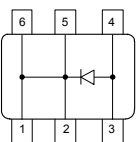


### Schottky Rectifier Diode

- Reverse voltage: 30 V
- Forward current: 2 A
- Low forward voltage: 0.53 V typ. @ 2 A
- Low leakage current 40  $\mu$ A typ. @ 30 V
- Low capacitance: 30 pF typ. @ 5 V
- High ESD / transient robustness according to:
  - ESD (HBM): Class 3 B (> 8000 V)
  - ESD (MM): Class C (> 400 V)
  - ISO7637-2: Pulse 1 (-100 V, 2 ms)
  - Pulse 2 (-300 V, 50  $\mu$ s)
  - Pulse 3 (-400 V, 100 ns)
- For high efficiency DC/DC conversion, fast switching, polarity protection, rectification and clamping applications
- Very small SMD package (2.0 x 1.25 x 0.9 mm<sup>3</sup>) with improved operating temperature range due to extra-low thermal resistance design (see attached Forward current curves)
- Ideal to replace SMA packages with significant size advantage
- Pb-free (RoHS compliant) package
- Qualified according AEC Q101



### BAS3020B



| Type     | Package | Configuration | Marking |
|----------|---------|---------------|---------|
| BAS3020B | SOT363  | single        | E9s     |

**Maximum Ratings** at  $T_A = 25\text{ °C}$ , unless otherwise specified

| Parameter  | Symbol       | Value       | Unit |
|--|--------------|-------------|------|
| Diode reverse voltage <sup>1)</sup>  | $V_R$        | 30          | V    |
| Peak reverse voltage <sup>1)</sup>   | $V_{RM}$     | 30          |      |
| RMS reverse voltage <sup>1)</sup>  | $V_{R(RMS)}$ | 21          |      |
| Forward current <sup>1)2)</sup> , $T_S \leq 96\text{ °C}$                                  | $I_F$        | 2           | A    |
| Repetitive peak forward current <sup>2)</sup><br>( $t_p \leq 1\text{ ms}$ , $D \leq 0.5$ ) | $I_{FRM}$    | 3.5         |      |
| Non-repetitive peak surge forward current <sup>2)</sup><br>( $t \leq 10\text{ ms}$ )       | $I_{FSM}$    | 10          |      |
| Junction temperature   | $T_j$        | 150         | °C   |
| Operating temperature range  | $T_{op}$     | -55 ... 125 |      |
| Storage temperature  | $T_{stg}$    | -65 ... 150 |      |

**Thermal Resistance**

| Parameter                                | Symbol     | Value     | Unit |
|--|------------|-----------|------|
| Junction - soldering point <sup>3)</sup> | $R_{thJS}$ | $\leq 42$ | K/W  |

**Electrical Characteristics** at  $T_A = 25\text{ °C}$ , unless otherwise specified

| Parameter | Symbol | Values |      |      | Unit |
|-----------|--------|--------|------|------|------|
|           |        | min.   | typ. | max. |      |

**DC Characteristics**

|                               |       |   |     |     |               |
|-------------------------------|-------|---|-----|-----|---------------|
| Reverse current <sup>4)</sup> | $I_R$ | - | 5   | 25  | $\mu\text{A}$ |
| $V_R = 5\text{ V}$            |       |   |     |     |               |
| $V_R = 10\text{ V}$           |       |   |     |     |               |
| $V_R = 30\text{ V}$           |       |   |     |     |               |
| Forward voltage <sup>4)</sup> | $V_F$ | - | 350 | 410 | mV            |
| $I_F = 500\text{ mA}$         |       |   |     |     |               |
| $I_F = 1\text{ A}$            |       |   |     |     |               |
| $I_F = 2\text{ A}$            |       |   |     |     |               |

<sup>1)</sup>For  $T_A > 25\text{ °C}$  the derating of  $V_R$  and  $I_F$  has to be considered. Please refer to the attached curves.

<sup>2)</sup>Only valid if pins 3 and 4 are connected in parallel.

<sup>3)</sup>For calculation of  $R_{thJA}$  please refer to Application Note Thermal Resistance.

