



BAT854AW-Q

40 V, 200 mA Schottky barrier dual diode

19 July 2022

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)

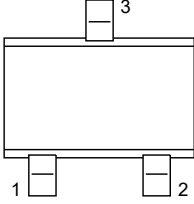
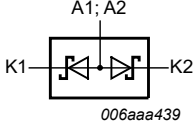
4. Quick reference data

Table 1. Quick reference data

| Symbol | Parameter | Conditions | Min | Typ | Max | Unit |
|------------------|-----------------|--|-----|-----|-----|---------------|
| Per diode | | | | | | |
| 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 | $V_R = 25 \text{ V}$; $t_p \leq 300 \text{ } \mu\text{s}$; $\delta \leq 0.02$; 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 | K1 | cathode (diode 1) |  <p>SC-70 (SOT323)</p> |  <p>006aaa439</p> |
| 2 | K2 | cathode (diode 2) | | |
| 3 | A1, A2 | common anode | | |

6. Ordering information

Table 3. Ordering information

| Type number | Package | | |
|----------------------------|---------|--|------------------------|
| | Name | Description | Version |
| BAT854AW-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] |
|-------------|-----------------|
| BAT854AW-Q | 82% |

[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

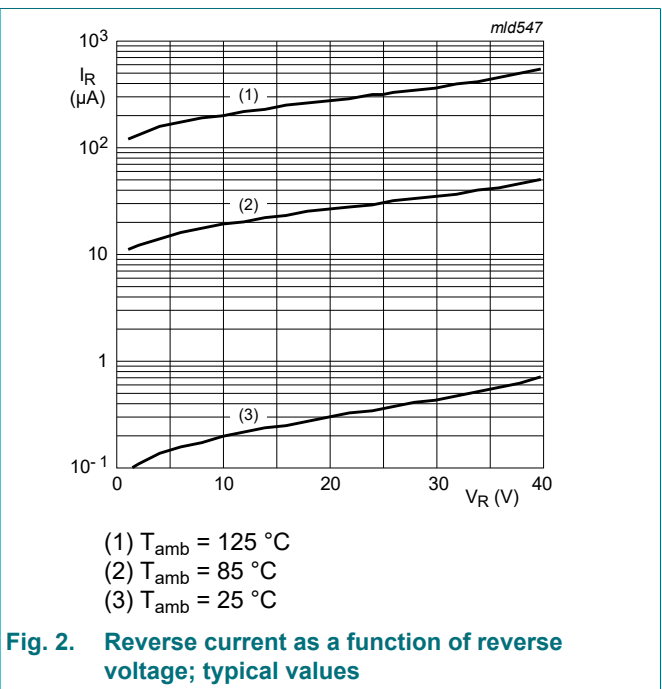
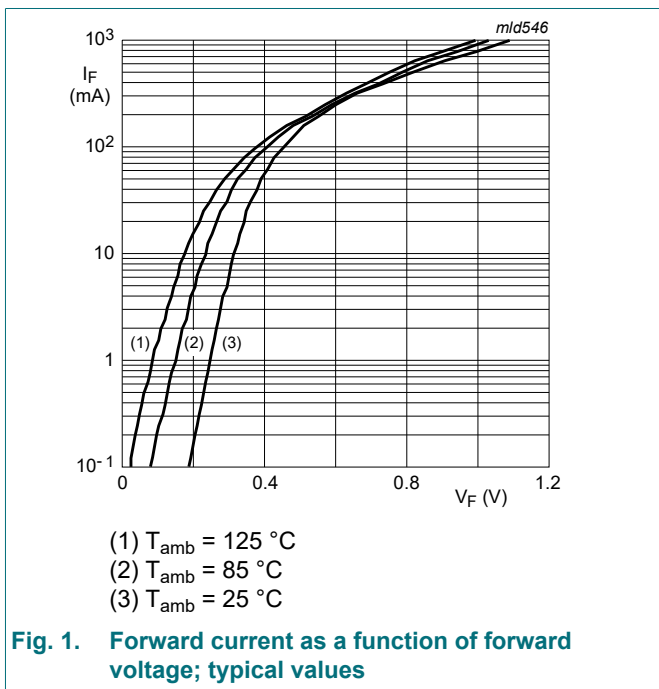
| Symbol | Parameter | Conditions | Min | Typ | Max | Unit |
|---------------|---|------------|-----|-----|-----|------|
| $R_{th(j-a)}$ | thermal resistance from junction to ambient | [1] | - | - | 625 | K/W |

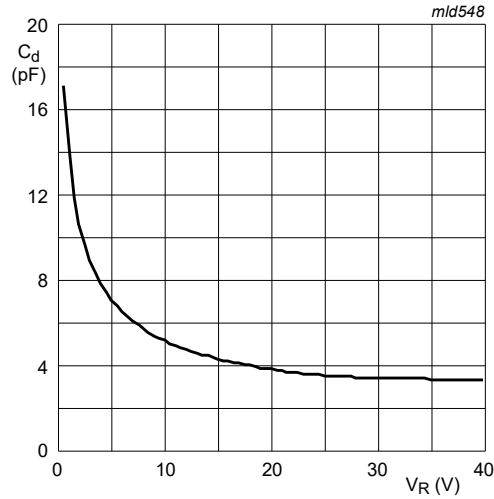
[1] Device mounted on an FR4 Printed-Circuit Board (PCB), single-sided copper, tin-plated and standard footprint.

