

# BAV16W

## List

|                                                         |   |
|---------------------------------------------------------|---|
| List.....                                               | 1 |
| Package outline.....                                    | 2 |
| Features.....                                           | 2 |
| Mechanical data.....                                    | 2 |
| Maximum ratings .....                                   | 2 |
| Rating and characteristic curves.....                   | 3 |
| Pinning information.....                                | 4 |
| Marking.....                                            | 4 |
| Suggested solder pad layout.....                        | 4 |
| Packing information.....                                | 5 |
| Reel packing.....                                       | 6 |
| Suggested thermal profiles for soldering processes..... | 6 |
| High reliability test capabilities.....                 | 7 |

# BAV16W

## 150mA Surface Mount Switching Diode-100V

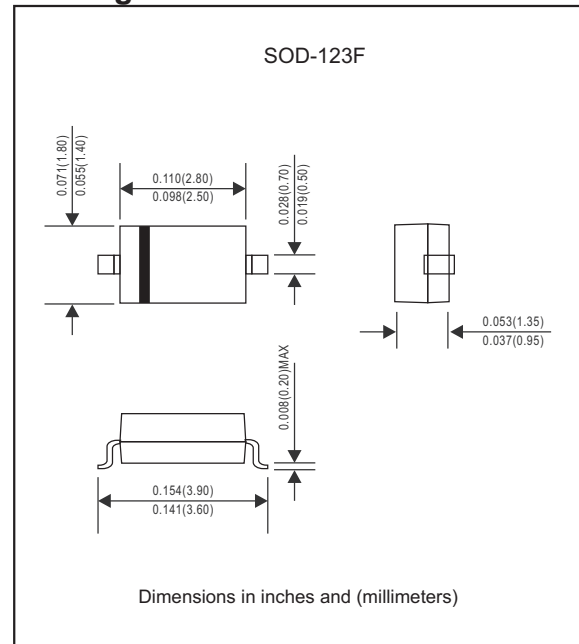
### Features

- Fast Switching Speed
- Surface Mount Package Ideally Suited for Automatic Insertion
- For General Purpose Switching Applications
- High Conductance
- Lead-free parts for green partner, exceeds environmental standards of MIL-STD-19500 /228
- Suffix "-H" indicates Halogen-free part, ex.BAV16W-H.

### Mechanical data

- Epoxy:UL94-VO rated flame retardant
- Case : Molded plastic, SOD-123F
- Terminals : Solder plated, solderable per MIL-STD-750, Method 2026
- Polarity : Indicated by cathode band
- Mounting Position : Any
- Weight : Approximated 0.010 gram

### Package outline



### Maximum ratings and Electrical Characteristics (AT $T_A=25^\circ\text{C}$ unless otherwise noted)

| PARAMETER                                                                                   | Symbol          | Limits                                                 | UNIT               |
|---------------------------------------------------------------------------------------------|-----------------|--------------------------------------------------------|--------------------|
| Maximum reverse voltage                                                                     | $V_R$           | 75                                                     | V                  |
| Maximum peak reverse voltage                                                                | $V_{RM}$        | 100                                                    | V                  |
| Maximum RMS voltage                                                                         | $V_{RMS}$       | 53                                                     | V                  |
| Maximum DC blocking voltage                                                                 | $V_{DC}$        | 75                                                     | V                  |
| Maximum average forward current at $T_A = 25^\circ\text{C}$                                 | $I_O$           | 150                                                    | mA                 |
| Maximum non-repetitive peak forward surge current @ $t=1.0\mu\text{s}$<br>@ $t=1.0\text{s}$ | $I_{FSM}$       | 2.0<br>1.0                                             | A                  |
| Maximum power dissipation derate above $25^\circ\text{C}$                                   | $P_D$           | 400                                                    | mW                 |
| Maximum forward voltage                                                                     | $V_F$           | 0.715@0.001A<br>0.855@0.01A<br>1.0@0.05A<br>1.25@0.15A | V                  |
| Maximum DC reverse current at rated DC blocking voltage $T_J = 25^\circ\text{C}$            | $I_R$           | 0.025@20V<br>1.0@75V                                   | $\mu\text{A}$      |
| Maximum junction capacitance (Notes 1)                                                      | $C_J$           | 2.0                                                    | pF                 |
| Maximum reverse recovery time (Notes 2)                                                     | $t_{rr}$        | 4.0                                                    | ns                 |
| Typical thermal resistance junction to ambient                                              | $R_{\theta JA}$ | 315                                                    | $^\circ\text{C/W}$ |
| Operating junction temperature range                                                        | $T_J$           | -55 to +150                                            | $^\circ\text{C}$   |
| Storage temperature range                                                                   | $T_{STG}$       | -55 to +150                                            | $^\circ\text{C}$   |

