



# RB751V40-Q

## Schottky barrier diode

14 September 2021

Product data sheet

## 1. General description

Planar Schottky barrier diode with an integrated guard ring for stress protection, in a very small SOD323 (SC-76) Surface-Mounted Device (SMD) plastic package.

## 2. Features and benefits

- Low forward voltage
- Low capacitance
- Qualified according to AEC-Q101 and recommended for use in automotive applications

## 3. Applications

- Ultra high-speed switching
- Voltage clamping
- Line termination
- Reverse polarity protection

## 4. Quick reference data

Table 1. Quick reference data

| Symbol    | Parameter                       | Conditions                                                                                                                       | Min | Typ | Max | Unit |
|-----------|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------|-----|-----|-----|------|
| $I_F$     | forward current                 |                                                                                                                                  | -   | -   | 120 | mA   |
| $V_{RRM}$ | repetitive peak reverse voltage |                                                                                                                                  | -   | -   | 40  | V    |
| $V_F$     | forward voltage                 | $I_F = 1 \text{ mA}$ ; $t_p \leq 300 \text{ } \mu\text{s}$ ; $\delta \leq 0.02$ ; pulsed; $T_{amb} = 25 \text{ } ^\circ\text{C}$ | -   | -   | 370 | mV   |

## 5. Pinning information

Table 2. Pinning information

| Pin | Symbol | Description | Simplified outline                                                                            | Graphic symbol                                                                                                                                                                               |
|-----|--------|-------------|-----------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1   | K      | cathode[1]  | <br>SOD323 | <br>K  A<br>sym001 |
| 2   | A      | anode       |                                                                                               |                                                                                                                                                                                              |

[1] The marking bar indicates the cathode.

## 6. Ordering information

Table 3. Ordering information

| Type number | Package |                                                                                          |         |
|-------------|---------|------------------------------------------------------------------------------------------|---------|
|             | Name    | Description                                                                              | Version |
| RB751V40-Q  | SOD323  | plastic, surface-mounted package; 2 leads; 1.3 mm pitch; 1.7 mm x 1.25 mm x 0.95 mm body | SOD323  |

## 7. Marking

Table 4. Marking codes

| Type number | Marking code |
|-------------|--------------|
| RB751V40-Q  | W8           |

## 8. Limiting values

Table 5. Limiting values

In accordance with the Absolute Maximum Rating System (IEC 60134).

| Symbol           | Parameter                           | Conditions                                                                            |     | Min | Max | Unit               |
|------------------|-------------------------------------|---------------------------------------------------------------------------------------|-----|-----|-----|--------------------|
| $V_R$            | reverse voltage                     | $T_j = 25\text{ }^{\circ}\text{C}$                                                    |     | -   | 40  | V                  |
| $V_{RRM}$        | repetitive peak reverse voltage     |                                                                                       |     | -   | 40  | V                  |
| $I_F$            | forward current                     |                                                                                       |     | -   | 120 | mA                 |
| $I_{FSM}$        | non-repetitive peak forward current | $t_p < 10\text{ ms}$ ; square wave; $T_{j(\text{init})} = 25\text{ }^{\circ}\text{C}$ |     | -   | 200 | mA                 |
| $P_{\text{tot}}$ | total power dissipation             | $T_{\text{amb}} \leq 25\text{ }^{\circ}\text{C}$                                      | [1] | -   | 280 | mW                 |
| $T_j$            | junction temperature                |                                                                                       |     | -   | 150 | $^{\circ}\text{C}$ |
| $T_{\text{amb}}$ | ambient temperature                 |                                                                                       |     | -65 | 150 | $^{\circ}\text{C}$ |
| $T_{\text{stg}}$ | storage temperature                 |                                                                                       |     | -65 | 150 | $^{\circ}\text{C}$ |

