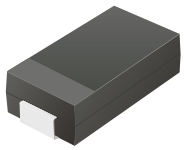
# SMD Transient Voltage Suppressor

SMD Diodes Specialist

# TV30C5V0-G Thru. TV30C171-G

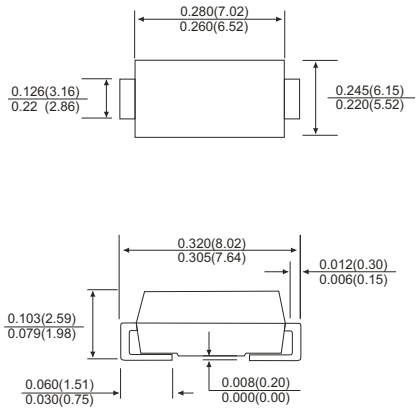
## Working Peak Reverse Voltage: 5.0 to 170 Volts
## Power Dissipation: 3000 Watts
## RoHS Device



## Features

-Ideally for surface mount applications.
-Easy pick and place.
-Plastic package has Underwriters Lab. flammability classification 94V-0.
-Typical IR less than 1μA above 10V.
-Fast response time: typically less than 1nS for uni-direction, less than 5nS for bi-direction, from 0V to BV min.
-Use in sensitive electronic protection against voltage transients induced by inductive load switching and lighting on ICs, MOSFET, signal lines of sensor units for consumer, computer, industrial, automotive and telecommunication.

**DO-214AB (SMC)**




Dimensions in inches and (millimeter)

## Mechanical data

-Case: JEDEC DO-214AB, molded plastic.
-Terminals: solderable per MIL-STD-750, method 2026.
-Polarity: Color band denotes cathode end.
-Approx. weight: 0.21 grams

## Maximum Ratings 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%.

| Characteristics | Symbol | Value | Units |
|---|---|---|---|
| Peak power dissipation on 10/1000μS waveform (Note 1) | $P_{PP}$ | 3000 | W |
| Peak pulse current on 10/1000μS waveform (Note 1) | $I_{PP}$ | See Next Table | A |
| Steady state power dissipation at $T_L$=75 °C | $P_D$ | 6.0 | W |
| Peak forward surge current, 8.3ms single half sine-wave superimposed on rated load, uni-directional only (Note 3) | $I_{FSM}$ | 300 | A |
| Maximum instantaneous forward voltage at 100.0A for uni-directional only (Note 3) | $V_F$ | 3.5/5.0 | V |
| Maximum operating junction temperature | $T_J$ | 150 | °C |
| Storage temperature range | $T_{STG}$ | -55 to +150 | °C |

Notes:
1. Non-repetitive current pulse, per Fig. 3 and derated above $T_A$=25 °C, per Fig. 2.
2. Measured on 8.3 ms single half sine-wave or equivalent square wave,duty cycle=4 pulses per minute maximum.
3. $V_F$<3.5V for devices of $V_{BR}$<200V and $V_F$<5.0V for devices of $V_{BR}$>201V

