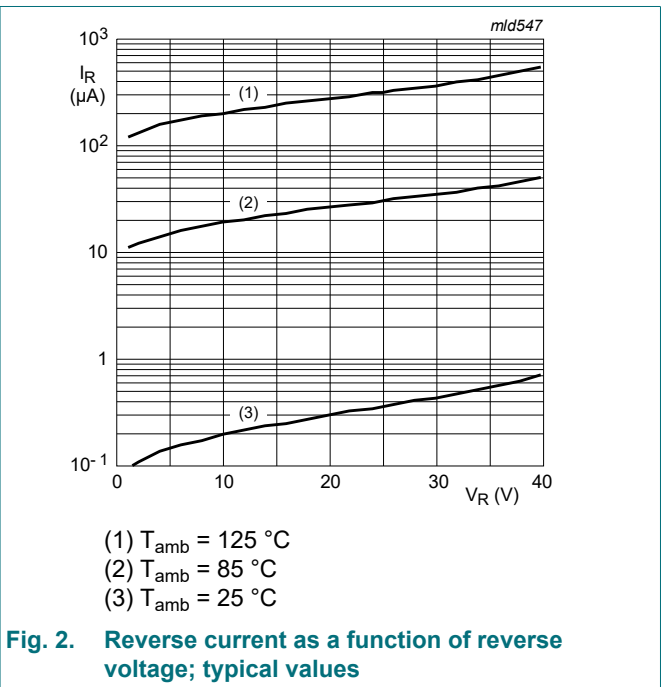
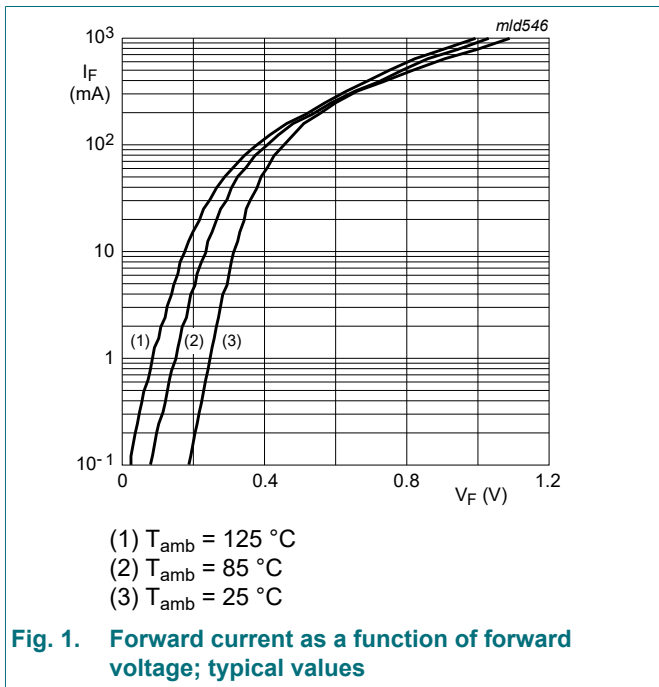
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
$R_{th(j-a)}$	thermal resistance from junction to ambient	[1]	-	-	625	K/W

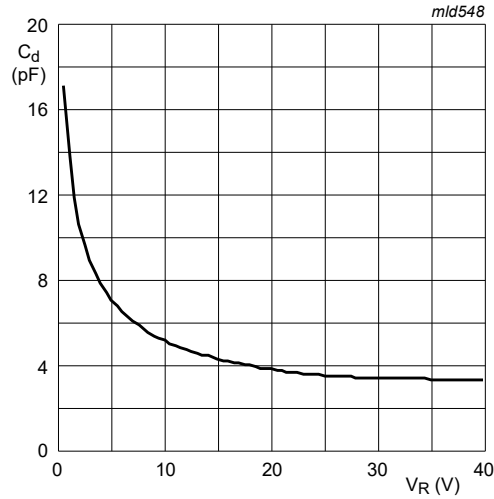
[1] Device mounted on an FR4 Printed-Circuit Board (PCB), single-sided copper, tin-plated and standard footprint.

10. Characteristics

Table 7. Characteristics

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Per diode						
V_F	forward voltage	$I_F = 0.1 \text{ mA}; T_{amb} = 25 \text{ }^\circ\text{C}$	-	200	-	mV
		$I_F = 1 \text{ mA}; T_{amb} = 25 \text{ }^\circ\text{C}$	-	260	-	mV
		$I_F = 10 \text{ mA}; T_{amb} = 25 \text{ }^\circ\text{C}$	-	340	-	mV
		$I_F = 30 \text{ mA}; T_{amb} = 25 \text{ }^\circ\text{C}$	-	-	420	mV
		$I_F = 100 \text{ mA}; T_{amb} = 25 \text{ }^\circ\text{C}$	-	-	550	mV
I_R	reverse current	$V_R = 25 \text{ V}; t_p = 300 \text{ } \mu\text{s}; \delta = 0.02; \text{ pulsed}; T_{amb} = 25 \text{ }^\circ\text{C}$	-	-	0.5	μA
C_d	diode capacitance	$V_R = 1 \text{ V}; f = 1 \text{ MHz}; T_{amb} = 25 \text{ }^\circ\text{C}$	-	-	20	pF





f = 1 MHz; T_{amb} = 25 °C

Fig. 3. Diode capacitance as a function of reverse voltage; typical values

11. Test information

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.

