



**THE DATASHEET OF  
VS-2KBB20R**



## Single Phase Rectifier Bridge, 1.9 A



2KBB

### FEATURES

- Suitable for printed circuit board mounting
- Leads on standard 2.54 mm (0.1") grid
- Compact construction
- High surge current capability
- Polarized package
- Equivalent to standard DIN parts
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)


**RoHS**  
COMPLIANT

### PRIMARY CHARACTERISTICS

|                       |                     |
|-----------------------|---------------------|
| $I_O$                 | 1.9 A               |
| $V_{RRM}$             | 50 V to 1000 V      |
| Package               | 2KBB                |
| Circuit configuration | Single phase bridge |

### DESCRIPTION

A 1.9 A single phase diode bridge rectifier assembly consisting of four silicon diodes in a plastic encapsulation, intended for general applications in industrial and consumer equipment.

### MAJOR RATINGS AND CHARACTERISTICS

| SYMBOL    | CHARACTERISTICS | VALUES      | UNITS            |
|-----------|-----------------|-------------|------------------|
| $I_O$     |                 | 1.9         | A                |
|           | $T_C$           | 45          | °C               |
| $I_{FSM}$ | 50 Hz           | 50          | A                |
|           | 60 Hz           | 52          |                  |
| $I^2t$    | 50 Hz           | 17.7        | A <sup>2</sup> s |
|           | 60 Hz           | 16.1        |                  |
| $V_{RRM}$ |                 | 100 to 1000 | V                |
| $T_J$     |                 | -40 to 150  | °C               |

### ELECTRICAL SPECIFICATIONS

#### VOLTAGE RATINGS AND APPLICATION DATA

| CROSS REFERENCE |           | $V_{RRM}, V_{RSM}$<br>MAXIMUM PEAK<br>REVERSE VOLTAGE<br>$T_J = 15\text{ °C}$<br>(V) | $I_{RM}$<br>TYPICAL PEAK REVERSE<br>CURRENT PER DIODE<br>AT RATED $V_{RRM}$<br>( $\mu$ A) |                       | APPLICATION DATA (SEE FIGURE 3)                                  |   |  |
|-----------------|-----------|--|---|-----------------------|--|---|--|
| PART<br>NUMBER  | DIN CODE  |  | $T_J = 25\text{ °C}$  | $T_J = 150\text{ °C}$ | $V_{RMS}$ MAXIMUM<br>RECOMMENDE<br>D AC SUPPLY<br>VOLTAGE<br>(V) | $C_{MAX}$<br>MAXIMUM<br>LOAD<br>CAPACITANCE<br>( $\mu$ F) | $R_{MIN}$<br>MINIMUM<br>SOURCE<br>RESISTANCE<br>( $\Omega$ ) |
|                 |           |  |   |                       |  |   |  |
| VS-2KBB05       | B20C1500  | 50   | 10  | 500                   | 20   | 7000  | 0.3  |
| VS-2KBB10       | B40C1500  | 100  | 10  | 500                   | 40   | 5000  | 0.5  |
| VS-2KBB20       | B80C1500  | 200  | 10  | 500                   | 80   | 3300  | 0.8  |
| VS-2KBB40       | B125C1500 | 400  | 10  | 500                   | 125  | 1600  | 1.5  |
| VS-2KBB60       | B250C1500 | 600  | 10  | 500                   | 250  | 1200  | 2.5  |
| VS-2KBB80       | B380C1500 | 800  | 10  | 500                   | 380  | 800   | 3.0  |
| VS-2KBB100      | B500C1500 | 1000   | 10  | 500                   | 500  | 600   | 5.0  |

