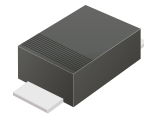


# TV02W5V0-G Thru TV02W191-G

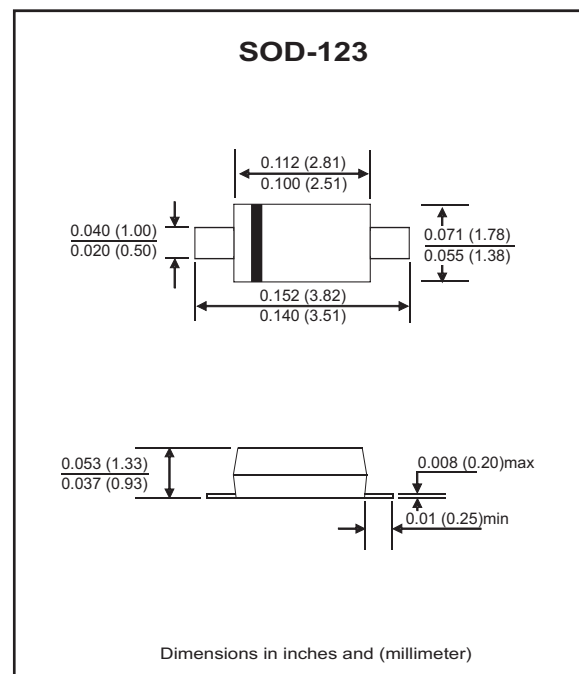
**Working Peak Reverse Voltage:5.0-190Volts****Peak Pulse Power:200Watts****RoHS Device**

## Features

- Glass passivated chip.
- Low leakage current.
- 200W peak pulse power capacity with a 10/1000us waveform,repitive rate (duty cycle):0.01%.
- Uni and bidirectional unit.
- Excellent clamping capability.
- Very fast response time.

## Mechanical data

- Case: Molded plastic.
- Epoxy: UL 94V-0 rate flame retardant.
- Lead: Axial leads, solderable per MIL-STD-202,method 208 guaranteed.
- Polarity: Color band denotes cathode end except bipolar.
- Mounting position: Any.



## Maximum Rating AND Electrical Characteristics

Ratings at 25 °C ambient temperature unless otherwise specified.  
Single phase, half wave, 60Hz, resistive or inductive load.  
For capacitive load, derate current by 20%.

| Parameter                                                                                 | Symbol                           | Value          | Unit |
|-------------------------------------------------------------------------------------------|----------------------------------|----------------|------|
| Peak power dissipation at 10/1000μs waveform                                              | P <sub>PP</sub>                  | 200            | W    |
| Peak power dissipation at 8/20μs waveform                                                 | P <sub>PP</sub>                  | 1000           | W    |
| Peak pulse current with a 10/1000μs waveform                                              | I <sub>PP</sub>                  | See next table | A    |
| Power dissipation on infinite heatsonk at T <sub>L</sub> = 75°C                           | P <sub>D</sub>                   | 0.4            | W    |
| Peak forward surge current, 8.3ms single half sone-wave undirestional only <sub>(1)</sub> | I <sub>FSM</sub>                 | 20             | A    |
| Operating junction and storage temperature range                                          | T <sub>J</sub> ,T <sub>STG</sub> | -55 to +150    | °C   |

Notes:

Measured on 8.3ms single half sine-wave or equivalent square wave, duty cycle=4 pulses per minute maximum.

