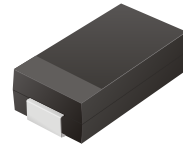


# SMD Transient Voltage Suppressor

## TV04A5V0 Thru TV04A171

Working Peak Reverse Voltage: 5.0 - 170 Volts  
Power Dissipation: 400 Watts

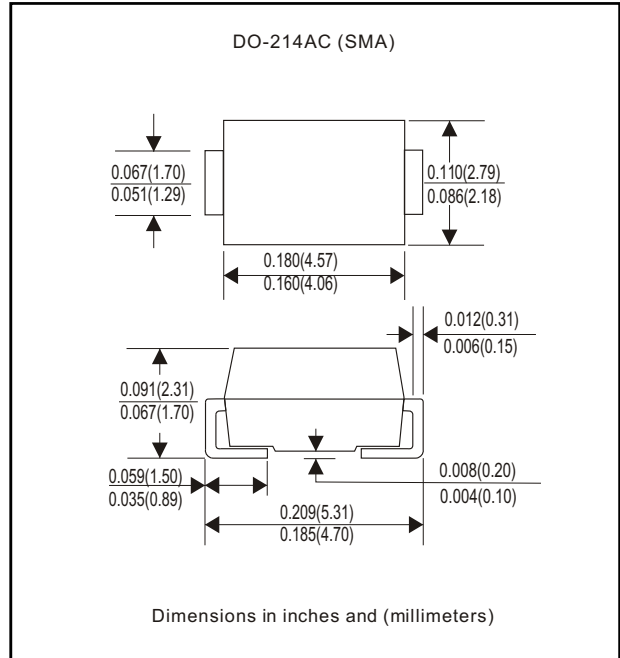


### Features

- Ideal for surface mount applications
- Easy pick and place
- Plastic package has Underwriters Lab. flammability classification 94V-0
- Typical IR less than 1uA above 10V
- Fast reponse time: typically less 1nS for uni-direction, less than 5nS for bi-directiona, from 0 V to BV min.

### Mechanical data

- Case: JEDEC DO-214AC molded plastic
- Terminals: solderable per MIL-STD-750, method 2026
- Polarity: Cathode band denoted
- Mounting position: Any
- Approx. weight:0.064 gram



### Maximum Ratings and Electrical Characteristics

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

| Characteristics   | Symbol | Value       | Units |
|---|--------|-------------|-------|
| Peak Power Dissipation on 10/1000uS Waveform (Note 1, Fig. 1)   | PPPM   | 400         | Watts |
| Peak Pulse Current of on 10/1000uS Waveform (Note 1, Fig. 3)  | IPPM   | See Table 1 | A     |
| Steady State PowerDissipation at TL=75°C (Note2)  | PM(AV) | 1.0         | Watts |
| Peak Forfard Surge Current, 8.3mS Single Half Sine-Wave Superimposed on Rated Load, Uni-Directional Only (Note 3) | IFSM   | 40          | A     |
| Maxinum Instantaneous Forward Voltage at 25.0A for Uni-Directional only (Note 3 & 4)                              | VF     | 3.5         | Volts |
| Operation Junction Temperature Range  | Tj     | -55 to +150 | °C    |
| Storage Temperature Range   | TSTG   | -55 to +150 | °C    |

Note: 1. Non-Repetitive Current Pulse, per Fig. 3 and Derated above TA=25°C, per Fig. 2.  
2. Mounted on 5.0x5.0mm<sup>2</sup> Copper Padsto Each Terminal.  
3. Lead Temperature at TL=75°C per Fig. 5  
4. Measured on 8.3 mS Single Half Sine-Wave for Uni-Directional Devices Only.  
5. Peak Pulse Power Waveform is 10/1000uS.

