



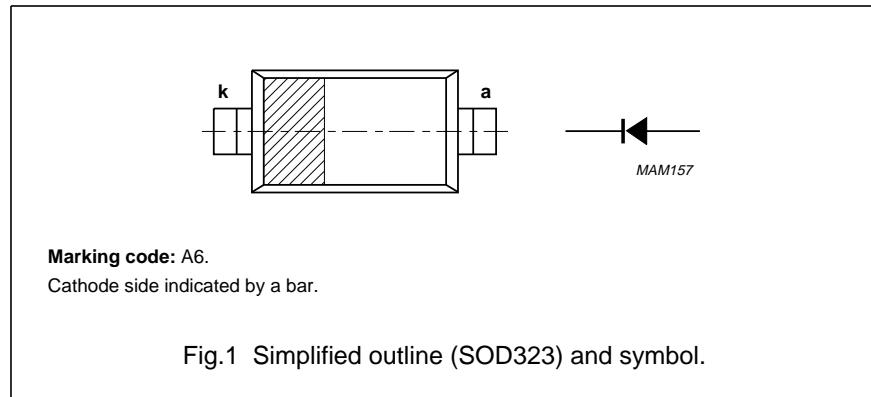
High-speed diode

BAS316**FEATURES**

- Very 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. 500 mA.

DESCRIPTION

The BAS316 is a high-speed switching diode fabricated in planar technology, and encapsulated in the SOD323 SMD plastic package.

**APPLICATIONS**

- High-speed switching in e.g. surface mounted circuits.

LIMITING VALUES

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

| SYMBOL | PARAMETER | CONDITIONS | MIN. | MAX. | UNIT |
|-----------|-------------------------------------|---|-------------|---------------|-------------|
| V_{RRM} | repetitive peak reverse voltage | | – | 85 | V |
| V_R | continuous reverse voltage | | – | 75 | V |
| I_F | continuous forward current | $T_s = 90^\circ\text{C}$; note 1; see Fig.2 | – | 250 | mA |
| I_{FRM} | repetitive peak forward current | | – | 500 | mA |
| I_{FSM} | non-repetitive peak forward current | square wave; $T_j = 25^\circ\text{C}$ prior to surge; see Fig.4 $t = 1 \mu\text{s}$ $t = 1 \text{ ms}$ $t = 1 \text{ s}$ | – – – | 4 1 0.5 | A A A |
| P_{tot} | total power dissipation | $T_s = 90^\circ\text{C}$; note 1 | – | 400 | mW |
| T_{stg} | storage temperature | | –65 | +150 | °C |
| T_j | junction temperature | | – | 150 | °C |

Note

1. T_s is the temperature at the soldering point of the cathode tab.

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

| SYMBOL | PARAMETER | CONDITIONS | MAX. | UNIT |
|----------|--------------------------|--|-------------------------|---|
| V_F | forward voltage | see Fig.3 $I_F = 1 \text{ mA}$ $I_F = 10 \text{ mA}$ $I_F = 50 \text{ mA}$ $I_F = 150 \text{ mA}$ | 715 855 1 1.25 | mV mV V V |
| I_R | reverse current | see Fig.5 $V_R = 25 \text{ V}$ $V_R = 75 \text{ V}$ $V_R = 25 \text{ V}; T_j = 150^\circ\text{C}$ $V_R = 75 \text{ V}; T_j = 150^\circ\text{C};$ | 30 1 30 50 | nA μA μA μA |
| C_d | diode capacitance | $f = 1 \text{ MHz}; V_R = 0$; see Fig.6 | 1.5 | 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 | 4 | ns |
| V_{fr} | forward recovery voltage | when switched from $I_F = 10 \text{ mA}$; $t_r = 20 \text{ ns}$; see Fig.8 | 1.75 | V |

THERMAL CHARACTERISTICS

| SYMBOL | PARAMETER | CONDITIONS | VALUE | UNIT |
|--------------|---|------------|-------|------|
| $R_{th j-s}$ | thermal resistance from junction to soldering point | note 1 | 150 | K/W |

