

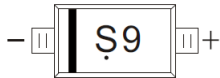
## SOD-123 Plastic-Encapsulate Diodes

### BAT46W SCHOTTKY BARRIER DIODE

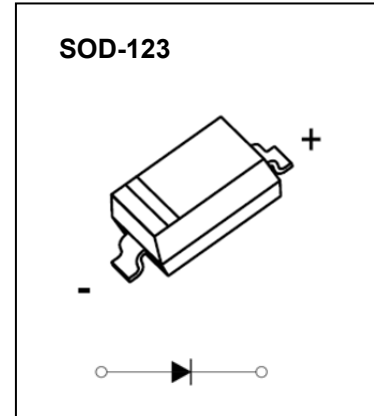
#### FEATURES

- High breakdown voltage
- Low turn-on voltage
- Guard ring construction for transient protection

#### MARKING: S9



The marking bar indicates the cathode  
Solid dot = Green molding compound device.



#### Maximum Ratings @T<sub>a</sub>=25°C

| Parameter                                                                          | Symbol           | Limit      | Unit |
|------------------------------------------------------------------------------------|------------------|------------|------|
| Peak repetitive peak reverse voltage                                               | V <sub>RRM</sub> | 100        | V    |
| Working peak reverse voltage                                                       | V <sub>RWM</sub> |            |      |
| Forward continuous current                                                         | I <sub>F</sub>   | 150        | mA   |
| Repetitive peak forward current (Note 1) @ t <sub>p</sub> < 1.0s, Duty Cycle < 50% | I <sub>FRM</sub> | 350        | mA   |
| Non-repetitive Peak Forward surge current @ t = 8.3ms                              | I <sub>FSM</sub> | 750        | mA   |
| Power dissipation                                                                  | P <sub>D</sub>   | 500        | mW   |
| Thermal resistance junction to ambient air                                         | R <sub>θJA</sub> | 200        | °C/W |
| Operating Junction Temperature Range                                               | T <sub>J</sub>   | -40 ~ +125 | °C   |
| Storage Temperature Range                                                          | T <sub>STG</sub> | -55 ~ +150 | °C   |

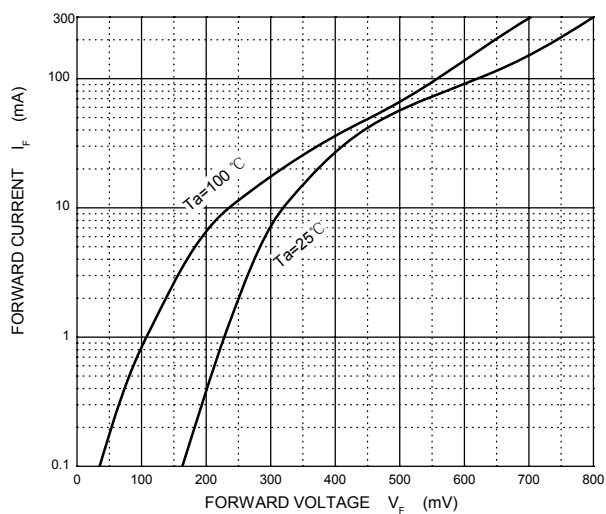
#### ELECTRICAL CHARACTERISTICS (T<sub>a</sub>=25°C unless otherwise specified)

| Parameter                                  | Symbol                                 | Test Conditions            | Min | Typ | Max  | Unit |
|--------------------------------------------|----------------------------------------|----------------------------|-----|-----|------|------|
| Reverse breakdown voltage (Note 2、3)       | V <sub>R</sub>                         | I <sub>R</sub> = 100μA     | 100 |     |      | V    |
| Reverse voltage leakage current (Note 2、3) | I <sub>R</sub>                         | V <sub>R1</sub> =1.5V      |     |     | 0.3  | μA   |
|                                            |                                        | V <sub>R2</sub> =10V       |     |     | 0.5  |      |
|                                            |                                        | V <sub>R3</sub> =50V       |     |     | 1    |      |
|                                            |                                        | V <sub>R4</sub> =75V       |     |     | 2    |      |
|                                            | I <sub>R</sub><br>T <sub>J</sub> =60°C | V <sub>R1</sub> =1.5V      |     |     | 12   | μA   |
|                                            |                                        | V <sub>R2</sub> =10V       |     |     | 20   |      |
|                                            |                                        | V <sub>R3</sub> =50V       |     |     | 44   |      |
|                                            |                                        | V <sub>R4</sub> =75V       |     |     | 80   |      |
| Forward voltage (Note 2、3)                 | V <sub>F</sub>                         | I <sub>F1</sub> =0.1mA     |     |     | 0.25 | V    |
|                                            |                                        | I <sub>F2</sub> =10mA      |     |     | 0.45 |      |
|                                            |                                        | I <sub>F3</sub> =250mA     |     |     | 1    |      |
| Diode capacitance                          | C <sub>T</sub>                         | V <sub>R</sub> =0, f=1MHz  |     | 20  |      | pF   |
|                                            |                                        | V <sub>R</sub> =1V, f=1MHz |     | 12  |      |      |