## Rating and Characteristic Curves (TV02W5V0-G Thru TV02W191-G)

Fig. 1 - Pulse Derating Curve

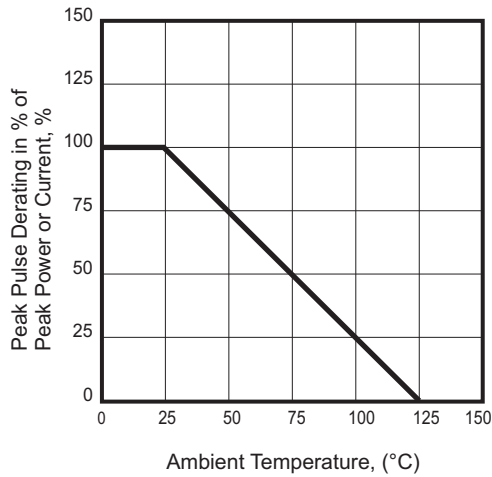


Fig.2 - Steady State Power Derating Curve

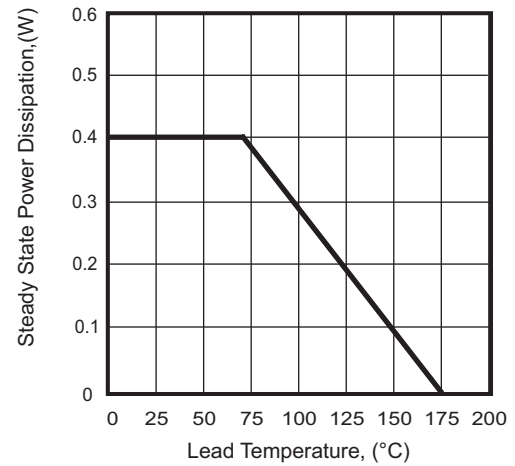


Fig. 3 - Pulse Waveform

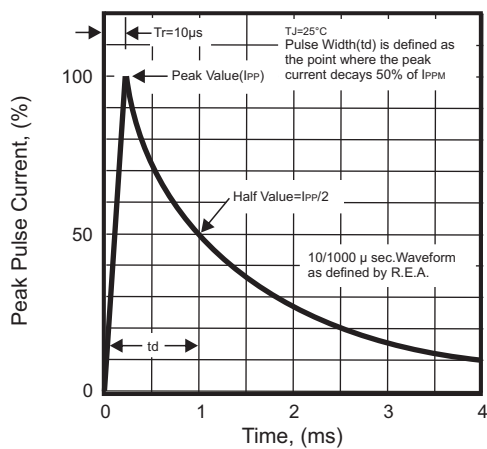


Fig. 4 - Peak Pulse Power Rating Curve

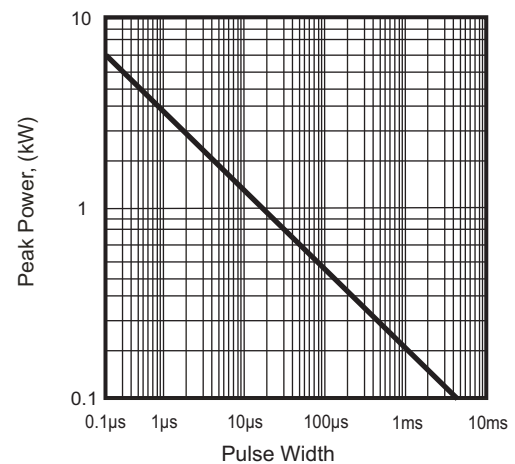
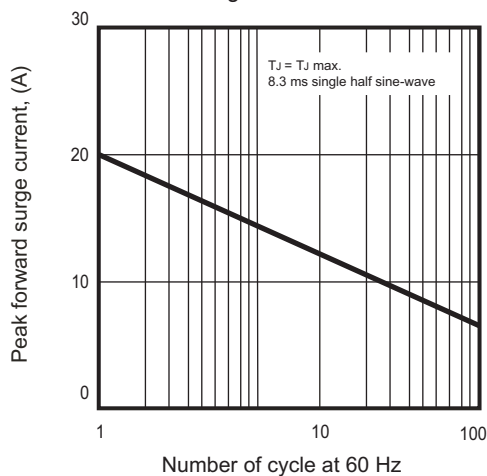


