



**THE DATASHEET OF
BAS40,235**





BAS40

General-purpose Schottky diode

7 March 2022

Product data sheet

1. General description

General-purpose Schottky diode in a small SOT23 (TO-236AB) Surface-Mounted Device (SMD) plastic package.

2. Features and benefits

- High switching speed
- Low leakage current
- High breakdown voltage
- Low capacitance
- AEC-Q101 qualified

3. Applications

- Ultra high-speed switching
- Voltage clamping

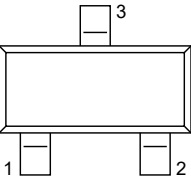
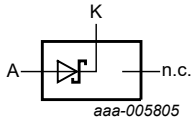
4. Quick reference data

Table 1. Quick reference data

| Symbol | Parameter | Conditions | Min | Typ | Max | Unit |
|--------|-----------------|--|-----|-----|-----|------|
| I_F | forward current | | - | - | 120 | mA |
| V_F | forward voltage | $I_F = 1 \text{ mA}$; $t_p \leq 300 \text{ } \mu\text{s}$; $\delta \leq 0.02$; pulsed; $T_{\text{amb}} = 25 \text{ } ^\circ\text{C}$ | - | - | 380 | mV |
| V_R | reverse voltage | $T_j = 25 \text{ } ^\circ\text{C}$ | - | - | 40 | V |

5. Pinning information

Table 2. Pinning information

| Pin | Symbol | Description | Simplified outline | Graphic symbol |
|-----|--------|---------------|--|---|
| 1 | A | anode |  <p style="text-align: center;">SOT23</p> |  |
| 2 | n.c. | not connected | | |
| 3 | K | cathode | | |

6. Ordering information

Table 3. Ordering information

| Type number | Package | | |
|-------------|---------|--|---------|
| | Name | Description | Version |
| BAS40 | SOT23 | plastic, surface-mounted package; 3 terminals; 1.9 mm pitch; 2.9 mm x 1.3 mm x 1 mm body | SOT23 |

7. Marking

Table 4. Marking codes

| Type number | Marking code ^[1] |
|-------------|-----------------------------|
| BAS40 | 43% |

[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 |
|------------------|-------------------------------------|--|-----|-----|------|
| V_R | reverse voltage | $T_j = 25\text{ °C}$ | - | 40 | V |
| I_F | forward current | | - | 120 | mA |
| I_{FRM} | repetitive peak forward current | $t_p \leq 1\text{ s}; \delta \leq 0.5$ | - | 120 | mA |
| I_{FSM} | non-repetitive peak forward current | $t_p \leq 10\text{ ms}; T_{j(\text{init})} = 25\text{ °C}$ | - | 200 | mA |
| 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

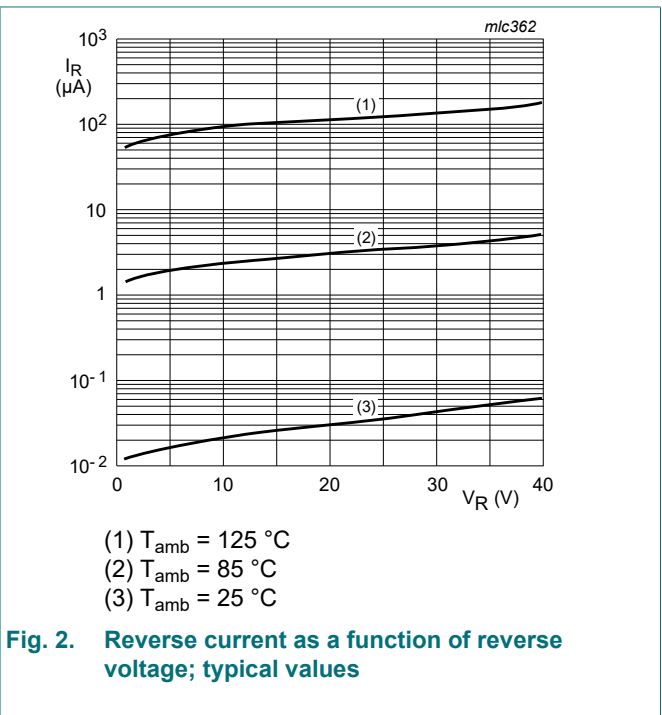
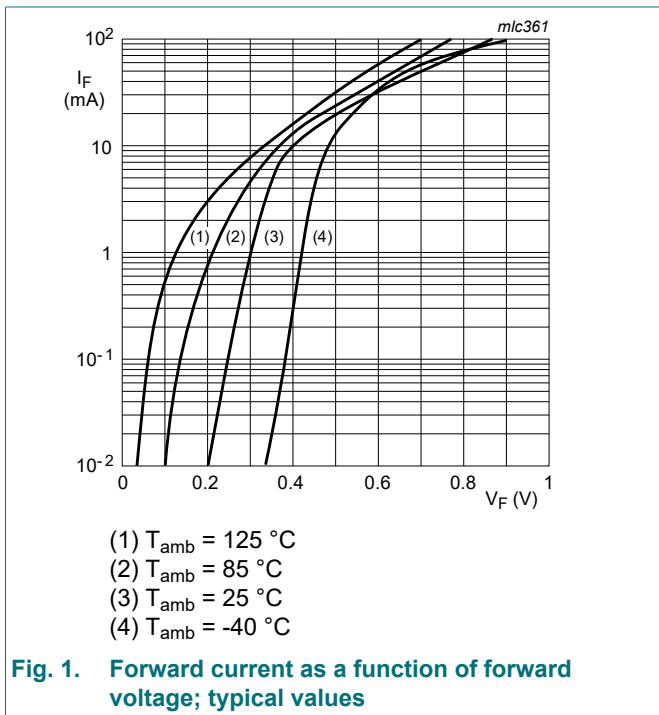
| Symbol | Parameter | Conditions | Min | Typ | Max | Unit |
|---------------|---|-------------|-----|-----|-----|------|
| $R_{th(j-a)}$ | thermal resistance from junction to ambient | in free air | [1] | - | 500 | K/W |

