

BAS86

Schottky barrier single diode

25 July 2012

Product data sheet

1. Product profile

1.1 General description

Planar Schottky barrier diode with an integrated guard ring for stress protection, encapsulated in a small hermetically sealed SOD80C glass Surface-Mounted Device (SMD) package with tin-plated metal discs at each end. It is suitable for “automatic placement” and as such it can withstand immersion soldering.

1.2 Features and benefits

- Low forward voltage
- High breakdown voltage
- Guard ring protected
- Hermetically sealed glass SMD package.

1.3 Applications

- Ultra high-speed switching
- Voltage clamping
- Protection circuits
- Blocking diodes

1.4 Quick reference data

Table 1. Quick reference data



| Symbol | Parameter | Conditions | Min | Typ | Max | Unit |
|-------------|-------------------------|---|-----|-----|-----|------|
| $I_{F(AV)}$ | average forward current | [1] | - | - | 200 | mA |
| V_R | reverse voltage | | - | - | 50 | V |
| V_F | forward voltage | $I_F = 100 \text{ mA}; T_{amb} = 25 \text{ }^\circ\text{C}$ | - | - | 900 | mV |

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



2. Pinning information

Table 2. Pinning information

| Pin | Symbol | Description | Simplified outline | Graphic symbol |
|-----|--------|------------------------|--|---|
| 1 | K | cathode ^[1] |  LLDS; MiniMelf (SOD80C) |  aaa-003679 |
| 2 | A | anode | | |

[1] The marking band indicates the cathode.

3. Ordering information

Table 3. Ordering information

| Type number | Package | | |
|-------------|-------------------|---|---------|
| | Name | Description | Version |
| BAS86 | LLDS; MiniMelf | hermetically sealed glass surface-mounted package; 2 connectors | SOD80C |

4. Marking

Table 4. Marking codes

| Type number | Marking code |
|-------------|--------------|
| BAS86 | marking band |

5. 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 | | - | 50 | V |
| I_F | forward current | | - | 200 | mA |
| $I_{F(AV)}$ | average forward current | | [1] | 200 | mA |
| I_{FRM} | repetitive peak forward current | $t_p \leq 1$ s; $\delta \leq 0.5$ | - | 500 | mA |
| I_{FSM} | non-repetitive peak forward current | $t_p = 10$ ms; $T_{j(\text{init})} = 25$ °C | - | 5 | A |
| T_j | junction temperature | | - | 125 | °C |
| T_{amb} | ambient temperature | | -65 | 125 | °C |
| T_{stg} | storage temperature | | -65 | 150 | °C |

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

6. Thermal characteristics

Table 6. Thermal characteristics

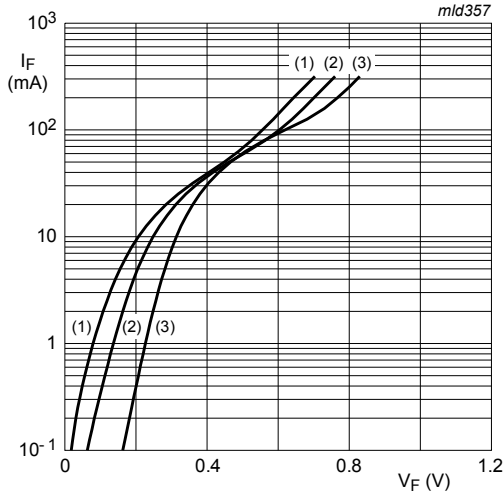
| Symbol | Parameter | Conditions | | Min | Typ | Max | Unit |
|---------------|---|-------------|-----|-----|-----|-----|------|
| $R_{th(j-a)}$ | thermal resistance from junction to ambient | in free air | [1] | - | - | 320 | K/W |