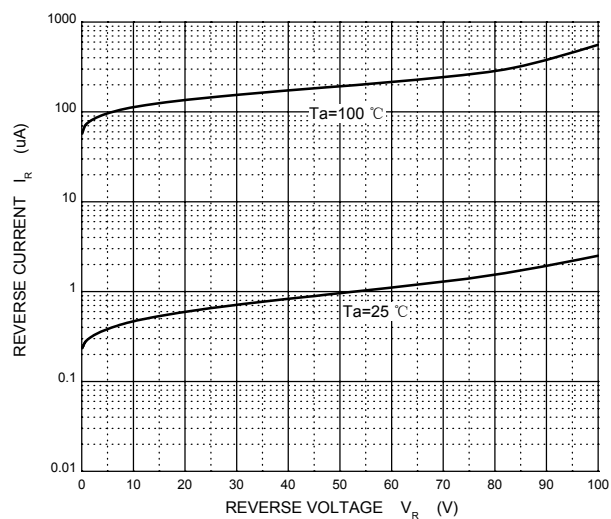
Notes: 1. Part mounted on FR-4 board with recommended pad layout.  
2. Short duration pulse test used to minimize self-heating effect.  
3. pulsed t<sub>p</sub> ≤ 300 μs; δ ≤ 0.02.

## Typical Characteristics

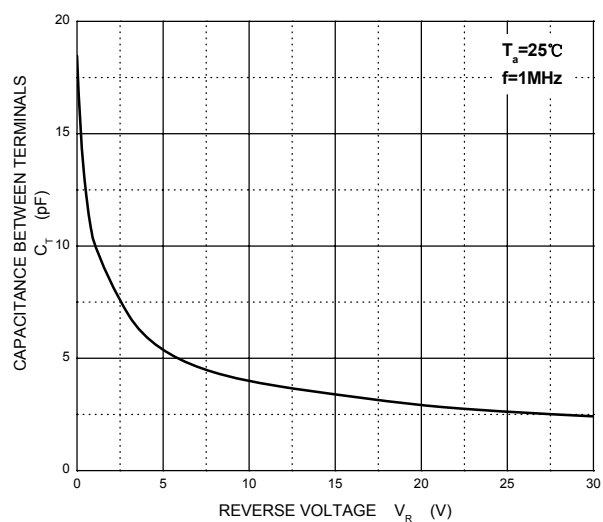
**Forward Characteristics**



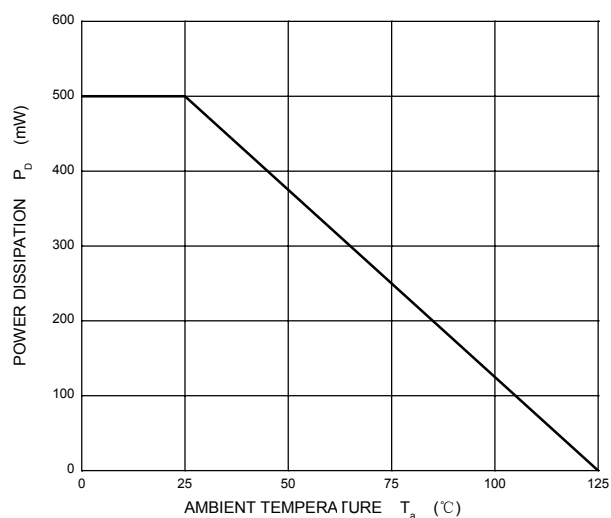
**Reverse Characteristics**



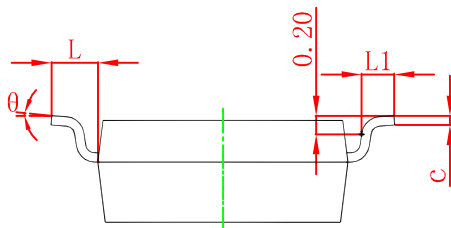
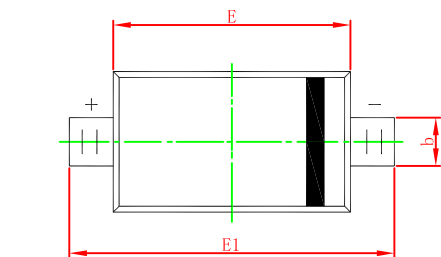
**Capacitance Characteristics**