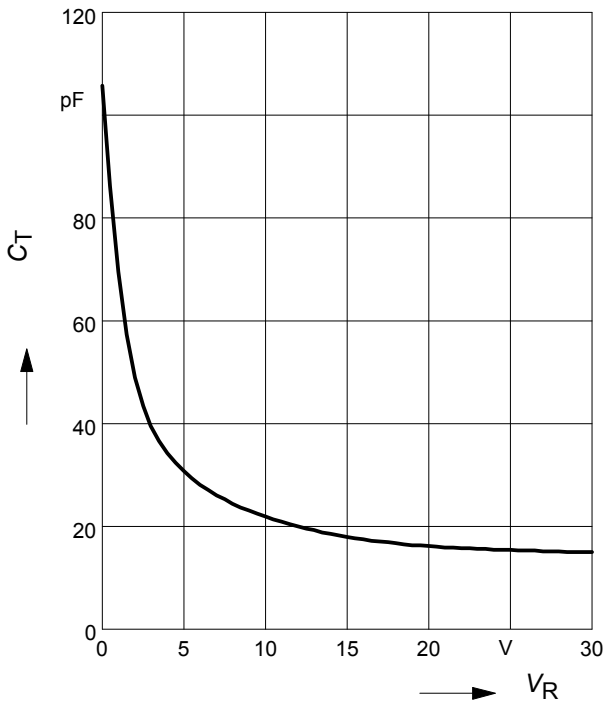
<sup>4)</sup>Pulsed test:  $t_p \leq 300\text{ }\mu\text{s}$ ;  $D = \leq 0.02$

**Electrical Characteristics at  $T_A = 25^\circ\text{C}$ , unless otherwise specified**

| Parameter                             | Symbol | Values |      |      | Unit |
|---------------------------------------|--------|--------|------|------|------|
|                                       |        | min.   | typ. | max. |      |
| <b>AC Characteristics</b>             |        |        |      |      |      |
| Diode capacitance                     | $C_T$  |        |      |      | pF   |
| $V_R = 1\text{ V}, f = 1\text{ MHz}$  |        | -      | 60   | 70   |      |
| $V_R = 5\text{ V}, f = 1\text{ MHz}$  |        | -      | 30   | 40   |      |
| $V_R = 10\text{ V}, f = 1\text{ MHz}$ |        | -      | 20   | 30   |      |