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

7. Characteristics

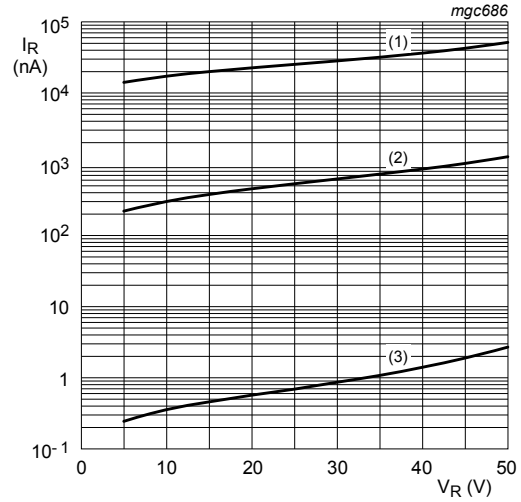
Table 7. Characteristics

| Symbol | Parameter | Conditions | | Min | Typ | Max | Unit |
|----------|-----------------------|---|--|-----|-----|-----|---------------|
| V_F | forward voltage | $I_F = 0.1 \text{ mA}; T_{amb} = 25 \text{ }^\circ\text{C}$ | | - | - | 300 | mV |
| | | $I_F = 1 \text{ mA}; T_{amb} = 25 \text{ }^\circ\text{C}$ | | - | - | 380 | mV |
| | | $I_F = 10 \text{ mA}; T_{amb} = 25 \text{ }^\circ\text{C}$ | | - | - | 450 | mV |
| | | $I_F = 30 \text{ mA}; T_{amb} = 25 \text{ }^\circ\text{C}$ | | - | - | 600 | mV |
| | | $I_F = 100 \text{ mA}; T_{amb} = 25 \text{ }^\circ\text{C}$ | | - | - | 900 | mV |
| I_R | reverse current | $V_R = 40 \text{ V}; T_{amb} = 25 \text{ }^\circ\text{C};$ pulsed; $t_p \leq 300 \text{ } \mu\text{s}; \delta \leq 0.02$ | | - | - | 5 | μA |
| C_d | diode capacitance | $f = 1 \text{ MHz}; T_{amb} = 25 \text{ }^\circ\text{C}; V_R = 1 \text{ V}$ | | - | - | 8 | pF |
| t_{rr} | reverse recovery time | $I_F = 10 \text{ mA}; I_R = 10 \text{ mA}; R_L = 100 \text{ } \Omega;$ $I_{R(meas)} = 1 \text{ mA}; T_{amb} = 25 \text{ }^\circ\text{C}$ | | - | - | 4 | ns |



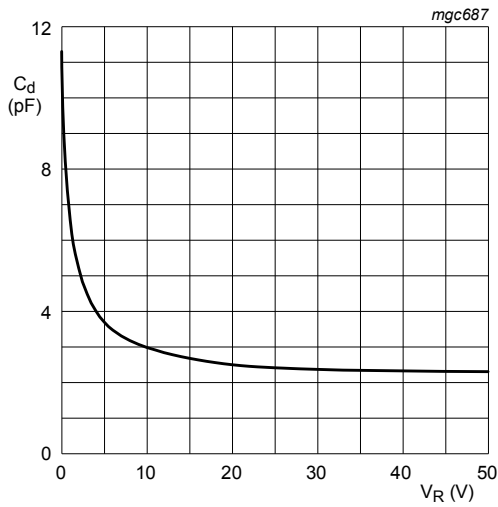
- (1) $T_{amb} = 125\text{ }^{\circ}\text{C}$
- (2) $T_{amb} = 85\text{ }^{\circ}\text{C}$
- (3) $T_{amb} = 25\text{ }^{\circ}\text{C}$

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



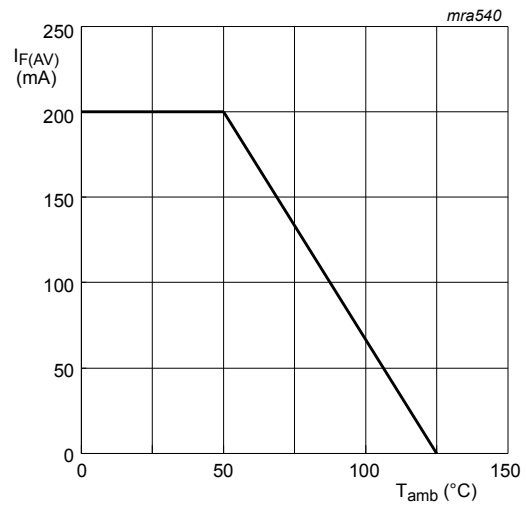
- (1) $T_{amb} = 85\text{ }^{\circ}\text{C}$
- (2) $T_{amb} = 25\text{ }^{\circ}\text{C}$
- (3) $T_{amb} = -40\text{ }^{\circ}\text{C}$