## RATING AND CHARACTERISTIC CURVES (TV30C5V0-G thru TV30C171-G)

Fig.1 Peak Pulse Power Rating Curve

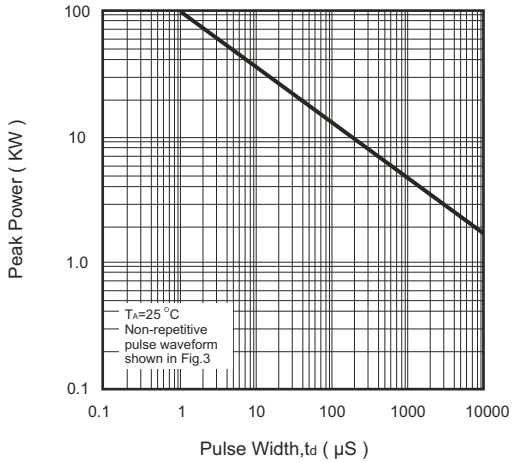



Fig.2 Pulse Derating Curve

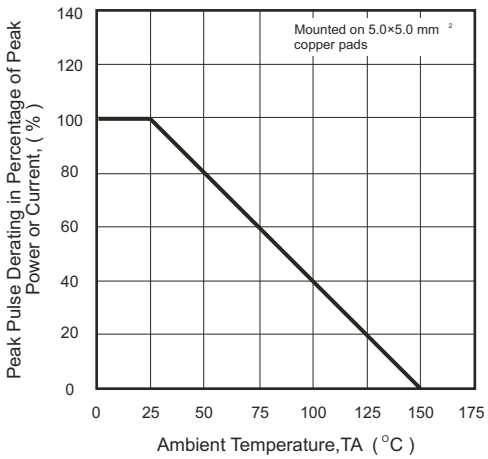



Fig.3 Pulse Waveform

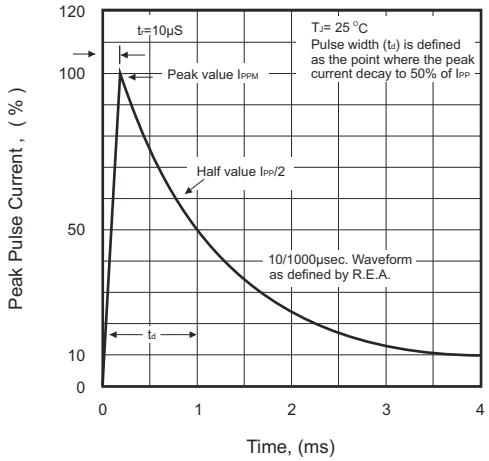



Fig.4 Typical Junction Capacitance

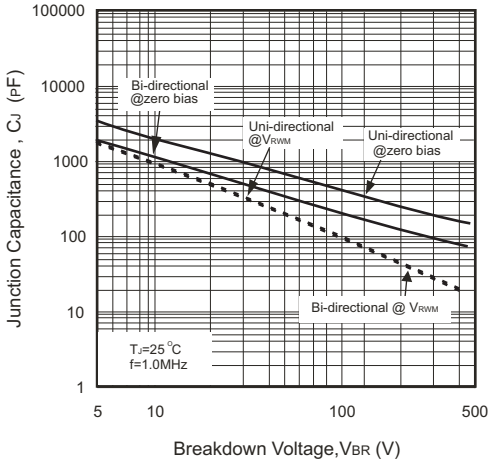



Fig.5 Steady State Power Derating Curve

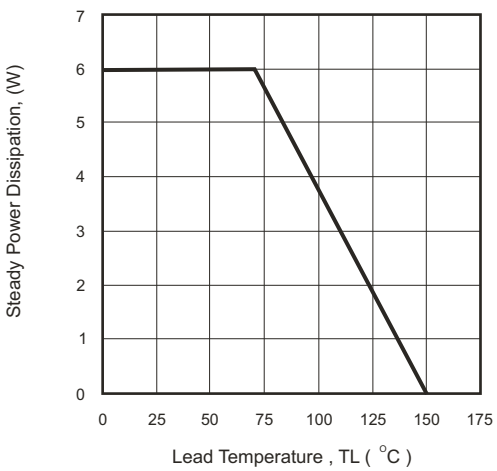
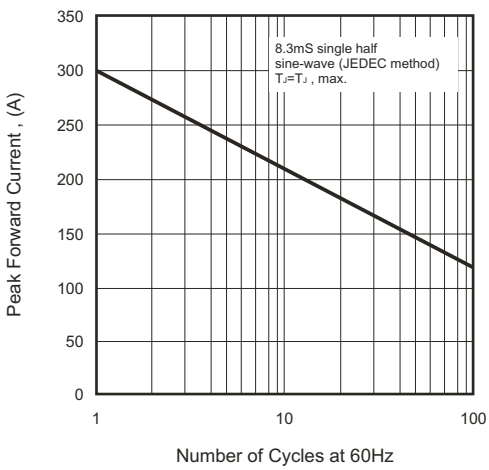