Fig. 5 - Maximum non-repetitive surge current



# SMD Transient Voltage Suppressor

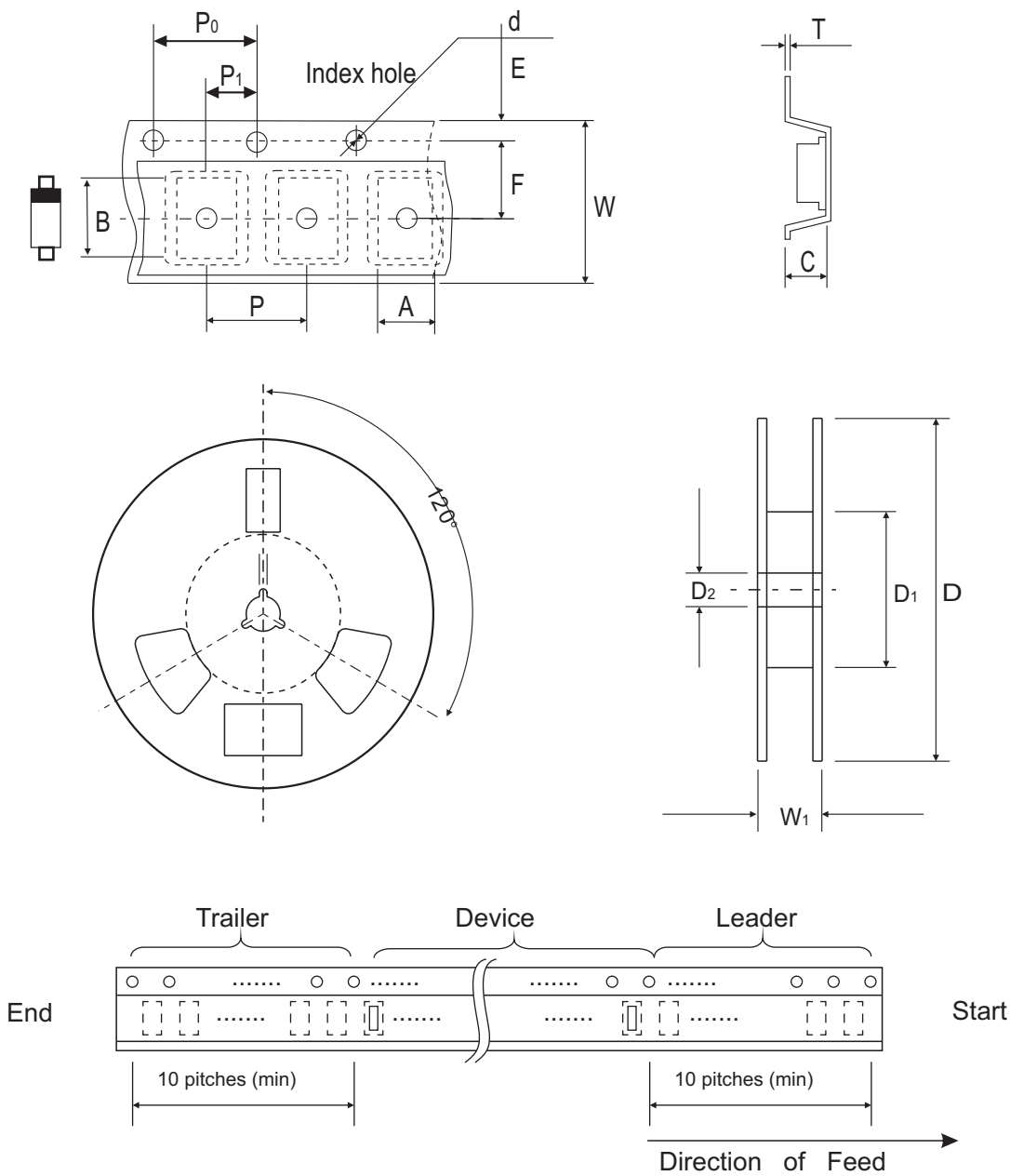
## Electrical Characteristics (TV02W5V0-G Thru TV02W191-G)

