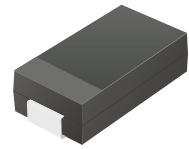


# SMD Transient Voltage Suppressor



## TVP06B6V8-G Thru. TVP06B601-G

Breakdown Voltage: 6.8 ~ 600Volts  
Power Dissipation: 600 Watts  
RoHS Device

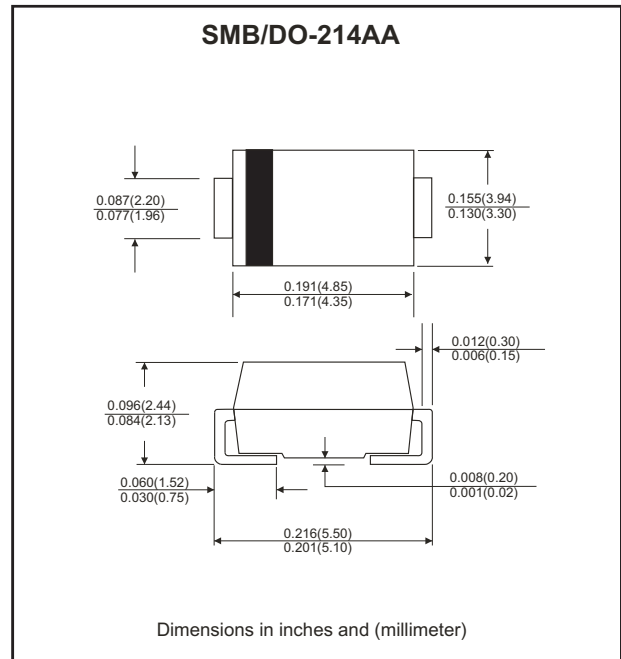


### Features

- Glass passivated chip.
- Low leakage.
- Uni and Bidirectional unit.
- Excellent clamping capability.
- Very fast response time.
- RoHS compliant.

### Mechanical Data

- Case: Molded plastic, JEDEC SMB/DO-214AA .
- Epoxy: UL 94V-0 rate flame retardant.
- Terminals: solderable per MIL-STD-750, method 2026
- Polarity: Cathode band denoted.
- Approx. weight: 0.108 grams



### 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 10/1000μS waveform (Note 1)                                 | P <sub>PP</sub>  | 600            | W     |
| Peak pulse current on 10/1000 μS 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>   | 5.0            | W     |
| Peak forward surge current, 8.3mS single half sine-wave uni-directional only (Note 2) | I <sub>FSM</sub> | 100            | A     |
| Maximum instantaneous forward voltage at 25.0A for uni-directional only (Note 3)      | V <sub>F</sub>   | 3.5/5.0        | V     |
| Operation junction temperature                                                        | T <sub>J</sub>   | -55 to +150    | °C    |
| Storage temperature range                                                             | T <sub>STG</sub> | -55 to +150    | °C    |

Note:

1. Non-repetitive current pulse, per Fig. 5 and derated above TA=25 °C per Fig.1
2. Measured on 8.3 mS single half sine-wave or equivalent square wave, duty cycle=4 pulse 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