Fig. 2. Reverse current as a function of reverse voltage; typical values



$T_{amb} = 25\text{ }^{\circ}\text{C}; f = 1\text{ MHz}$

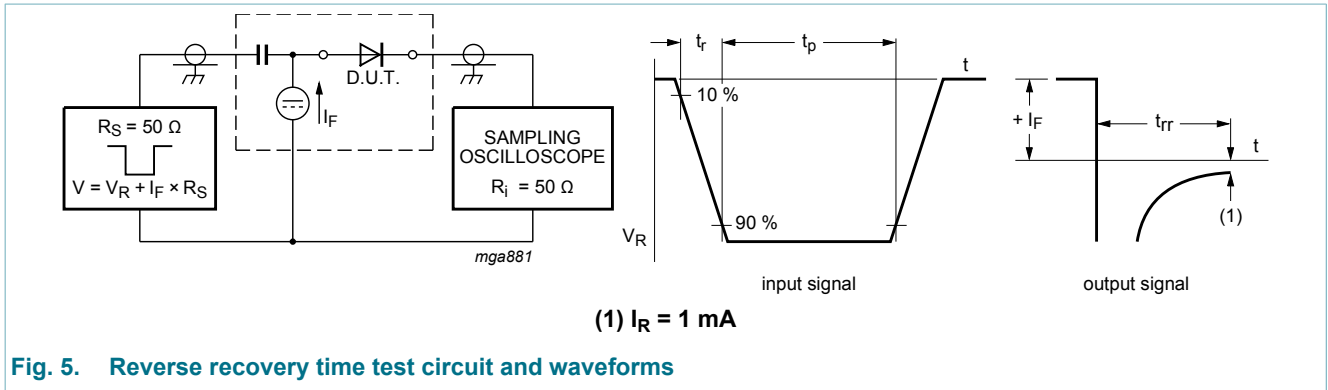
Fig. 3. Diode capacitance as a function of reverse voltage; typical values



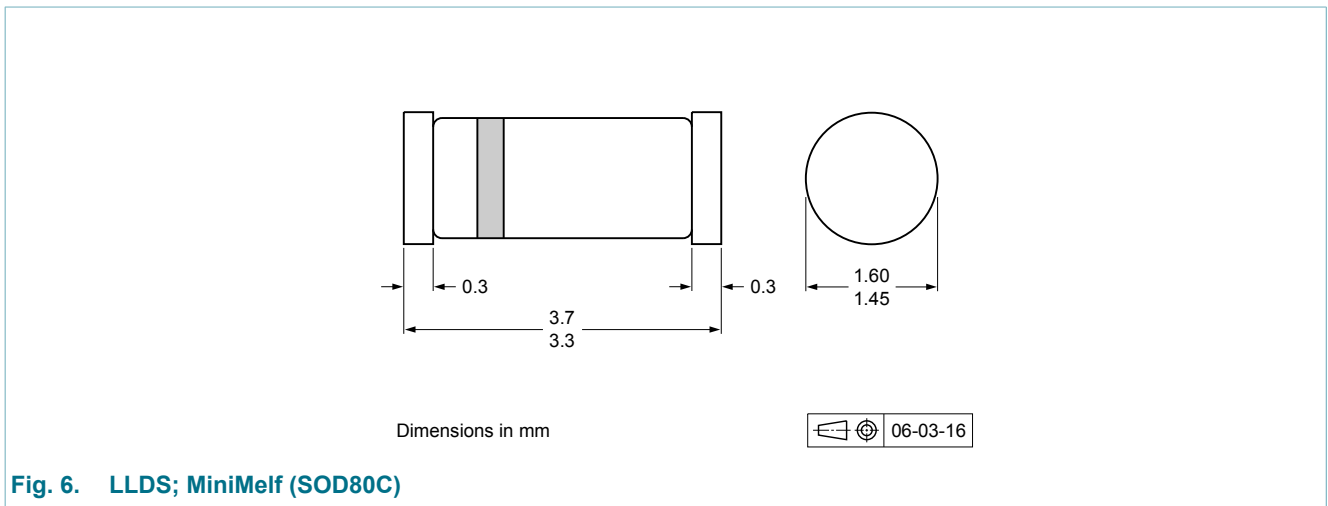
FR4 PCB, standard footprint

Fig. 4. Average forward current as a function of ambient temperature; derating curve

