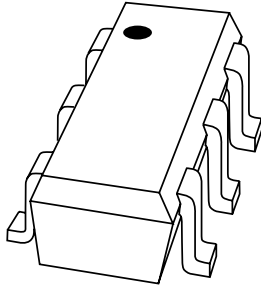


# DATA SHEET



## **BAV756S**

### High-speed switching diode array

Product specification  
Supersedes data of 1997 Aug 27  
File under Discrete Semiconductors, SC01

1997 Oct 21

High-speed switching diode array

BAV756S

FEATURES

- Small plastic SMD package
- High switching speed: max. 4 ns
- Continuous reverse voltage: max. 75 V
- Repetitive peak reverse voltage: max. 85 V
- Repetitive peak forward current: max. 450 mA.

PINNING

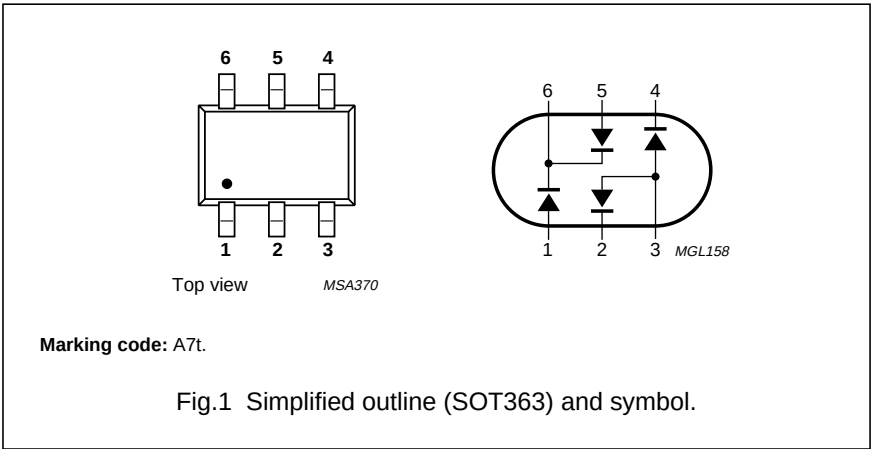
| PIN | DESCRIPTION    |
|-----|----------------|
| 1   | anode (a1)     |
| 2   | cathode (k1)   |
| 3   | common anode   |
| 4   | cathode (k2)   |
| 5   | anode (a2)     |
| 6   | common cathode |

APPLICATIONS

- General purpose switching in e.g. surface mounted circuits.

DESCRIPTION

The BAV756S consists of four high-speed switching diodes fabricated in planar technology, and encapsulated in the small SMD SOT363 plastic package. One pair of diodes has a common cathode; the other pair has a common anode.



LIMITING VALUES

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

| 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; see Fig.2                              | –    | 250  | mA   |
|           |                                     | all diodes loaded; see Fig.2                                | –    | 100  | mA   |
| $I_{FRM}$ | repetitive peak forward current     |                                                             | –    | 450  | mA   |
| $I_{FSM}$ | non-repetitive peak forward current | square wave; $T_j = 25\text{ °C}$ prior to surge; see Fig.4 |      |      |      |
|           |                                     | $t = 1\text{ }\mu\text{s}$                                  | –    | 4    | A    |
|           |                                     | $t = 1\text{ ms}$                                           | –    | 1    | A    |
|           |                                     | $t = 1\text{ s}$                                            | –    | 0.5  | A    |
| $P_{tot}$ | total power dissipation             | $T_s = 60\text{ °C}$ ; note 1                               | –    | 350  | mW   |
| $T_{stg}$ | storage temperature                 |                                                             | –65  | +150 | °C   |
| $T_j$     | junction temperature                |                                                             | –65  | +150 | °C   |

Note

1. One or more diodes loaded.

## High-speed switching diode array

## BAV756S

**ELECTRICAL CHARACTERISTICS**

$T_j = 25\text{ }^{\circ}\text{C}$  unless otherwise specified.