Fig.6 Max. Non-Repetitive Forward Surge Current (Uni-directional only)



## Table 1. Specification

| Part No | Absolute Maximum Rating (Ta= 25 °C) | | | | | Electrical Characteristic (Ta= 25 °C) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | $V_{RWM}$ | $V_{BR}$ Min. | $V_{BR}$ Max. | $I_T$ | $I_{FSM}$ | Max. $V_C$ | | $I_R$@$V_{RWM}$ | Marking Code | |
| | (V) | (V) | (V) | (mA) | (A)@8.3mS | (V) | $I_{PP}$ (A) | (uA) | Uni | Bi |
| TV30C5V0K(B)-G | 5.00 | 6.40 | 7.30 | 10 | 250 | 9.6 | 312.5 | 1000 | RDD | DDD |
| TV30C5V0J(B)-G | 5.00 | 6.40 | 7.00 | 10 | 250 | 9.2 | 326.1 | 1000 | RDE | DDE |
| TV30C6V0K(B)-G | 6.00 | 6.67 | 8.15 | 10 | 250 | 11.4 | 263.2 | 1000 | RDF | DDF |
| TV30C6V0J(B)-G | 6.00 | 6.67 | 7.37 | 10 | 250 | 10.3 | 291.3 | 1000 | RDG | DDG |
| TV30C6V5K(B)-G | 6.50 | 7.22 | 8.82 | 10 | 250 | 12.3 | 243.9 | 500 | RDH | DDH |
| TV30C6V5J(B)-G | 6.50 | 7.22 | 7.98 | 10 | 250 | 11.2 | 267.9 | 500 | RDK | DDK |
| TV30C7V0K(B)-G | 7.00 | 7.78 | 9.51 | 10 | 250 | 13.3 | 225.6 | 200 | RDL | DDL |
| TV30C7V0J(B)-G | 7.00 | 7.78 | 8.60 | 10 | 250 | 12.0 | 250.0 | 200 | PDM | DDM |
| TV30C7V5K(B)-G | 7.50 | 8.33 | 10.20 | 1 | 250 | 14.3 | 209.8 | 100 | PDN | DDN |
| TV30C7V5J(B)-G | 7.50 | 8.33 | 9.21 | 1 | 250 | 12.9 | 232.6 | 100 | PDP | DDP |
| TV30C8V0K(B)-G | 8.00 | 8.89 | 10.90 | 1 | 250 | 15.0 | 200.0 | 50 | PDQ | DDQ |
| TV30C8V0J(B)-G | 8.00 | 8.89 | 9.83 | 1 | 250 | 13.6 | 220.6 | 50 | PDR | DDR |
| TV30C8V5K(B)-G | 8.50 | 9.44 | 11.50 | 1 | 250 | 15.9 | 188.7 | 25 | PDS | DDS |
| TV30C8V5J(B)-G | 8.50 | 9.44 | 10.40 | 1 | 250 | 14.4 | 208.3 | 25 | PDT | DDT |
| TV30C9V0K(B)-G | 9.00 | 10.0 | 12.20 | 1 | 250 | 16.9 | 177.5 | 10 | PDU | DDU |
| TV30C9V0J(B)-G | 9.00 | 10.0 | 11.10 | 1 | 250 | 15.4 | 194.8 | 10 | PDV | DDV |
| TV30C100K(B)-G | 10.0 | 11.1 | 13.60 | 1 | 250 | 18.8 | 159.6 | 5 | PDW | DDW |
| TV30C100J(B)-G | 10.0 | 11.1 | 12.30 | 1 | 250 | 17.0 | 176.5 | 5 | PDX | DDX |
| TV30C110K(B)-G | 11.0 | 12.2 | 14.90 | 1 | 250 | 20.1 | 149.3 | 5 | PDY | DDY |
| TV30C110J(B)-G | 11.0 | 12.2 | 13.50 | 1 | 250 | 18.2 | 164.8 | 5 | PDZ | DDZ |
| TV30C120K(B)-G | 12.0 | 13.3 | 16.30 | 1 | 250 | 22.0 | 136.4 | 5 | PED | DED |
