

## TV30C5V0-G Thru. TV30C441-G

Working Peak Reverse Voltage: 5.0 to 440 Volts

Power Dissipation: 3000 Watts

RoHS Device



### Features

- Glass passivated chip.
- 3000W peak pulse power capability with a 10/1000µs waveform, repetitive rate (duty cycle):0.01%
- Low leakage.
- Uni and Bidirectional unit.
- Excellent clamping capability.
- Very fast response time.
- UL recognized file # E349157  Range: TV30C5V0J(B) thru. TV30C171J(B)

### Mechanical Data

- Case: DO-214AB/SMC molded plastic.
- Epoxy: UL 94V-0 rate flame retardant
- Terminals: Solderable per MIL-STD-750, method 2026.
- Polarity: Color band denoted cathode end except bipolar.
- Weight: 0.230 gram (approx.)



### Circuit Diagram



### 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 with a 10/1000µs waveform (Note 1)                            | P <sub>PP</sub>                   | 3000           | W     |
| Peak pulse current with a 10/1000µs waveform (Note 1)                                | I <sub>PP</sub>                   | See Next Table | A     |
| Power dissipation on infinite heatsink at T <sub>L</sub> =75°C                       | P <sub>D</sub>                    | 6.0            | W     |
| Peak forward surge current, 8.3ms single half sine-wave unidirectional only (Note 2) | I <sub>FSM</sub>                  | 300            | A     |
| Maximum instantaneous forward voltage at 100A for unidirectional only (Note 3)       | V <sub>F</sub>                    | 3.5/5.0        | V     |
| Operation junction and storage temperature range                                     | T <sub>J</sub> , T <sub>STG</sub> | -55 to +150    | °C    |

- Notes: 1. Non-repetitive current pulse, per Fig.5 and derated above T<sub>A</sub>=25°C, per Fig.1  
2. Measured on 8.3 ms single half sine-wave or equivalent square wave, duty cycle = 4 pulses per minute maximum.  
3. V<sub>F</sub><3.5V for devices of V<sub>BR</sub><200V and V<sub>F</sub><5.0V for devices of V<sub>BR</sub>>201V