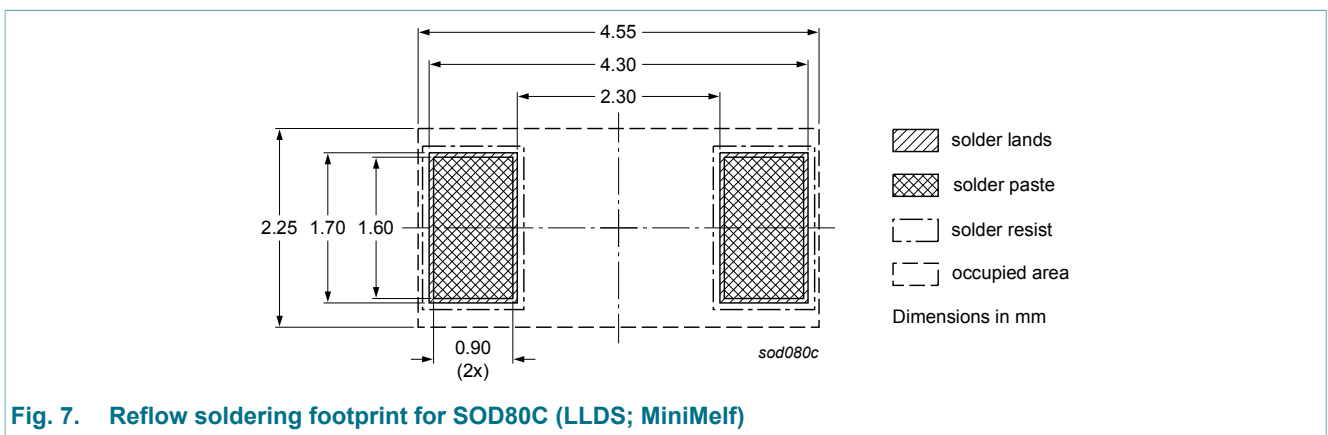
8. Test information

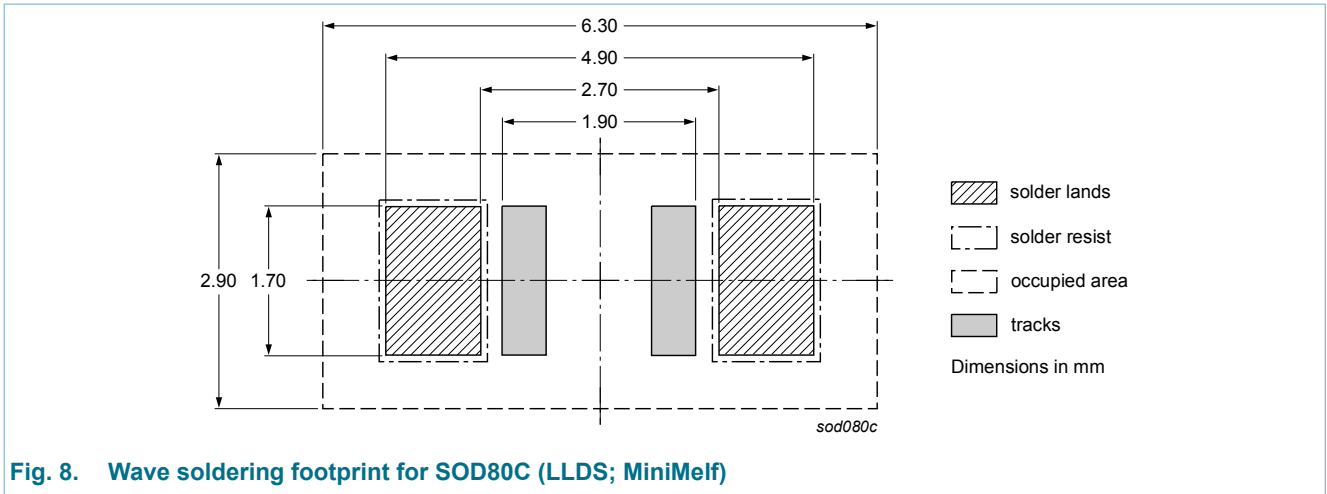


9. Package outline



10. Soldering





11. Revision history

Table 8. Revision history

| Data sheet ID | Release date | Data sheet status | Change notice | Supersedes |
|----------------|--|-----------------------|---------------|------------|
| BAS86 v.5 | 20120725 | Product data sheet | - | BAS86 v.4 |
| Modifications: | <ul style="list-style-type: none"> Editorial update | | | |
| BAS86 v.4 | 20100908 | Product data sheet | - | BAS86 v.3 |
| BAS86 v.3 | 20000525 | Product specification | - | BAS86 v.2 |
| BAS86 v.2 | 19961001 | Product specification | - | BAS86 v.1 |
| BAS86 v.1 | 19960320 | Product specification | - | - |

12. Legal information

12.1 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. |
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| Product [short] data sheet | Production | This document contains the product specification. |

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