REV:A

# SMD Transient Voltage Suppressor



SMD Diodes Specialist

## Electrical Characteristics (TVP06B6V8-G Thru. TVP06B601-G)

| Part No.         | Absolute Maximum Rating (T <sub>A</sub> =25 °C) |                      |                      |                |                  | Electrical Characteristic (T <sub>A</sub> =25 °C) |                     |                                  |              |      |
|------------------|-------------------------------------------------|----------------------|----------------------|----------------|------------------|---------------------------------------------------|---------------------|----------------------------------|--------------|------|
|                  | V <sub>RWM</sub>                                | V <sub>BR</sub> Min. | V <sub>BR</sub> Max. | I <sub>T</sub> | I <sub>FSM</sub> | Max V <sub>C</sub>                                |                     | I <sub>R</sub> @V <sub>RWM</sub> | Marking Code |      |
|                  | (V)                                             | (V)                  | (V)                  | (mA)           | (A)@8.3mS        | I <sub>PP</sub> (V)                               | I <sub>PP</sub> (A) | (uA)                             | UNI          | BI   |
| TVP06B6V8A(CA)-G | 5.8                                             | 6.46                 | 7.14                 | 10             | 100              | 10.5                                              | 57.14               | 1000                             | 6V8A         | 6V8C |
| TVP06B7V5A(CA)-G | 6.4                                             | 7.13                 | 7.88                 | 10             | 100              | 11.3                                              | 53.10               | 500                              | 7V5A         | 7V5C |
| TVP06B8V2A(CA)-G | 7.0                                             | 7.79                 | 8.61                 | 10             | 100              | 12.1                                              | 49.59               | 200                              | 8V2A         | 8V2C |
| TVP06B9V1A(CA)-G | 7.8                                             | 8.65                 | 9.56                 | 1              | 100              | 13.4                                              | 44.78               | 50                               | 9V1A         | 9V1C |
| TVP06B10A(CA)-G  | 8.6                                             | 9.50                 | 10.50                | 1              | 100              | 14.5                                              | 41.38               | 10                               | 10A          | 10C  |
| TVP06B11A(CA)-G  | 9.4                                             | 10.45                | 11.55                | 1              | 100              | 15.6                                              | 38.46               | 5                                | 11A          | 11C  |
| TVP06B12A(CA)-G  | 10.2                                            | 11.40                | 12.60                | 1              | 100              | 16.7                                              | 35.93               | 5                                | 12A          | 12C  |
| TVP06B13A(CA)-G  | 11.1                                            | 12.35                | 13.65                | 1              | 100              | 18.2                                              | 32.97               | 5                                | 13A          | 13C  |
| TVP06B15A(CA)-G  | 12.8                                            | 14.25                | 15.75                | 1              | 100              | 21.2                                              | 28.30               | 5                                | 15A          | 15C  |
| TVP06B16A(CA)-G  | 13.6                                            | 15.20                | 16.80                | 1              | 100              | 22.5                                              | 26.67               | 5                                | 16A          | 16C  |
| TVP06B18A(CA)-G  | 15.3                                            | 17.10                | 18.90                | 1              | 100              | 25.2                                              | 23.81               | 5                                | 18A          | 18C  |
| TVP06B20A(CA)-G  | 17.1                                            | 19.0                 | 21.00                | 1              | 100              | 27.7                                              | 21.66               | 5                                | 20A          | 20C  |
| TVP06B22A(CA)-G  | 18.8                                            | 20.90                | 23.10                | 1              | 100              | 30.6                                              | 19.61               | 5                                | 22A          | 22C  |
| TVP06B24A(CA)-G  | 20.5                                            | 22.80                | 25.20                | 1              | 100              | 33.2                                              | 18.07               | 5                                | 24A          | 24C  |
| TVP06B27A(CA)-G  | 23.1                                            | 25.65                | 28.35                | 1              | 100              | 37.5                                              | 16.00               | 5                                | 27A          | 27C  |
| TVP06B30A(CA)-G  | 25.6                                            | 28.50                | 31.50                | 1              | 100              | 41.4                                              | 14.49               | 5                                | 30A          | 30C  |
| TVP06B33A(CA)-G  | 28.2                                            | 31.35                | 34.65                | 1              | 100              | 45.7                                              | 13.13               | 5                                | 33A          | 33C  |
| TVP06B36A(CA)-G  | 30.8                                            | 34.20                | 37.80                | 1              | 100              | 49.9                                              | 12.02               | 5                                | 36A          | 36C  |
| TVP06B39A(CA)-G  | 33.3                                            | 37.05                | 40.90                | 1              | 100              | 53.9                                              | 11.13               | 5                                | 39A          | 39C  |
| TVP06B43A(CA)-G  | 36.8                                            | 40.85                | 45.15                | 1              | 100              | 59.3                                              | 10.12               | 5                                | 43A          | 43C  |
| TVP06B47A(CA)-G  | 40.2                                            | 44.65                | 49.35                | 1              | 100              | 64.8                                              | 9.26                | 5                                | 47A          | 47C  |
| TVP06B51A(CA)-G  | 43.6                                            | 48.45                | 53.55                | 1              | 100              | 70.1                                              | 8.56                | 5                                | 51A          | 51C  |