Notes :

1.  $C_J$  at  $V_R = 0\text{V}$ ,  $f = 1\text{MHz}$

2.  $I_F = I_R = 10\text{mA}$  to  $I_{rr} = 0.1 \times I_R$ ,  $R_L = 100\Omega$

## Rating and characteristic curves (BAV16W)

Fig. 1 TYPICAL FORWARD CHARACTERISTICS

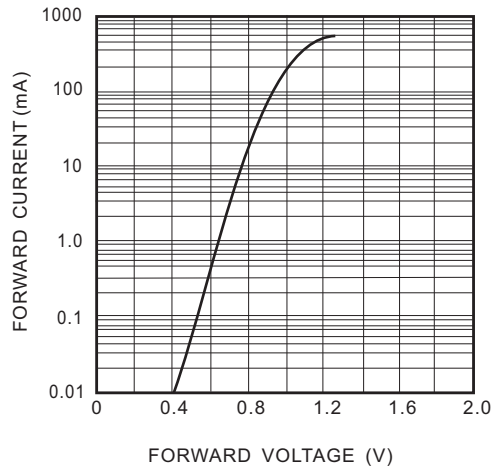


Fig. 2 TYPICAL LEAKAGE CURRENT VS. JUNCTION TEMPERATURE

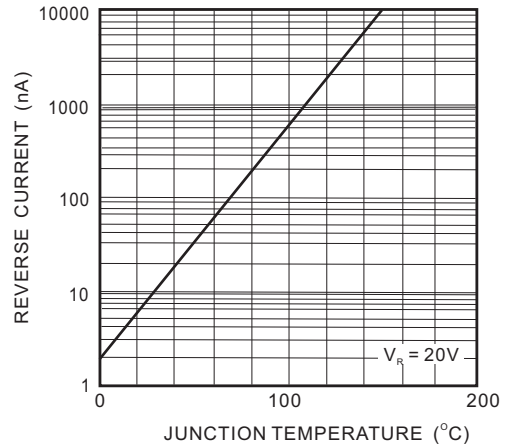


FIG.3-TYPICAL JUNCTION CAPACITANCE

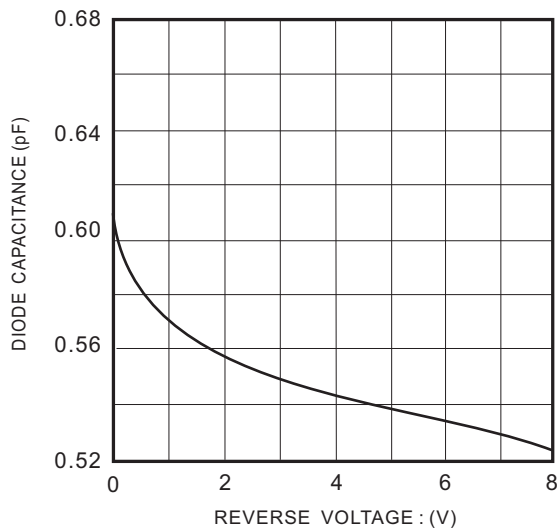
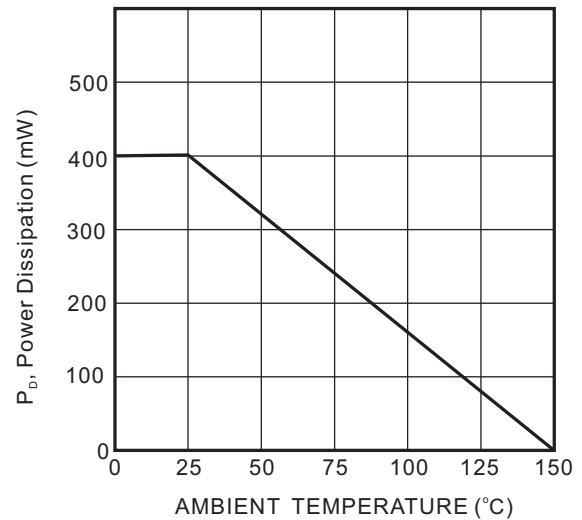
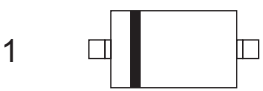