[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; $T_{amb} = 25 \text{ } ^\circ\text{C}$ | - | - | 380 | mV |
| | | $I_F = 10 \text{ mA}; t_p \leq 300 \text{ } \mu\text{s}; \delta \leq 0.02;$ pulsed; $T_{amb} = 25 \text{ } ^\circ\text{C}$ | - | - | 500 | mV |
| | | $I_F = 40 \text{ mA}; t_p \leq 300 \text{ } \mu\text{s}; \delta \leq 0.02;$ pulsed; $T_{amb} = 25 \text{ } ^\circ\text{C}$ | - | - | 1 | V |
| I_R | reverse current | $V_R = 30 \text{ V}; T_{amb} = 25 \text{ } ^\circ\text{C}$ | - | - | 1 | μA |
| | | $V_R = 40 \text{ V}; T_{amb} = 25 \text{ } ^\circ\text{C}$ | - | - | 10 | μA |
| C_d | diode capacitance | $V_R = 0 \text{ V}; f = 1 \text{ MHz}; T_{amb} = 25 \text{ } ^\circ\text{C}$ | - | - | 5 | pF |



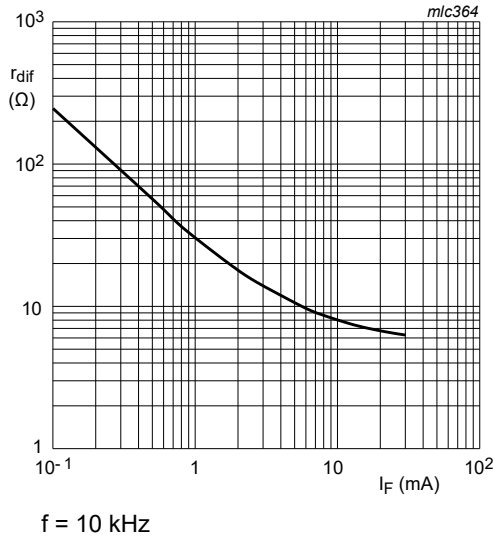


Fig. 3. Differential resistance as a function of forward current; typical values

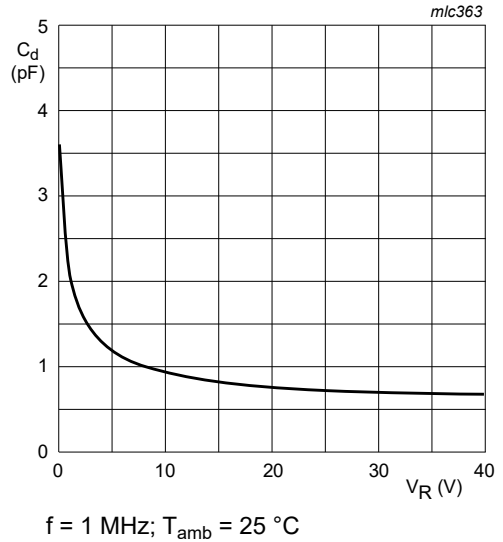


Fig. 4. Diode capacitance as a function of reverse voltage; typical values

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