| TVP06B56A(CA)-G  | 47.8                                            | 53.20                | 58.80                | 1              | 100              | 77.0                                              | 7.79                | 5                                | 56A          | 56C  |
| TVP06B62A(CA)-G  | 53.0                                            | 58.90                | 65.10                | 1              | 100              | 85.0                                              | 7.06                | 5                                | 62A          | 62C  |
| TVP06B68A(CA)-G  | 58.1                                            | 64.60                | 71.40                | 1              | 100              | 92.0                                              | 6.52                | 5                                | 68A          | 68C  |
| TVP06B75A(CA)-G  | 64.1                                            | 71.25                | 78.75                | 1              | 100              | 103.0                                             | 5.83                | 5                                | 75A          | 75C  |
| TVP06B82A(CA)-G  | 70.1                                            | 77.90                | 86.10                | 1              | 100              | 113.0                                             | 5.31                | 5                                | 82A          | 82C  |
| TVP06B91A(CA)-G  | 77.8                                            | 86.45                | 95.55                | 1              | 100              | 125.0                                             | 4.80                | 5                                | 91A          | 91C  |
| TVP06B101A(CA)-G | 85.5                                            | 95.00                | 105.00               | 1              | 100              | 137.0                                             | 4.38                | 5                                | 100A         | 100C |
| TVP06B111A(CA)-G | 94.0                                            | 104.50               | 115.50               | 1              | 100              | 152.0                                             | 3.95                | 5                                | 110A         | 110C |
| TVP06B121A(CA)-G | 102.0                                           | 114.00               | 126.00               | 1              | 100              | 165.0                                             | 3.64                | 5                                | 120A         | 120C |
| TVP06B131A(CA)-G | 111.0                                           | 123.50               | 136.50               | 1              | 100              | 179.0                                             | 3.35                | 5                                | 130A         | 130C |
| TVP06B151A(CA)-G | 128.0                                           | 142.50               | 157.50               | 1              | 100              | 207.0                                             | 2.90                | 5                                | 150A         | 150C |
| TVP06B161A(CA)-G | 136.0                                           | 152.00               | 168.00               | 1              | 100              | 219.0                                             | 2.74                | 5                                | 160A         | 160C |
| TVP06B171A(CA)-G | 145.0                                           | 161.50               | 178.50               | 1              | 100              | 234.0                                             | 2.56                | 5                                | 170A         | 170C |
| TVP06B181A(CA)-G | 154.0                                           | 171.00               | 189.00               | 1              | 100              | 246.0                                             | 2.44                | 5                                | 180A         | 180C |
| TVP06B201A(CA)-G | 171.0                                           | 190.00               | 210.00               | 1              | 100              | 274.0                                             | 2.19                | 5                                | 200A         | 200C |
| TVP06B221A(CA)-G | 185.0                                           | 209.00               | 231.00               | 1              | 100              | 328.0                                             | 1.83                | 5                                | 220A         | 220C |
| TVP06B251A(CA)-G | 214.0                                           | 237.50               | 262.50               | 1              | 100              | 344.0                                             | 1.74                | 5                                | 250A         | 250C |
| TVP06B301A(CA)-G | 256.0                                           | 285.00               | 315.00               | 1              | 100              | 414.0                                             | 1.45                | 5                                | 300A         | 300C |
| TVP06B351A(CA)-G | 299.3                                           | 332.50               | 367.50               | 1              | 100              | 482.0                                             | 1.24                | 5                                | 350A         | 350C |
| TVP06B381A(CA)-G | 324.9                                           | 361.00               | 399.00               | 1              | 100              | 524.4                                             | 1.14                | 5                                | 380A         | 380C |
| TVP06B401A(CA)-G | 342.0                                           | 380.00               | 420.00               | 1              | 100              | 548.0                                             | 1.09                | 5                                | 400A         | 400C |
| TVP06B441A(CA)-G | 376.2                                           | 418.00               | 462.00               | 1              | 100              | 607.2                                             | 0.99                | 5                                | 440A         | 440C |
| TVP06B501A(CA)-G | 427.5                                           | 475.00               | 525.00               | 1              | 100              | 690.0                                             | 0.87                | 5                                | 500A         | 500C |
| TVP06B521A(CA)-G | 444.6                                           | 494.00               | 546.00               | 1              | 100              | 717.6                                             | 0.84                | 5                                | 520A         | 520C |
| TVP06B551A(CA)-G | 470.3                                           | 522.50               | 577.50               | 1              | 100              | 759.0                                             | 0.79                | 5                                | 550A         | 550C |
| TVP06B601A(CA)-G | 513.0                                           | 570.00               | 630.00               | 1              | 100              | 828.0                                             | 0.72                | 5                                | 600A         | 600C |