Fig. 4 POWER DERATING CURVE

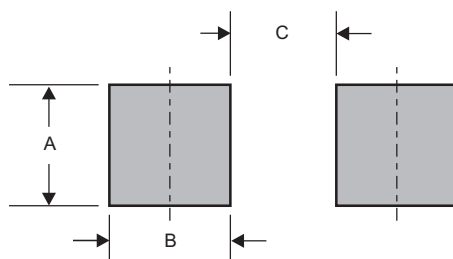


**BAV16W****Pinning information**

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

**Marking**

| Type number | Marking code |
|-------------|--------------|
| BAV16W      | T6, T4       |

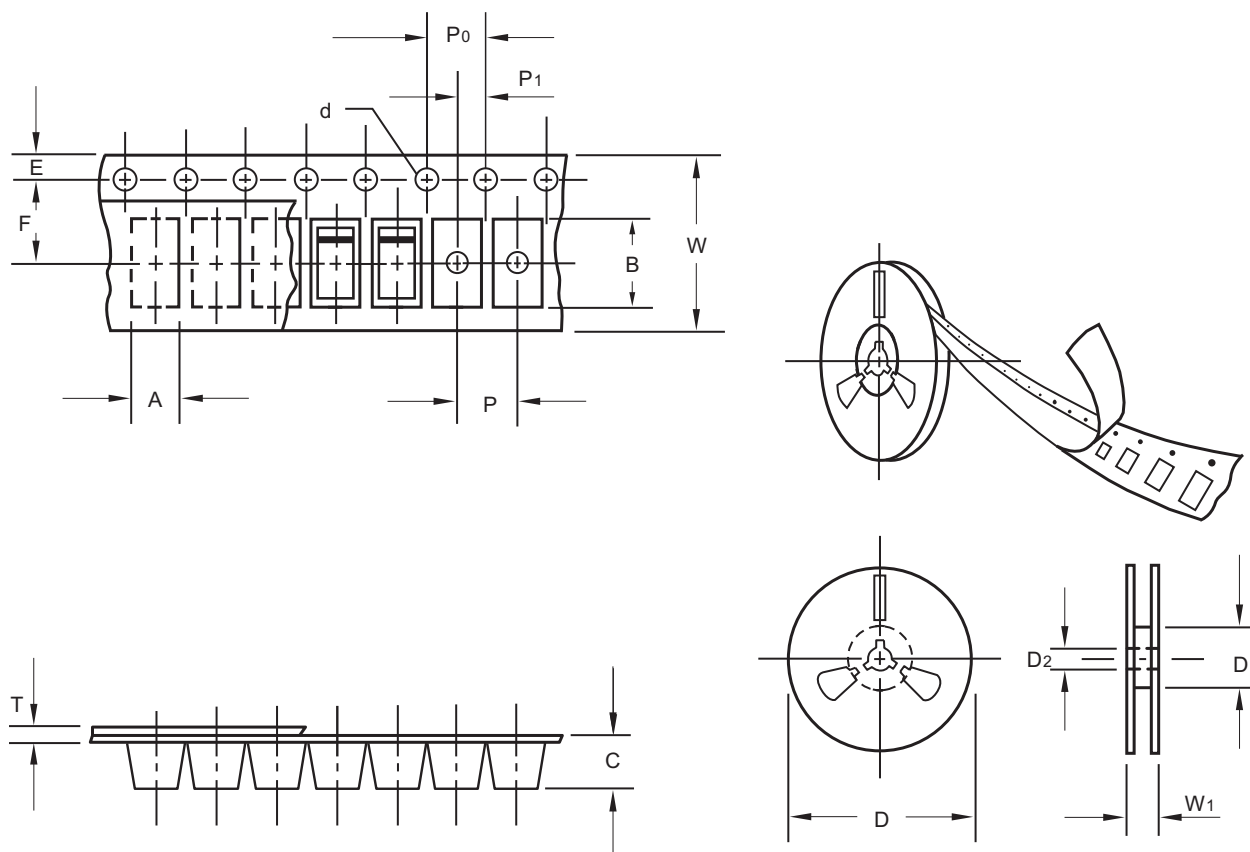
**Suggested solder pad layout**

Dimensions in inches and (millimeters)

