



**CYStek Electronics Corp.**

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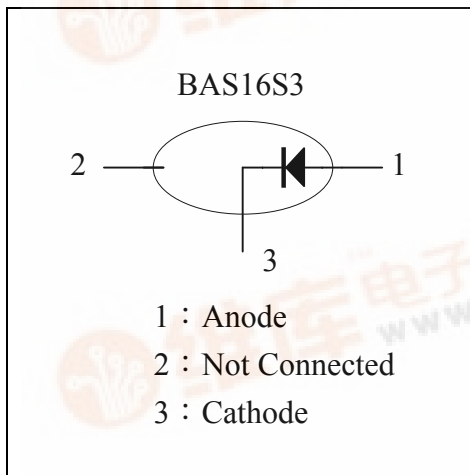
## High –speed switching diode

# BAS16S3

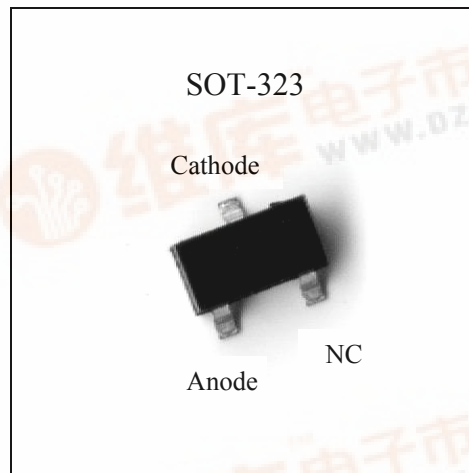
### Description

The BAS16S3 is a high-speed switching diode fabricated in planar technology, and encapsulated in a small SOT-323 plastic SMD package.

### Equivalent Circuit



### Outline



### Features

- Small plastic SMD package
- High switching speed: max. 4ns
- Continuous reverse voltage: max. 75V
- Repetitive peak reverse voltage: max. 85V
- Repetitive peak forward current: max. 500mA.

### Applications

- High-speed switching in hybrid thick and thin-film circuits.



## Absolute Maximum Ratings @TA=25°C

| Parameters                                                                                  | Symbol    | Min              | Max  | Unit |
|---------------------------------------------------------------------------------------------|-----------|------------------|------|------|
| Repetitive peak reverse voltage                                                             | $V_{RRM}$ | -                | 85   | V    |
| Continuous reverse voltage                                                                  | $V_R$     | -                | 75   | V    |
| Continuous forward current (Note 1)                                                         | $I_F$     | -                | 215  | mA   |
| Repetitive peak forward current                                                             | $I_{FRM}$ |                  | 500  | mA   |
| Non-repetitive peak forward current<br>@square wave, $T_j=125^\circ\text{C}$ prior to surge | $I_{FSM}$ | $t=1\mu\text{s}$ | 4    | A    |
| $t=1\text{ms}$                                                                              |           | -                | 1    | A    |
| $t=1\text{s}$                                                                               |           | -                | 0.5  | A    |
| Total power dissipation (Note 1)                                                            | $P_{tot}$ |                  | 250  | mW   |
| Junction Temperature                                                                        | $T_j$     | -                | 150  | °C   |
| Storage Temperature                                                                         | $T_{stg}$ | -65              | +150 | °C   |

Note 1: Device mounted on an FR-4 PCB.

## Electrical Characteristics @ $T_j=25^\circ\text{C}$ unless otherwise specified

| Parameters               | Symbol   | Conditions                                                                                                 | Min | Typ. | Max  | Unit          |
|--------------------------|----------|------------------------------------------------------------------------------------------------------------|-----|------|------|---------------|
| Forward voltage          | $V_F$    | $I_F=1\text{mA}$                                                                                           | -   | -    | 715  | mV            |
|                          |          | $I_F=10\text{mA}$                                                                                          |     |      | 855  | mV            |
|                          |          | $I_F=50\text{mA}$                                                                                          |     |      | 1    | V             |
|                          |          | $I_F=150\text{mA}$                                                                                         |     |      | 1.25 | V             |
| Reverse current          | $I_R$    | $V_R=25\text{V}$                                                                                           | -   | -    | 30   | nA            |
|                          |          | $V_R=75\text{V}$                                                                                           |     |      | 1    | $\mu\text{A}$ |
|                          |          | $V_R=25\text{V}, T_j=150^\circ\text{C}$                                                                    |     |      | 30   | $\mu\text{A}$ |
|                          |          | $V_R=75\text{V}, T_j=150^\circ\text{C}$                                                                    |     |      | 50   | $\mu\text{A}$ |
| Diode capacitance        | $C_d$    | $V_R=0\text{V}, f=1\text{MHz}$                                                                             | -   | -    | 1.5  | pF            |
| Reverse recovery time    | $t_{rr}$ | when switched from $I_F=10\text{mA}$ to $I_R=10\text{mA}$ , $R_L=100\Omega$ , measured at $I_R=1\text{mA}$ | -   | -    | 4    | ns            |
| Forward recovery voltage | $V_{fr}$ | when switched from $I_F=10\text{mA}$ $t_r=20\text{ns}$                                                     | -   | -    | 1.75 | V             |

