

## TV04A5V0-G Thru. TV04A441-G

Working Peak Reverse Voltage: 5.0 to 440 Volts  
Power Dissipation: 400 Watts  
RoHS Device



### Features

- Glass passivated chip.
- 400W peak pulse power capability with a 10/1000  $\mu$ s 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: TV04A5V0J(B) thru. TV04A240J(B)

### Mechanical data

- Epoxy: UL 94V-0 rate flame retardant.
- Case: SMA/DO-214AC, molded plastic.
- Terminals: solderable per MIL-STD-750, method 2026.
- Polarity: Color band denotes cathode end except bipolar.
- Weight: 0.069 gram (approx.)



### 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 10/1000 $\mu$ S waveform (Note1)                           | P <sub>PP</sub>                   | 400            | W     |
| Peak pulse current on 10/1000 $\mu$ S waveform (Note 1)                              | I <sub>PP</sub>                   | See Next Table | A     |
| Steady state power dissipation at T <sub>L</sub> =75°C                               | P <sub>D</sub>                    | 1.0            | W     |
| Peak forward surge current, 8.3mS single half sine-wave unidirectional only (Note 2) | I <sub>FSM</sub>                  | 40             | A     |
| Maximum instantaneous forward voltage at 25.0A for unidirectional only (Note 3)      | V <sub>F</sub>                    | 3.5/5.0        | V     |
| Operating junction and storage temperature   | 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 8.3mS single half sine-wave or equare 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 (TV04A5V0-G thru TV04A441-G)

Fig.1 - Pulse Derating Curve



Fig.2 - Maximum 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



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# SMD Transient Voltage Suppressor