## RATING AND CHARACTERISTIC CURVES (TV30C5V0-G Thru. TV30C441-G)

Fig.1 - Pulse Derating Curve

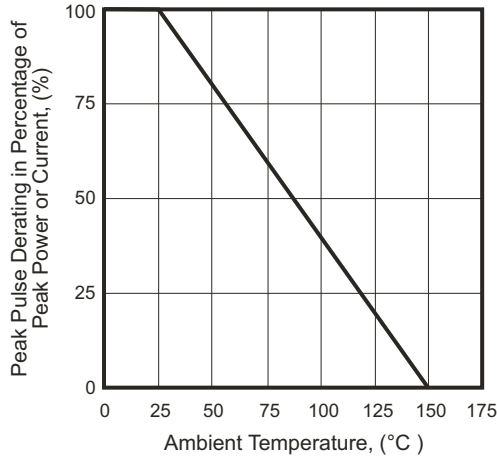


Fig.2 - Max. Non-Repetitive Surge Current



Fig.3 - Steady State Power Derating Curve

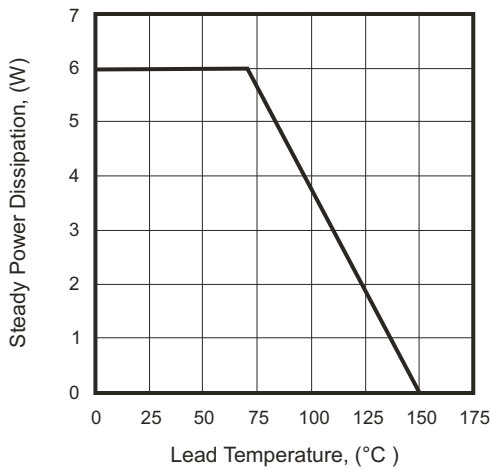


Fig.4 - Peak Pulse Power Rating Curve



Fig.5 - Pulse Waveform



Fig.6 - Typical Junction Capacitance



# SMD Transient Voltage Suppressor



## Electrical Characteristics (TV30C5V0-G Thru. TV30C441-G)

| Part No.       | Breakdown voltage<br>V <sub>BR</sub> @ I <sub>T</sub> |             |                        | Maximum<br>Reverse<br>Leakage<br>@VRWM<br>I <sub>R</sub> (uA) | Working<br>Peak<br>Reverse<br>Voltage<br>V <sub>VRWM</sub> (V) | Maximum<br>Reverse<br>Surge<br>Current<br>I <sub>PP</sub> (A) | Maximum<br>Clamping<br>Voltage<br>@I <sub>PP</sub><br>V <sub>c</sub> (V) | Device<br>Marking<br>Code |     |
|----------------|---|-------------|------------------------|---|--|---|--|---------------------------|-----|
|                | Min.<br>(V)   | Max.<br>(V) | I <sub>T</sub><br>(mA) |   |  |   |  | UNI                       | BI  |
| TV30C5V0J(B)-G | 6.40  | 7.00        | 50                     | 800   | 5.0  | 326.09  | 9.2  | RDE                       | DDE |
| TV30C6V0J(B)-G | 6.67  | 7.37        | 50                     | 800   | 6.0  | 291.26  | 10.3   | RDG                       | DDG |
| TV30C6V5J(B)-G | 7.22  | 7.98        | 50                     | 500   | 6.5  | 267.86  | 11.2   | RDK                       | DDK |
| TV30C7V0J(B)-G | 7.78  | 8.60        | 50                     | 200   | 7.0  | 250.00  | 12.0   | PDM                       | DDM |
| TV30C7V5J(B)-G | 8.33  | 9.21        | 5                      | 100   | 7.5  | 232.56  | 12.9   | PDP                       | DDP |
| TV30C8V0J(B)-G | 8.89  | 9.83        | 5                      | 50  | 8.0  | 220.59  | 13.6   | PDR                       | DDR |
| TV30C8V5J(B)-G | 9.44  | 10.40       | 5                      | 20  | 8.5  | 208.33  | 14.4   | PDT                       | DDT |
| TV30C9V0J(B)-G | 10.00   | 11.10       | 5                      | 10  | 9.0  | 194.81  | 15.4   | PDV                       | DDV |
| TV30C100J(B)-G | 11.10   | 12.30       | 5                      | 5   | 10.0   | 176.47  | 17.0   | PDX                       | DDX |
| TV30C110J(B)-G | 12.20   | 13.50       | 5                      | 2   | 11.0   | 164.84  | 18.2   | PDZ                       | DDZ |
| TV30C120J(B)-G | 13.30   | 14.70       | 5                      | 2   | 12.0   | 150.75  | 19.9   | PEE                       | DEE |
| TV30C130J(B)-G | 14.40   | 15.90       | 5                      | 2   | 13.0   | 139.53  | 21.5   | PEG                       | DEG |
| TV30C140J(B)-G | 15.60   | 17.20       | 5                      | 2   | 14.0   | 129.31  | 23.2   | PEK                       | DEK |
| TV30C150J(B)-G | 16.70   | 18.50       | 5                      | 2   | 15.0   | 122.95  | 24.4   | PEM                       | DEM |
| TV30C160J(B)-G | 17.80   | 19.70       | 5                      | 2   | 16.0   | 115.38  | 26.0   | PEP                       | DEP |
| TV30C170J(B)-G | 18.90   | 20.90       | 5                      | 2   | 17.0   | 108.70  | 27.6   | PER                       | DER |
| TV30C180J(B)-G | 20.00   | 22.10       | 5                      | 2   | 18.0   | 102.74  | 29.2   | PET                       | DET |
| TV30C190J(B)-G | 21.10   | 23.30       | 5                      | 2   | 19.0   | 97.47   | 30.8   | PEB                       | DEB |
