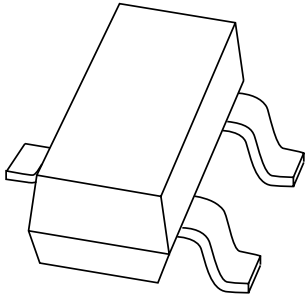


DATA SHEET



BAV170

Low-leakage double diode

Product data sheet
Supersedes data of 1999 May 11

2003 Mar 25

Low-leakage double diode

BAV170

FEATURES

- Plastic SMD package
- Low leakage current: typ. 3 pA
- Switching time: typ. 0.8 μs
- Continuous reverse voltage: max. 75 V
- Repetitive peak reverse voltage: max. 85 V
- Repetitive peak forward current: max. 500 mA.

APPLICATION

- Low-leakage current applications in surface mounted circuits.

MARKING

| TYPE NUMBER | MARKING CODE ⁽¹⁾ |
|-------------|-----------------------------|
| BAV170 | JX* |

Note

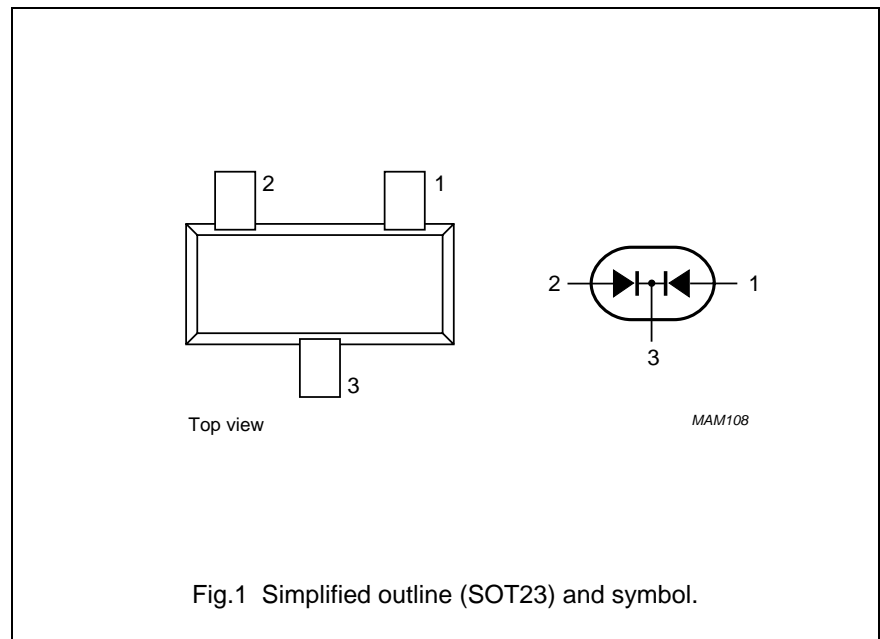
- * = p : Made in Hong Kong.
 * = t : Made in Malaysia.
 * = W : Made in China.

DESCRIPTION

Epitaxial, medium-speed switching, double diode in a small SOT23 plastic SMD package. The diodes are in common cathode configuration.

PINNING

| PIN | DESCRIPTION |
|-----|----------------|
| 1 | anode |
| 2 | anode |
| 3 | common cathode |



Low-leakage double diode

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LIMITING VALUES

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

| SYMBOL | PARAMETER | CONDITIONS | MIN. | MAX. | UNIT |
|------------------|-------------------------------------|--|------|------|------|
| Per diode | | | | | |
| V_{RRM} | repetitive peak reverse voltage | | – | 85 | V |
| V_R | continuous reverse voltage | | – | 75 | V |
| I_F | continuous forward current | single diode loaded; note 1; see Fig.2 | – | 215 | mA |
| | | double diode loaded; note 1; see Fig.2 | – | 125 | mA |
| I_{FRM} | repetitive peak forward current | | – | 500 | mA |
| I_{FSM} | non-repetitive peak forward current | square wave; $T_j = 25\text{ °C}$ prior to surge; see Fig.4 | | | |
| | | $t_p = 1\ \mu\text{s}$ | – | 4 | A |
| | | $t_p = 1\ \text{ms}$ | – | 1 | A |
| | | $t_p = 1\ \text{s}$ | – | 0.5 | A |
| P_{tot} | total power dissipation | $T_{amb} = 25\text{ °C}$; note 1 | – | 250 | mW |
| T_{stg} | storage temperature | | –65 | +150 | °C |
| T_j | junction temperature | | – | 150 | °C |