## Electrical Characteristics (TV04A5V0-G Thru. TV04A441-G)

| Part No.       | Breakdown voltage<br>V <sub>BR</sub> @ I <sub>T</sub> |          |                     | Maximum Reverse Leakage<br>@VRWM<br>I <sub>R</sub> (uA) | Working Peak Reverse Voltage<br>V <sub>RWM</sub> (V) | Maximum Reverse Surge Current<br>I <sub>PP</sub> (A) | Maximum Clamping Voltage<br>@I <sub>PP</sub><br>V <sub>c</sub> (V) | Device Marking Code |    |
|----------------|---|----------|---------------------|---|--|--|--|---------------------|----|
|                | Min. (V)  | Max. (V) | I <sub>T</sub> (mA) |   |  |  |  | UNI                 | BI |
| TV04A5V0J(B)-G | 6.40  | 7.00     | 10                  | 800   | 5.0  | 43.48  | 9.2  | AE                  | WE |
| TV04A6V0J(B)-G | 6.67  | 7.37     | 10                  | 800   | 6.0  | 38.83  | 10.3   | AG                  | WG |
| TV04A6V5J(B)-G | 7.22  | 7.98     | 10                  | 500   | 6.5  | 35.71  | 11.2   | AK                  | WK |
| TV04A7V0J(B)-G | 7.78  | 8.60     | 10                  | 200   | 7.0  | 33.33  | 12.0   | AM                  | WM |
| TV04A7V5J(B)-G | 8.33  | 9.21     | 1                   | 100   | 7.5  | 31.01  | 12.9   | AP                  | WP |
| TV04A8V0J(B)-G | 8.89  | 9.83     | 1                   | 50  | 8.0  | 29.41  | 13.6   | AR                  | WR |
| TV04A8V5J(B)-G | 9.44  | 10.40    | 1                   | 10  | 8.5  | 27.78  | 14.4   | AT                  | WT |
| TV04A9V0J(B)-G | 10.00   | 11.10    | 1                   | 5   | 9.0  | 25.97  | 15.4   | AV                  | WV |
| TV04A100J(B)-G | 11.10   | 12.30    | 1                   | 5   | 10.0   | 23.53  | 17.0   | AX                  | WX |
| TV04A110J(B)-G | 12.20   | 13.50    | 1                   | 1   | 11.0   | 21.98  | 18.2   | AZ                  | WZ |
| TV04A120J(B)-G | 13.30   | 14.70    | 1                   | 1   | 12.0   | 20.10  | 19.9   | BE                  | XE |
| TV04A130J(B)-G | 14.40   | 15.90    | 1                   | 1   | 13.0   | 18.60  | 21.5   | BG                  | XG |
| TV04A140J(B)-G | 15.60   | 17.20    | 1                   | 1   | 14.0   | 17.24  | 23.2   | BK                  | XK |
| TV04A150J(B)-G | 16.70   | 18.50    | 1                   | 1   | 15.0   | 16.39  | 24.4   | BM                  | XM |
| TV04A160J(B)-G | 17.80   | 19.70    | 1                   | 1   | 16.0   | 15.38  | 26.0   | BP                  | XP |
| TV04A170J(B)-G | 18.90   | 20.90    | 1                   | 1   | 17.0   | 14.49  | 27.6   | BR                  | XR |
| TV04A180J(B)-G | 20.00   | 22.10    | 1                   | 1   | 18.0   | 13.70  | 29.2   | BT                  | XT |
| TV04A190J(B)-G | 21.10   | 23.30    | 1                   | 1   | 19.0   | 13.00  | 30.8   | BB                  | XB |
| TV04A200J(B)-G | 22.20   | 24.50    | 1                   | 1   | 20.0   | 12.35  | 32.4   | BV                  | XV |
| TV04A220J(B)-G | 24.40   | 26.90    | 1                   | 1   | 22.0   | 11.27  | 35.5   | BX                  | XX |
| TV04A240J(B)-G | 26.70   | 29.50    | 1                   | 1   | 24.0   | 10.28  | 38.9   | BZ                  | XZ |
| TV04A260J(B)-G | 28.90   | 31.90    | 1                   | 1   | 26.0   | 9.50   | 42.1   | CE                  | YE |
| TV04A280J(B)-G | 31.10   | 34.40    | 1                   | 1   | 28.0   | 8.81   | 45.4   | CG                  | YG |
| TV04A300J(B)-G | 33.30   | 36.80    | 1                   | 1   | 30.0   | 8.26   | 48.4   | CK                  | YK |
| TV04A330J(B)-G | 36.70   | 40.60    | 1                   | 1   | 33.0   | 7.50   | 53.3   | CM                  | YM |
| TV04A360J(B)-G | 40.00   | 44.20    | 1                   | 1   | 36.0   | 6.88   | 58.1   | CP                  | YP |
| TV04A400J(B)-G | 44.40   | 49.10    | 1                   | 1   | 40.0   | 6.20   | 64.5   | CR                  | YR |
| TV04A430J(B)-G | 47.80   | 52.80    | 1                   | 1   | 43.0   | 5.76   | 69.4   | CT                  | YT |
| TV04A450J(B)-G | 50.00   | 55.30    | 1                   | 1   | 45.0   | 5.50   | 72.7   | CV                  | YV |
| TV04A480J(B)-G | 53.30   | 58.90    | 1                   | 1   | 48.0   | 5.17   | 77.4   | CX                  | YX |
| TV04A510J(B)-G | 56.70   | 62.70    | 1                   | 1   | 51.0   | 4.85   | 82.4   | CZ                  | YZ |
| TV04A540J(B)-G | 60.00   | 66.30    | 1                   | 1   | 54.0   | 4.59   | 87.1   | RE                  | ZE |
| TV04A580J(B)-G | 64.40   | 71.20    | 1                   | 1   | 58.0   | 4.27   | 93.6   | RG                  | ZG |
| TV04A600J(B)-G | 66.70   | 73.70    | 1                   | 1   | 60.0   | 4.13   | 96.8   | RK                  | ZK |
| TV04A640J(B)-G | 71.10   | 78.60    | 1                   | 1   | 64.0   | 3.88   | 103.0  | RM                  | ZM |
| TV04A700J(B)-G | 77.80   | 86.00    | 1                   | 1   | 70.0   | 3.54   | 113.0  | RP                  | ZP |
| TV04A750J(B)-G | 83.30   | 92.10    | 1                   | 1   | 75.0   | 3.31   | 121.0  | RR                  | ZR |
| TV04A780J(B)-G | 86.70   | 95.80    | 1                   | 1   | 78.0   | 3.17   | 126.0  | RT                  | ZT |
| TV04A800J(B)-G | 88.80   | 97.60    | 1                   | 1   | 80.0   | 3.09   | 129.6  | RB                  | ZB |
| TV04A850J(B)-G | 94.40   | 104.00   | 1                   | 1   | 85.0   | 2.92   | 137.0  | RV                  | ZV |

