## High Voltage Switching Diode

## BAS20H

## Features

- S Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC-Q101 Qualified and PPAP Capable
- These Devices are $\mathrm{Pb}-$ Free, Halogen Free/BFR Free and are RoHS Compliant


## MAXIMUM RATINGS

| Rating | Symbol | Value | Unit |
| :--- | :---: | :---: | :---: |
| Continuous Reverse Voltage | $\mathrm{V}_{\mathrm{R}}$ | 200 | Vdc |
| Repetitive Peak Reverse Voltage | $\mathrm{V}_{\text {RRM }}$ | 200 | Vdc |
| Continuous Forward Current | $\mathrm{I}_{\mathrm{F}}$ | 200 | mAdc |
| Peak Forward Surge Current | $\mathrm{I}_{\mathrm{FM}}$ (surge) | 625 | mAdc |
| Repetitive Peak Forward Current | $\mathrm{I}_{\mathrm{FRM}}$ | 500 | mA |
| (Pulse Wave = 1 sec, Duty Cycle = 66\%) |  |  |  |
| Non-Repetitive Peak Forward Current | $\mathrm{I}_{\mathrm{FSM}}$ |  | A |
| (Square Wave, $\mathrm{T}_{\mathrm{J}}=25^{\circ} \mathrm{C}$ prior to surge) |  | 5.0 |  |
| $\mathrm{t}=1 \mathrm{\mu s}$ |  | 2.0 |  |
| $\mathrm{t}=1 \mathrm{~ms}$ |  | 0.5 |  |
| $\mathrm{t}=1 \mathrm{~s}$ |  |  |  |

THERMAL CHARACTERISTICS

| Characteristic | Symbol | Max | Unit |
| :--- | :---: | :---: | :---: |
| Total Device Dissipation FR-5 Board* | $\mathrm{P}_{\mathrm{D}}$ |  | 200 |
| $\mathrm{~T}_{\mathrm{A}}=25^{\circ} \mathrm{C}$ |  | mW |  |
| Derate above $25^{\circ} \mathrm{C}$ |  | 1.57 | $\mathrm{~mW} /{ }^{\circ} \mathrm{C}$ |
| Thermal Resistance Junction-to-Ambient | $\mathrm{R}_{\theta \mathrm{JA}}$ | 635 | ${ }^{\circ} \mathrm{C} / \mathrm{W}$ |
| Junction and Storage Temperature Range | $\mathrm{T}_{\mathrm{J}}, \mathrm{T}_{\text {stg }}$ | -55 to <br> +150 | ${ }^{\circ} \mathrm{C}$ |
|  |  |  |  |

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.
*FR-5 Minimum Pad
ELECTRICAL CHARACTERISTICS $\left(T_{A}=25^{\circ} \mathrm{C}\right.$ unless otherwise noted)

| Characteristic | Symbol | Min | Max | Unit |
| :---: | :---: | :---: | :---: | :---: |

## OFF CHARACTERISTICS

| Reverse Voltage Leakage Current <br> $\left(V_{R}=200 \mathrm{Vdc}\right)$ <br> $\left(\mathrm{V}_{\mathrm{R}}=200 \mathrm{Vdc}, \mathrm{T}_{\mathrm{J}}=150^{\circ} \mathrm{C}\right)$ | $\mathrm{I}_{\mathrm{R}}$ | - | 1.0 | $\mu \mathrm{Adc}$ |
| :--- | :---: | :---: | :---: | :---: |
| Reverse Breakdown Voltage <br> $\left(\mathrm{I}_{\mathrm{BR}}=100 \mu \mathrm{Adc}\right)$ | $\mathrm{V}_{(\mathrm{BR})}$ | 250 | - | Vdc |
| Forward Voltage <br> $\left(\mathrm{I}_{\mathrm{F}}=100 \mathrm{mAdc}\right)$ <br> $\left(\mathrm{I}_{\mathrm{F}}=200 \mathrm{mAdc}\right)$ | $\mathrm{V}_{\mathrm{F}}$ | - | 1000 | mV |
| Diode Capacitance <br> $\left(\mathrm{V}_{\mathrm{R}}=0, \mathrm{f}=1.0 \mathrm{MHz}\right)$ | $\mathrm{C}_{\mathrm{D}}$ | - | 5.0 | pF |
| Reverse Recovery Time <br> $\left(\mathrm{I}_{\mathrm{F}}=\mathrm{I}_{\mathrm{R}}=30 \mathrm{mAdc}, \mathrm{R}_{\mathrm{L}}=100 \Omega\right)$ | $\mathrm{t}_{\mathrm{rr}}$ | - | 50 | ns |

## HIGH VOLTAGE SWITCHING DIODE



SOD-323 CASE 477 STYLE 1

## MARKING DIAGRAM



JR = Specific Device Code
M = Date Code*

- = Pb-Free Package
(Note: Microdot may be in either location)
*Date Code orientation may vary depending upon manufacturing location.

ORDERING INFORMATION

| Device | Package | Shipping $^{\dagger}$ |
| :---: | :---: | :---: |
| BAS20HT1G | SOD-323 <br> (Pb-Free) | $3000 /$ Tape \& Reel |
| SBAS20HT1G | SOD-323 <br> (Pb-Free) | $3000 /$ Tape \& Reel |

$\dagger$ For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.


Notes: 1. A $2.0 \mathrm{k} \Omega$ variable resistor adjusted for a Forward Current $\left(\mathrm{I}_{\mathrm{F}}\right)$ of 30 mA .
2. Input pulse is adjusted so $\mathrm{I}_{\mathrm{R} \text { (peak) }}$ is equal to 30 mA .
3. $t_{p}$ " $t_{r r}$

Figure 1. Recovery Time Equivalent Test Circuit


Figure 2. Forward Current


Figure 3. Leakage Current


Figure 4. Total Capacitance


SIDE VIEW


NDTES:

1. DIMENSIDNING AND TILERANCING AS PER ASME Y14.5M, 2018
2. CONTRaLLING DIMENSIDN: MILLIMETERS
3. LEAD THICKNESS SPECIFIED PER L/F DRAWING WITH SULDER PLATING.
4. DIMENSIIDNS A AND B DD NDT INCLUDE MDLD FLASH, pRITRUSIDNS aR GATE BURRS
5. DIMENSIIN L IS MEASURE FRDM END DF RADIUS



## RECDMMENDED MDUNTING FIDTPRINT

*For additional information on our $\mathrm{Pb}-$ Free strategy and soldering details, please download the ZN Semiconductor Soldering and Mounting Techniques Reference manual, SOLDERRM/D.


$$
\begin{aligned}
& X X=\text { Specific Device Code } \\
& M \text { = Date Code }
\end{aligned}
$$

*This information is generic. Please refer to device data sheet for actual part marking. $\mathrm{Pb}-\mathrm{Free}$ indicator, " G " or microdot " "", may or may not be present. Some products may not follow the Generic Marking.
STYLE 1:
PIN 1. CATHODE (POLARITY BAND) $\quad$ STYLE 2:
NO POLARITY

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| :---: | :---: | :---: |
| DESCRIPTION: | SOD-323 1.70x1.25x0.85 | PAGE 1 OF 1 |

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