| PACKAGE  | A            | B            | C            |
|----------|--------------|--------------|--------------|
| SOD-123F | 0.048 (1.22) | 0.036 (0.91) | 0.093 (2.36) |

## BAV16W

## Packing information



unit:mm

| Item                      | Symbol | Tolerance | SOD-123F |
|---------------------------|--------|-----------|----------|
| Carrier width             | A      | 0.1       | 2.00     |
| Carrier length            | B      | 0.1       | 3.85     |
| Carrier depth             | C      | 0.1       | 1.10     |
| Sprocket hole             | d      | 0.1       | 1.50     |
| 13" Reel outside diameter | D      | 2.0       | -        |
| 13" Reel inner diameter   | D1     | min       | -        |
| 7" Reel outside diameter  | D      | 2.0       | 178.00   |
| 7" Reel inner diameter    | D1     | min       | 62.00    |
| Feed hole diameter        | D2     | 0.5       | 13.00    |
| Sprocket hole position    | E      | 0.1       | 1.75     |
| Punch hole position       | F      | 0.1       | 3.50     |
| Punch hole pitch          | P      | 0.1       | 4.00     |
| Sprocket hole pitch       | P0     | 0.1       | 4.00     |
| Embossment center         | P1     | 0.1       | 2.00     |
| Overall tape thickness    | T      | 0.1       | 0.23     |
| Tape width                | W      | 0.3       | 8.00     |
| Reel width                | W1     | 1.0       | 11.40    |

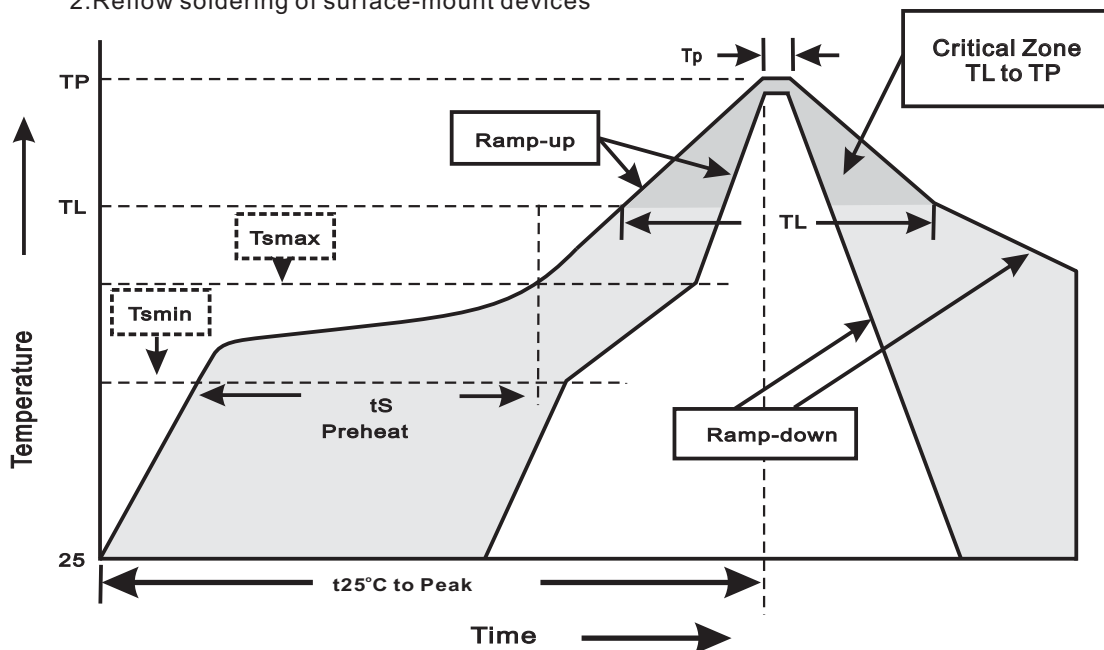
Note: Devices are packed in accordance with EIA standard RS-481-A and specifications listed above.