| Part No       | Absolute Maximum Rating (Ta=25°C) |                      |                      |                | V <sub>C</sub> (Max.)<br>@ IPP | IPP<br>@ 10/1000us | I <sub>R</sub><br>@ V <sub>RWM</sub> | Marking Code |    |
|---------------|-----------------------------------|----------------------|----------------------|----------------|--------------------------------|--------------------|--------------------------------------|--------------|----|
|               | V <sub>RWM</sub>                  | V <sub>BR</sub> Min. | V <sub>BR</sub> Max. | I <sub>T</sub> |                                |                    |                                      |              |    |
|               | (V)                               | (V)                  | (V)                  | (mA)           | (V)                            | (A)                | (uA)                                 | Uni          | Bi |
| TV02W5V0(B)-G | 5.0                               | 6.40                 | 7.00                 | 10             | 9.20                           | 21.7               | 400                                  | FE           | KE |
| TV02W6V0(B)-G | 6.0                               | 6.67                 | 7.37                 | 10             | 10.3                           | 19.4               | 400                                  | FG           | KG |
| TV02W6V5(B)-G | 6.5                               | 7.22                 | 7.98                 | 10             | 11.2                           | 17.9               | 250                                  | FK           | KK |
| TV02W7V0(B)-G | 7.0                               | 7.78                 | 8.60                 | 10             | 12.0                           | 16.7               | 100                                  | FM           | KM |
| TV02W7V5(B)-G | 7.5                               | 8.33                 | 9.21                 | 1              | 12.9                           | 15.5               | 50                                   | FP           | KP |
| TV02W8V0(B)-G | 8.0                               | 8.89                 | 9.83                 | 1              | 13.6                           | 14.7               | 25                                   | FR           | KR |
| TV02W8V5(B)-G | 8.5                               | 9.44                 | 10.4                 | 1              | 14.4                           | 13.9               | 10                                   | FT           | KT |
| TV02W9V0(B)-G | 9.0                               | 10.0                 | 11.1                 | 1              | 15.4                           | 13.0               | 5                                    | FV           | KV |
| TV02W100(B)-G | 10                                | 11.1                 | 12.3                 | 1              | 17.0                           | 11.8               | 2.5                                  | FX           | KX |
| TV02W110(B)-G | 11                                | 12.2                 | 13.5                 | 1              | 18.2                           | 11.0               | 2.5                                  | FZ           | KZ |
| TV02W120(B)-G | 12                                | 13.3                 | 14.7                 | 1              | 19.9                           | 10.1               | 2.5                                  | HE           | LE |
| TV02W130(B)-G | 13                                | 14.4                 | 15.9                 | 1              | 21.5                           | 9.30               | 1                                    | HG           | JG |
| TV02W140(B)-G | 14                                | 15.6                 | 17.2                 | 1              | 23.2                           | 8.62               | 1                                    | HK           | LK |
| TV02W150(B)-G | 15                                | 16.7                 | 18.5                 | 1              | 24.4                           | 8.20               | 1                                    | HM           | LM |
| TV02W160(B)-G | 16                                | 17.8                 | 19.7                 | 1              | 26.0                           | 7.69               | 1                                    | HP           | LP |
| TV02W170(B)-G | 17                                | 18.9                 | 20.9                 | 1              | 27.6                           | 7.25               | 1                                    | HR           | LR |
| TV02W180(B)-G | 18                                | 20.0                 | 22.1                 | 1              | 29.2                           | 6.85               | 1                                    | HT           | LT |
| TV02W190(B)-G | 19                                | 21.1                 | 23.3                 | 1              | 30.6                           | 6.54               | 1                                    | HB           | LB |
| TV02W200(B)-G | 20                                | 22.2                 | 24.5                 | 1              | 32.4                           | 6.17               | 1                                    | HV           | LV |
| TV02W220(B)-G | 22                                | 24.4                 | 26.9                 | 1              | 35.5                           | 5.63               | 1                                    | HX           | LX |
| TV02W240(B)-G | 24                                | 26.7                 | 29.5                 | 1              | 38.9                           | 5.14               | 1                                    | HZ           | LZ |
| TV02W260(B)-G | 26                                | 28.9                 | 31.9                 | 1              | 42.1                           | 4.75               | 1                                    | JE           | ME |
| TV02W280(B)-G | 28                                | 31.1                 | 34.4                 | 1              | 45.4                           | 4.41               | 1                                    | JG           | MG |
| TV02W300(B)-G | 30                                | 33.3                 | 36.8                 | 1              | 48.4                           | 4.13               | 1                                    | JK           | MK |