| TV30C200J(B)-G | 22.20   | 24.50       | 5                      | 2   | 20.0   | 92.59   | 32.4   | PEV                       | DEV |
| TV30C220J(B)-G | 24.40   | 26.90       | 5                      | 2   | 22.0   | 84.51   | 35.5   | PEX                       | DEX |
| TV30C240J(B)-G | 26.70   | 29.50       | 5                      | 2   | 24.0   | 77.12   | 38.9   | PEZ                       | DEZ |
| TV30C260J(B)-G | 28.90   | 31.90       | 5                      | 2   | 26.0   | 71.26   | 42.1   | PFE                       | DFE |
| TV30C280J(B)-G | 31.10   | 34.40       | 5                      | 2   | 28.0   | 66.08   | 45.4   | PFG                       | DFG |
| TV30C300J(B)-G | 33.30   | 36.80       | 5                      | 2   | 30.0   | 61.98   | 48.4   | PFK                       | DFK |
| TV30C330J(B)-G | 36.70   | 40.60       | 5                      | 2   | 33.0   | 56.29   | 53.3   | PFM                       | DFM |
| TV30C360J(B)-G | 40.00   | 44.20       | 5                      | 2   | 36.0   | 51.64   | 58.1   | PFP                       | DFP |
| TV30C400J(B)-G | 44.40   | 49.10       | 5                      | 2   | 40.0   | 46.51   | 64.5   | PFR                       | DFR |
| TV30C430J(B)-G | 47.80   | 52.80       | 5                      | 2   | 43.0   | 43.23   | 69.4   | PFT                       | DFT |
| TV30C450J(B)-G | 50.00   | 55.30       | 5                      | 2   | 45.0   | 41.27   | 72.7   | PFV                       | DFV |
| TV30C480J(B)-G | 53.30   | 58.90       | 5                      | 2   | 48.0   | 38.76   | 77.4   | PFX                       | DFX |
| TV30C510J(B)-G | 56.70   | 62.70       | 5                      | 2   | 51.0   | 36.41   | 82.4   | PFZ                       | DFZ |
| TV30C540J(B)-G | 60.00   | 66.30       | 5                      | 2   | 54.0   | 34.44   | 87.1   | RGE                       | DGE |
| TV30C580J(B)-G | 64.40   | 71.20       | 5                      | 2   | 58.0   | 32.05   | 93.6   | PGG                       | DGG |
| TV30C600J(B)-G | 66.70   | 73.70       | 5                      | 2   | 60.0   | 30.99   | 96.8   | PGK                       | DGK |
| TV30C640J(B)-G | 71.10   | 78.60       | 5                      | 2   | 64.0   | 29.13   | 103.0  | PGM                       | DGM |
| TV30C700J(B)-G | 77.80   | 86.00       | 5                      | 2   | 70.0   | 26.55   | 113.0  | PGP                       | DGP |
| TV30C750J(B)-G | 83.30   | 92.10       | 5                      | 2   | 75.0   | 24.79   | 121.0  | PGR                       | DGR |
| TV30C780J(B)-G | 86.70   | 95.80       | 5                      | 2   | 78.0   | 23.81   | 126.0  | PGT                       | DGT |
| TV30C800J(B)-G | 88.80   | 97.60       | 5                      | 2   | 80.0   | 23.15   | 129.6  | PGB                       | DGB |
| TV30C850J(B)-G | 94.40   | 104.00      | 5                      | 2   | 85.0   | 21.90   | 137.0  | PGV                       | DGV |
| TV30C900J(B)-G | 100.00  | 111.00      | 5                      | 2   | 90.0   | 20.55   | 146.0  | PGX                       | DGX |
| TV30C101J(B)-G | 111.00  | 123.00      | 5                      | 2   | 100.0  | 18.52   | 162.0  | PGZ                       | DGZ |
| TV30C111J(B)-G | 122.00  | 135.00      | 5                      | 2   | 110.0  | 16.95   | 177.0  | PHE                       | DHE |
| TV30C121J(B)-G | 133.00  | 147.00      | 5                      | 2   | 120.0  | 15.54   | 193.0  | PHG                       | DHG |