| SYMBOL           | PARAMETER                | CONDITIONS                                                                                                                                                                  | MAX.                    | UNIT                                                  |
|------------------|--------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|-------------------------------------------------------|
| <b>Per diode</b> |                          |                                                                                                                                                                             |                         |                                                       |
| $V_F$            | forward voltage          | see Fig.3<br>$I_F = 1\text{ mA}$<br>$I_F = 10\text{ mA}$<br>$I_F = 50\text{ mA}$<br>$I_F = 150\text{ mA}$                                                                   | 715<br>855<br>1<br>1.25 | mV<br>mV<br>V<br>V                                    |
| $I_R$            | reverse current          | see Fig.5<br>$V_R = 25\text{ V}$<br>$V_R = 75\text{ V}$<br>$V_R = 25\text{ V}; T_j = 150\text{ }^{\circ}\text{C}$<br>$V_R = 75\text{ V}; T_j = 150\text{ }^{\circ}\text{C}$ | 30<br>2.5<br>60<br>100  | nA<br>$\mu\text{A}$<br>$\mu\text{A}$<br>$\mu\text{A}$ |
| $C_d$            | diode capacitance        | $V_R = 0; f = 1\text{ MHz}$                                                                                                                                                 | 2                       | pF                                                    |
| $t_{rr}$         | reverse recovery time    | when switched from $I_F = 10\text{ mA}$ to $I_R = 10\text{ mA}$ ; $R_L = 100\text{ }\Omega$ ; measured at $I_R = 1\text{ mA}$ ; see Fig.6                                   | 4                       | ns                                                    |
| $V_{fr}$         | forward recovery voltage | when switched from $I_F = 10\text{ mA}$ ; $t_r = 20\text{ ns}$ ; see Fig.7                                                                                                  | 1.75                    | V                                                     |

**THERMAL CHARACTERISTICS**

| SYMBOL        | PARAMETER                                           | CONDITIONS | VALUE | UNIT |
|---------------|-----------------------------------------------------|------------|-------|------|
| $R_{th\ j-s}$ | thermal resistance from junction to soldering point | note 1     | 255   | K/W  |

