

# SB220 THRU SB2200

## List

深圳FMS Kinter 131 6803 0058

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# SB220 THRU SB2200

## 2.0A Axial Leaded Schottky Barrier Rectifiers-20V-200V

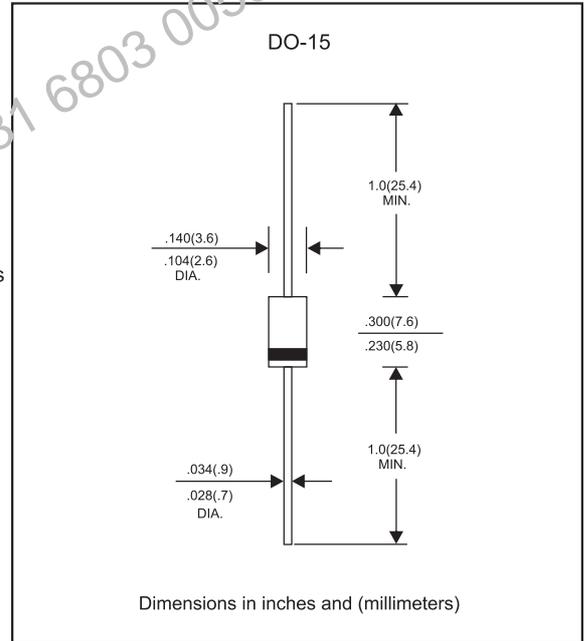
### Features

- Metal silicon junction ,majority carrier conduction
- Guard ring for overvoltage protection
- Low power loss ,high efficiency
- High current capability ,Low forward voltage drop
- High surge capability
- For use in low voltage ,high frequency inverters, free wheeling ,and polarity protection applications
- High temperature soldering guaranteed:260°C/10 seconds at terminals
- Lead-free parts meet environmental standards of MIL-STD-19500 /228
- Suffix "-H" indicates Halogen-free parts, ex. SB220-H.

### Mechanical data

- Epoxy : UL94-V0 rated flame retardant
- Case : Molded plastic, DO-15
- Lead : Axial leads, solderable per MIL-STD-202, Method 208 guaranteed
- Polarity: Color band denotes cathode end
- Mounting Position : Any
- Weight : Approximated 0.40 gram

### Package outline



### Maximum ratings and Electrical Characteristics (AT T<sub>A</sub>=25°C unless otherwise noted)

| PARAMETER                  | CONDITIONS  | Symbol           | MIN. | TYP. | MAX. | UNIT |
|----------------------------|---|------------------|------|------|------|------|
| Forward rectified current  | See Fig.1   | I <sub>O</sub>   |      |      | 2.0  | A    |
| Forward surge current      | 8.3ms single half sine-wave superimposed on rate load (JEDEC methode) | I <sub>FSM</sub> |      |      | 50   | A    |
| Reverse current            | V <sub>R</sub> = V <sub>RRM</sub> T <sub>J</sub> = 25°C               | I <sub>R</sub>   |      |      | 0.5  | mA   |
|                            | V <sub>R</sub> = V <sub>RRM</sub> T <sub>J</sub> = 100°C              |                  |      |      | 10   |      |
| Thermal resistance         | Junction to ambient Note 1  | R <sub>θJA</sub> |      | 35   |      | °C/W |
| Diode junction capacitance | f=1MHz and applied 4V DC reverse voltage                              | C <sub>J</sub>   |      | 170  |      | pF   |
| Storage temperature        |   | T <sub>STG</sub> | -65  |      | +175 | °C   |

Note 1: Thermal resistance from junction to lead, and/or to ambient P. C. B. mounted with 0.375" (9.5mm) lead length with 1.5 X1.5"(38X38mm)copper pads