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

## 9. Thermal characteristics

Table 6. Thermal characteristics

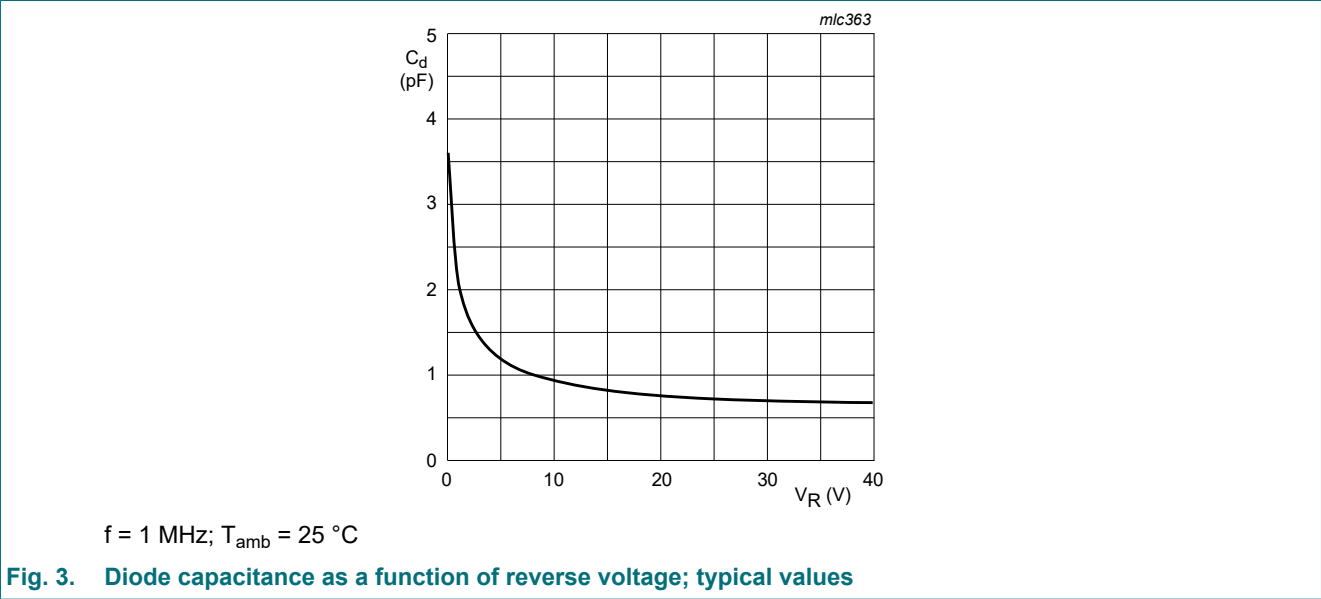
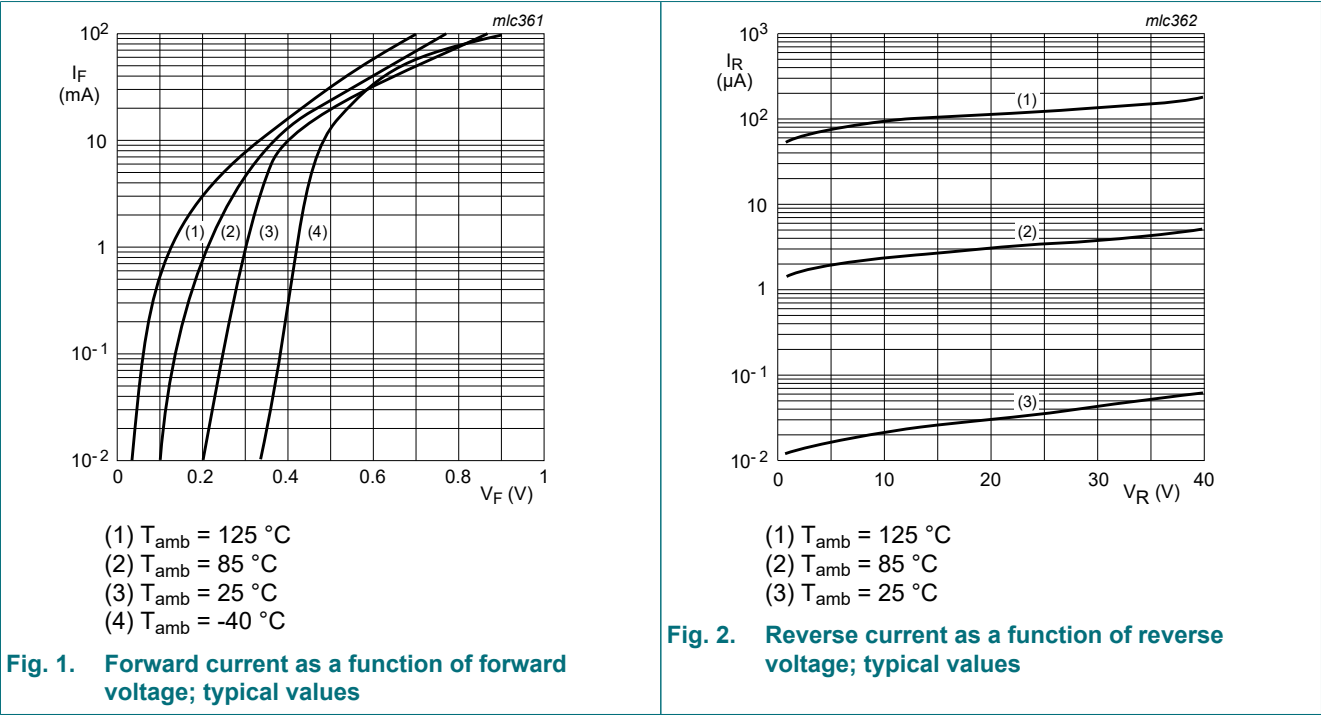
| Symbol               | Parameter                                   | Conditions  |     | Min | Typ | Max | Unit |
|----------------------|---------------------------------------------|-------------|-----|-----|-----|-----|------|
| $R_{\text{th}(j-a)}$ | thermal resistance from junction to ambient | in free air | [1] | -   | -   | 450 | 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          |
|--------|-------------------|------------------------------------------------------------------------------------------------------------------------------------|-----|-----|-----|---------------|
| $V_F$  | forward voltage   | $I_F = 1\text{ mA}$ ; $t_p \leq 300\text{ }\mu\text{s}$ ; $\delta \leq 0.02$ ; pulsed; $T_{\text{amb}} = 25\text{ }^\circ\text{C}$ | -   | -   | 370 | mV            |
| $I_R$  | reverse current   | $V_R = 30\text{ V}$ ; $T_{\text{amb}} = 25\text{ }^\circ\text{C}$                                                                  | -   | -   | 0.5 | $\mu\text{A}$ |
| $C_d$  | diode capacitance | $V_R = 1\text{ V}$ ; $f = 1\text{ MHz}$ ; $T_{\text{amb}} = 25\text{ }^\circ\text{C}$                                              | -   | 2   | -   | pF            |



