

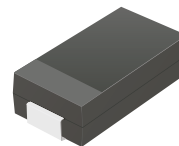
# SMD Transient Voltage Suppressor

## TV15C5V0-G Thru. TV15C441-G

Working Peak Reverse Voltage: 5.0 - 440 Volts

Power Dissipation: 1500Watts

RoHS Device

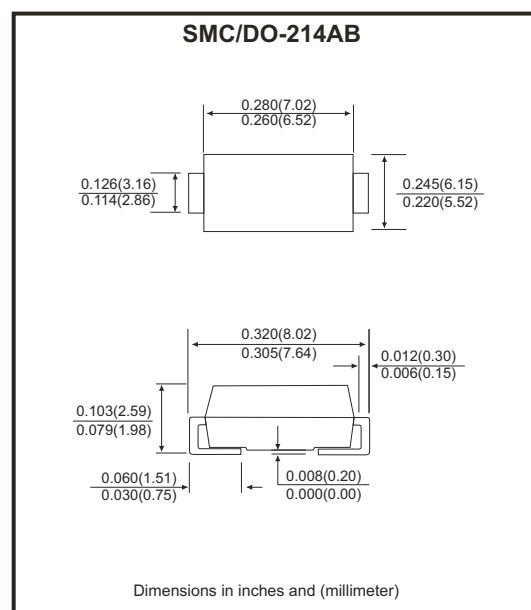


### Features

- Glass passivated chip.
- 1500 W 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.

### Mechanical Data

- Case: DO-214AB/SMC molded plastic.
- Epoxy: UL 94V-0 rate flame retardant
- Terminals: solderable per MIL-STD-750, method 2026.
- Polarity: Cathode band denoted.
- Weight: Approx. 0.21 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 at 10/1000 $\mu$ S waveform (Notes.1)                                                       | P <sub>PPM</sub> | 1500        | W     |
| Peak pulse current at 10/1000 $\mu$ S waveform (Notes.1)                                                           | I <sub>PPM</sub> | See table 1 | A     |
| Steady state power dissipation at T <sub>L</sub> =75°C                                                             | P <sub>D</sub>   | 6.5         | W     |
| Peak forward surge current, 8.3ms single half sine-wave superimposed on rated load, uni-directional only (Notes.2) | I <sub>FSM</sub> | 200         | A     |
| Maximum instantaneous forward voltage at 100A for uni-directional only (Note.3)                                    | V <sub>F</sub>   | 3.5/5.0     | V     |
| Operation junction temperature range                                                                               | T <sub>J</sub>   | -55 to +150 | °C    |
| Storage temperature range                                                                                          | 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