| SYMBOLS | V <sub>RRM</sub> <sup>*1</sup><br>(V) | V <sub>RMS</sub> <sup>*2</sup><br>(V) | V <sub>R</sub> <sup>*3</sup><br>(V) | V <sub>F</sub> <sup>*4</sup><br>(V) | Operating temperature<br>T <sub>J</sub> , (°C) |
|---------|---------------------------------------|---------------------------------------|-------------------------------------|-------------------------------------|--|
| SB220   | 20                                    | 14                                    | 20                                  | 0.55                                | -55 to +125                                    |
| SB230   | 30                                    | 21                                    | 30                                  |                                     |  |
| SB240   | 40                                    | 28                                    | 40                                  |                                     |  |
| SB250   | 50                                    | 35                                    | 50                                  | 0.70                                | -55 to +150                                    |
| SB260   | 60                                    | 42                                    | 60                                  |                                     |  |
| SB280   | 80                                    | 56                                    | 80                                  | 0.85                                |  |
| SB2100  | 100                                   | 70                                    | 100                                 |                                     |  |
| SB2150  | 150                                   | 105                                   | 150                                 | 0.90                                |  |
| SB2200  | 200                                   | 140                                   | 200                                 |                                     |  |

\*1 Repetitive peak reverse voltage

\*2 RMS voltage

\*3 Continuous reverse voltage

\*4 Maximum forward voltage@I<sub>F</sub>=2.0A

## Rating and characteristic curves (SB220 THRU SB2200)

FIG.1-TYPICAL FORWARD CURRENT DERATING CURVE

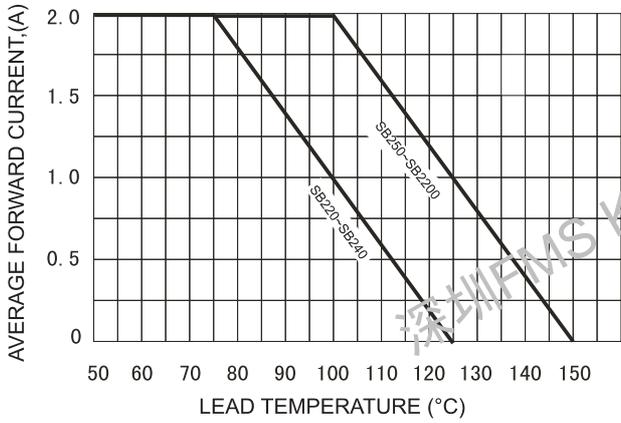


FIG.2-TYPICAL FORWARD CHARACTERISTICS

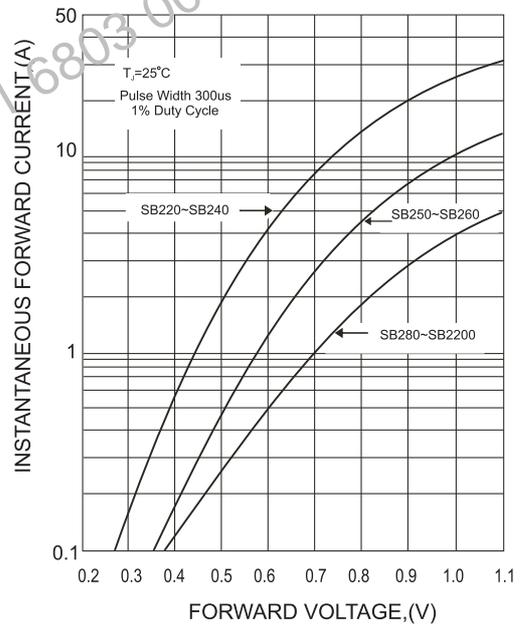


FIG.3-MAXIMUM NON-REPETITIVE FORWARD SURGE CURRENT

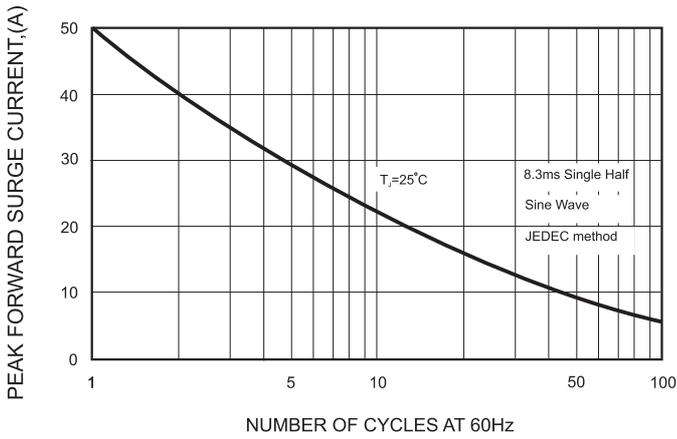


FIG.4-TYPICAL JUNCTION CAPACITANCE

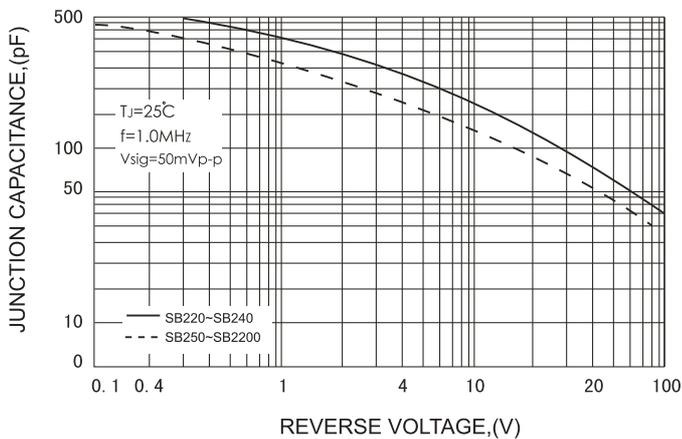
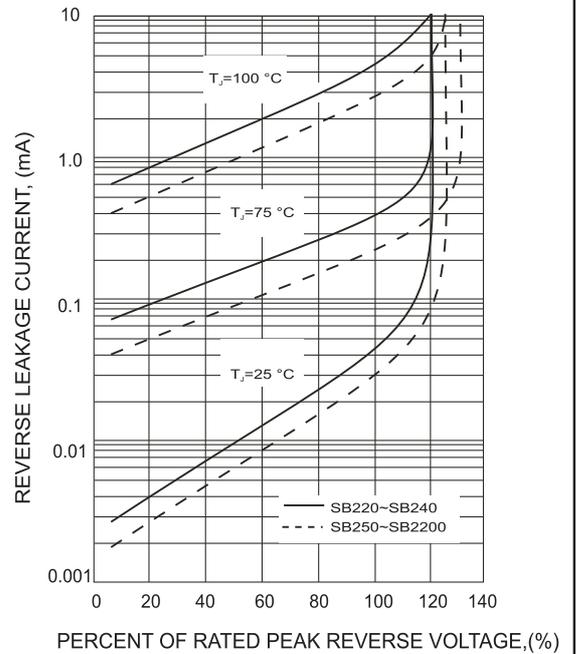


FIG.5 - TYPICAL REVERSE CHARACTERISTICS



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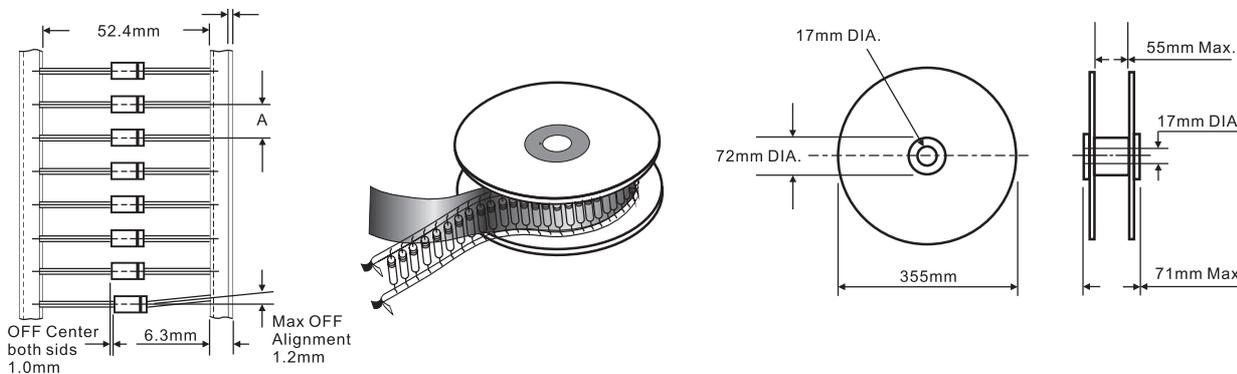
## Pinning information

| Pin                        | Simplified outline   | Symbol  |
|----------------------------|--|---|
| Pin1 cathode<br>Pin2 anode |  |  |