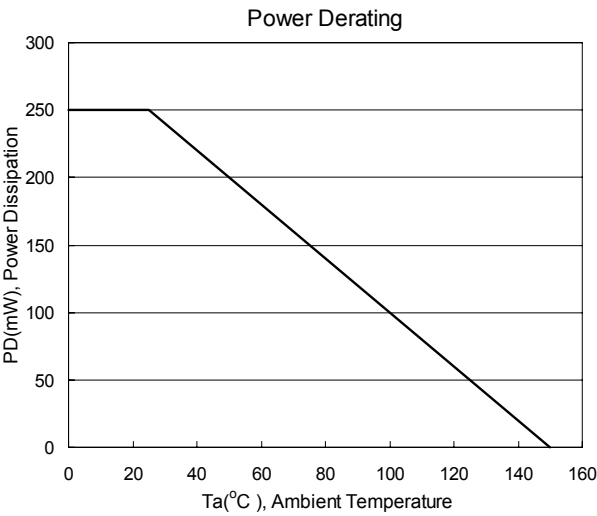
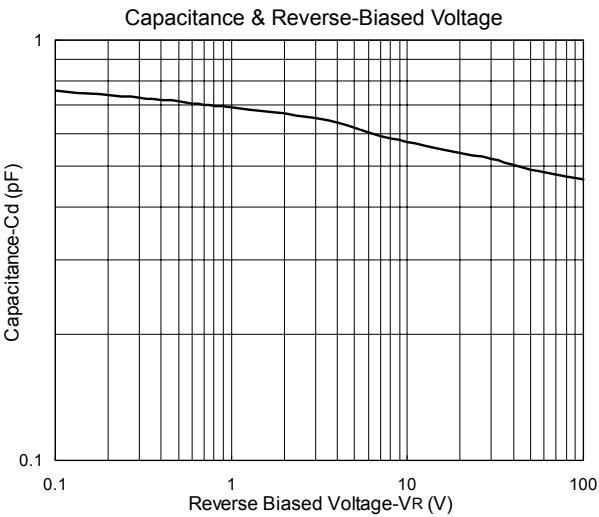
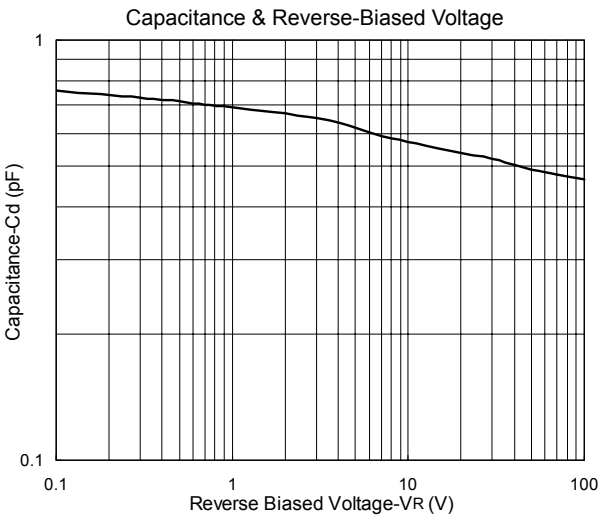
## Thermal Characteristics

| Symbol        | Parameter                                     | Conditions | Value | Unit |
|---------------|-----------------------------------------------|------------|-------|------|
| $R_{th,j-tp}$ | thermal resistance from junction to tie-point |            | 360   | °C/W |
| $R_{th,j-a}$  | thermal resistance from junction to ambient   | Note 1     | 500   | °C/W |