Note

1. Device mounted on a FR4 printed-circuit board.

ELECTRICAL CHARACTERISTICS $T_j = 25\text{ °C}$ unless otherwise specified.

| SYMBOL | PARAMETER | CONDITIONS | TYP. | MAX. | UNIT |
|------------------|-----------------------|--|-------|------|---------------|
| Per diode | | | | | |
| V_F | forward voltage | see Fig.3 | | | |
| | | $I_F = 1\ \text{mA}$ | – | 900 | mV |
| | | $I_F = 10\ \text{mA}$ | – | 1000 | mV |
| | | $I_F = 50\ \text{mA}$ | – | 1100 | mV |
| | | $I_F = 150\ \text{mA}$ | – | 1250 | mV |
| I_R | reverse current | see Fig.5 | | | |
| | | $V_R = 75\ \text{V}$ | 0.003 | 5 | nA |
| | | $V_R = 75\ \text{V}$; $T_j = 150\text{ °C}$ | 3 | 80 | nA |
| C_d | diode capacitance | $f = 1\ \text{MHz}$; $V_R = 0$; see Fig.6 | 2 | – | pF |
| t_{rr} | reverse recovery time | when switched from $I_F = 10\ \text{mA}$ to $I_R = 10\ \text{mA}$; $R_L = 100\ \Omega$; measured at $I_R = 1\ \text{mA}$; see Fig.7 | 0.8 | 3 | μs |

Low-leakage double diode

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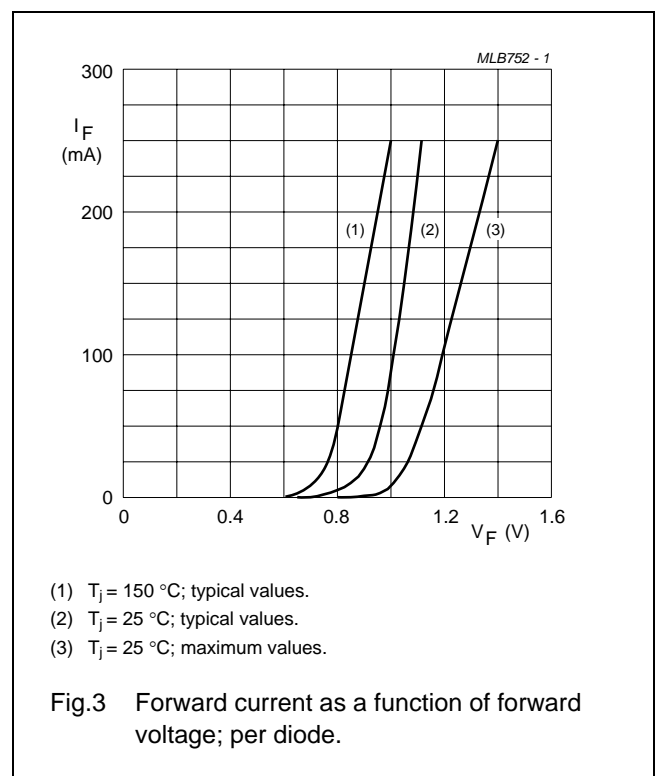
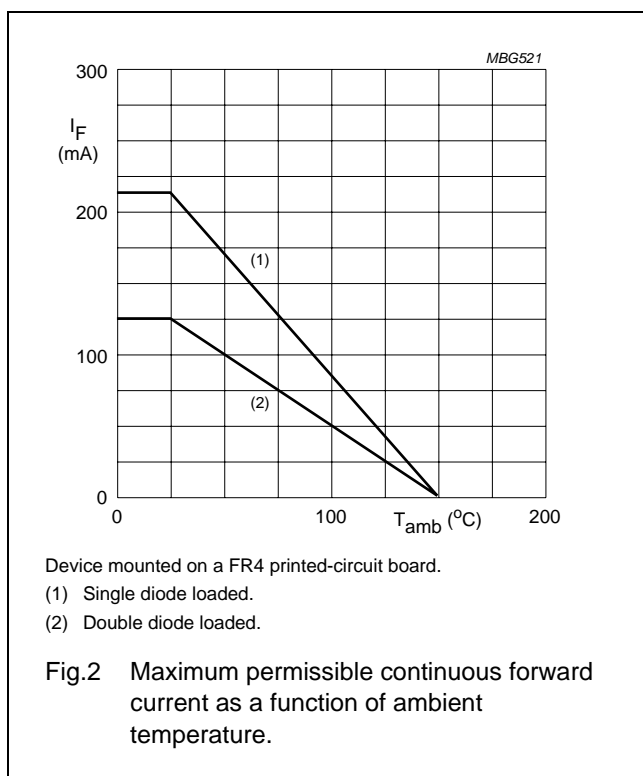
THERMAL CHARACTERISTICS

