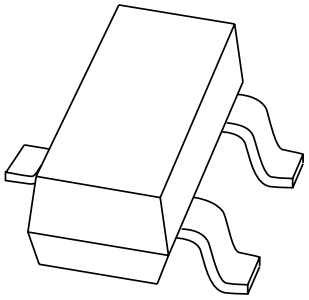
# DATA SHEET



# BAT721 series
## Schottky barrier (double) diodes

Product specification
Supersedes data of 1998 Jan 21

1999 May 06

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# Schottky barrier (double) diodes BAT721 series

## FEATURES

- Ultra high switching speed
- Low forward voltage
- Guard ring protected
- Small plastic SMD package.

## APPLICATIONS

- Ultra high-speed switching
- Voltage clamping
- Protection circuits.

## DESCRIPTION

Planar Schottky barrier diodes encapsulated in a SOT23 small plastic SMD package. Single diodes and double diodes with different pinning are available.

## MARKING

| TYPE NUMBER | MARKING CODE(1) |
|---|---|
| BAT721 | L7∗ |
| BAT721A | L8∗ |
| BAT721C | L9∗ |
| BAT721S | L0∗ |

**Note**

1. ∗ = p : Made in Hong Kong.
   ∗ = t : Made in Malaysia.

## PINNING

| PIN | BAT721 | | | |
|---|---|---|---|---|
| | | A | C | S |
| 1 | a | $k_1$ | $a_1$ | $a_1$ |
| 2 | n.c. | $k_2$ | $a_2$ | $k_2$ |
| 3 | k | $a_1$, $a_2$ | $k_1$, $k_2$ | $k_1$, $a_2$ |

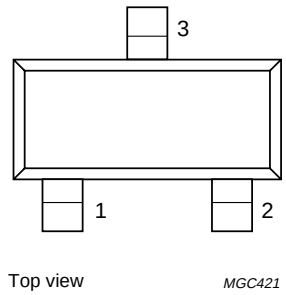


Fig.1 Simplified outline (SOT23) and pin configuration.

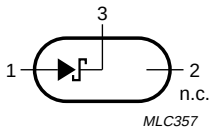


Fig.2 BAT721 single diode configuration (symbol).

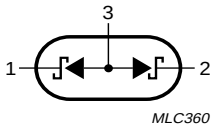


Fig.3 BAT721A diode configuration (symbol).

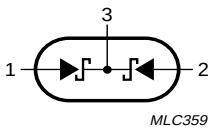


Fig.4 BAT721C diode configuration (symbol).

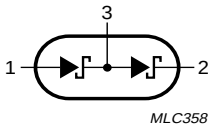


Fig.5 BAT721S diode configuration (symbol).



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## LIMITING VALUES

In accordance with the Absolute Maximum Rating System (IEC 134).

| SYMBOL | PARAMETER | CONDITIONS | MIN. | MAX. | UNIT |
|---|---|---|---|---|---|
| $V_R$ | continuous reverse voltage | | – | 40 | V |
| $I_F$ | continuous forward current | | – | 200 | mA |
| $I_{FSM}$ | non-repetitive peak forward current | $t_p$ = 8.3 ms half sinewave; JEDEC method | – | 1 | A |
| $T_{stg}$ | storage temperature | | –65 | +150 | °C |
| $T_j$ | junction temperature | | – | 125 | °C |

## ELECTRICAL CHARACTERISTICS

$T_j$ = 25 °C unless otherwise specified.

| SYMBOL | PARAMETER | CONDITIONS | MIN. | MAX. | UNIT |
|---|---|---|---|---|---|
| $V_F$ | continuous forward voltage | see Fig.6 | | | |
| | | $I_F$ = 10 mA | – | 300 | mV |
| | | $I_F$ = 100 mA | – | 420 | mV |
| | | $I_F$ = 200 mA | – | 550 | mV |
| $I_R$ | continuous reverse current | $V_R$ = 30 V; see Fig.7 | – | 15 | µA |
| | | $V_R$ = 30 V; $T_j$ = 100 °C; see Fig.7 | – | 3 | mA |
| $C_d$ | diode capacitance | f = 1 MHz; $V_R$ = 0; see Fig.8 | 40 | 50 | pF |