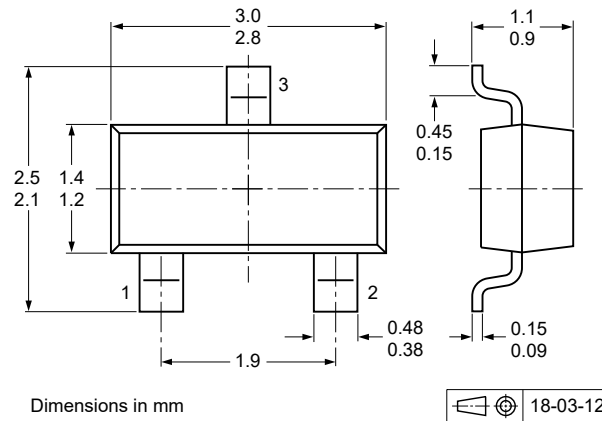


Fig. 5. Package outline SOT23

13. Soldering

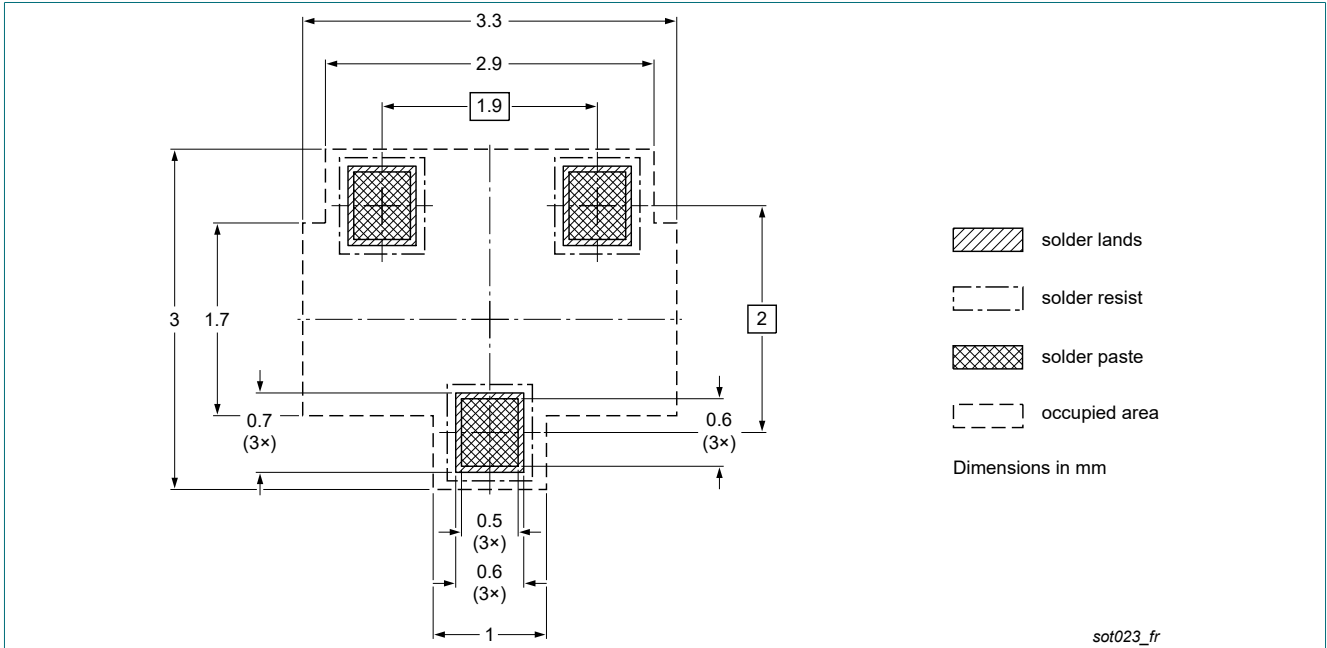


Fig. 6. Reflow soldering footprint for SOT23

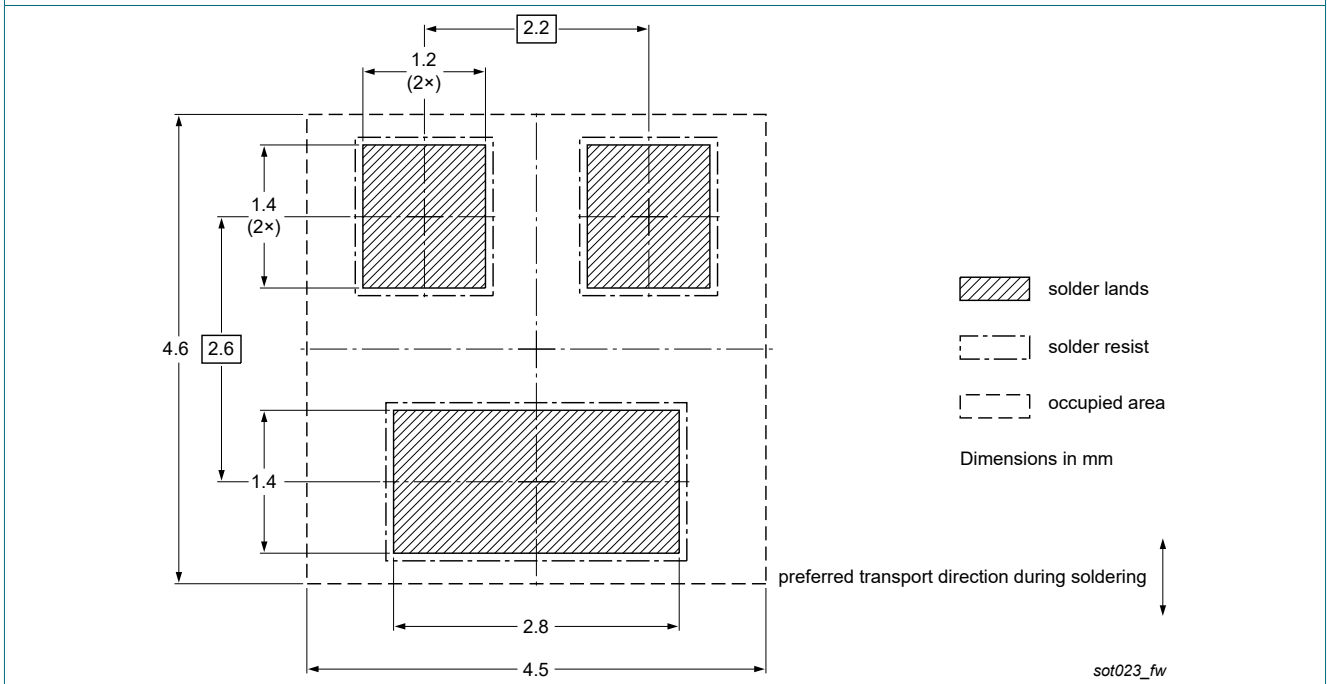


Fig. 7. Wave soldering footprint for SOT23

14. Revision history

Table 8. Revision history

| Data sheet ID | Release date | Data sheet status | Change notice | Supersedes |
|------------------------|--|-----------------------|---------------|---|
| BAS40 v.11 | 20220307 | Product data sheet | - | BAS40_1PSXXSB4X_SER_10 |
| Modifications: | <ul style="list-style-type: none"> Family data sheet splitted to single type data sheets. | | | |
| BAS40_1PSXXSB4X_SER_10 | 20210407 | Product data sheet | - | BAS40_1PSXXSB4X_SER_9 |
| BAS40_1PSXXSB4X_SER_9 | 20150318 | Product data sheet | - | BAS40_1PSXXSB4X_SER_8 |
| BAS40_1PSXXSB4X_SER_8 | 20100113 | Product data sheet | - | BAS40_1PSXXSB4X_SER_7 |
| BAS40_1PSXXSB4X_SER_7 | 20060512 | Product data sheet | - | BAS40_1PSXXSB4X_SER_6 |
