



TMBAT49

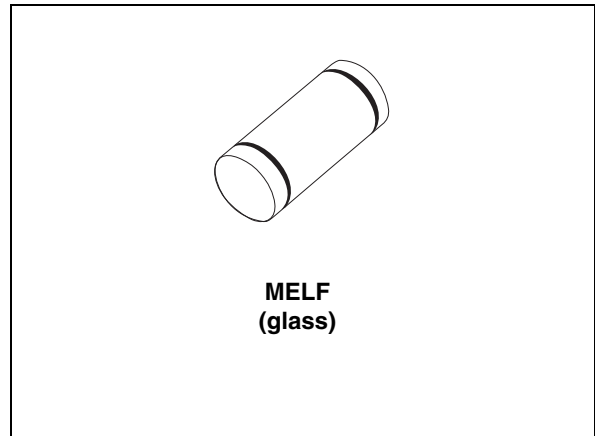
Small signal Schottky diode

Features

- very low turn-on voltage
- fast switching

Description

The TMBAT49 is a general purpose metal to silicon diode. This device has integrated protection against excessive voltage such as electrostatic discharges.



1 Characteristics

Table 1. Absolute ratings (limiting values)

| Symbol | Parameter | | Value | Unit |
|-----------|--|---|--------------|------|
| V_{RRM} | Repetitive peak reverse voltage | | 80 | V |
| I_F | Forward continuous current | $T_j = 70\text{ °C}$ | 500 | mA |
| I_{FRM} | Repetitive peak forward current | $t_p = 1\text{ s}$ $\delta \leq 0.5$ | 3 | A |
| I_{FSM} | Surge non repetitive forward current | $t_p = 10\text{ ms}$ | 10 | A |
| T_{stg} | Storage temperature range | | - 65 to +150 | °C |
| T_j | Operating junction temperature range | | - 65 to +125 | °C |
| T_L | Maximum lead soldering temperature during 15 s | | 260 | °C |

Table 2. Thermal parameter

| Symbol | Parameter | Value | Unit |
|---------------|------------------|-------|------|
| $R_{th(j-l)}$ | Junction to lead | 110 | °C/W |

Table 3. Static electrical characteristics

| Symbol | Parameter | Test conditions | | Min. | Typ. | Max. | Unit |
|-------------|-------------------------|----------------------|-----------------------|------|------|------|------|
| $I_R^{(1)}$ | Reverse leakage current | $T_j = 25\text{ °C}$ | $V_R = 80\text{ V}$ | - | - | 200 | μA |
| $V_F^{(1)}$ | Forward voltage drop | $T_j = 25\text{ °C}$ | $I_F = 10\text{ mA}$ | - | - | 0.32 | V |
| | | | $I_F = 100\text{ mA}$ | - | - | 0.42 | |
| | | | $I_F = 1\text{ A}$ | - | - | 1 | |

1. Pulse test: $t_p \leq 300\text{ }\mu\text{s}$, $\delta < 2\%$

Table 4. Dynamic characteristics ($T_j = 25\text{ °C}$)

| Symbol | Parameter | Test conditions | | Min. | Typ. | Max. | Unit |
|--------|-------------------|-----------------|--------------------|------|------|------|------|
| C | Diode capacitance | F = 1 MHz | $V_R = 0\text{ V}$ | - | 120 | - | pF |
| | | | $V_R = 5\text{ V}$ | - | 35 | - | |

Figure 1. Forward voltage drop versus forward current (typical values, low level)

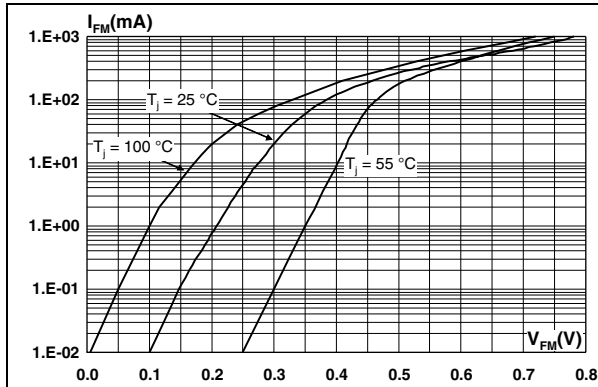


Figure 2. Forward voltage drop versus forward current (typical values, high level)

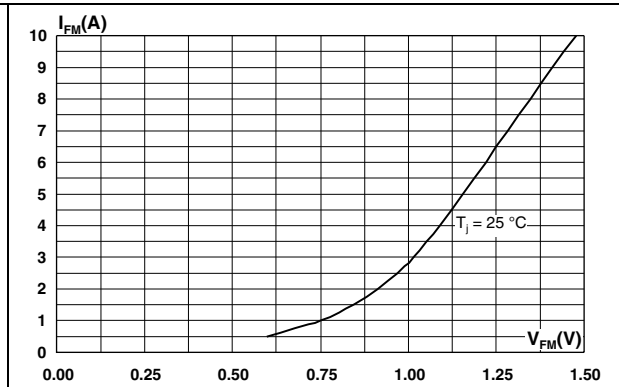


Figure 3. Reverse leakage current versus reverse voltage applied (typical values)