Note:

- 1) The available parts are "A" type only, the parts without A (V<sub>BR</sub> is ±10%) is not available.
- 2) Add suffix "C" or "CA" 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.

REV:A

# SMD Transient Voltage Suppressor

## Rating and Characteristics Curves (TVP06B5V0-G Thru. TVP06B601-G)

Fig.1- Pulse Derating Curve

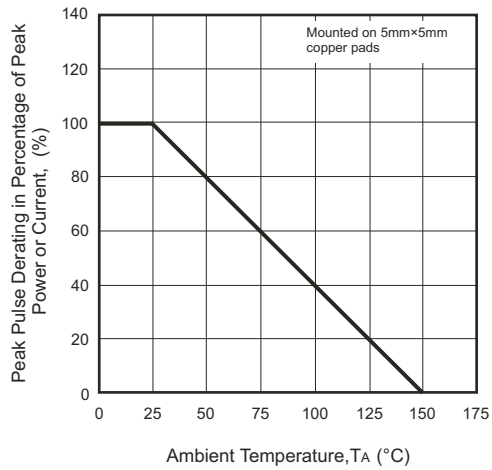


Fig.2- Maximum Non-Repetitive Surge Current

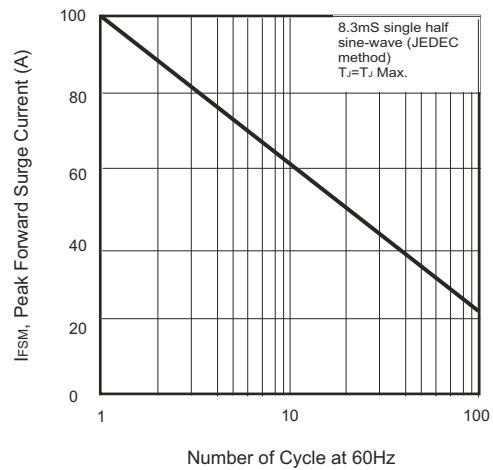


Fig.3 - Steady State Power Derating Curve

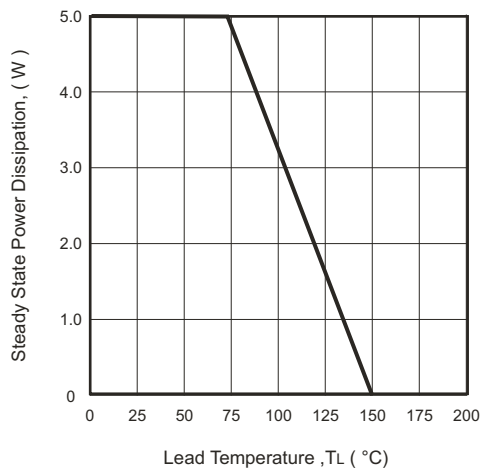


Fig.4 - Peak Pulse Power Rating Curve

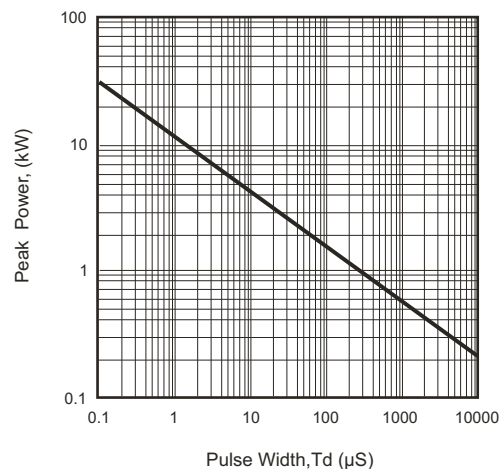


Fig.5 - Pulse Waveform

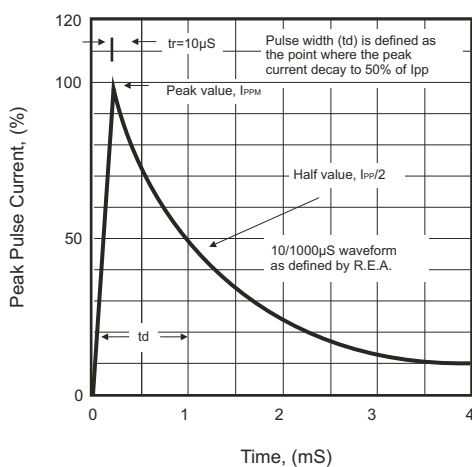
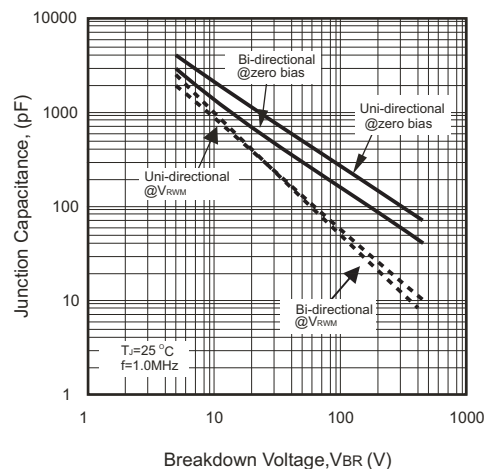
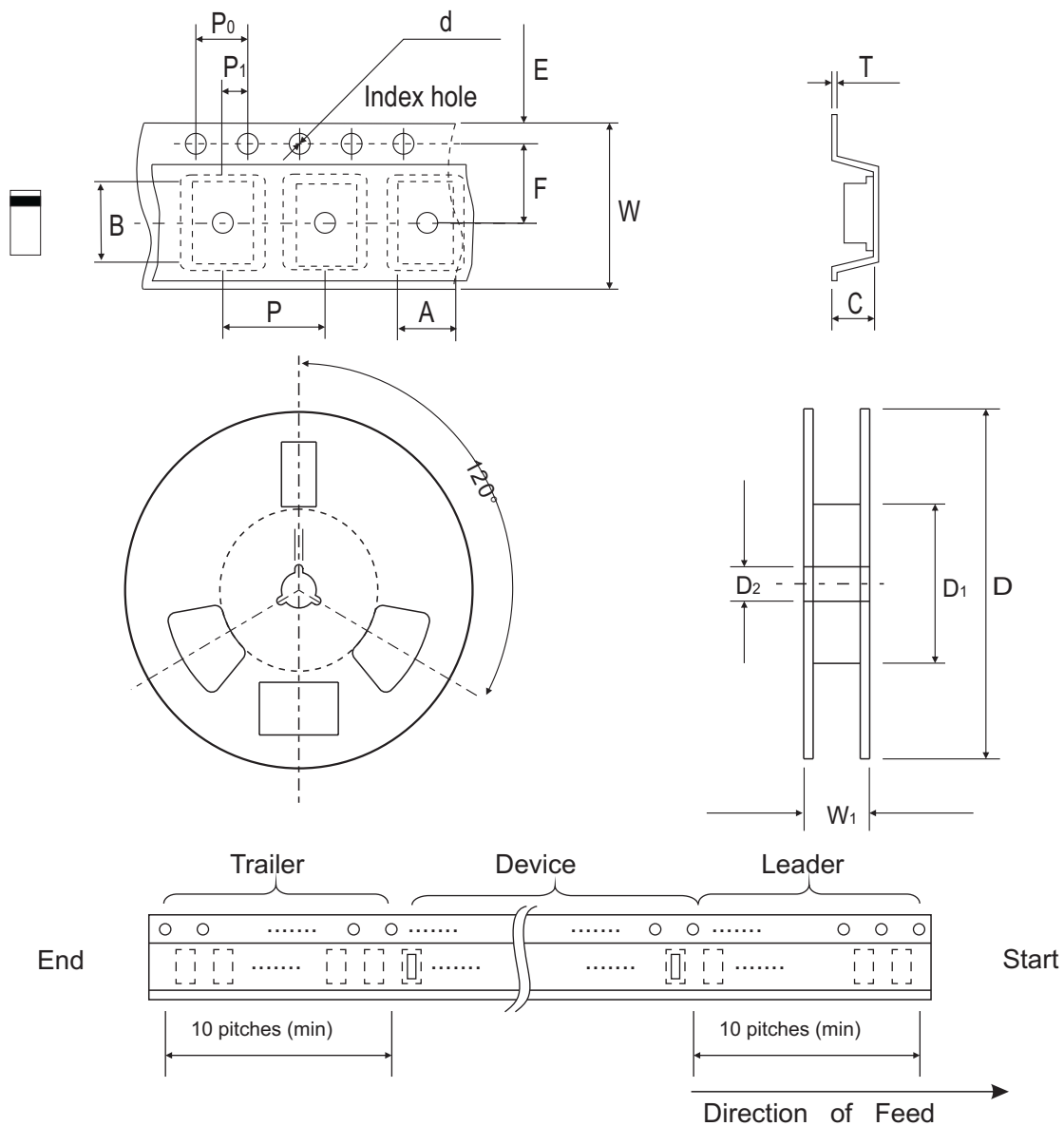