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REV.1

# SMD Transient Voltage Suppressor

## Electrical Characteristics (TV30C5V0-G Thru. TV30C441-G)

| Part No.       | Breakdown voltage<br>V <sub>BR</sub> @ I <sub>T</sub> |             |                        | Maximum<br>Reverse<br>Leakage<br>@V <sub>RWM</sub><br>I <sub>R</sub> (uA) | Working<br>Peak<br>Reverse<br>Voltage<br>V <sub>RWM</sub> (V) | Maximum<br>Reverse<br>Surge<br>Current<br>I <sub>PP</sub> (A) | Maximum<br>Clamping<br>Voltage<br>@I <sub>PP</sub><br>V <sub>C</sub> (V) | Device<br>Marking<br>Code |     |
|----------------|---|-------------|------------------------|---|---|---|--|---------------------------|-----|
|                | Min.<br>(V)   | Max.<br>(V) | I <sub>T</sub><br>(mA) |   |   |   |  | UNI                       | BI  |
| TV30C131J(B)-G | 144.0   | 159.0       | 5                      | 2   | 130.0   | 14.35   | 209.0  | PHK                       | DHK |
| TV30C141J(B)-G | 155.0   | 171.0       | 5                      | 2   | 140.0   | 13.23   | 226.8  | PHB                       | DHB |
| TV30C151J(B)-G | 167.0   | 185.0       | 5                      | 2   | 150.0   | 12.35   | 243.0  | PHM                       | DHM |
| TV30C161J(B)-G | 178.0   | 197.0       | 5                      | 2   | 160.0   | 11.58   | 259.0  | PHP                       | DHP |
| TV30C171J(B)-G | 189.0   | 209.0       | 5                      | 2   | 170.0   | 10.91   | 275.0  | PHR                       | DHR |
| TV30C181J(B)-G | 200.0   | 220.0       | 5                      | 2   | 180.0   | 10.29   | 291.6  | PHT                       | DHT |
| TV30C191J(B)-G | 211.0   | 232.0       | 5                      | 2   | 190.0   | 9.75  | 307.8  | PHV                       | DHV |
| TV30C201J(B)-G | 224.0   | 247.0       | 5                      | 2   | 200.0   | 9.26  | 324.0  | PHW                       | DHW |
| TV30C221J(B)-G | 246.0   | 272.0       | 5                      | 2   | 220.0   | 8.43  | 356.0  | PHX                       | DHX |
| TV30C251J(B)-G | 279.0   | 309.0       | 5                      | 2   | 250.0   | 7.41  | 405.0  | PHZ                       | DHZ |
| TV30C301J(B)-G | 335.0   | 371.0       | 5                      | 2   | 300.0   | 6.17  | 486.0  | PJE                       | DJE |
| TV30C351J(B)-G | 391.0   | 432.0       | 5                      | 2   | 350.0   | 5.29  | 567.0  | PJG                       | DJG |
| TV30C401J(B)-G | 447.0   | 494.0       | 5                      | 2   | 400.0   | 4.63  | 648.0  | PJK                       | DJK |
| TV30C441J(B)-G | 492.0   | 543.0       | 5                      | 2   | 440.0   | 4.21  | 713.0  | PJM                       | DJM |

Note:

- 1) Suffix J denotes 5% tolerance devices.
- 2) Suffix B after part number to specify Bi-directional devices.
- 3) For Bi-Directional devices having V<sub>R</sub> of 10 volts and under, the I<sub>R</sub> limit is double.

## Reel Taping Specification



|                   |        |               |               |               |                |                |               |   |   |
|-------------------|--------|---------------|---------------|---------------|----------------|----------------|---------------|---|---|
| DO-214AB<br>(SMC) | SYMBOL | A             | B             | C             | d              | T              | D             | D <sub>1</sub>                            | D <sub>2</sub>                            |
|                   | (mm)   | See Note 1    |               |               | 1.55 ± 0.05    | 0.40 (Max.)    | 330.00        | 50.00 (Min.)                              | 13.00 <sup>+0.50</sup> <sub>-0.20</sub>   |
|                   | (inch) | See Note 1    |               |               | 0.061 ± 0.002  | 0.016 (Max.)   | 13.000        | 1.969 (Min.)                              | 0.512 <sup>+0.020</sup> <sub>-0.008</sub> |
| DO-214AB<br>(SMC) | SYMBOL | E             | F             | P             | P <sub>0</sub> | P <sub>1</sub> | W             | W <sub>1</sub>                            | W <sub>2</sub>                            |
|                   | (mm)   | 1.75 ± 0.10   | 7.50 ± 0.05   | 8.00 ± 0.10   | 4.00 ± 0.10    | 2.00 ± 0.05    | 16.00 ± 0.10  | 16.40 <sup>+2.00</sup> <sub>-0.00</sub>   | 22.40 (Max.)                              |
|                   | (inch) | 0.069 ± 0.004 | 0.295 ± 0.002 | 0.315 ± 0.004 | 0.157 ± 0.004  | 0.079 ± 0.002  | 0.630 ± 0.004 | 0.646 <sup>+0.079</sup> <sub>-0.000</sub> | 0.882 (Max.)                              |

Notes: 1. A, B, and C the clearance between the component and the cavity must be within 0.5 mm max. for 8 mm tape and 12 mm tape, 1.0 mm max. for 16mm tape and 24 mm tape.

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