12. Package outline

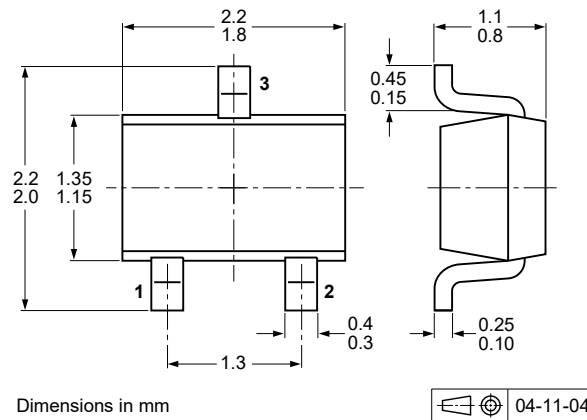


Fig. 4. Package outline SC-70 (SOT323)

13. Soldering

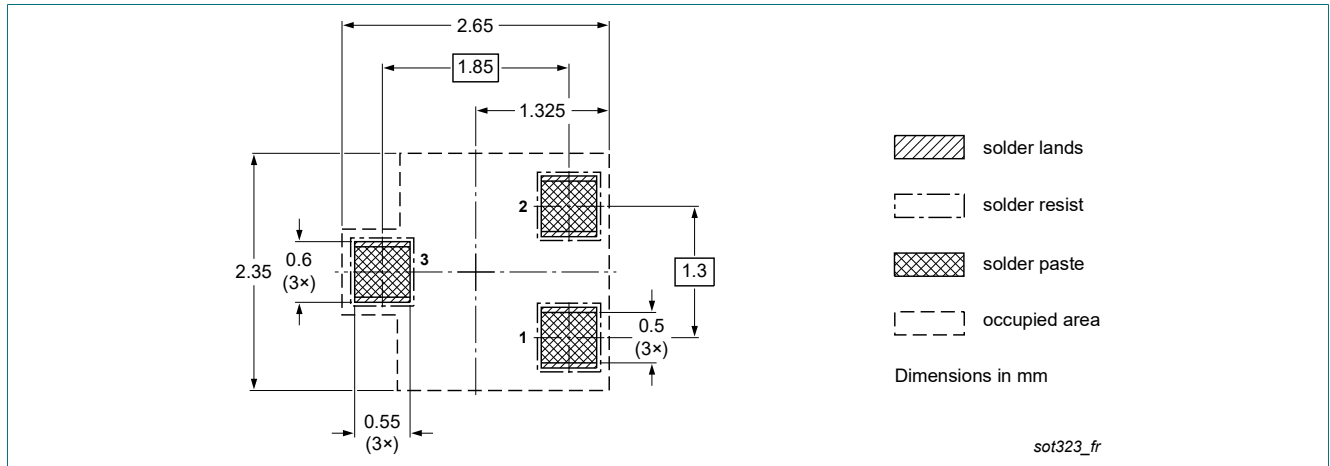


Fig. 5. Reflow soldering footprint for SC-70 (SOT323)

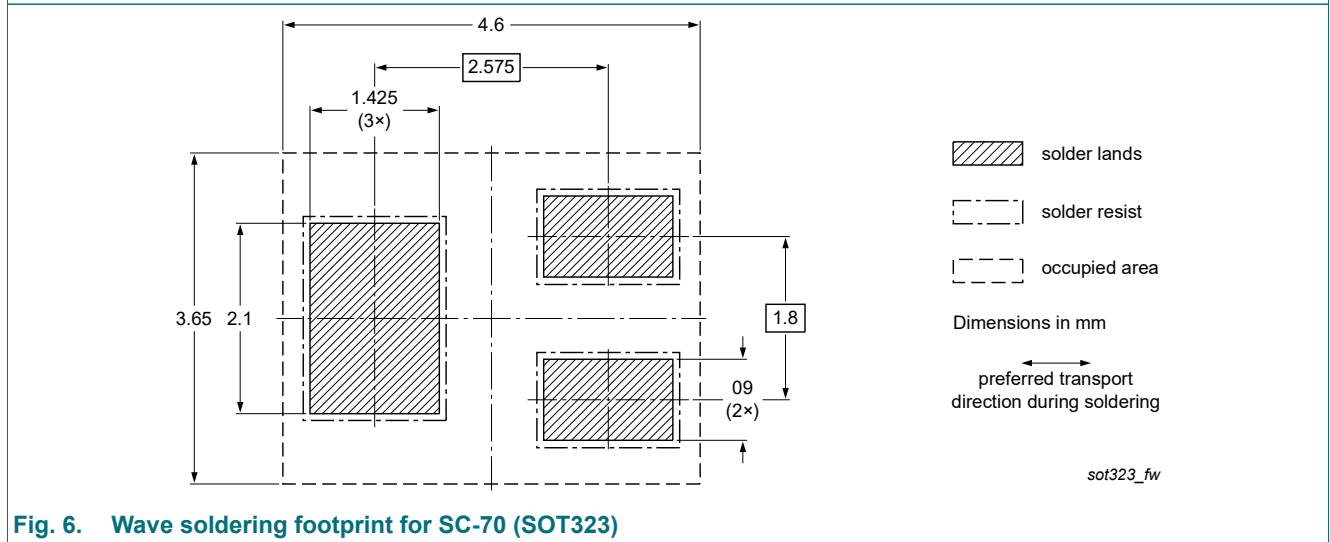


Fig. 6. Wave soldering footprint for SC-70 (SOT323)

14. Revision history

Table 8. Revision history

Data sheet ID	Release date	Data sheet status	Change notice	Supersedes
BAT854W v.2	20230104	Product data sheet	-	BAT854W_SERIES v.1
Modifications:	<ul style="list-style-type: none">• Family data sheet splitted to single type data sheets.• 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.			
BAT854W_SERIES v.1	20010227	Product data sheet	-	-

15. 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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