| TV02W330(B)-G | 33                                | 36.7                 | 40.6                 | 1              | 53.3                           | 3.75               | 1                                    | JM           | MM |
| TV02W360(B)-G | 36                                | 40.0                 | 44.2                 | 1              | 58.1                           | 3.44               | 1                                    | JP           | MP |
| TV02W400(B)-G | 40                                | 44.4                 | 49.1                 | 1              | 64.5                           | 3.10               | 1                                    | JR           | MR |
| TV02W430(B)-G | 43                                | 47.8                 | 52.8                 | 1              | 69.4                           | 2.88               | 1                                    | JT           | MT |
| TV02W450(B)-G | 45                                | 50.0                 | 55.3                 | 1              | 72.7                           | 2.75               | 1                                    | JV           | MV |
| TV02W480(B)-G | 48                                | 53.3                 | 58.9                 | 1              | 77.4                           | 2.58               | 1                                    | JX           | MX |
| TV02W510(B)-G | 51                                | 56.7                 | 62.7                 | 1              | 82.4                           | 2.43               | 1                                    | JZ           | MZ |
| TV02W540(B)-G | 54                                | 60.0                 | 66.3                 | 1              | 87.1                           | 2.30               | 1                                    | XE           | NE |
| TV02W580(B)-G | 58                                | 64.4                 | 71.2                 | 1              | 93.6                           | 2.14               | 1                                    | XG           | NG |
| TV02W600(B)-G | 60                                | 66.7                 | 73.7                 | 1              | 96.8                           | 2.07               | 1                                    | XK           | NK |
| TV02W640(B)-G | 64                                | 71.1                 | 78.6                 | 1              | 103                            | 1.94               | 1                                    | XM           | NM |
| TV02W700(B)-G | 70                                | 77.8                 | 86.0                 | 1              | 113                            | 1.77               | 1                                    | XP           | NP |
| TV02W750(B)-G | 75                                | 83.3                 | 92.1                 | 1              | 121                            | 1.65               | 1                                    | XR           | NR |
| TV02W780(B)-G | 78                                | 86.7                 | 95.8                 | 1              | 126                            | 1.59               | 1                                    | XT           | NT |
| TV02W800(B)-G | 80                                | 88.8                 | 97.6                 | 1              | 129                            | 1.55               | 1                                    | XB           | NB |
| TV02W850(B)-G | 85                                | 94.4                 | 104                  | 1              | 137                            | 1.46               | 1                                    | XV           | NV |
| TV02W900(B)-G | 90                                | 100                  | 111                  | 1              | 146                            | 1.37               | 1                                    | XX           | NX |
| TV02W101(B)-G | 100                               | 111                  | 123                  | 1              | 162                            | 1.23               | 1                                    | XZ           | NZ |
| TV02W111(B)-G | 110                               | 122                  | 135                  | 1              | 177                            | 1.13               | 1                                    | TE           | PE |
| TV02W121(B)-G | 120                               | 133                  | 147                  | 1              | 193                            | 1.04               | 1                                    | TG           | PG |
| TV02W131(B)-G | 130                               | 144                  | 159                  | 1              | 209                            | 0.96               | 1                                    | TK           | PK |
| TV02W141(B)-G | 140                               | 155                  | 171                  | 1              | 224                            | 0.89               | 1                                    | TB           | PB |
| TV02W151(B)-G | 150                               | 167                  | 185                  | 1              | 243                            | 0.82               | 1                                    | TM           | PM |
| TV02W161(B)-G | 160                               | 178                  | 197                  | 1              | 259                            | 0.77               | 1                                    | TP           | PP |
| TV02W171(B)-G | 170                               | 189                  | 209                  | 1              | 275                            | 0.73               | 1                                    | TR           | PR |
| TV02W181(B)-G | 180                               | 200                  | 220                  | 1              | 290                            | 0.69               | 1                                    | TT           | PT |
| TV02W191(B)-G | 190                               | 211                  | 232                  | 1              | 290                            | 0.69               | 1                                    | TV           | PV |