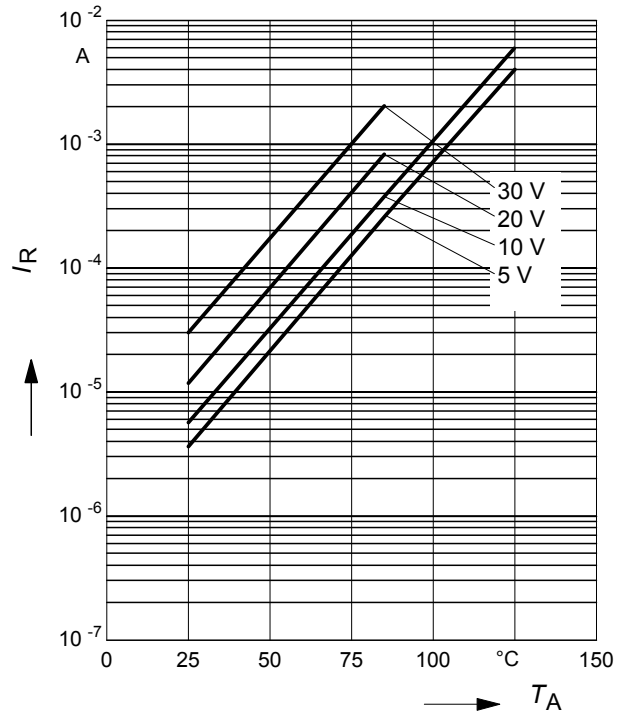
**Diode capacitance  $C_T = f(V_R)$**

$f = 1\text{MHz}$



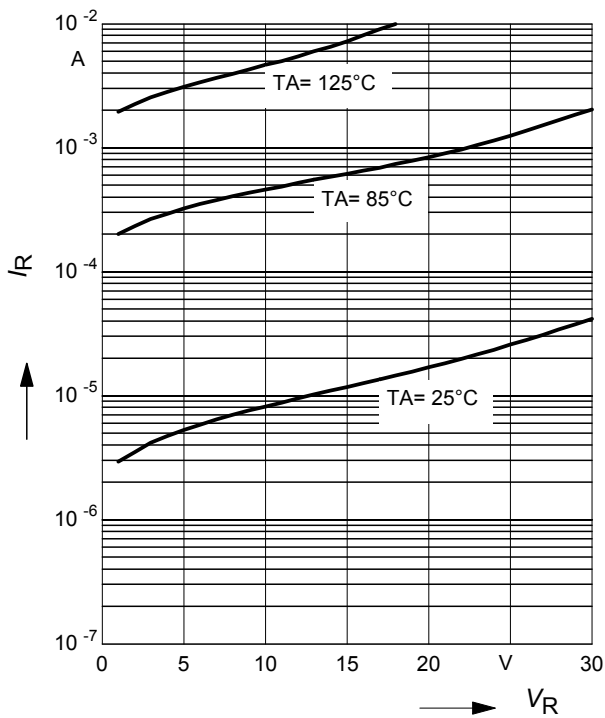
**Reverse current  $I_R = f(T_A)$**

$V_R = \text{Parameter}$



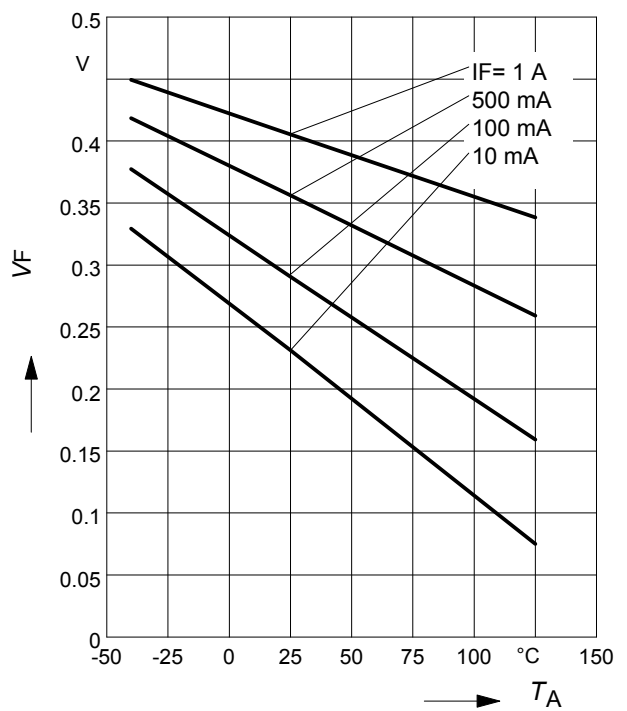
**Reverse current  $I_R = f(V_R)$**

$T_A = \text{Parameter}$



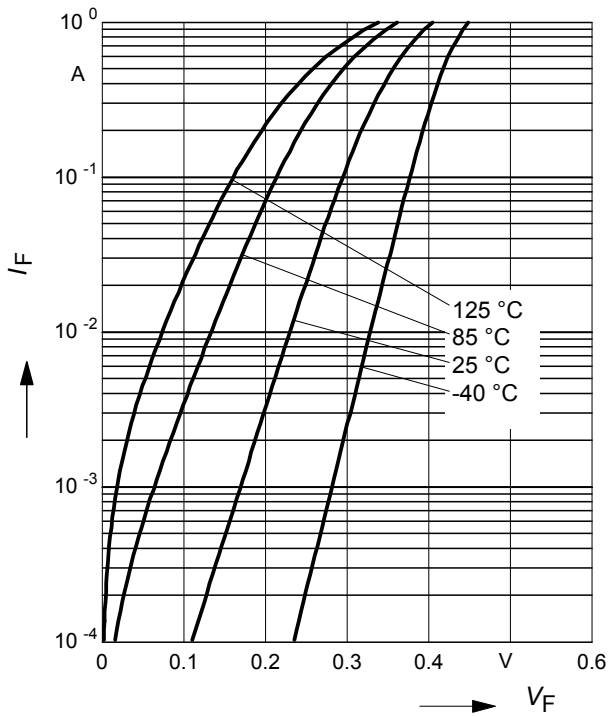
**Forward Voltage  $V_F = f(T_A)$**

$I_F = \text{Parameter}$



**Forward current  $I_F = f(V_F)$**

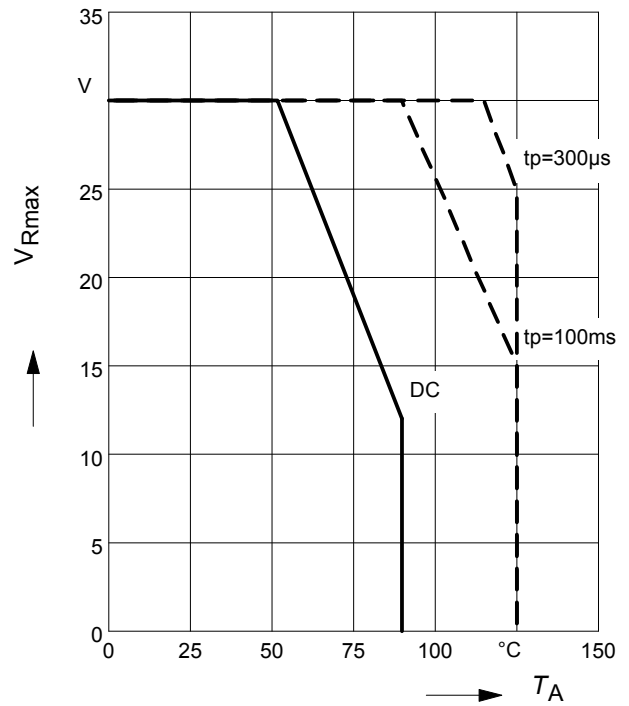
$T_A =$  Parameter



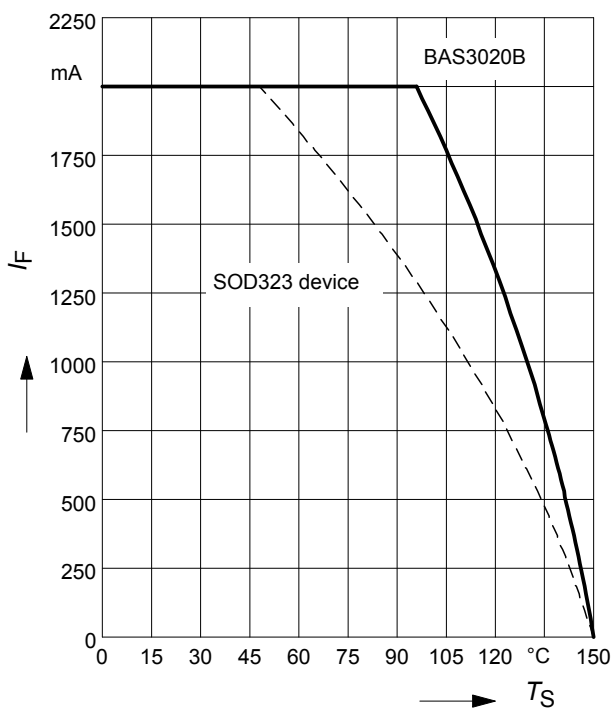
**Permissible Reverse voltage  $V_R = f(T_A)$**

$t_p =$  Parameter, Duty cycle < 0.01

