



BAT854CW-Q

40 V, 200 mA Schottky barrier dual diode

4 January 2023

Product data sheet

1. General description

Planar Schottky barrier dual 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
- Qualified according to AEC-Q101 and recommended for use in automotive applications

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

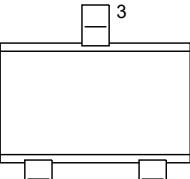
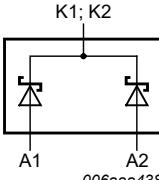
Table 1. Quick reference data

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

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5. Pinning information

Table 2. Pinning information

Pin	Symbol	Description	Simplified outline	Graphic symbol
1	A1	anode (diode 1)	 SC-70 (SOT323)	
2	A2	anode (diode 2)		
3	K1, K2	common cathode (diode 1 and diode 2)		

6. Ordering information

Table 3. Ordering information

Type number	Package		
	Name	Description	Version
BAT854CW-Q	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]
BAT854CW-Q	83%

[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	$t_p \leq 1 \text{ s}; \delta \leq 0.5$		-	300	mA
I_{FSM}	non-repetitive peak forward current	$t_p = 8.3 \text{ ms}; \text{half sinewave}; \text{JEDEC method}; T_{j(\text{init})} = 25 \text{ }^\circ\text{C}$		-	1	A
T_j	junction temperature			-	150	$^\circ\text{C}$
T_{amb}	ambient temperature			-65	150	$^\circ\text{C}$
T_{stg}	storage temperature			-65	150	$^\circ\text{C}$

9. Thermal characteristics

Table 6. Thermal characteristics

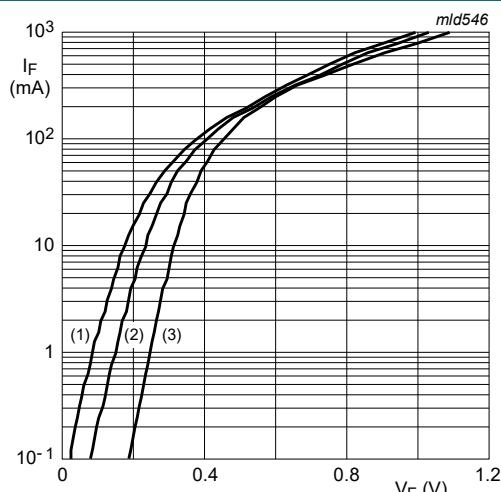
Symbol	Parameter	Conditions		Min	Typ	Max	Unit
$R_{th(j-a)}$	thermal resistance from junction to ambient		[1]	-	-	625	K/W

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

10. Characteristics

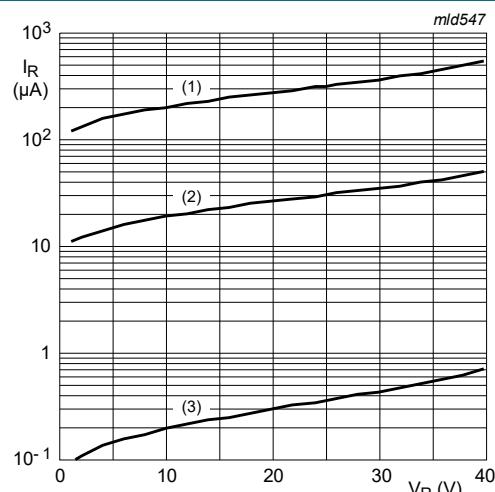
Table 7. Characteristics

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



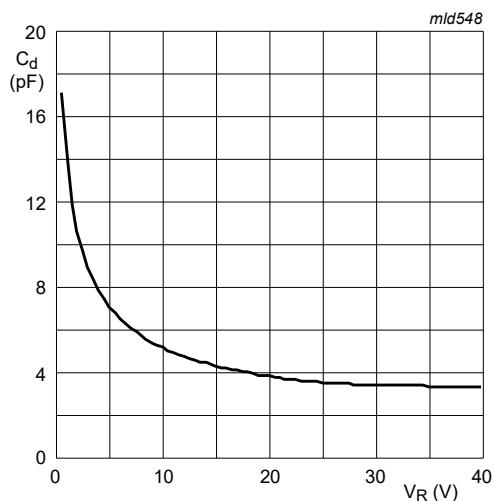
- (1) $T_{amb} = 125^\circ\text{C}$
- (2) $T_{amb} = 85^\circ\text{C}$
- (3) $T_{amb} = 25^\circ\text{C}$

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



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

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. 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

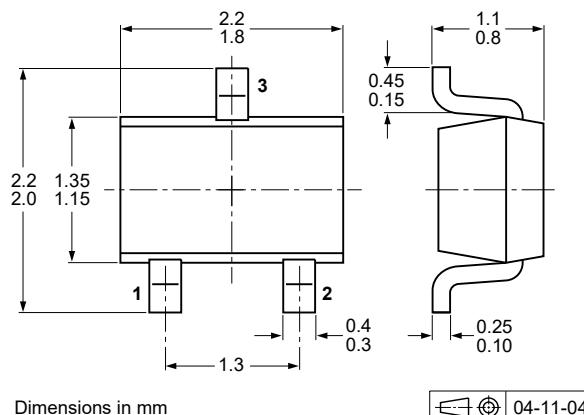
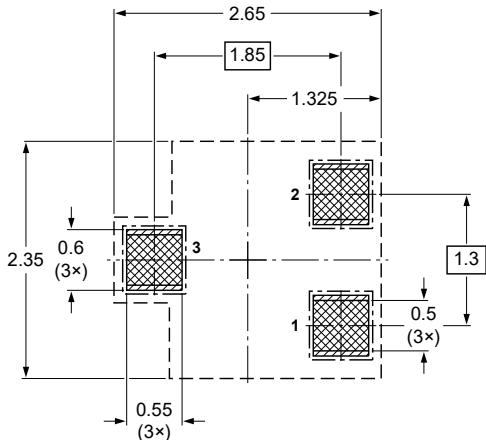


Fig. 4. Package outline SC-70 (SOT323)

13. Soldering



solder lands

solder resist

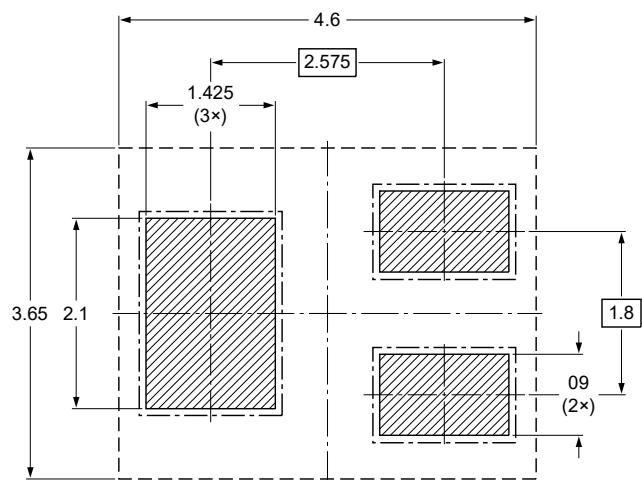
solder paste

occupied area

Dimensions in mm

sot323_fr

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



solder lands

solder resist

occupied area

Dimensions in mm

preferred transport
direction during soldering

sot323_fw

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
BAT854CW-Q v.1	20230104	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.

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