| TV30C120J(B)-G | 12.0 | 13.3 | 14.70 | 1 | 250 | 19.9 | 150.8 | 5 | PEE | DEE |
| TV30C130K(B)-G | 13.0 | 14.4 | 17.60 | 1 | 250 | 23.8 | 126.1 | 5 | PEF | DEF |
| TV30C130J(B)-G | 13.0 | 14.4 | 15.90 | 1 | 250 | 21.5 | 139.5 | 5 | PEG | DEG |
| TV30C140K(B)-G | 14.0 | 15.6 | 19.10 | 1 | 250 | 25.8 | 116.3 | 5 | PEH | DEH |
| TV30C140J(B)-G | 14.0 | 15.6 | 17.20 | 1 | 250 | 23.2 | 129.3 | 5 | PEK | DEK |
| TV30C150K(B)-G | 15.0 | 16.7 | 20.40 | 1 | 250 | 26.9 | 111.5 | 5 | PEL | DEL |
| TV30C150J(B)-G | 15.0 | 16.7 | 18.50 | 1 | 250 | 24.4 | 123.0 | 5 | PEM | DEM |
| TV30C160K(B)-G | 16.0 | 17.8 | 21.80 | 1 | 250 | 28.8 | 104.2 | 5 | PEN | DEN |
| TV30C160J(B)-G | 16.0 | 17.8 | 19.70 | 1 | 250 | 26.0 | 115.4 | 5 | PEP | DEP |
| TV30C170K(B)-G | 17.0 | 18.9 | 23.10 | 1 | 250 | 30.5 | 98.4 | 5 | PEQ | DEQ |
| TV30C170J(B)-G | 17.0 | 18.9 | 20.90 | 1 | 250 | 27.6 | 108.7 | 5 | PER | DER |
| TV30C180K(B)-G | 18.0 | 20.0 | 24.40 | 1 | 250 | 32.2 | 93.2 | 5 | PES | DES |
| TV30C180J(B)-G | 18.0 | 20.0 | 22.10 | 1 | 250 | 29.2 | 102.7 | 5 | PET | DET |
| TV30C200K(B)-G | 20.0 | 22.2 | 27.10 | 1 | 250 | 35.8 | 83.8 | 5 | PEU | DEU |
| TV30C200J(B)-G | 20.0 | 22.2 | 24.50 | 1 | 250 | 32.4 | 92.6 | 5 | PEV | DEV |
| TV30C220K(B)-G | 22.0 | 24.4 | 29.80 | 1 | 250 | 39.4 | 76.1 | 5 | PEW | DEW |
| TV30C220J(B)-G | 22.0 | 24.4 | 26.90 | 1 | 250 | 35.5 | 84.5 | 5 | PEX | DEX |
| TV30C240K(B)-G | 24.0 | 26.7 | 32.60 | 1 | 250 | 43.0 | 69.8 | 5 | PEY | DEY |
| TV30C240J(B)-G | 24.0 | 26.7 | 29.50 | 1 | 250 | 38.9 | 77.1 | 5 | PEZ | DEZ |
| TV30C260K(B)-G | 26.0 | 28.9 | 35.30 | 1 | 250 | 46.6 | 64.4 | 5 | PFD | DFD |
| TV30C260J(B)-G | 26.0 | 28.9 | 31.90 | 1 | 250 | 42.1 | 71.3 | 5 | PFE | DFE |
| TV30C280K(B)-G | 28.0 | 31.1 | 38.00 | 1 | 250 | 50.0 | 60.0 | 5 | PFF | DFF |
| TV30C280J(B)-G | 28.0 | 31.1 | 34.40 | 1 | 250 | 45.4 | 66.1 | 5 | PFG | DFG |
| TV30C300K(B)-G | 30.0 | 33.3 | 40.70 | 1 | 250 | 53.5 | 56.1 | 5 | PFH | DFH |
| TV30C300J(B)-G | 30.0 | 33.3 | 36.80 | 1 | 250 | 48.4 | 62.0 | 5 | PFK | DFK |
| TV30C330K(B)-G | 33.0 | 36.7 | 44.90 | 1 | 250 | 59.0 | 50.9 | 5 | PFL | DFL |
| TV30C330J(B)-G | 33.0 | 36.7 | 40.60 | 1 | 250 | 53.3 | 56.3 | 5 | PFM | DFM |