#### Note

- For PIN configuration - ~ ~ + add "R" to end of part number, e.g. 2KBB05R (see also dimensions for details - link at the end of datasheet)



| FORWARD CONDUCTION                                     |                   |   |  |            |               |
|--|-------------------|---|--|------------|---------------|
| PARAMETER  | SYMBOL            | TEST CONDITIONS   |  | VALUES     | UNITS         |
| Maximum DC output current                              | $I_O$             | $T_C = 45\text{ }^\circ\text{C}$ , resistive and inductive load |  | 1.9        | A             |
|  |                   | $T_C = 45\text{ }^\circ\text{C}$ , capacitive load              |  | 1.5        |               |
| Maximum peak one cycle, non-repetitive surge current   | $I_{FSM}$         | t = 6 ms  | Following any rated load condition, and with rated $V_{RRM}$ applied following surge | 50         | A             |
|  |                   | t = 5 ms  |  | 52         |               |
| Maximum $I^2t$ for fusing, initial $T_J = T_J$ maximum | $I^2t$            | t = 10 ms   | Rated $V_{RRM}$ applied following surge, initial $T_J = 150\text{ }^\circ\text{C}$   | 12.5       | $A^2s$        |
|  |                   | t = 8.3 ms  |  | 11.3       |               |
|  |                   | t = 10 ms   |  | 17.7       |               |
|  |                   | t = 8.3 ms  |  | 16.1       |               |
| Maximum $I^2\sqrt{t}$ capability for fusing            | $I^2\sqrt{t}$ (1) | t = 0.1 to 10 ms, $V_{RRM}$ following surge = 0                 |  | 177        | $A^2\sqrt{s}$ |
| Maximum peak forward voltage per diode                 | $V_{FM}$          | $I_O = 1.9\text{ A}$ (3.0 $A_{pk}$ )                            |  | 1.1        | V             |
| Operating frequency range                              | f                 |   |  | 40 to 2000 | Hz            |

**Note**

(1)  $I^2t$  for time  $t_x = I^2\sqrt{t} \times \sqrt{t_x}$

| THERMAL AND MECHANICAL SPECIFICATIONS            |                |            |                  |
|--|----------------|------------|------------------|
| PARAMETER  | SYMBOL         | VALUES     | UNITS            |
| Operating junction and storage temperature range | $T_J, T_{Stg}$ | -40 to 150 | $^\circ\text{C}$ |
| Approximate weight                               |                | 4          | g                |
|  |                | 0.14       | oz.              |

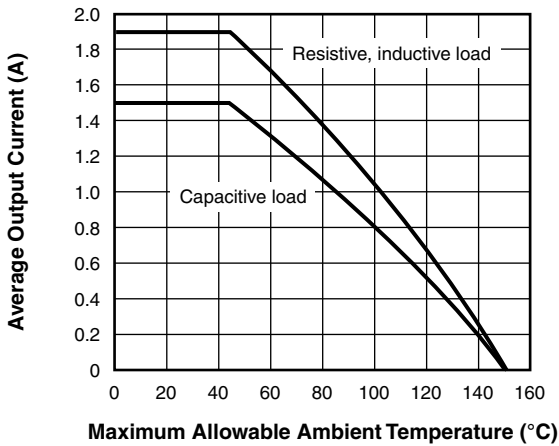


Fig. 1 - Average (DC) Output Current vs. Maximum Allowable Ambient Temperature

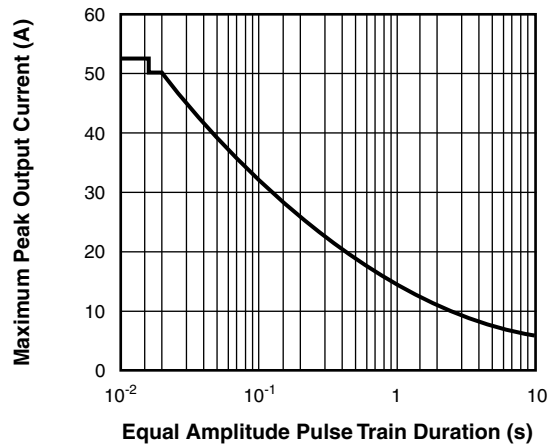


Fig. 2 - Maximum Non-Repetitive Surge Current vs. Pulse Train Duration (f = 50 Hz)

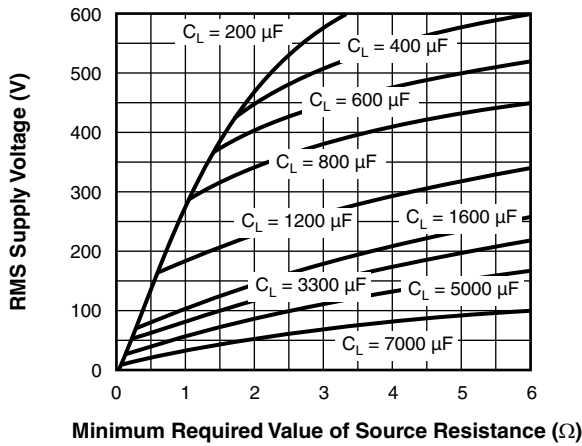


Fig. 3 - Minimum Required Source Resistance vs. RMS Supply Voltage and Load Capacitance