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 | $V_R = 25 \text{ V}; t_p \leq 300 \text{ } \mu\text{s}; \delta \leq 0.02;$ 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

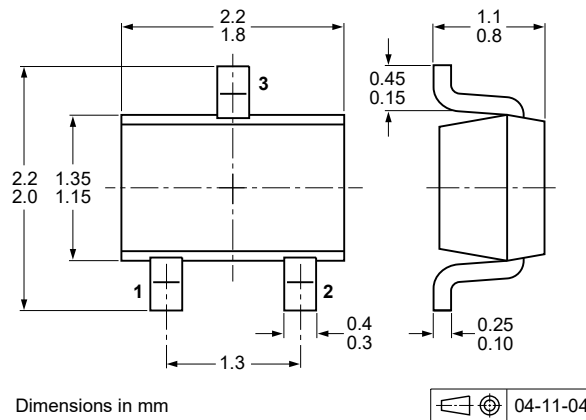


Fig. 4. Package outline SC-70 (SOT323)

13. Soldering

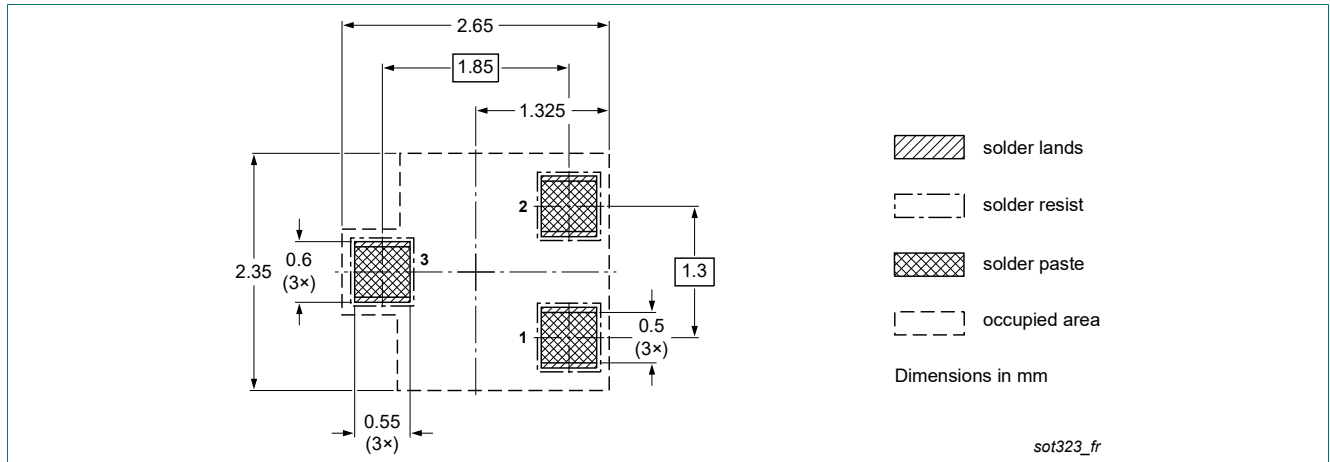


Fig. 5. Reflow soldering footprint for SC-70 (SOT323)

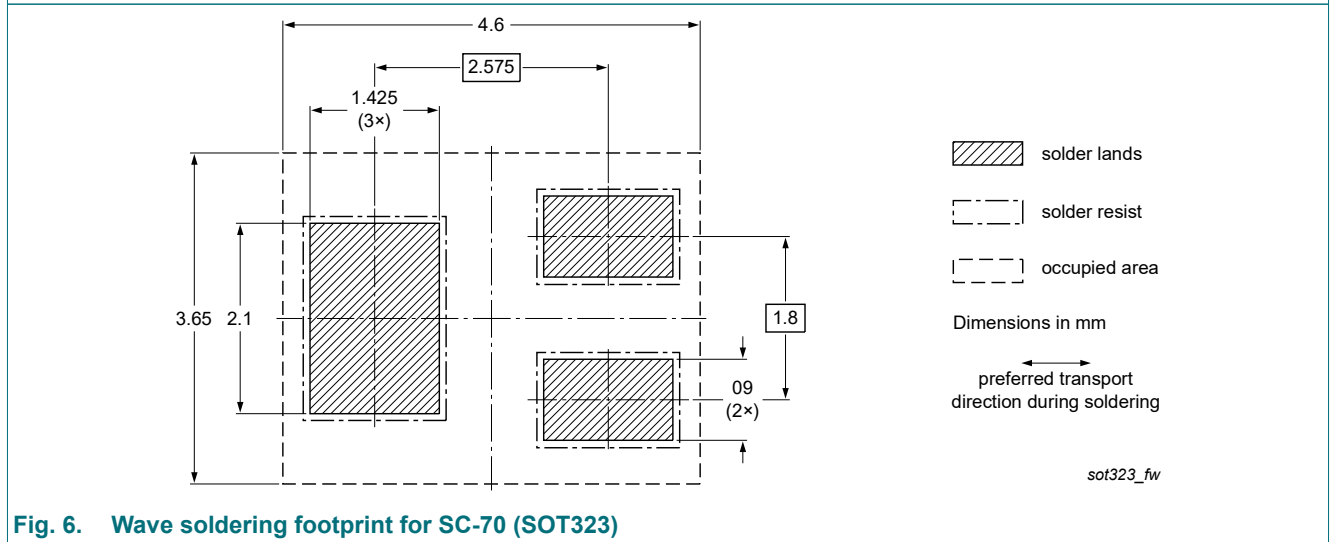


Fig. 6. Wave soldering footprint for SC-70 (SOT323)

14. Revision history

Table 8. Revision history

| Data sheet ID | Release date | Data sheet status | Change notice | Supersedes |
|----------------|--------------|--------------------|---------------|------------|
| BAT854AW-Q v.1 | 202207019 | 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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- [2] The term 'short data sheet' is explained in section "Definitions".
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