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REV:G

## Electrical Characteristics (TV04A5V0-G Thru. TV04A441-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 |
| TV04A900J(B)-G | 100.0   | 111.0       | 1                      | 1   | 90.0  | 2.74  | 146.0  | RX                        | ZX |
| TV04A101J(B)-G | 111.0   | 123.0       | 1                      | 1   | 100.0   | 2.47  | 162.0  | RZ                        | ZZ |
| TV04A111J(B)-G | 122.0   | 135.0       | 1                      | 1   | 110.0   | 2.26  | 177.0  | SE                        | VE |
| TV04A121J(B)-G | 133.0   | 147.0       | 1                      | 1   | 120.0   | 2.07  | 193.0  | SG                        | VG |
| TV04A131J(B)-G | 144.0   | 159.0       | 1                      | 1   | 130.0   | 1.91  | 209.0  | SK                        | VK |
| TV04A141J(B)-G | 155.0   | 171.0       | 1                      | 1   | 140.0   | 1.76  | 226.8  | SB                        | VB |
| TV04A151J(B)-G | 167.0   | 185.0       | 1                      | 1   | 150.0   | 1.65  | 243.0  | SM                        | VM |
| TV04A161J(B)-G | 178.0   | 197.0       | 1                      | 1   | 160.0   | 1.54  | 259.0  | SP                        | VP |
| TV04A171J(B)-G | 189.0   | 209.0       | 1                      | 1   | 170.0   | 1.45  | 275.0  | SR                        | VR |
| TV04A181J(B)-G | 200.0   | 220.0       | 1                      | 1   | 180.0   | 1.37  | 291.6  | ST                        | VT |
| TV04A191J(B)-G | 211.0   | 232.0       | 1                      | 1   | 190.0   | 1.30  | 307.8  | SV                        | VV |
| TV04A201J(B)-G | 224.0   | 247.0       | 1                      | 1   | 200.0   | 1.23  | 324.0  | SW                        | VW |
| TV04A221J(B)-G | 246.0   | 272.0       | 1                      | 1   | 220.0   | 1.12  | 356.0  | SX                        | VX |
| TV04A251J(B)-G | 279.0   | 309.0       | 1                      | 1   | 250.0   | 0.99  | 405.0  | SZ                        | VZ |
| TV04A301J(B)-G | 335.0   | 371.0       | 1                      | 1   | 300.0   | 0.82  | 486.0  | DE                        | HE |
| TV04A351J(B)-G | 391.0   | 432.0       | 1                      | 1   | 350.0   | 0.71  | 567.0  | DG                        | HG |
| TV04A401J(B)-G | 447.0   | 494.0       | 1                      | 1   | 400.0   | 0.62  | 648.0  | DK                        | HK |
| TV04A441J(B)-G | 492.0   | 543.0       | 1                      | 1   | 440.0   | 0.56  | 713.0  | DM                        | HM |

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



| SMA/DO-214AC | SYMBOL | A             | B             | C           | d             | D        | D1         | D2            |
|--------------|--------|---------------|---------------|-------------|---------------|----------|------------|---------------|
|              | (mm)   | 2.79 ± 0.10   | 5.33 ± 0.10   | 4.50 (max)  | 1.75 ± 0.10   | 330MAX   | 50.0 MIN.  | 13.0 ± 0.2    |
|              | (inch) | 0.110 ± 0.004 | 0.210 ± 0.004 | 0.177 (max) | 0.069 ± 0.004 | 13.00MAX | 1.969 MIN. | 0.512 ± 0.008 |

| SMA/DO-214AC | SYMBOL | E             | F             | P             | P0            | P1            | W             | W1         |
|--------------|--------|---------------|---------------|---------------|---------------|---------------|---------------|------------|
|              | (mm)   | 1.75 ± 0.10   | 5.50 ± 0.05   | 4.00 ± 0.10   | 4.00 ± 0.10   | 2.00 ± 0.05   | 12.0 ± 0.30   | 18.4 MAX.  |
|              | (inch) | 0.069 ± 0.004 | 0.216 ± 0.002 | 0.157 ± 0.004 | 0.157 ± 0.004 | 0.079 ± 0.002 | 0.472 ± 0.012 | 0.724 MAX. |

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## Marking Code

1. **C**: COMCHIP

2. **○**: Package

|   |     |
|---|-----|
| ○ | PKG |
| A | SMA |
| B | SMB |
| C | SMC |

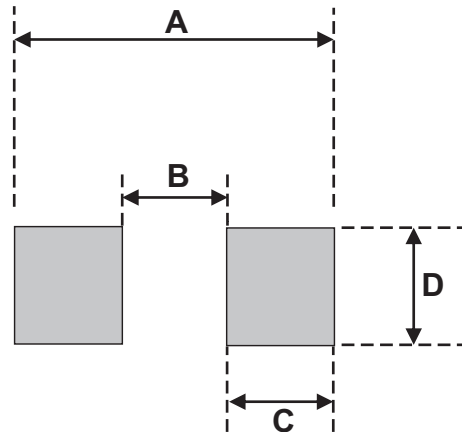
3. **XX**: Marking code (see Page. 3~4)

4. **█**: Cathod Band



## Suggested PAD Layout

| SIZE | DO-214AC(SMA) |           |
|------|---------------|-----------|
|      | (mm)          | (inch)    |
| A    | 5.28          | 0.208     |
| B    | 1.88 MAX      | 0.074 MAX |
| C    | 1.52 MIN      | 0.060 MIN |
| D    | 1.68 MIN      | 0.066 MIN |



## Standard Packaging

| Case Type    | REEL PACK    |                  |
|--------------|--------------|------------------|
|              | REEL ( pcs ) | Reel Size (inch) |
| SMA/DO-214AC | 5,000        | 13               |