## Rating and Characteristic Curves (TV04A5V0 Thru TV04A171)

Fig. 1 - Reverse Characteristics

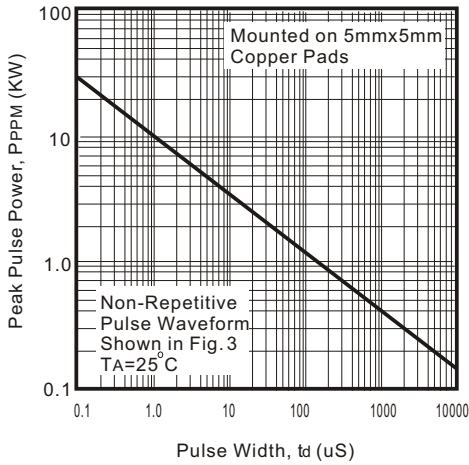


Fig. 2 - Pulse Derating Curve

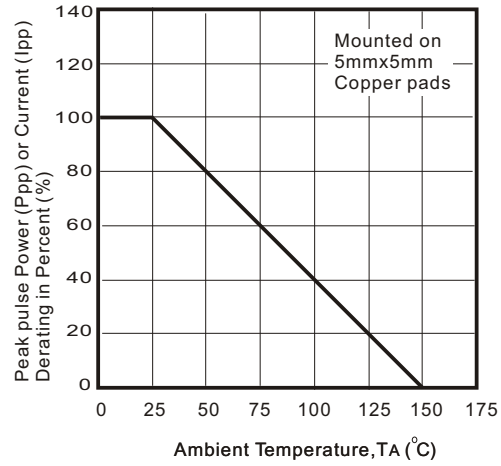


Fig. 3 - Pulse Waveform

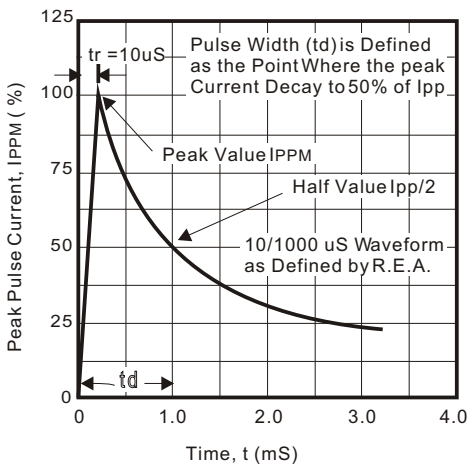


Fig. 4 - Typical Junction Capacitance

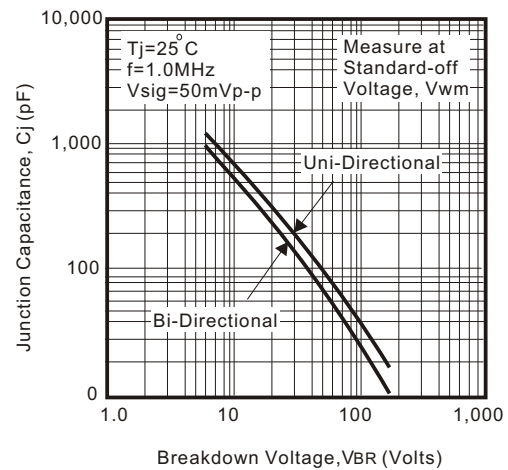


Fig. 5 - Steady State Power Derating Curve

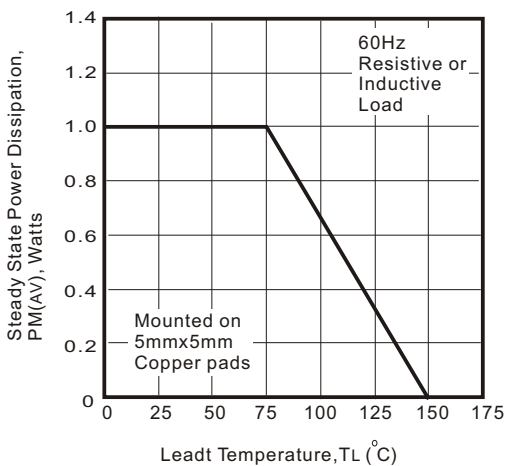
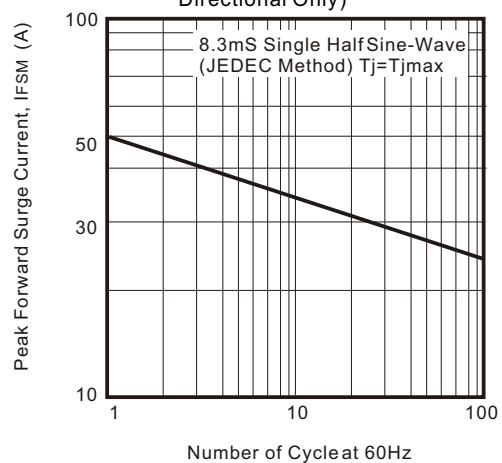