| SYMBOL | PARAMETER | CONDITIONS | VALUE | UNIT |
|----------------|---|------------|-------|------|
| $R_{th\ j-tp}$ | thermal resistance from junction to tie-point | | 360 | K/W |
| $R_{th\ j-a}$ | thermal resistance from junction to ambient | note 1 | 500 | K/W |

Note

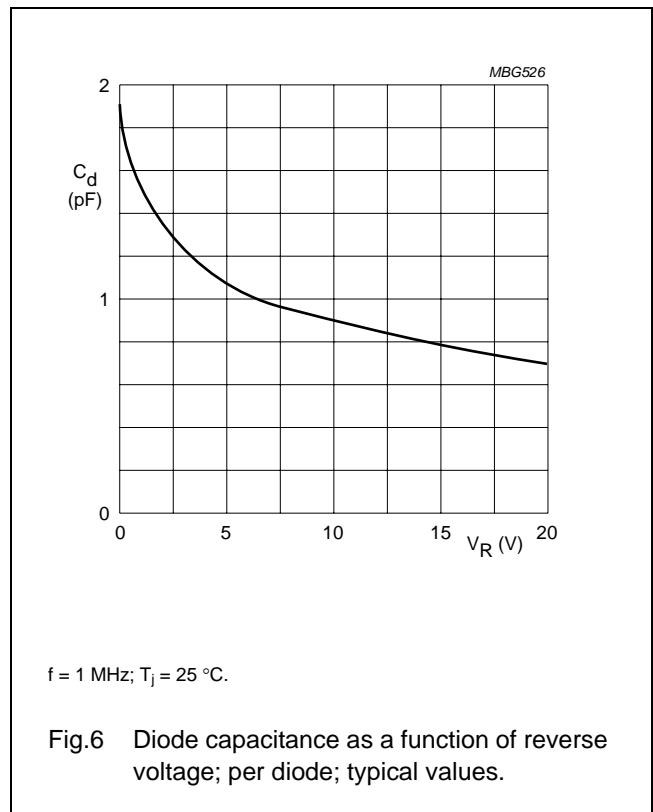
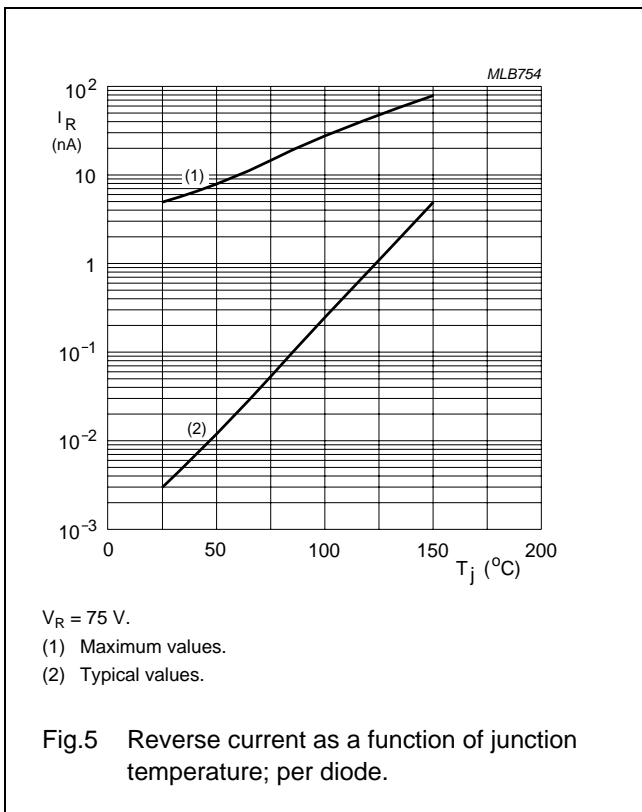
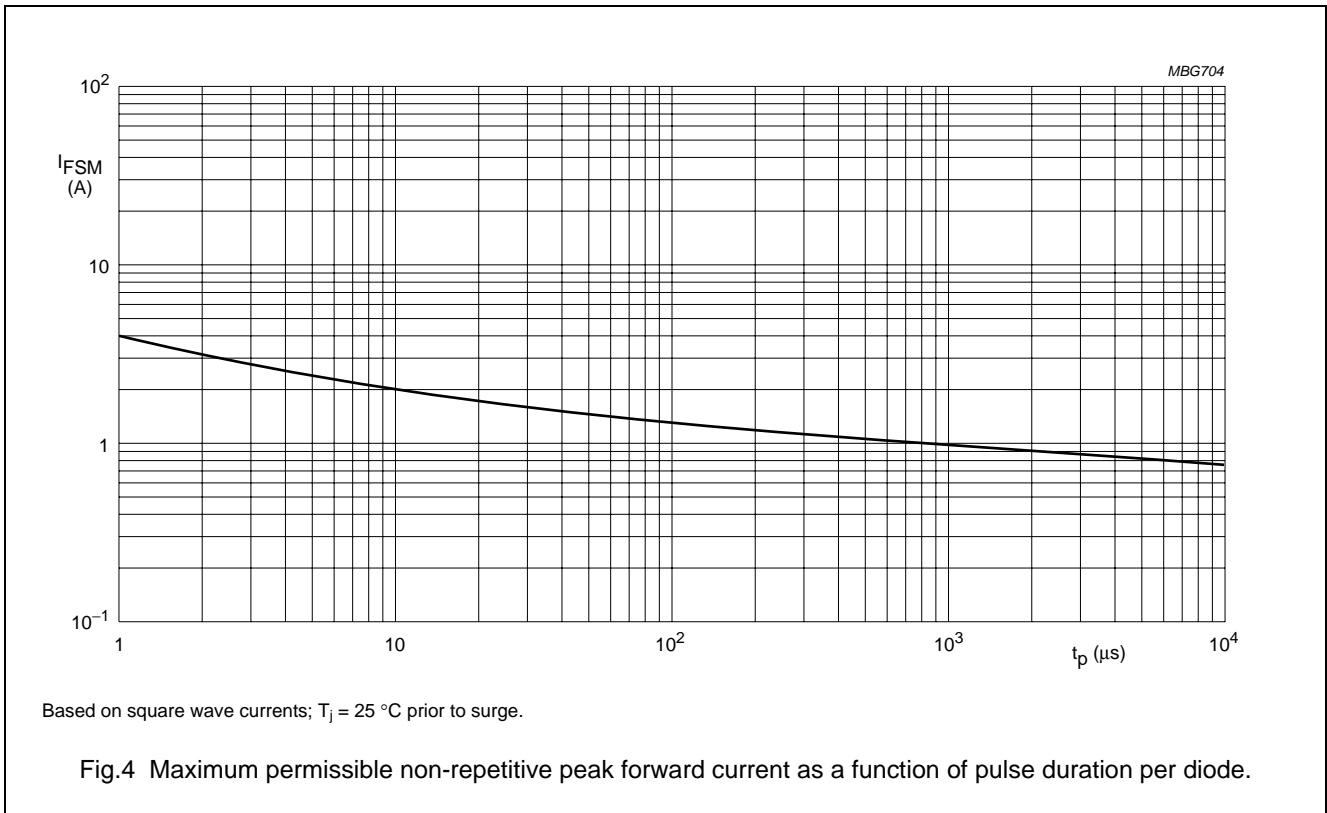
1. Device mounted on a FR4 printed-circuit board.