## Marking

| Type number | Marking code |
|-------------|--------------|
| SB220       | SB220        |
| SB230       | SB230        |
| SB240       | SB240        |
| SB250       | SB250        |
| SB260       | SB260        |
| SB280       | SB280        |
| SB2100      | SB2100       |
| SB2150      | SB2150       |
| SB2200      | SB2200       |

## Taping & bulk specifications for AXIAL devices



### REEL PACKING

| DEVICE CASE TYPE | Q'TY 1 (PCS / REEL) | COMPONENT SPACING "A" in FIG. A | CARTON SIZE (m/m) | Q'TY 2 (PCS / CARTON) | APPROX. CROSS WEIGHT(kg) |
|------------------|---------------------|---------------------------------|-------------------|-----------------------|--------------------------|
| DO-15            | 4,000               | 5 mm                            | 360 * 340 * 370   | 16,000                | 9.9                      |

### AMMO PACKING

| DEVICE CASE TYPE | Q'TY 1 (PCS / BOX) | INNER BOX SIZE (m/m) | CARTON SIZE (m/m) | Q'TY 2 (PCS / CARTON) | APPROX. CROSS WEIGHT(kg) |
|------------------|--------------------|----------------------|-------------------|-----------------------|--------------------------|
| DO-15            | 3,000              | 260 * 83 * 160       | 440 * 270 * 340   | 30,000                | 14.3                     |

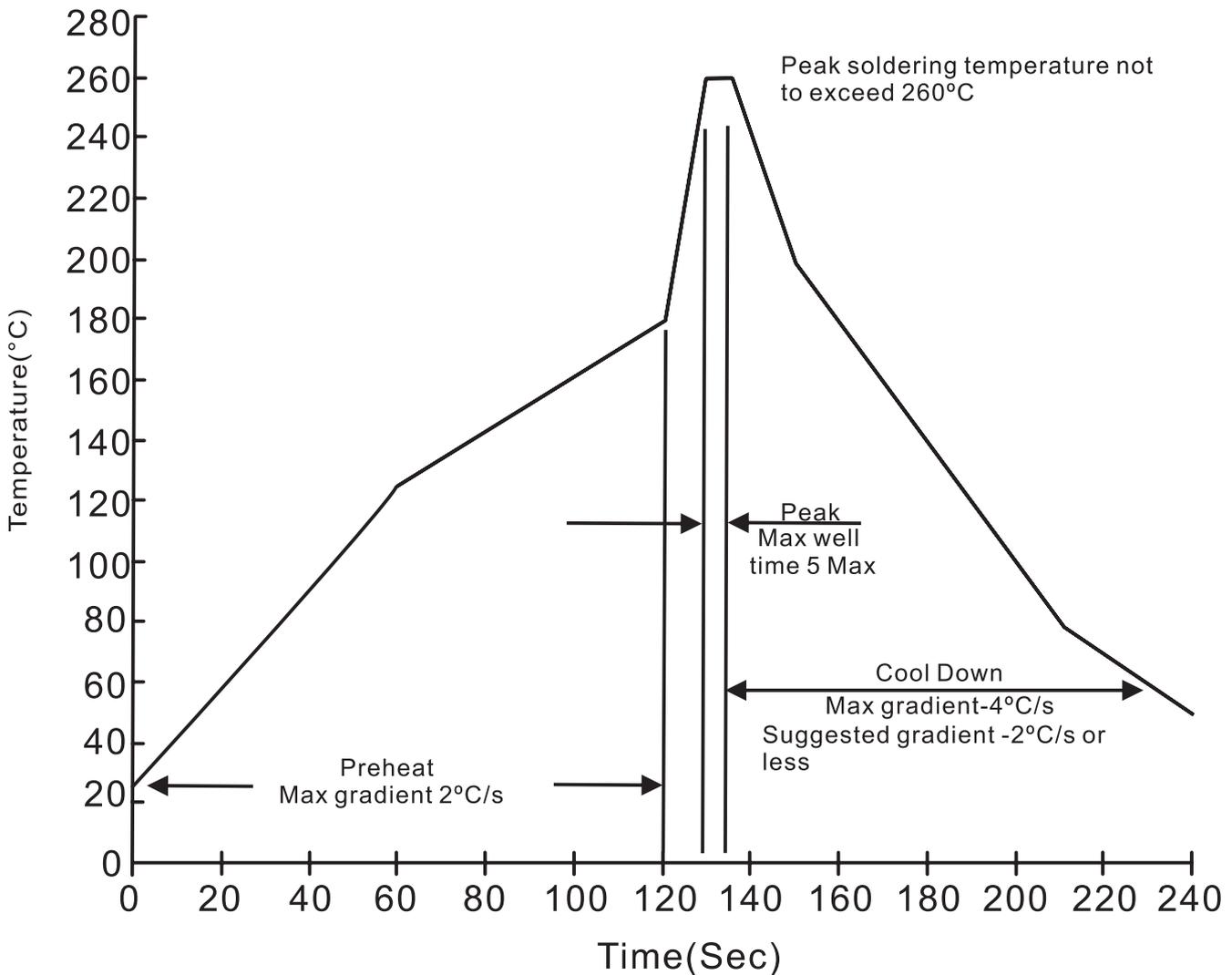
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BULK PACKING