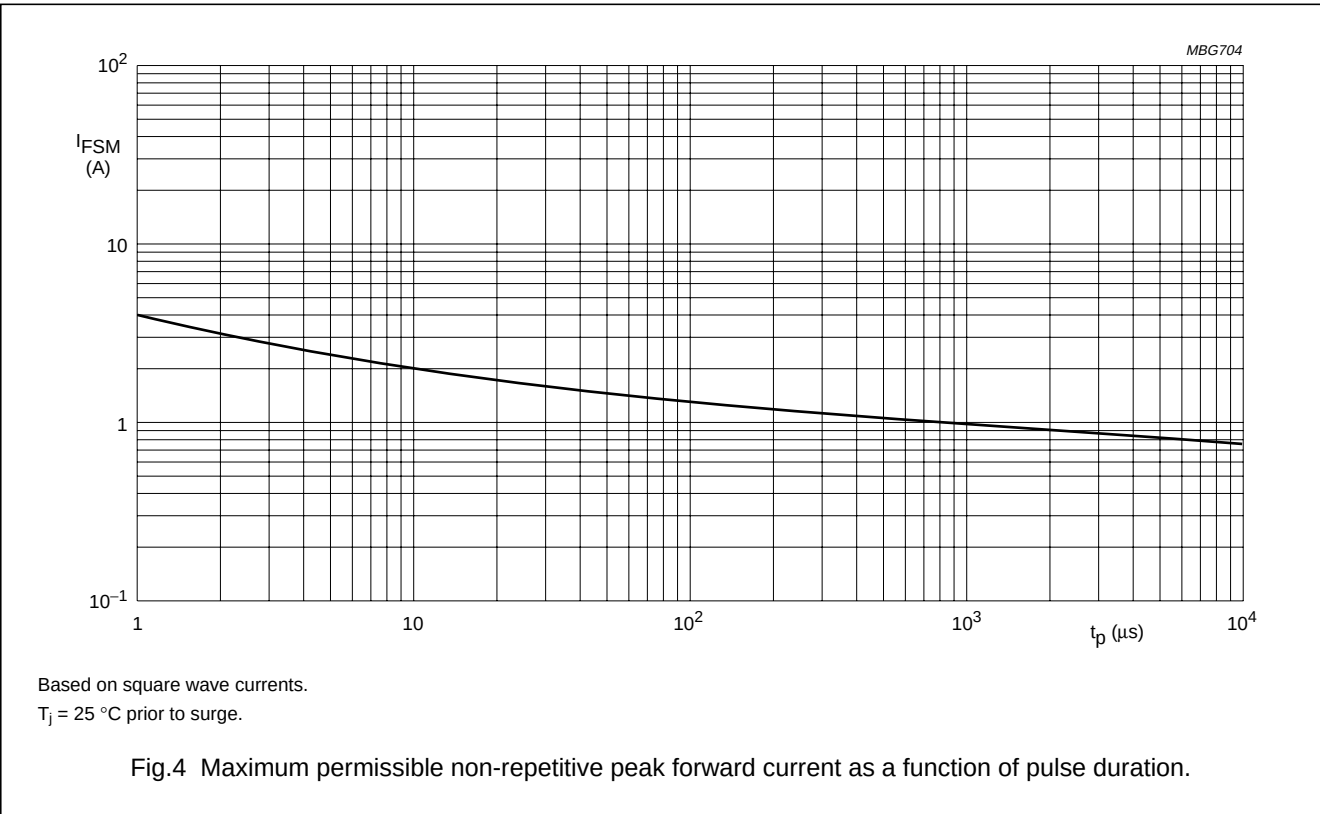
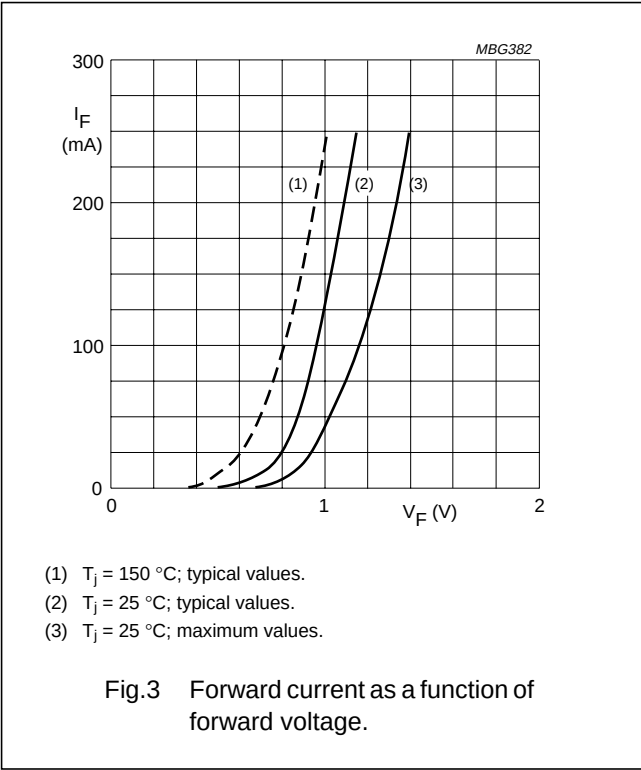
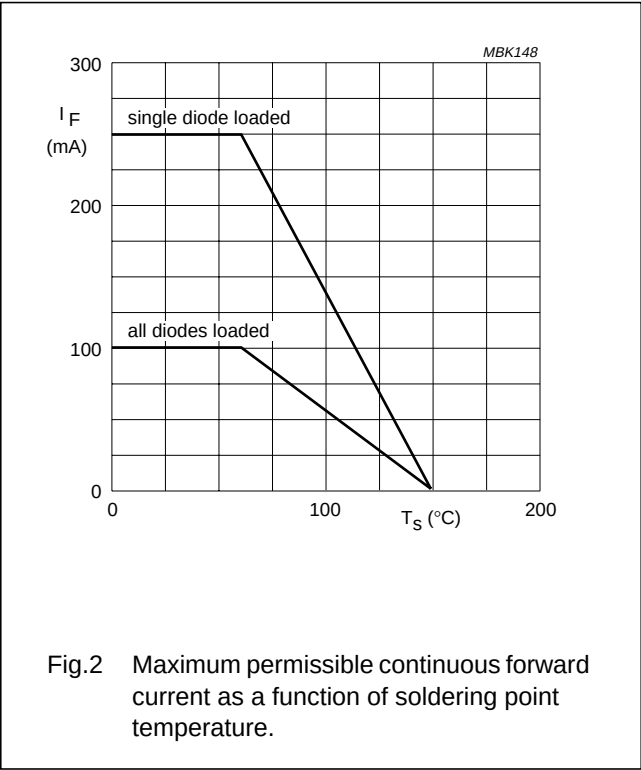
**Note**

- One or more diodes loaded.