Fig.6 - Typical Junction Capacitance



## Reel Taping Specification



|                | SYMBOL | A             | B             | C           | d                 | D     | D <sub>1</sub> | D <sub>2</sub> |
|----------------|--------|---------------|---------------|-------------|-------------------|-------|----------------|----------------|
| DO-214AA (SMB) | (mm)   | 3.67 ± 0.10   | 5.69 ± 0.10   | 4.50 (max)  | 1.55 + 0.10-0.0   | 330   | 50.0 MIN.      | 13.00 ± 0.20   |
|                | (inch) | 0.144 ± 0.004 | 0.224 ± 0.004 | 0.177 (max) | 0.061 + 0.004-0.0 | 13.00 | 1.969 MIN.     | 0.512 ± 0.008  |

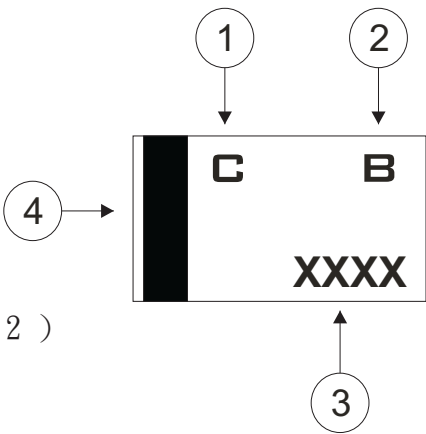
|                | SYMBOL | E             | F             | P             | P <sub>0</sub> | P <sub>1</sub> | W             | W <sub>1</sub> |
|----------------|--------|---------------|---------------|---------------|----------------|----------------|---------------|----------------|
| DO-214AA (SMB) | (mm)   | 1.75 ± 0.10   | 5.50 ± 0.05   | 8.00 ± 0.10   | 4.00 ± 0.10    | 2.00 ± 0.05    | 12.0 ± 0.30   | 18.4 MAX.      |
|                | (inch) | 0.069 ± 0.004 | 0.217 ± 0.002 | 0.315 ± 0.004 | 0.157 ± 0.004  | 0.079 ± 0.002  | 0.472 ± 0.012 | 0.724 MAX.     |

## Marking Code

- 1. C: COMCHIP
- 2. ○: Package

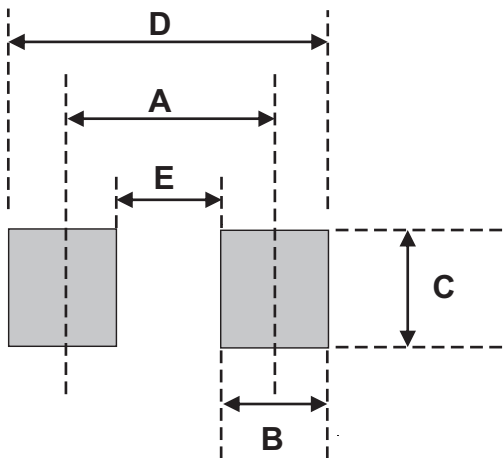
|   |     |
|---|-----|
| ○ | PKG |
| B | SMB |

- 3. XXX / XXXX: Marking code(see Page.2 )
- 4. ■: Cathod Band



## Suggested PAD Layout

| SIZE | DO-214AA (SMB) |        |
|------|----------------|--------|
|      | (mm)           | (inch) |
| A    | 4.50           | 0.177  |
| B    | 1.50           | 0.059  |
| C    | 3.60           | 0.142  |
| D    | 6.00           | 0.236  |
| E    | 3.00           | 0.118  |



## Standard Package

| Case Type      | Qty per Reel | Reel Size |
|----------------|--------------|-----------|
|                | (Pcs)        | (inch)    |
| DO-214AA (SMB) | 3000         | 13        |