Fig. 6 - Maximum Non-Repetitive Peak Forward Surge Current (Uni-Directional Only)



**Table 1. Specification**

| Part No.     | Absolute Maximum Rating (Ta=25°C) |         |         |      |            | Electrical Characteristics (Ta=25°C) |        |          |              |    |
|--------------|-----------------------------------|---------|---------|------|------------|--------------------------------------|--------|----------|--------------|----|
|              | VRWM                              | VBR Min | VBR Max | IT   | IFSM       | Max Vc                               |        | IR @VRWM | Marking Code |    |
|              | (V)                               | (V)     | (V)     | (mA) | (A) @8.3ms | (V)                                  | Ipp(A) | (uA)     | UNI          | BI |
| TV04A5V0K(B) | 5.00                              | 6.40    | 7.30    | 10   | 40         | 9.6                                  | 41.6   | 800      | AD           | WD |
| TV04A5V0J(B) | 5.00                              | 6.40    | 7.00    | 10   | 40         | 9.2                                  | 43.5   | 800      | AE           | WE |
| TV04A6V0K(B) | 6.00                              | 6.67    | 8.15    | 10   | 40         | 11.4                                 | 35.1   | 800      | AF           | WF |
| TV04A6V0J(B) | 6.00                              | 6.67    | 7.37    | 10   | 40         | 10.3                                 | 38.0   | 800      | AG           | WG |
| TV04A6V5K(B) | 6.50                              | 7.22    | 8.82    | 10   | 40         | 12.3                                 | 32.5   | 500      | AH           | WH |
| TV04A6V5J(B) | 6.50                              | 7.22    | 7.98    | 10   | 40         | 11.2                                 | 35.7   | 500      | AK           | WK |
| TV04A7V0K(B) | 7.00                              | 7.78    | 9.51    | 1    | 40         | 13.3                                 | 30.1   | 200      | AL           | WL |
| TV04A7V0J(B) | 7.00                              | 7.78    | 8.60    | 1    | 40         | 12.0                                 | 33.3   | 200      | AM           | WM |
| TV04A7V5K(B) | 7.50                              | 8.33    | 10.2    | 1    | 40         | 14.3                                 | 28.0   | 100      | AN           | WN |
| TV04A7V5J(B) | 7.50                              | 8.33    | 9.21    | 1    | 40         | 12.9                                 | 31.0   | 100      | AP           | WP |
| TV04A8V0K(B) | 8.00                              | 8.89    | 10.9    | 1    | 40         | 15.0                                 | 26.5   | 50       | AQ           | WQ |
| TV04A8V0J(B) | 8.00                              | 8.89    | 9.83    | 1    | 40         | 13.6                                 | 29.4   | 50       | AR           | WR |
| TV04A8V5K(B) | 8.50                              | 9.44    | 11.5    | 1    | 40         | 15.9                                 | 25.1   | 10       | AS           | WS |
| TV04A8V5J(B) | 8.50                              | 9.44    | 10.4    | 1    | 40         | 14.4                                 | 27.7   | 10       | AT           | WT |
| TV04A9V0K(B) | 9.00                              | 10.0    | 12.2    | 1    | 40         | 16.9                                 | 23.6   | 5        | AU           | WU |
| TV04A9V0J(B) | 9.00                              | 10.0    | 11.1    | 1    | 40         | 15.4                                 | 26.0   | 5        | AV           | WV |
| TV04A100K(B) | 10.00                             | 11.1    | 13.6    | 1    | 40         | 18.8                                 | 21.1   | 5        | AW           | WW |
| TV04A100J(B) | 10.00                             | 11.1    | 12.3    | 1    | 40         | 17.0                                 | 23.5   | 5        | AX           | WX |
| TV04A110K(B) | 11.00                             | 12.2    | 14.9    | 1    | 40         | 20.1                                 | 20.0   | 5        | AY           | WY |
| TV04A110J(B) | 11.00                             | 12.2    | 13.5    | 1    | 40         | 18.2                                 | 22.0   | 5        | AZ           | WZ |
| TV04A120K(B) | 12.00                             | 13.3    | 16.3    | 1    | 40         | 22.0                                 | 18.1   | 5        | BD           | XD |
| TV04A120J(B) | 12.00                             | 13.3    | 14.7    | 1    | 40         | 19.9                                 | 20.1   | 5        | BE           | XE |
| TV04A130K(B) | 13.00                             | 14.4    | 17.6    | 1    | 40         | 23.8                                 | 16.8   | 5        | BF           | XF |
| TV04A130J(B) | 13.00                             | 14.4    | 15.9    | 1    | 40         | 21.5                                 | 18.6   | 5        | BG           | XG |
| TV04A140K(B) | 14.00                             | 15.6    | 19.1    | 1    | 40         | 25.8                                 | 15.5   | 5        | BH           | XH |
| TV04A140J(B) | 14.00                             | 15.6    | 17.2    | 1    | 40         | 23.2                                 | 17.2   | 5        | BK           | XK |