High-speed switching diode array

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GRAPHICAL DATA



High-speed switching diode array

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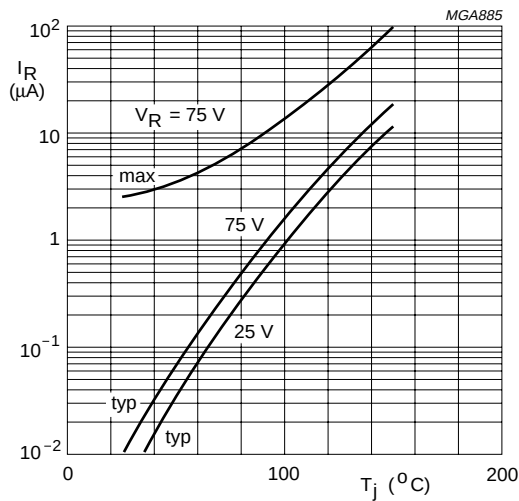
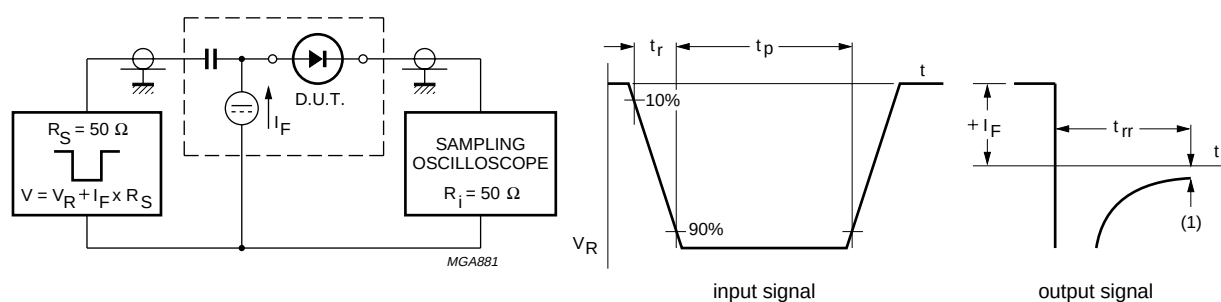


Fig.5 Reverse current as a function of junction temperature.

## High-speed switching diode array

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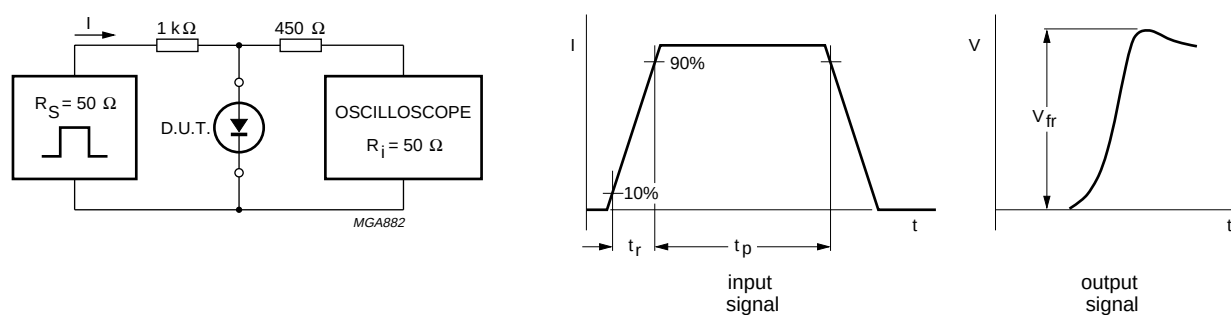


(1)  $I_R = 1 \text{ mA}$ .

Input signal: reverse pulse rise time  $t_r = 0.6 \text{ ns}$ ; reverse voltage pulse duration  $t_p = 100 \text{ ns}$ ; duty factor  $\delta = 0.05$ .

Oscilloscope: rise time  $t_r = 0.35 \text{ ns}$ .

Fig.6 Reverse recovery voltage test circuit and waveforms.



Input signal: forward pulse rise time  $t_r = 20 \text{ ns}$ ; forward current pulse duration  $t_p \geq 100 \text{ ns}$ ; duty factor  $\delta \leq 0.005$ .

Fig.7 Forward recovery voltage test circuit and waveforms.