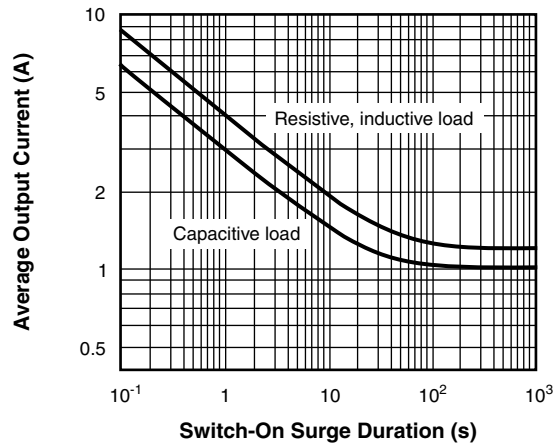
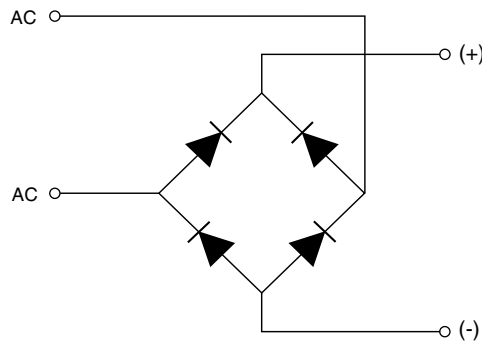


Fig. 4 - Maximum Switch-On Surge Current vs. Surge Duration

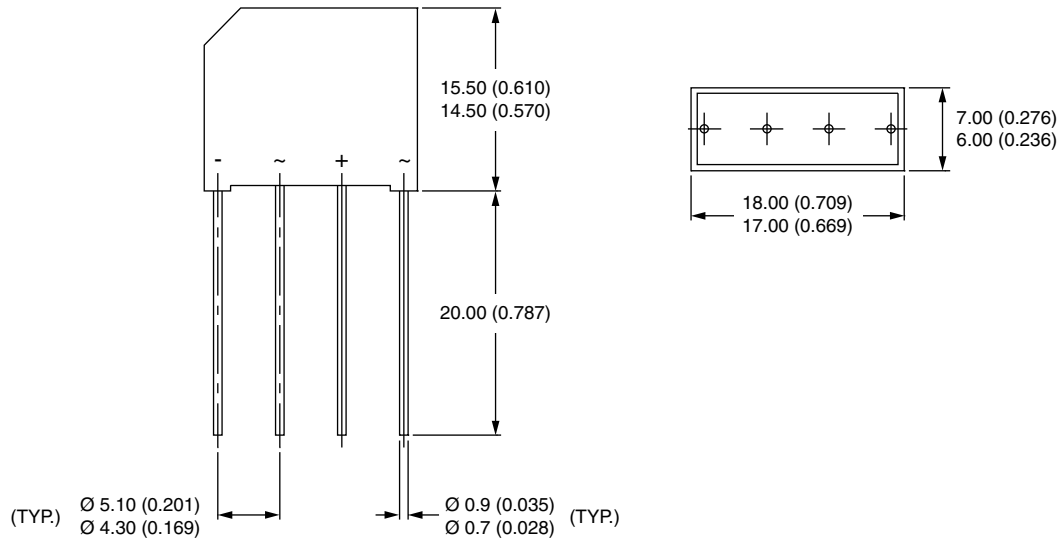
**CIRCUIT CONFIGURATION**



| LINKS TO RELATED DOCUMENTS |  |
|----------------------------|--|
| Dimensions                 | <a href="http://www.vishay.com/doc?95328">www.vishay.com/doc?95328</a> |

## 2KBB

**DIMENSIONS** in millimeters (inches)



**Note**

- For PIN configuration - ~ ~ + add "R" to end of part number



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