## 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

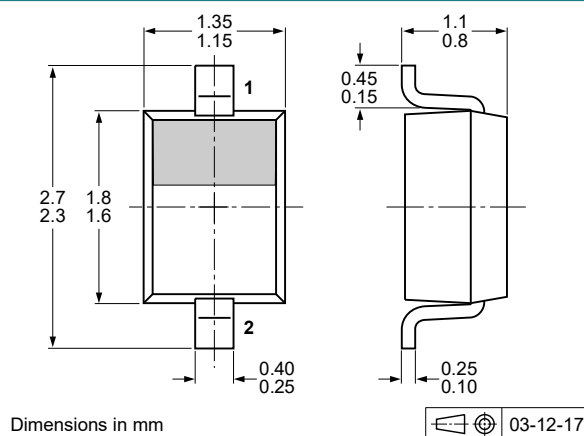


Fig. 4. Package outline SOD323

13. Soldering

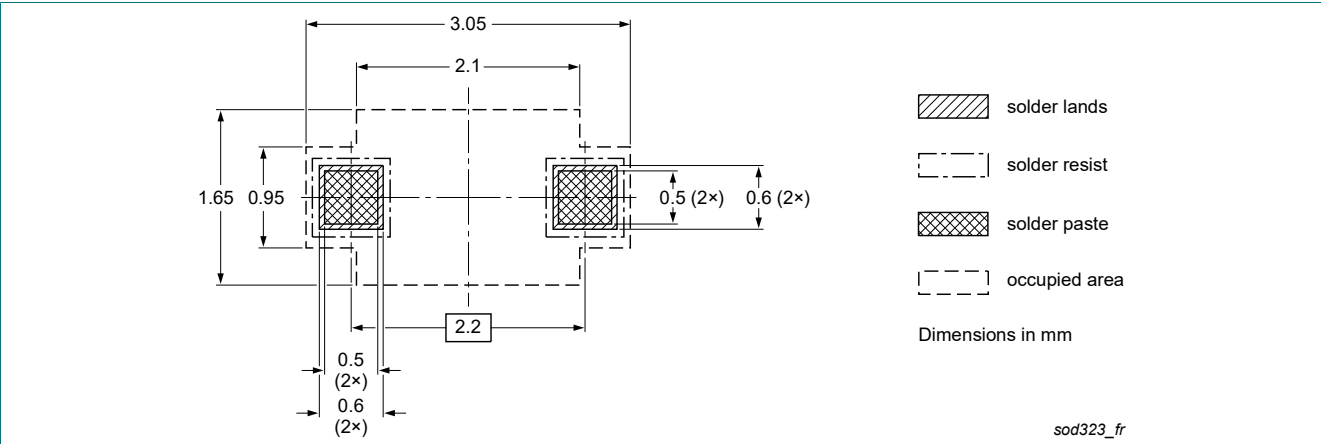


Fig. 5. Reflow soldering footprint for SOD323

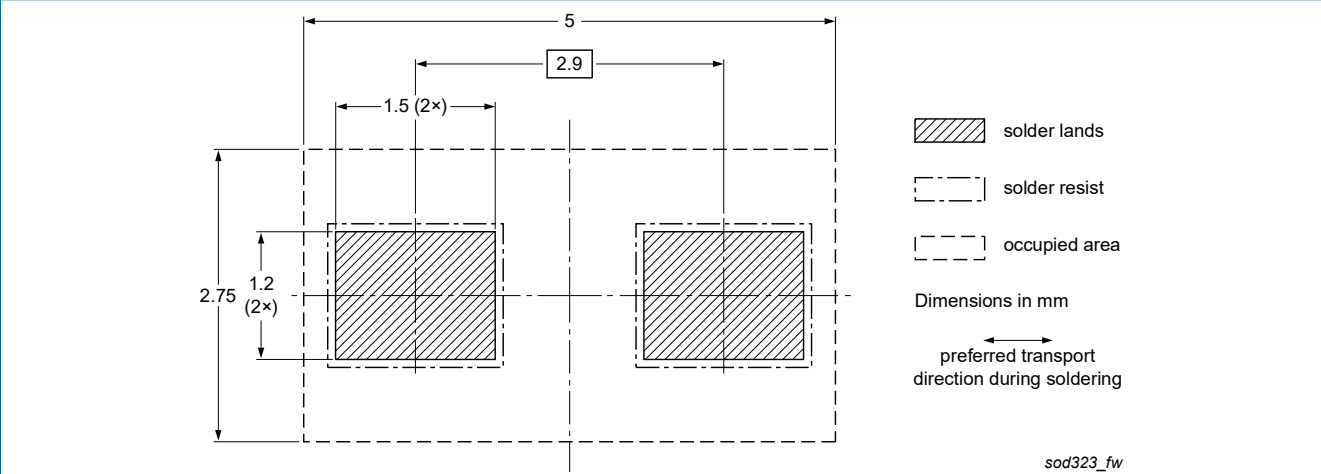


Fig. 6. Wave soldering footprint for SOD323

## 14. Revision history

Table 8. Revision history

| Data sheet ID  | Release date | Data sheet status  | Change notice | Supersedes |
|----------------|--------------|--------------------|---------------|------------|
| RB751V40-Q v.1 | 20210914     | Product data sheet | -             | -          |

## 15. Legal information

### Data sheet status

| Document status<br>[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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