**BAV16W****Reel packing**

| PACKAGE  | REEL SIZE | REEL (pcs) | COMPONENT SPACING (m/m) | BOX (pcs) | INNER BOX (m/m) | REEL DIA, (m/m) | CARTON SIZE (m/m) | CARTON (pcs) | APPROX. GROSS WEIGHT (kg) |
|----------|-----------|------------|-------------------------|-----------|-----------------|-----------------|-------------------|--------------|---------------------------|
| SOD-123F | 7"        | 3,000      | 4.0                     | 30,000    | 183*183*123     | 178             | 382*262*387       | 240,000      | 9.5                       |

**Suggested thermal profiles for soldering processes**

- 1.Storage environment: Temperature=5°C~40°C Humidity=55%±25%
- 2.Reflow soldering of surface-mount devices

**3.Reflow soldering**

| Profile Feature                                                                                                                 | Soldering Condition         |
|---------------------------------------------------------------------------------------------------------------------------------|-----------------------------|
| Average ramp-up rate(T <sub>L</sub> to T <sub>P</sub> )                                                                         | <3°C/sec                    |
| Preheat<br>-Temperature Min(T <sub>smmin</sub> )<br>-Temperature Max(T <sub>smmax</sub> )<br>-Time(min to max)(t <sub>s</sub> ) | 150°C<br>200°C<br>60~120sec |
| T <sub>smmax</sub> to T <sub>L</sub><br>-Ramp-upRate                                                                            | <3°C/sec                    |
| Time maintained above:<br>-Temperature(T <sub>L</sub> )<br>-Time(t <sub>L</sub> )                                               | 217°C<br>60~260sec          |
| Peak Temperature(T <sub>P</sub> )                                                                                               | 255°C-0/+5°C                |
| Time within 5°C of actual Peak Temperature(t <sub>P</sub> )                                                                     | 10~30sec                    |
| Ramp-down Rate                                                                                                                  | <6°C/sec                    |
| Time 25°C to Peak Temperature                                                                                                   | <6minutes                   |

**BAV16W****High reliability test capabilities**

| Item Test                         | Conditions                                                                                                                                 | Reference                     |
|-----------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|
| 1. Solder Resistance              | at $260\pm5^{\circ}\text{C}$ for $10\pm2\text{sec.}$<br>immerse body into solder $1/16''\pm1/32''$                                         | MIL-STD-750D<br>METHOD-2031   |
| 2. Solderability                  | at $245\pm5^{\circ}\text{C}$ for 5 sec.                                                                                                    | MIL-STD-202F<br>METHOD-208    |
| 3. High Temperature Reverse Bias  | $V_R=80\%$ rate at $T_J=150^{\circ}\text{C}$ for 168 hrs.                                                                                  | MIL-STD-750D<br>METHOD-1038   |
| 4. Forward Operation Life         | Rated average rectifier current at $T_A=25^{\circ}\text{C}$ for 500hrs.                                                                    | MIL-STD-750D<br>METHOD-1027   |
| 5. 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   |
| 6. Pressure Cooker                | $15P_{SIG}$ at $T_A=121^{\circ}\text{C}$ for 4 hrs.                                                                                        | JESD22-A102                   |
| 7. Temperature Cycling            | $-55^{\circ}\text{C}$ to $+125^{\circ}\text{C}$ dwelled for 30 min.<br>and transferred for 5min. total 10 cycles.                          | MIL-STD-750D<br>METHOD-1051   |
| 8. Forward Surge                  | Peak forward surge current                                                                                                                 | MIL-STD-750D<br>METHOD-4066-2 |
| 9. Humidity                       | at $T_A=85^{\circ}\text{C}$ , RH=85% for 1000hrs.                                                                                          | MIL-STD-750D<br>METHOD-1021   |
| 10. High Temperature Storage Life | at $175^{\circ}\text{C}$ for 1000 hrs.                                                                                                     | MIL-STD-750D<br>METHOD-1031   |