**Note**

1. Pulse test: $t_p \leq 300$ µs; $\delta \leq 0.02$.

## THERMAL CHARACTERISTICS

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

**Note**

1. Refer to SOT23 standard mounting conditions.



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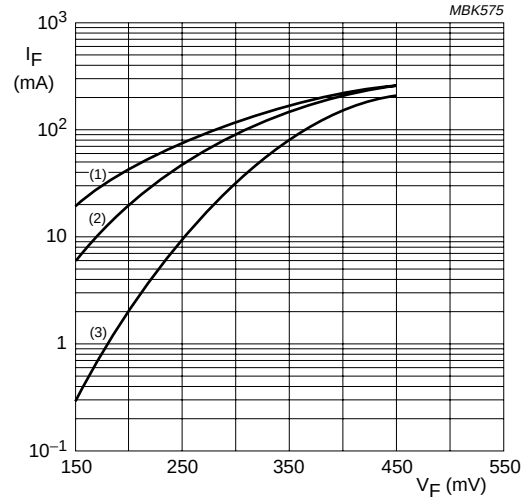
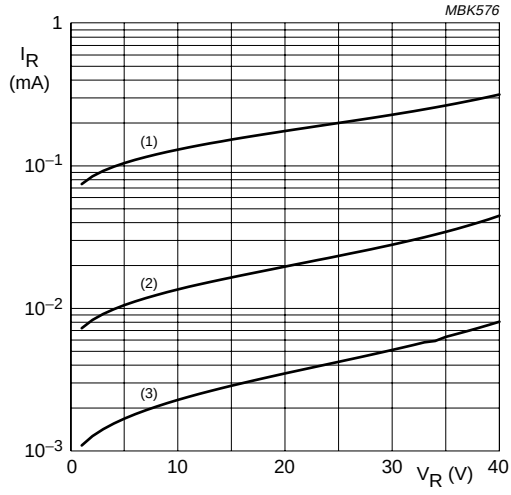
## GRAPHICAL DATA



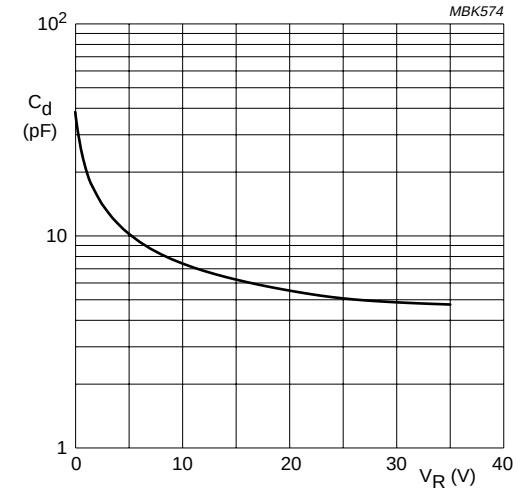

(1) $T_{amb}$ = 125 °C.
(2) $T_{amb}$ = 85 °C.
(3) $T_{amb}$ = 25 °C.

Fig.6 Forward current as a function of forward voltage; typical values.




(1) $T_{amb}$ = 125 °C.
(2) $T_{amb}$ = 85 °C.
(3) $T_{amb}$ = 25 °C.

Fig.7 Reverse current as a function of reverse voltage; typical values.




f = 1 MHz; $T_j$ = 25 °C.

Fig.8 Diode capacitance as a function of reverse voltage; typical values.