| TV04A150K(B) | 15.00                             | 16.7    | 20.4    | 1    | 40         | 26.9                                 | 14.8   | 5        | BL           | XL |
| TV04A150J(B) | 15.00                             | 16.7    | 18.5    | 1    | 40         | 24.4                                 | 16.4   | 5        | BM           | XM |
| TV04A160K(B) | 16.00                             | 17.8    | 21.8    | 1    | 40         | 28.8                                 | 13.8   | 5        | BN           | XN |
| TV04A160J(B) | 16.00                             | 17.8    | 19.7    | 1    | 40         | 26.0                                 | 15.3   | 5        | BP           | XP |
| TV04A170K(B) | 17.00                             | 18.9    | 23.1    | 1    | 40         | 30.5                                 | 13.1   | 5        | BQ           | XQ |
| TV04A170J(B) | 17.00                             | 18.9    | 20.9    | 1    | 40         | 27.6                                 | 14.5   | 5        | BR           | XR |
| TV04A180K(B) | 18.00                             | 20.0    | 24.4    | 1    | 40         | 32.2                                 | 12.4   | 5        | BS           | XS |
| TV04A180J(B) | 18.00                             | 20.0    | 22.1    | 1    | 40         | 29.2                                 | 13.7   | 5        | BT           | XT |
| TV04A200K(B) | 20.00                             | 22.2    | 27.1    | 1    | 40         | 35.8                                 | 11.1   | 5        | BU           | XU |
| TV04A200J(B) | 20.00                             | 22.2    | 24.5    | 1    | 40         | 32.4                                 | 12.3   | 5        | BV           | XV |
| TV04A220K(B) | 22.00                             | 24.4    | 29.8    | 1    | 40         | 39.4                                 | 10.0   | 5        | BW           | XW |
| TV04A220J(B) | 22.00                             | 24.4    | 26.9    | 1    | 40         | 35.5                                 | 11.2   | 5        | BX           | XX |
| TV04A240K(B) | 24.00                             | 26.7    | 32.6    | 1    | 40         | 43.0                                 | 9.3    | 5        | BY           | XY |
| TV04A240J(B) | 24.00                             | 26.7    | 29.5    | 1    | 40         | 38.9                                 | 10.3   | 5        | BZ           | XZ |
| TV04A260K(B) | 26.00                             | 28.9    | 35.3    | 1    | 40         | 46.6                                 | 8.6    | 5        | CD           | YD |
| TV04A260J(B) | 26.00                             | 28.9    | 31.9    | 1    | 40         | 42.1                                 | 9.5    | 5        | CE           | YE |
| TV04A280K(B) | 28.00                             | 31.1    | 38.0    | 1    | 40         | 50.0                                 | 8.0    | 5        | CF           | YF |
| TV04A280J(B) | 28.00                             | 31.1    | 34.4    | 1    | 40         | 45.4                                 | 8.8    | 5        | CG           | YG |
| TV04A300K(B) | 30.00                             | 33.3    | 40.7    | 1    | 40         | 53.5                                 | 7.5    | 5        | CH           | YH |
| TV04A300J(B) | 30.00                             | 33.3    | 36.8    | 1    | 40         | 48.4                                 | 8.3    | 5        | CK           | YK |
| TV04A330K(B) | 33.00                             | 36.7    | 44.9    | 1    | 40         | 59.0                                 | 6.8    | 5        | CL           | YL |
| TV04A330J(B) | 33.00                             | 36.7    | 40.6    | 1    | 40         | 53.3                                 | 7.5    | 5        | CM           | YM |
| TV04A360K(B) | 36.00                             | 40.0    | 49.9    | 1    | 40         | 64.3                                 | 6.2    | 5        | CN           | YN |
| TV04A360J(B) | 36.00                             | 40.0    | 44.2    | 1    | 40         | 58.1                                 | 6.9    | 5        | CP           | YP |
| TV04A400K(B) | 40.00                             | 44.4    | 54.3    | 1    | 40         | 71.4                                 | 5.6    | 5        | CQ           | YQ |
| TV04A400J(B) | 40.00                             | 44.4    | 49.1    | 1    | 40         | 64.5                                 | 6.2    | 5        | CR           | YR |
| TV04A430K(B) | 43.00                             | 47.8    | 58.4    | 1    | 40         | 76.7                                 | 5.2    | 5        | CS           | YS |
| TV04A430J(B) | 43.00                             | 47.8    | 52.8    | 1    | 40         | 69.4                                 | 5.7    | 5        | CT           | YT |
| TV04A450K(B) | 45.00                             | 50.0    | 61.1    | 1    | 40         | 80.3                                 | 5.0    | 5        | CU           | YU |
| TV04A450J(B) | 45.00                             | 50.0    | 55.3    | 1    | 40         | 72.7                                 | 5.5    | 5        | CV           | YV |