Notes:

1. Suffix B after part number to specify bi-directional devices.

## Reel Taping Specification

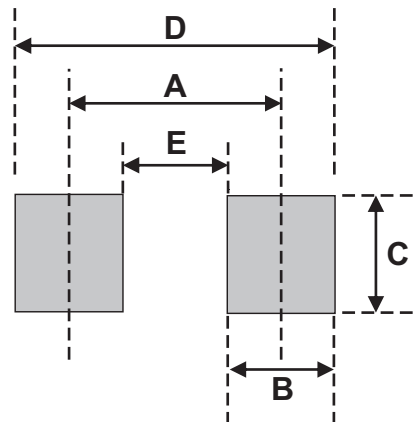


| SOD-123 | SYMBOL | A                 | B                 | C                 | d                 | D                 | D1                | D2                |
|---------|--------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
|         | (mm)   | $1.85 \pm 0.10$   | $3.94 \pm 0.10$   | $1.57 \pm 0.10$   | $1.55 \pm 0.10$   | $178 \pm 1.00$    | $54.40 \pm 0.40$  | $13.0 \pm 0.20$   |
|         | (inch) | $0.073 \pm 0.004$ | $0.155 \pm 0.004$ | $0.062 \pm 0.004$ | $0.061 \pm 0.004$ | $7.008 \pm 0.039$ | $2.142 \pm 0.016$ | $0.512 \pm 0.008$ |

| SOD-123 | SYMBOL | E                 | F                 | P                 | P0                | P1                | W                        | W1                |
|---------|--------|-------------------|-------------------|-------------------|-------------------|-------------------|--------------------------|-------------------|
|         | (mm)   | $1.75 \pm 0.10$   | $3.50 \pm 0.05$   | $4.00 \pm 0.10$   | $4.00 \pm 0.10$   | $2.00 \pm 0.10$   | $8.00 \pm 0.30/-0.10$    | $9.50 \pm 1.00$   |
|         | (inch) | $0.069 \pm 0.004$ | $0.138 \pm 0.002$ | $0.158 \pm 0.004$ | $0.158 \pm 0.004$ | $0.079 \pm 0.004$ | $0.315 \pm 0.012/-0.004$ | $0.374 \pm 0.039$ |

## Suggested PAD Layout

| SIZE | SOD-123 |        |
|------|---------|--------|
|      | (mm)    | (inch) |
| A    | 3.35    | 0.132  |
| B    | 0.80    | 0.032  |
| C    | 1.00    | 0.039  |
| D    | 4.15    | 0.163  |
| E    | 2.55    | 0.100  |



## Standard Packaging

| Case Type | REEL PACK       |                     |
|-----------|-----------------|---------------------|
|           | REEL<br>( pcs ) | Reel Size<br>(inch) |
| SOD-123   | 3,000           | 7                   |

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[TV02W900-G](#) [TV02W9V0B-G](#)