GRAPHICAL DATA



Low-leakage double diode

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Low-leakage double diode

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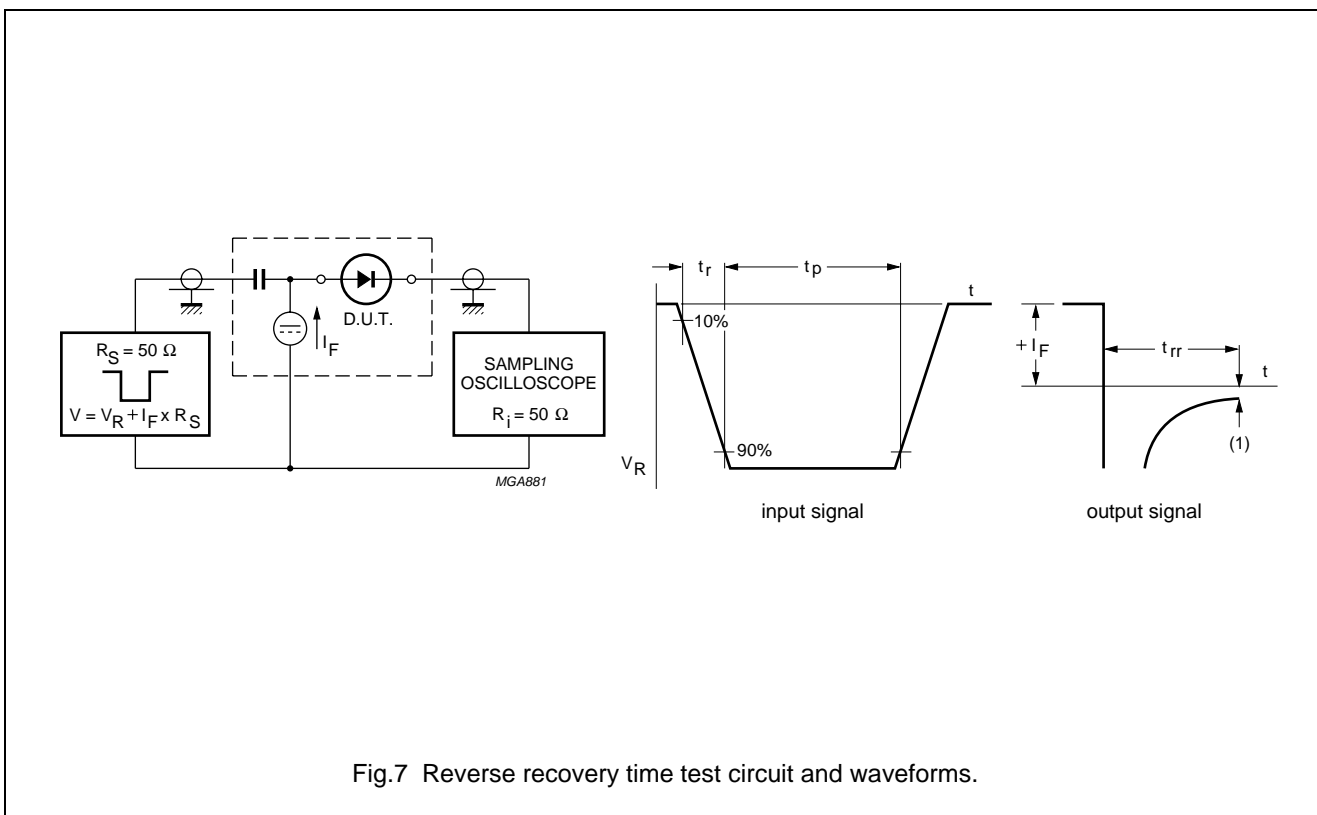


Fig.7 Reverse recovery time test circuit and waveforms.