## Ratings and Characteristics Curve (TV15C5V0-G Thru. TV15C441-G)

Fig.1 - Pulse Derating Curve

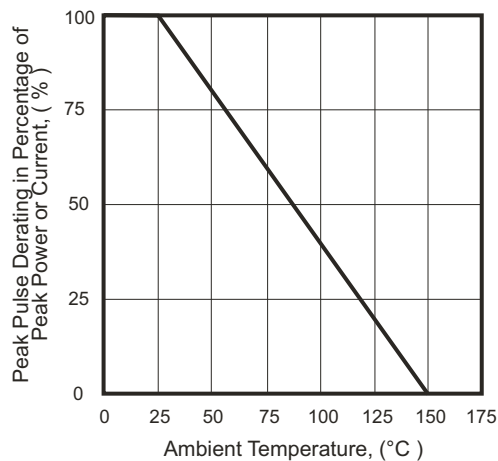


Fig.2 - Max. Non-Repetitive Surge Current

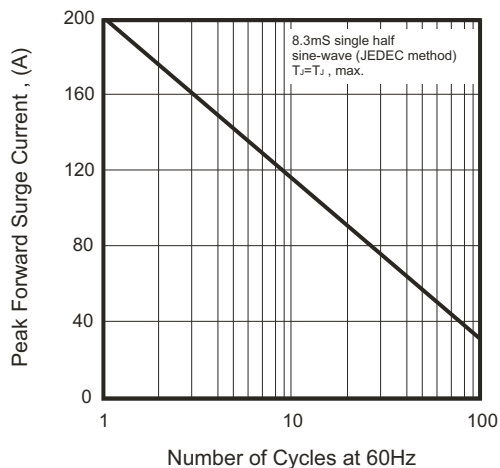


Fig.3 - Steady State Power Derating Curve

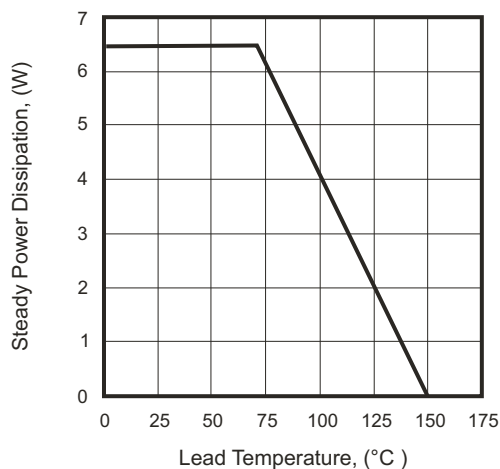


Fig.4 - Peak Pulse Power Rating Curve

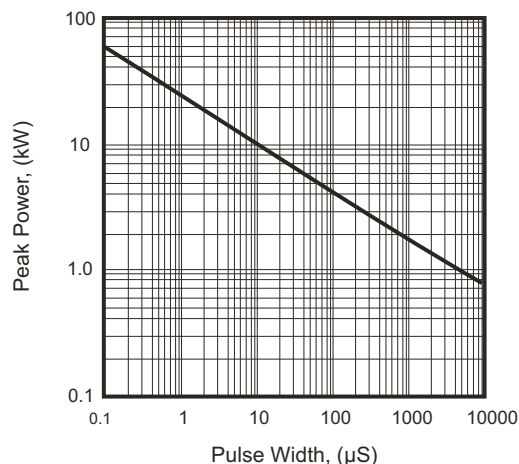


Fig.5- Pulse Waveform

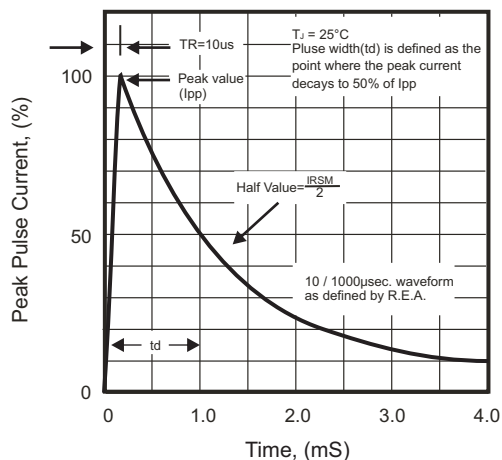
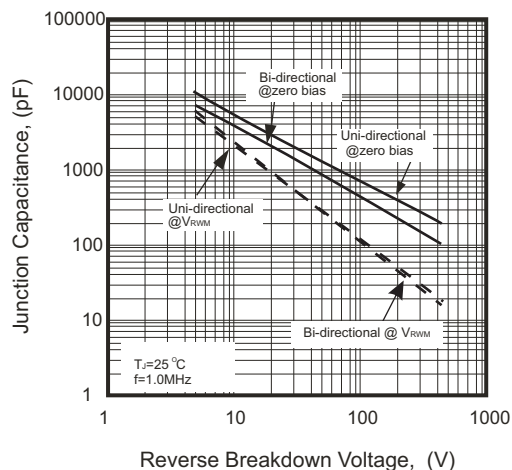