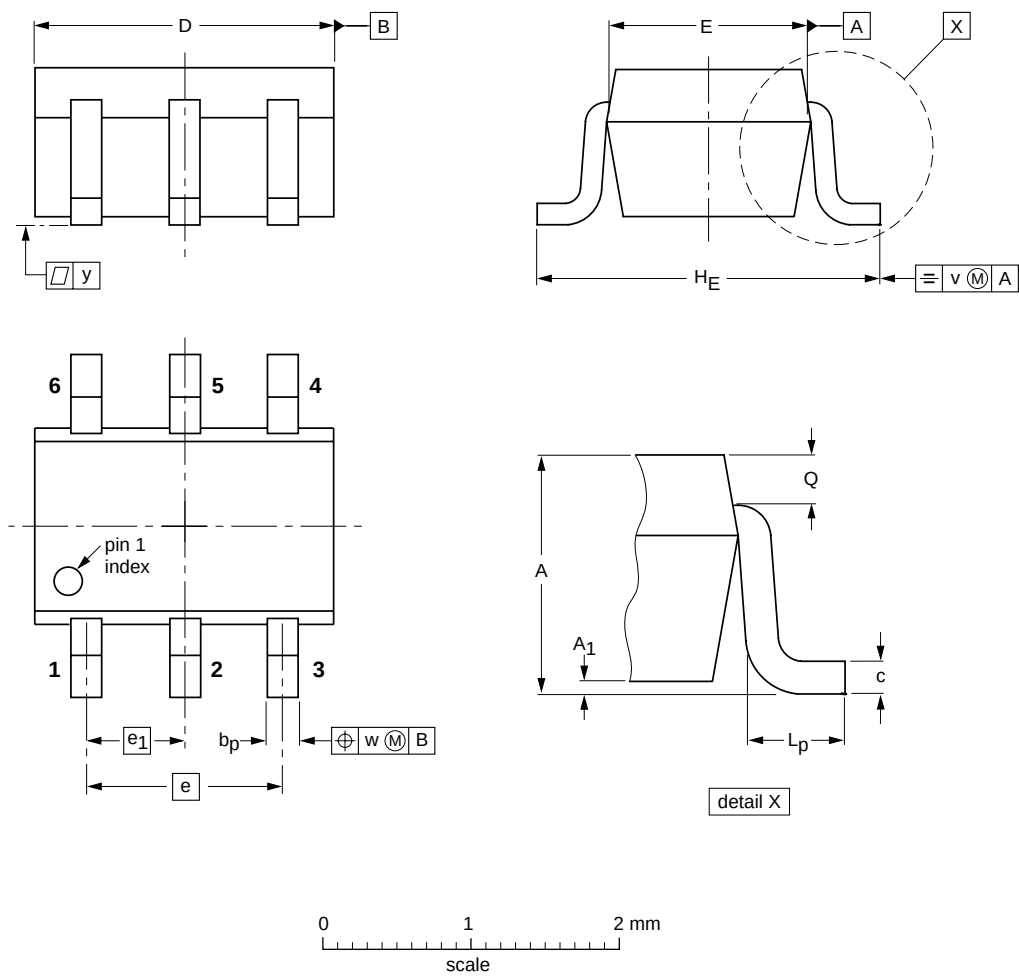
High-speed switching diode array

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PACKAGE OUTLINE

Plastic surface mounted package; 6 leads

SOT363



DIMENSIONS (mm are the original dimensions)

| UNIT | A          | A1<br>max | bp           | c            | D          | E            | e   | e1   | HE         | Lp           | Q            | v   | w   | y   |
|------|------------|-----------|--------------|--------------|------------|--------------|-----|------|------------|--------------|--------------|-----|-----|-----|
| mm   | 1.1<br>0.8 | 0.1       | 0.30<br>0.20 | 0.25<br>0.10 | 2.2<br>1.8 | 1.35<br>1.15 | 1.3 | 0.65 | 2.2<br>2.0 | 0.45<br>0.15 | 0.25<br>0.15 | 0.2 | 0.2 | 0.1 |

| OUTLINE<br>VERSION | REFERENCES |       |       |  | EUROPEAN<br>PROJECTION | ISSUE DATE |
|--------------------|------------|-------|-------|--|------------------------|------------|
|                    | IEC        | JEDEC | EIAJ  |  |                        |            |
| SOT363             |            |       | SC-88 |  |                        | 97-02-28   |

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High-speed switching diode array

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BAV756S

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**DEFINITIONS**

| <b>Data Sheet Status</b>                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                       |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| 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.                                |
| <b>Limiting values</b>                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                       |
| 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. |                                                                                       |
| <b>Application information</b>                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                       |
| Where application information is given, it is advisory and does not form part of the specification.                                                                                                                                                                                                                                                                                                                                                       |                                                                                       |

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## High-speed switching diode array

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### NOTES

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NOTES

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## High-speed switching diode array

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