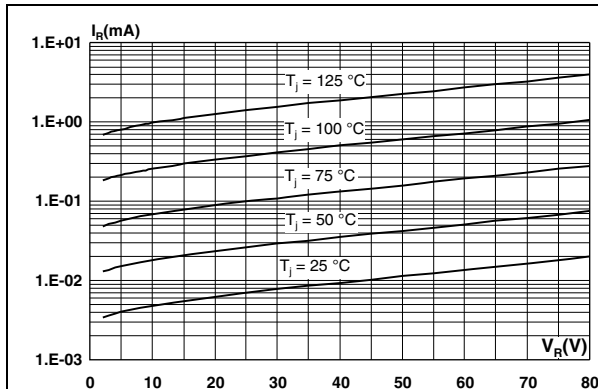


Figure 4. Junction capacitance versus reverse voltage applied (typical values)

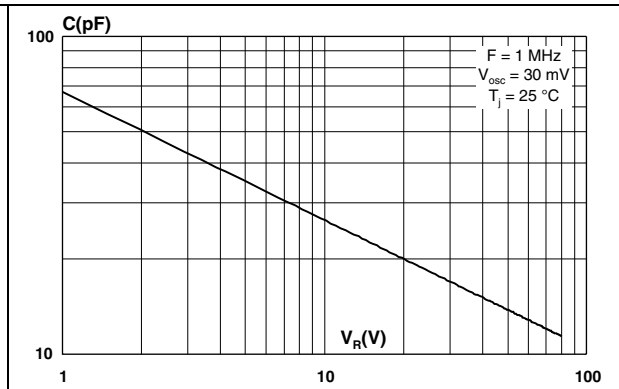


Figure 5. Non-repetitive peak surge forward current versus pulse duration (square waveform)

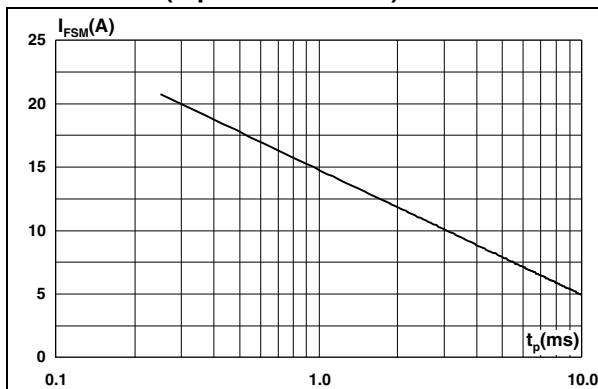
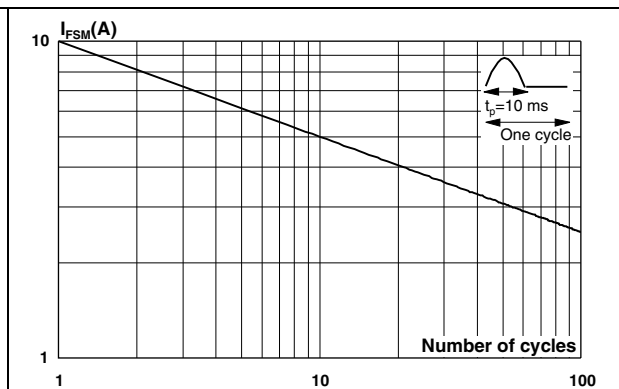


Figure 6. Non-repetitive peak surge forward current versus number of cycles



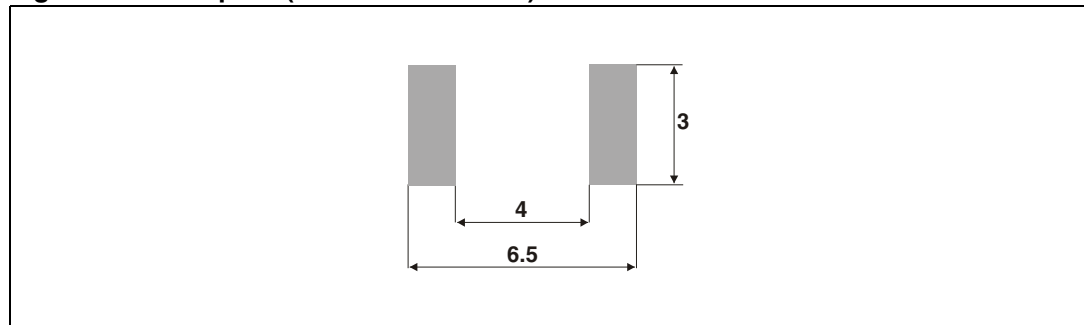
2 Package information

In order to meet environmental requirements, ST offers these devices in different grades of ECOPACK® packages, depending on their level of environmental compliance. ECOPACK® specifications, grade definitions and product status are available at: www.st.com. ECOPACK® is an ST trademark.

Table 5. MELF package dimensions

| Ref. | Dimensions | | | | | |
|------|-------------|------|------|--------|-------|-------|
| | Millimeters | | | Inches | | |
| | Min. | Typ. | Max. | Min. | Typ. | Max. |
| A | 4.80 | | 5.20 | 0.189 | | 0.205 |
| ø B | 2.50 | | 2.65 | 0.098 | | 0.104 |
| C | 0.45 | | 0.60 | 0.018 | | 0.024 |
| ø D | | 2.50 | | | 0.098 | |

Figure 7. Footprint (dimensions in mm)



3 Ordering information

Table 6. Ordering information

| Order code | Marking | Package | Weight | Base qty | Delivery mode |
|-------------|--------------|--------------|--------|----------|---------------|
| TMBAT49FILM | Cathode ring | MELF (glass) | 0.15 g | 1500 | Bulk |

4 Revision history

Table 7. Document revision history

| Date | Revision | Changes |
|-------------|----------|--|
| Aug-1999 | 1A | Previous release. |
| 12-Nov-2010 | 2 | Added ECOPACK statement. Updated graphics in Section 1 . |

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