| BAS40_1PSXXSB4X_SER_6 | 20050809 | Product data sheet | - | 1PS70SB40_3 1PS75SB45_2 1PS76SB40_3 1PS79SB40_2 1PS88SB48_3 BAS40H_1 BAS40L_1 BAS40-05V_1 BAS40-07V_1 BAS40W_3 BAS40_SERIES_5 |
| 1PS70SB40_3 | 19990426 | Product specification | - | 1PS70SB40_2 |
| 1PS75SB45_2 | 19990426 | Product specification | - | 1PS75SB45_1 |
| 1PS76SB40_3 | 20040126 | Product specification | - | 1PS76SB40_2 |
| 1PS79SB40_2 | 19990426 | Product specification | - | 1PS79SB40_1 |
| 1PS88SB48_3 | 20021107 | Product specification | - | 1PS88SB48_2 |
| BAS40H_1 | 20050425 | Product data sheet | - | - |
| BAS40L_1 | 20030520 | Product specification | - | - |
| BAS40-05V_1 | 20021121 | Product specification | - | - |
| BAS40-07V_1 | 20020327 | Product specification | - | - |
| BAS40W_3 | 19990426 | Product specification | - | BAS40W_2 |
| BAS40_SERIES_5 | 20011010 | Product specification | - | BAS40_4 |

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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Date of release: 7 March 2022

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