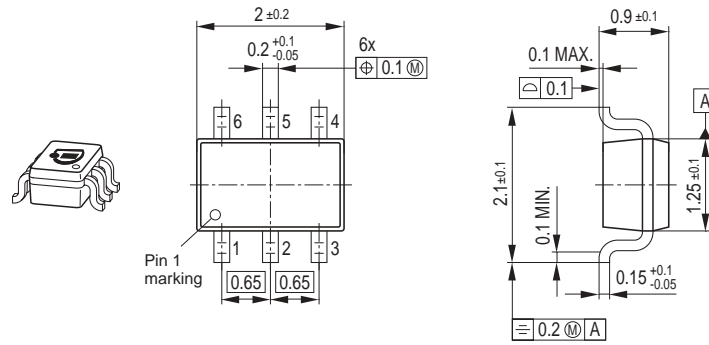
Device mounted on PCB with  $R_{th} = 160$  k/W



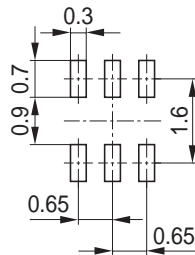
**Forward current  $I_F = f(T_S)$**



### Package Outline

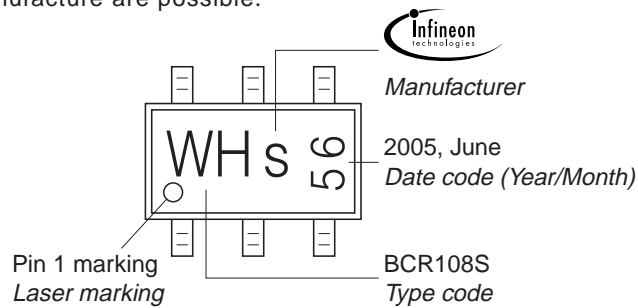


### Foot Print



### Marking Layout (Example)

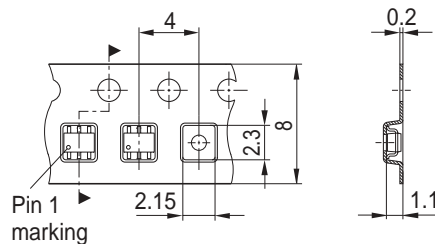
Small variations in positioning of Date code, Type code and Manufacture are possible.



### Standard Packing

Reel  $\varnothing$ 180 mm = 3.000 Pieces/Reel  
 Reel  $\varnothing$ 330 mm = 10.000 Pieces/Reel

For symmetric types no defined Pin 1 orientation in reel.



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