| DEVICE CASE TYPE | Q'TY 1 (PCS / BOX) | INNER BOX SIZE (m/m) | CARTON SIZE (m/m) | Q'TY 2 (PCS / CARTON) | APPROX. CROSS WEIGHT(kg) |
|------------------|--------------------|----------------------|-------------------|-----------------------|--------------------------|
| DO-15            | 500                | 194 * 84 * 20        | 465 * 220 * 260   | 25,000                | 12.9                     |

Suggested thermal profiles for soldering processes

1. Lead free temperature profile wave-soldering



**SB220 THRU SB2200****High reliability test capabilities**

| Item Test                         | Conditions   | Reference                     |
|-----------------------------------|--|-------------------------------|
| 1. Solder Resistance              | at 260±5°C for 10±2sec.<br>immerse body into solder 1/16"±1/32"  | MIL-STD-750D<br>METHOD-2031   |
| 2. Solderability                  | at 245±5°C for 5 sec.  | MIL-STD-202F<br>METHOD-208    |
| 3. Pull Test                      | 1.0kg in axial lead direction for 10 sec.<br>$I_F = I_O$   | MIL-STD-750D<br>METHOD-2036   |
| 4. Bend Lead                      | 1.0kg weight applied to each lead bending<br>arc 90°±5° for 3 times.   | MIL-STD-750D<br>METHOD-2036   |
| 5. High Temperature Reverse Bias  | $V_R = 80\%$ rate at $T_J = 125^\circ\text{C}$ for 168 hrs.  | MIL-STD-750D<br>METHOD-1038   |
| 6. Forward Operation Life         | Rated average rectifier current at $T_A = 25^\circ\text{C}$ for 500hrs.  | MIL-STD-750D<br>METHOD-1027   |
| 7. Intermittent Operation Life    | $T_A = 25^\circ\text{C}$ , $I_F = I_O$<br>On state: power on for 5 min.<br>off state: power off for 5 min,<br>on and off for 500 cycles. | MIL-STD-750D<br>METHOD-1036   |
| 8. Pressure Cooker                | 15P <sub>sig</sub> at $T_A = 121^\circ\text{C}$ for 4 hrs.   | JESD22-A102                   |
| 9. Temperature Cycling            | -55°C to +125°C dwelled for 30 min.<br>and transferred for 5min. total 10 cycles.  | MIL-STD-750D<br>METHOD-1051   |
| 10. Thermal Shock                 | 0°C for 5 min. rise to 100°C for 5 min. total 10 cycles.   | MIL-STD-750D<br>METHOD-1056   |
| 11. Forward Surge                 | 8.3ms single half sine-wave superimposed<br>on rated load, one surge.  | MIL-STD-750D<br>METHOD-4066-2 |
| 12. Humidity                      | at $T_A = 85^\circ\text{C}$ , RH=85% for 1000hrs.  | MIL-STD-750D<br>METHOD-1021   |
| 13. High Temperature Storage Life | at 175°C for 1000 hrs.   | MIL-STD-750D<br>METHOD-1031   |