Note

1. Soldering point of the cathode tab.



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GRAPHICAL DATA

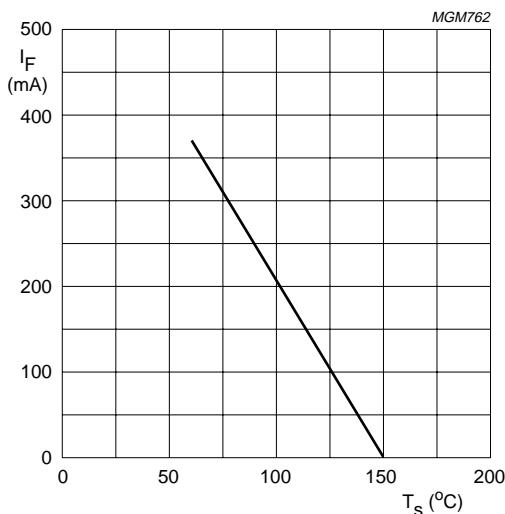
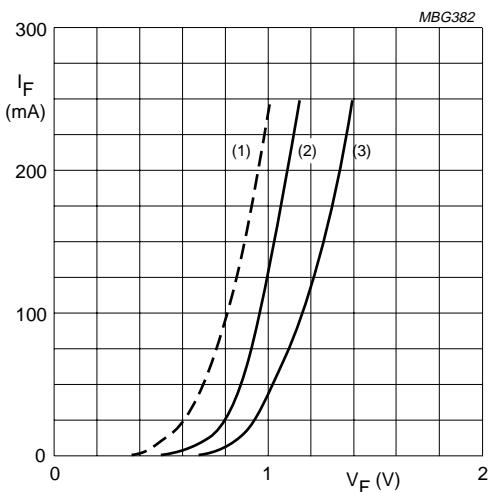
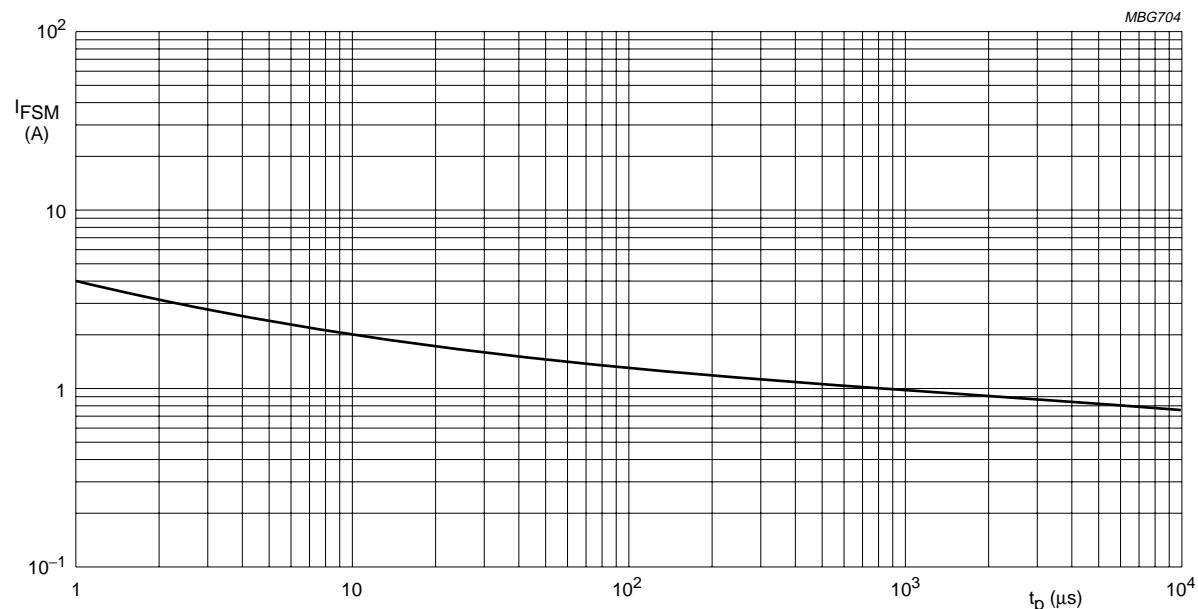


Fig.2 Maximum permissible continuous forward current as a function of soldering point temperature.



- (1) $T_j = 150 \text{ }^\circ\text{C}$; typical values.
(2) $T_j = 25 \text{ }^\circ\text{C}$; typical values.
(3) $T_j = 25 \text{ }^\circ\text{C}$; maximum values.

Fig.3 Forward current as a function of forward voltage.



Based on square wave currents.

$T_j = 25 \text{ }^\circ\text{C}$ prior to surge.

Fig.4 Maximum permissible non-repetitive peak forward current as a function of pulse duration.



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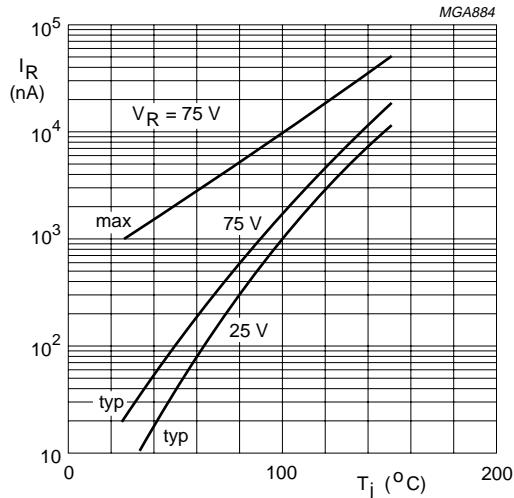
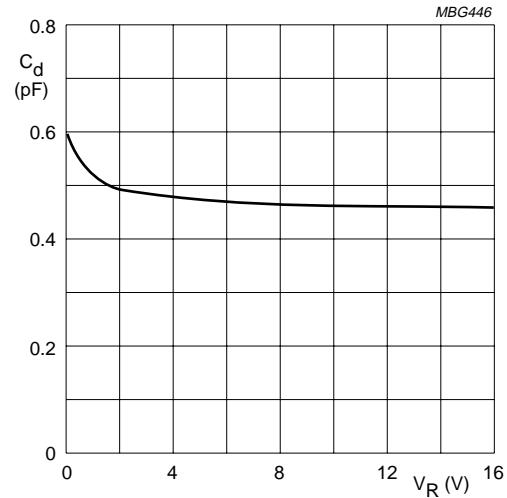


Fig.5 Reverse current as a function of junction temperature.



$f = 1$ MHz; $T_j = 25$ °C.

Fig.6 Diode capacitance as a function of reverse voltage; typical values.