| Part No.     | Absolute Maximum Rating (Ta=25°C) |         |         |      |            | Electrical Characteristics (Ta=25°C) |        |          |              |    |
|--------------|-----------------------------------|---------|---------|------|------------|--------------------------------------|--------|----------|--------------|----|
|              | VRWM                              | VBR Min | VBR Max | IT   | IFSM       | Max Vc                               |        | IR @VRWM | Marking Code |    |
|              | (V)                               | (V)     | (V)     | (mA) | (A) @8.3mS | (V)                                  | Ipp(A) | (uA)     | UNI          | BI |
| TV04A480K(B) | 48.00                             | 53.3    | 65.1    | 1    | 40         | 85.5                                 | 4.7    | 5        | CW           | YW |
| TV04A480J(B) | 48.00                             | 53.3    | 58.9    | 1    | 40         | 77.4                                 | 5.2    | 5        | CX           | YX |
| TV04A510K(B) | 51.00                             | 56.7    | 69.3    | 1    | 40         | 91.1                                 | 4.4    | 5        | CY           | YY |
| TV04A510J(B) | 51.00                             | 56.7    | 62.7    | 1    | 40         | 82.4                                 | 4.9    | 5        | CZ           | YZ |
| TV04A540K(B) | 54.00                             | 60.0    | 73.3    | 1    | 40         | 96.3                                 | 4.2    | 5        | RD           | ZD |
| TV04A540J(B) | 54.00                             | 60.0    | 66.3    | 1    | 40         | 87.1                                 | 4.6    | 5        | RE           | ZE |
| TV04A580K(B) | 58.00                             | 64.4    | 78.7    | 1    | 40         | 103.0                                | 3.9    | 5        | RF           | ZF |
| TV04A580J(B) | 58.00                             | 64.4    | 71.2    | 1    | 40         | 93.6                                 | 4.3    | 5        | RG           | ZG |
| TV04A600K(B) | 60.00                             | 66.7    | 81.5    | 1    | 40         | 107.0                                | 3.7    | 5        | RH           | ZH |
| TV04A600J(B) | 60.00                             | 66.7    | 73.7    | 1    | 40         | 96.8                                 | 4.1    | 5        | RK           | ZK |
| TV04A640K(B) | 64.00                             | 71.1    | 86.9    | 1    | 40         | 114.0                                | 3.5    | 5        | RL           | ZL |
| TV04A640J(B) | 64.00                             | 71.1    | 78.6    | 1    | 40         | 103.0                                | 3.9    | 5        | RM           | ZM |
| TV04A700K(B) | 70.00                             | 77.8    | 95.0    | 1    | 40         | 125.0                                | 3.2    | 5        | RN           | ZN |
| TV04A700J(B) | 70.00                             | 77.8    | 86.0    | 1    | 40         | 113.0                                | 3.5    | 5        | RP           | ZP |
| TV04A750K(B) | 75.00                             | 83.3    | 102     | 1    | 40         | 134.0                                | 3.0    | 5        | RQ           | ZQ |
| TV04A750J(B) | 75.00                             | 83.3    | 92.1    | 1    | 40         | 121.0                                | 3.3    | 5        | RR           | ZR |
| TV04A780K(B) | 78.00                             | 86.7    | 106     | 1    | 40         | 139.0                                | 2.9    | 5        | RS           | ZS |