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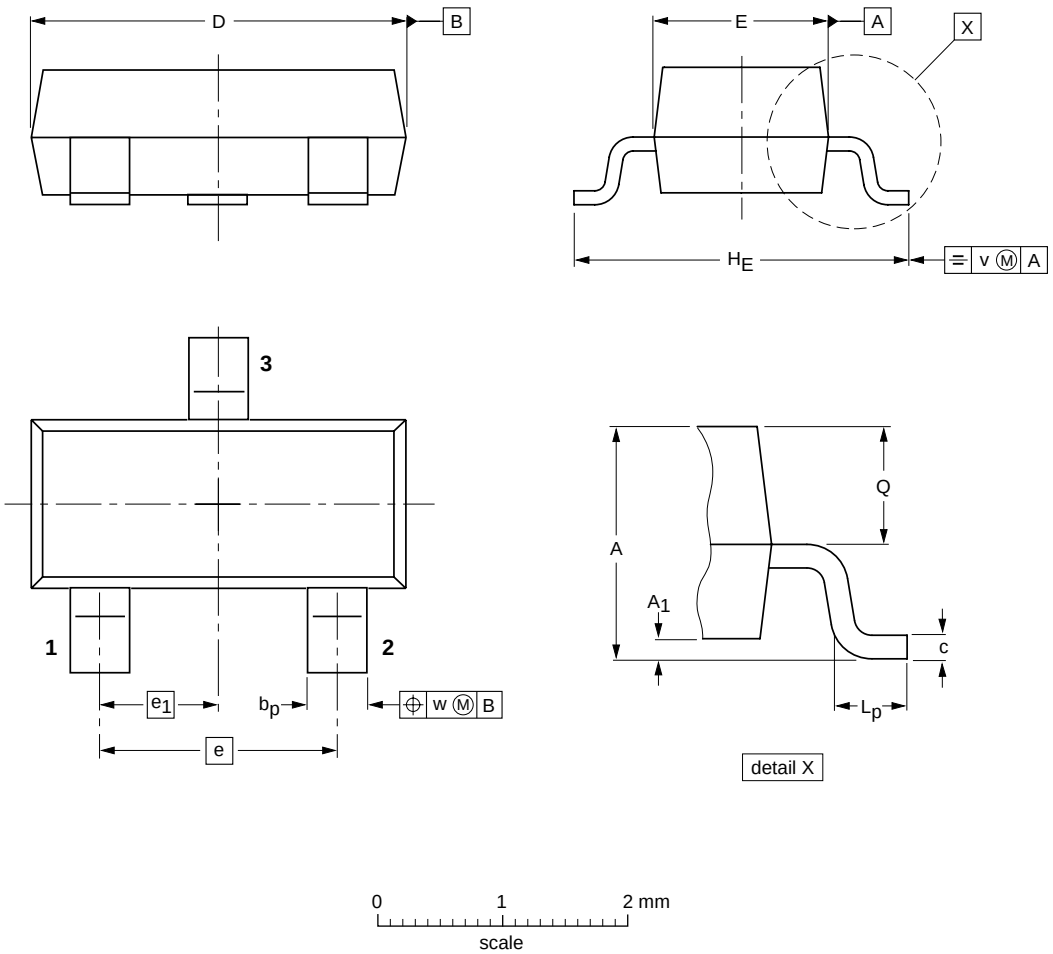
## PACKAGE OUTLINE

**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<br>0.9 | 0.1 | 0.48<br>0.38 | 0.15<br>0.09 | 3.0<br>2.8 | 1.4<br>1.2 | 1.9 | 0.95 | 2.5<br>2.1 | 0.45<br>0.15 | 0.55<br>0.45 | 0.2 | 0.1 |

| OUTLINE VERSION | REFERENCES | | | | EUROPEAN PROJECTION | ISSUE DATE |
|---|---|---|---|---|---|---|
| | IEC | JEDEC | EIAJ | | | |
| SOT23 | | | | | | 97-02-28 |



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## DEFINITIONS

| | |
|---|---|
| **Data sheet status** | |
| Objective specification | This data sheet contains target or goal specifications for product development. |
| Preliminary specification | This data sheet contains preliminary data; supplementary data may be published later. |
| Product specification | This data sheet contains final product specifications. |
| **Limiting values** | |
| Limiting values given are in accordance with the Absolute Maximum Rating System (IEC 134). Stress above one or more of the limiting values may cause permanent damage to the device. These are stress ratings only and operation of the device at these or at any other conditions above those given in the Characteristics sections of the specification is not implied. Exposure to limiting values for extended periods may affect device reliability. | |
| **Application information** | |
| Where application information is given, it is advisory and does not form part of the specification. | |

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**NOTES**



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