**Power Derating Curve**



## SOD-123 Package Outline Dimensions



| Symbol | Dimensions In Millimeters |       | Dimensions In Inches |       |
|--------|---------------------------|-------|----------------------|-------|
|        | Min                       | Max   | Min                  | Max   |
| A      | 1.050                     | 1.250 | 0.041                | 0.049 |
| A1     | 0.000                     | 0.100 | 0.000                | 0.004 |
| A2     | 1.050                     | 1.150 | 0.041                | 0.045 |
| b      | 0.450                     | 0.650 | 0.018                | 0.026 |
| c      | 0.080                     | 0.150 | 0.003                | 0.006 |
| D      | 1.500                     | 1.700 | 0.059                | 0.067 |
| E      | 2.600                     | 2.800 | 0.102                | 0.110 |
| E1     | 3.550                     | 3.850 | 0.140                | 0.152 |
| L      | 0.500 REF                 |       | 0.020 REF            |       |
| L1     | 0.250                     | 0.450 | 0.010                | 0.018 |
| θ      | 0°                        | 8°    | 0°                   | 8°    |

## SOD-123 Suggested Pad Layout



### Note:

1. Controlling dimension: in millimeters.
2. General tolerance:  $\pm 0.05\text{mm}$ .
3. The pad layout is for reference purposes only.

### NOTICE

JSCJ reserves the right to make modifications, enhancements, improvements, corrections or other changes without further notice to any product herein. JSCJ does not assume any liability arising out of the application or use of any product described herein.

SOD-123 Embossed Carrier Tape



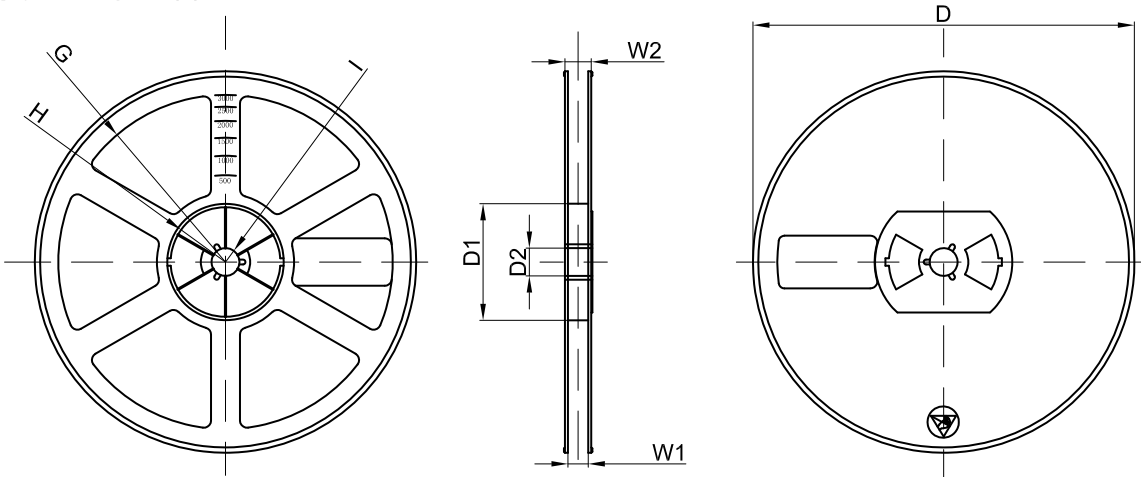
Packaging Description:  
SOD-123 parts are shipped in tape. The carrier tape is made from a dissipative (carbon filled) polycarbonate resin. The cover tape is a multilayer film (Heat Activated Adhesive in nature) primarily composed of polyester film, adhesive layer, sealant, and anti-static sprayed agent. These reeled parts in standard option are shipped with 3,000 units per 7" or 17.8cm diameter reel. The reels are clear in color and is made of polystyrene plastic (anti-static coated).

| Dimensions are in millimeter |      |      |      |       |      |      |      |      |      |      |
|------------------------------|------|------|------|-------|------|------|------|------|------|------|
| Pkg type                     | A    | B    | C    | d     | E    | F    | P0   | P    | P1   | W    |
| SOD-123                      | 1.85 | 3.95 | 1.57 | Ø1.55 | 1.75 | 3.50 | 4.00 | 4.00 | 2.00 | 8.00 |

SOD-123 Tape Leader and Trailer



SOD-123 Reel



| Dimensions are in millimeter |         |       |       |        |        |       |      |       |
|------------------------------|---------|-------|-------|--------|--------|-------|------|-------|
| Reel Option                  | D       | D1    | D2    | G      | H      | I     | W1   | W2    |
| 7"Dia                        | Ø178.00 | 54.40 | 13.00 | R78.00 | R25.60 | R6.50 | 9.50 | 12.30 |

| REEL     | Reel Size | Box        | Box Size(mm) | Carton      | Carton Size(mm) | G.W.(kg) |
|----------|-----------|------------|--------------|-------------|-----------------|----------|
| 3000 pcs | 7 inch    | 45,000 pcs | 203×203×195  | 180,000 pcs | 438×438×220     |          |