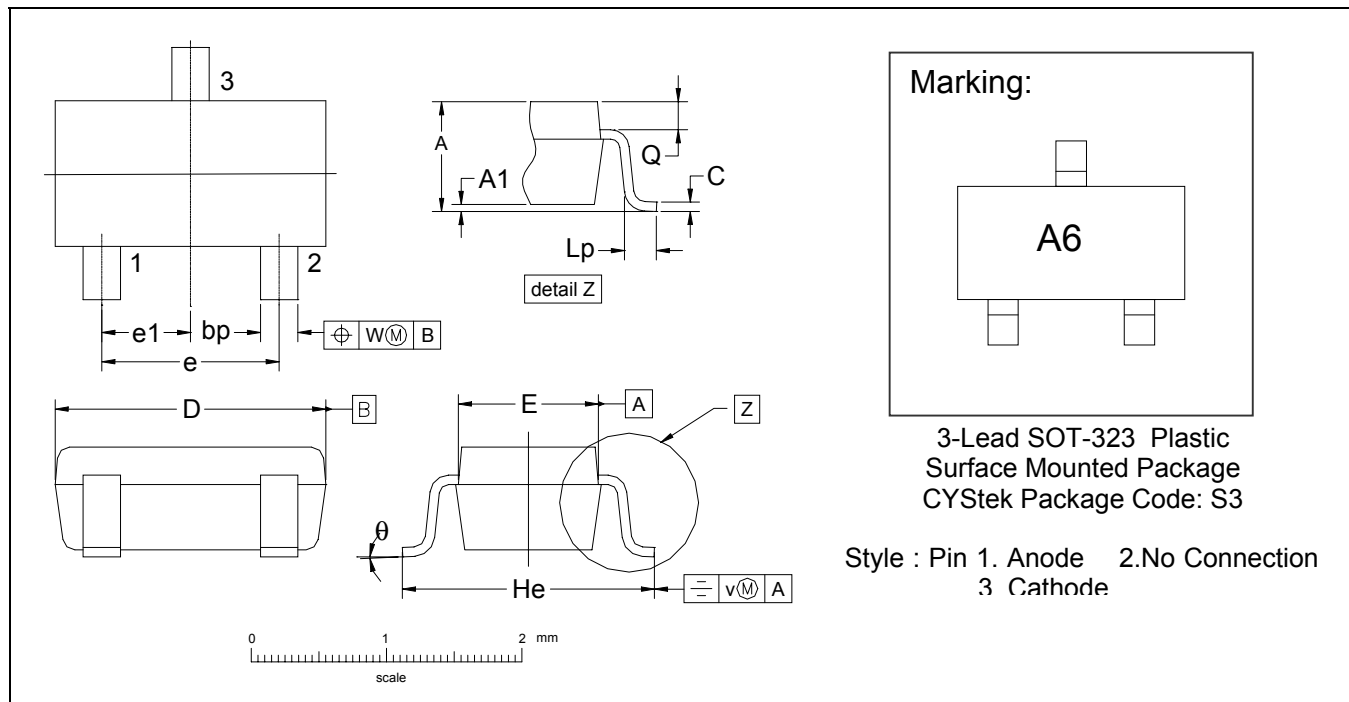
Note 1: Device mounted on an FR-4 PCB.



Characteristic Curves



## SOT-323 Dimension



\*: Typical

| DIM | Inches |        | Millimeters |      | DIM | Inches |        | Millimeters |      |
|-----|--------|--------|-------------|------|-----|--------|--------|-------------|------|
|     | Min.   | Max.   | Min.        | Max. |     | Min.   | Max.   | Min.        | Max. |
| A   | 0.0315 | 0.0433 | 0.80        | 1.10 | e1  | 0.0256 | -      | 0.65        | -    |
| A1  | 0.0000 | 0.0039 | 0.00        | 0.10 | He  | 0.0787 | 0.0886 | 2.00        | 2.25 |
| bp  | 0.0118 | 0.0157 | 0.30        | 0.40 | Lp  | 0.0059 | 0.0177 | 0.15        | 0.45 |
| C   | 0.0039 | 0.0098 | 0.10        | 0.25 | Q   | 0.0051 | 0.0091 | 0.13        | 0.23 |
| D   | 0.0709 | 0.0866 | 1.80        | 2.20 | v   | 0.0079 | -      | 0.2         | -    |
| E   | 0.0453 | 0.0531 | 1.15        | 1.35 | w   | 0.0079 | -      | 0.2         | -    |
| e   | 0.0512 | -      | 1.3         | -    | θ   | -      | -      | 10°         | 0°   |

Notes: 1.Controlling dimension: millimeters.

2.Maximum lead thickness includes lead finish thickness, and minimum lead thickness is the minimum thickness of base material.

3.If there is any question with packing specification or packing method, please contact your local CYStek sales office.

### Material:

- Lead: 42 Alloy ; solder plating
- Mold Compound: Epoxy resin family, flammability solid burning class: UL94V-0

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