## Table 1. Specification

| Part No | Absolute Maximum Rating (Ta= 25 °C) | | | | | Electrical Characteristic (Ta= 25 °C) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | $V_{RWM}$ | $V_{BR}$ Min. | $V_{BR}$ Max. | $I_T$ | $I_{FSM}$ | Max. $V_C$ | | $I_R$@$V_{RWM}$ | Marking Code | |
| | (V) | (V) | (V) | (mA) | (A)@8.3mS | (V) | $I_{PP}$ (A) | (uA) | Uni | Bi |
| TV30C360K(B)-G | 36.0 | 40.0 | 48.9 | 1 | 250 | 64.3 | 46.7 | 5 | PFN | DFN |
| TV30C360J(B)-G | 36.0 | 40.0 | 44.2 | 1 | 250 | 58.1 | 51.6 | 5 | PFP | DFP |
| TV30C400K(B)-G | 40.0 | 44.4 | 54.3 | 1 | 250 | 71.4 | 42.0 | 5 | PFQ | DFQ |
| TV30C400J(B)-G | 40.0 | 44.4 | 49.1 | 1 | 250 | 64.5 | 46.5 | 5 | PFR | DFR |
| TV30C430K(B)-G | 43.0 | 47.8 | 58.4 | 1 | 250 | 76.7 | 39.1 | 5 | PFS | DFS |
| TV30C430J(B)-G | 43.0 | 47.8 | 52.8 | 1 | 250 | 69.4 | 43.2 | 5 | PFT | DFT |
| TV30C450K(B)-G | 45.0 | 50.0 | 61.1 | 1 | 250 | 80.3 | 37.4 | 5 | PFU | DFU |
| TV30C450J(B)-G | 45.0 | 50.0 | 55.3 | 1 | 250 | 72.7 | 41.3 | 5 | PFV | DFV |
| TV30C480K(B)-G | 48.0 | 53.3 | 65.1 | 1 | 250 | 85.5 | 35.1 | 5 | PFW | DFW |
| TV30C480J(B)-G | 48.0 | 53.3 | 58.9 | 1 | 250 | 77.4 | 38.8 | 5 | PFX | DFX |
| TV30C510K(B)-G | 51.0 | 56.7 | 69.3 | 1 | 250 | 91.1 | 32.9 | 5 | PFY | DFY |
| TV30C510J(B)-G | 51.0 | 56.7 | 62.7 | 1 | 250 | 82.4 | 36.4 | 5 | PFZ | DFZ |
| TV30C540K(B)-G | 54.0 | 60.0 | 73.3 | 1 | 250 | 96.3 | 31.2 | 5 | RGD | DGD |
| TV30C540J(B)-G | 54.0 | 60.0 | 66.3 | 1 | 250 | 87.1 | 34.4 | 5 | RGE | DGE |
| TV30C580K(B)-G | 58.0 | 64.4 | 78.7 | 1 | 250 | 103 | 29.1 | 5 | RGF | DGF |
| TV30C580J(B)-G | 58.0 | 64.4 | 71.2 | 1 | 250 | 93.6 | 32.1 | 5 | PGG | DGG |
| TV30C600K(B)-G | 60.0 | 66.7 | 81.5 | 1 | 250 | 107 | 28.0 | 5 | RGH | DGH |
| TV30C600J(B)-G | 60.0 | 66.7 | 73.7 | 1 | 250 | 96.8 | 31.0 | 5 | PGK | DGK |
| TV30C640K(B)-G | 64.0 | 71.1 | 86.9 | 1 | 250 | 114 | 26.3 | 5 | PGL | DGL |
| TV30C640J(B)-G | 64.0 | 71.1 | 78.6 | 1 | 250 | 103 | 29.1 | 5 | PGM | DGM |