| TV04A780J(B) | 78.00                             | 86.7    | 95.8    | 1    | 40         | 126.0                                | 3.2    | 5        | RT           | ZT |
| TV04A850K(B) | 85.00                             | 94.4    | 115     | 1    | 40         | 151.0                                | 2.6    | 5        | RU           | ZU |
| TV04A850J(B) | 85.00                             | 94.4    | 104     | 1    | 40         | 137.0                                | 2.9    | 5        | RV           | ZV |
| TV04A900K(B) | 90.00                             | 100     | 122     | 1    | 40         | 160.0                                | 2.5    | 5        | RW           | ZW |
| TV04A900J(B) | 90.00                             | 100     | 111     | 1    | 40         | 146.0                                | 2.7    | 5        | RX           | ZX |
| TV04A101K(B) | 100.00                            | 111     | 136     | 1    | 40         | 179.0                                | 2.2    | 5        | RY           | ZY |
| TV04A101J(B) | 100.00                            | 111     | 123     | 1    | 40         | 162.0                                | 2.5    | 5        | RZ           | ZZ |
| TV04A111K(B) | 110.00                            | 122     | 149     | 1    | 40         | 196.0                                | 2.0    | 5        | SD           | VD |
| TV04A111J(B) | 110.00                            | 122     | 135     | 1    | 40         | 177.0                                | 2.3    | 5        | SE           | VE |
| TV04A121K(B) | 120.00                            | 133     | 163     | 1    | 40         | 214.0                                | 1.9    | 5        | SF           | VF |
| TV04A121J(B) | 120.00                            | 133     | 147     | 1    | 40         | 193.0                                | 2.0    | 5        | SG           | VG |
| TV04A131K(B) | 130.00                            | 144     | 176     | 1    | 40         | 231.0                                | 1.7    | 5        | SH           | VH |
| TV04A131J(B) | 130.00                            | 144     | 159     | 1    | 40         | 209.0                                | 1.9    | 5        | SK           | VK |
| TV04A151K(B) | 150.00                            | 167     | 204     | 1    | 40         | 268.0                                | 1.5    | 5        | SL           | VL |
| TV04A151J(B) | 150.00                            | 167     | 185     | 1    | 40         | 243.0                                | 1.6    | 5        | SM           | VM |
| TV04A161K(B) | 160.00                            | 178     | 218     | 1    | 40         | 287.0                                | 1.4    | 5        | SN           | VN |
| TV04A161J(B) | 160.00                            | 178     | 197     | 1    | 40         | 259.0                                | 1.5    | 5        | SP           | VP |
| TV04A171K(B) | 170.00                            | 189     | 231     | 1    | 40         | 304.0                                | 1.3    | 5        | SQ           | VQ |
| TV04A171J(B) | 170.00                            | 189     | 209     | 1    | 40         | 275.0                                | 1.4    | 5        | SR           | VR |

Note:

- 1) Suffix K Denotes 10% tolerance devices, suffix J denotes 5% tolerance devices.
- 2) Suffix B after part number to specify bi-directional devices.
- 3) For bi-directional devices having VR of 10 volts and under, the IR limit is double.