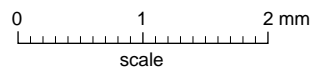
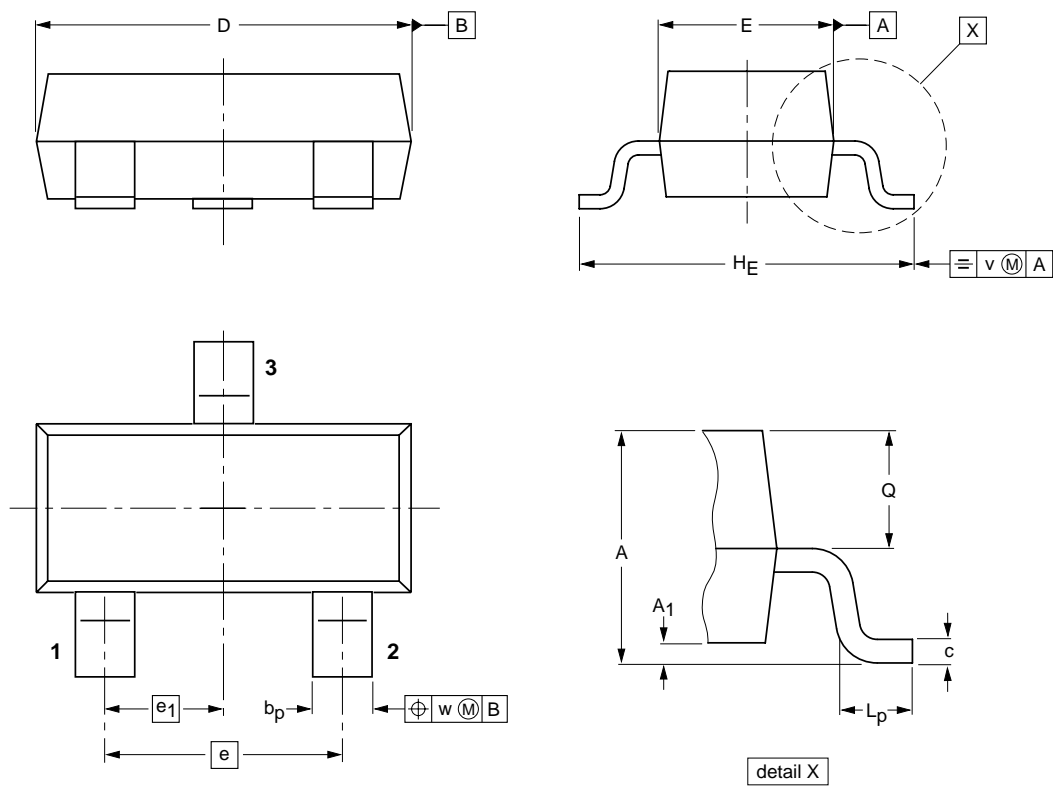
Low-leakage double diode

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PACKAGE OUTLINE

Plastic surface mounted package; 3 leads

SOT23



DIMENSIONS (mm are the original dimensions)

| UNIT | A | A ₁ max. | b _p | c | D | E | e | e ₁ | H _E | L _p | Q | v | w |
|------|------------|------------------------|----------------|--------------|------------|------------|-----|----------------|----------------|----------------|--------------|-----|-----|
| mm | 1.1 0.9 | 0.1 | 0.48 0.38 | 0.15 0.09 | 3.0 2.8 | 1.4 1.2 | 1.9 | 0.95 | 2.5 2.1 | 0.45 0.15 | 0.55 0.45 | 0.2 | 0.1 |

| OUTLINE VERSION | REFERENCES | | | EUROPEAN PROJECTION | ISSUE DATE |
|-----------------|------------|----------|------|---------------------|----------------------|
| | IEC | JEDEC | EIAJ | | |
| SOT23 | | TO-236AB | | | 97-02-28 99-09-13 |

Low-leakage double diode

BAV170

DATA SHEET STATUS

| DOCUMENT STATUS ⁽¹⁾ | PRODUCT STATUS ⁽²⁾ | DEFINITION |
|--------------------------------|-------------------------------|---|
| Objective data sheet | Development | This document contains data from the objective specification for product development. |
| Preliminary data sheet | Qualification | This document contains data from the preliminary specification. |
| Product data sheet | Production | This document contains the product specification. |

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