| TV30C700K(B)-G | 70.0 | 77.8 | 95.1 | 1 | 250 | 125 | 24.0 | 5 | PGN | DGN |
| TV30C700J(B)-G | 70.0 | 77.8 | 86.0 | 1 | 250 | 113 | 26.6 | 5 | PGP | DGP |
| TV30C750K(B)-G | 75.0 | 83.3 | 102.0 | 1 | 250 | 134 | 22.4 | 5 | PGQ | DGQ |
| TV30C750J(B)-G | 75.0 | 83.3 | 92.1 | 1 | 250 | 121 | 24.8 | 5 | PGR | DGR |
| TV30C780K(B)-G | 78.0 | 86.7 | 106.0 | 1 | 250 | 139 | 21.6 | 5 | PGS | DGS |
| TV30C780J(B)-G | 78.0 | 86.7 | 95.8 | 1 | 250 | 126 | 23.8 | 5 | PGT | DGT |
| TV30C850K(B)-G | 85.0 | 94.4 | 115.0 | 1 | 250 | 151 | 19.9 | 5 | PGU | DGU |
| TV30C850J(B)-G | 85.0 | 94.4 | 104.0 | 1 | 250 | 137 | 21.9 | 5 | PGV | DGV |
| TV30C900K(B)-G | 90.0 | 100 | 122.0 | 1 | 250 | 160 | 18.8 | 5 | PGW | DGW |
| TV30C900J(B)-G | 90.0 | 100 | 111.0 | 1 | 250 | 146 | 20.6 | 5 | PGX | DGX |
| TV30C101K(B)-G | 100 | 111 | 136.0 | 1 | 250 | 179 | 16.8 | 5 | PGY | DGY |
| TV30C101J(B)-G | 100 | 111 | 123.0 | 1 | 250 | 162 | 18.5 | 5 | PGZ | DGZ |
| TV30C111K(B)-G | 110 | 122 | 149.0 | 1 | 250 | 196 | 15.3 | 5 | PHD | DHD |
| TV30C111J(B)-G | 110 | 122 | 135.0 | 1 | 250 | 177 | 17.0 | 5 | PHE | DHE |
| TV30C121K(B)-G | 120 | 133 | 163.0 | 1 | 250 | 214 | 14.0 | 5 | PHF | DHF |
| TV30C121J(B)-G | 120 | 133 | 147.0 | 1 | 250 | 193 | 15.5 | 5 | PHG | DHG |
| TV30C131K(B)-G | 130 | 144 | 176.0 | 1 | 250 | 231 | 13.0 | 5 | PHH | DHH |
| TV30C131J(B)-G | 130 | 144 | 159.0 | 1 | 250 | 209 | 14.4 | 5 | PHK | DHK |
| TV30C151K(B)-G | 150 | 167 | 204.0 | 1 | 250 | 268 | 11.2 | 5 | PHL | DHL |
| TV30C151J(B)-G | 150 | 167 | 185.0 | 1 | 250 | 243 | 12.4 | 5 | PHM | DHM |
| TV30C161K(B)-G | 160 | 178 | 218.0 | 1 | 250 | 287 | 10.5 | 5 | PHN | DHN |
| TV30C161J(B)-G | 160 | 178 | 197.0 | 1 | 250 | 259 | 11.6 | 5 | PHP | DHP |
| TV30C171K(B)-G | 170 | 189 | 231.0 | 1 | 250 | 304 | 9.9 | 5 | PHQ | DHQ |
| TV30C171J(B)-G | 170 | 189 | 209.0 | 1 | 250 | 275 | 10.9 | 5 | PHR | DHR |

Notes:
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 $V_R$ of 10 volts and under, the $I_R$ limit is double.