Fig.6 - Typical Junction Capacitance



# SMD Transient Voltage Suppressor

## Electrical Characteristics (TV15C5V0-G Thru. TV15C441-G)

| Part No.       | Absolute Maximum Rating(Ta=25°C) |                     |                     |                |                  | Electrical Characteristic(Ta=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        | (V)                                | IPP(A)                           | (μA)         | UNI | BI  |
| TV15C5V0J(B)-G | 5.00                             | 6.40                | 7.00                | 10             | 200              | 9.2                                | 163.04                           | 1000         | GDE | BDE |
| TV15C6V0J(B)-G | 6.00                             | 6.67                | 7.37                | 10             | 200              | 10.3                               | 145.63                           | 1000         | GDG | BDG |
| TV15C6V5J(B)-G | 6.50                             | 7.22                | 7.98                | 10             | 200              | 11.2                               | 133.93                           | 500          | GDK | BDK |
| TV15C7V0J(B)-G | 7.00                             | 7.78                | 8.60                | 10             | 200              | 12.0                               | 125.00                           | 200          | GDM | BDM |
| TV15C7V5J(B)-G | 7.50                             | 8.33                | 9.21                | 1              | 200              | 12.9                               | 116.28                           | 100          | GDP | BDP |
| TV15C8V0J(B)-G | 8.00                             | 8.89                | 9.83                | 1              | 200              | 13.6                               | 110.29                           | 50           | GDR | BDR |
| TV15C8V5J(B)-G | 8.50                             | 9.44                | 10.40               | 1              | 200              | 14.4                               | 104.17                           | 20           | GDT | BDT |
| TV15C9V0J(B)-G | 9.00                             | 10.00               | 11.10               | 1              | 200              | 15.4                               | 97.40                            | 10           | GDV | BDV |
| TV15C100J(B)-G | 10.0                             | 11.10               | 12.30               | 1              | 200              | 17.0                               | 88.24                            | 5            | GDX | BDX |
| TV15C110J(B)-G | 11.0                             | 12.20               | 13.50               | 1              | 200              | 18.2                               | 82.42                            | 1            | GDZ | BDZ |
| TV15C120J(B)-G | 12.0                             | 13.30               | 14.70               | 1              | 200              | 19.9                               | 75.38                            | 1            | GEE | BEE |
| TV15C130J(B)-G | 13.0                             | 14.40               | 15.90               | 1              | 200              | 21.5                               | 69.77                            | 1            | GEG | BEG |
| TV15C140J(B)-G | 14.0                             | 15.60               | 17.20               | 1              | 200              | 23.2                               | 64.66                            | 1            | GEK | BEK |
| TV15C150J(B)-G | 15.0                             | 16.70               | 18.50               | 1              | 200              | 24.4                               | 61.48                            | 1            | GEM | BEM |
| TV15C160J(B)-G | 16.0                             | 17.80               | 19.70               | 1              | 200              | 26.0                               | 57.69                            | 1            | GEP | BEP |
| TV15C170J(B)-G | 17.0                             | 18.90               | 20.90               | 1              | 200              | 27.6                               | 54.35                            | 1            | GER | BER |
| TV15C180J(B)-G | 18.0                             | 20.00               | 22.10               | 1              | 200              | 29.2                               | 51.37                            | 1            | GET | BET |
| TV15C190J(B)-G | 19.0                             | 21.10               | 23.30               | 1              | 200              | 30.8                               | 48.73                            | 1            | GEB | BEB |
| TV15C200J(B)-G | 20.0                             | 22.20               | 24.50               | 1              | 200              | 32.4                               | 46.30                            | 1            | GEV | BEV |
| TV15C220J(B)-G | 22.0                             | 24.40               | 26.90               | 1              | 200              | 35.5                               | 42.25                            | 1            | GEX | BEX |
| TV15C240J(B)-G | 24.0                             | 26.70               | 29.50               | 1              | 200              | 38.9                               | 38.56                            | 1            | GEZ | BEZ |
| TV15C260J(B)-G | 26.0                             | 28.90               | 31.90               | 1              | 200              | 42.1                               | 35.63                            | 1            | GFE | BFE |
| TV15C280J(B)-G | 28.0                             | 31.10               | 34.40               | 1              | 200              | 45.4                               | 33.04                            | 1            | GFG | BFG |
| TV15C300J(B)-G | 30.0                             | 33.30               | 36.80               | 1              | 200              | 48.4                               | 30.99                            | 1            | GFK | BFK |
| TV15C330J(B)-G | 33.0                             | 36.70               | 40.60               | 1              | 200              | 53.3                               | 28.14                            | 1            | GFM | BFM |
| TV15C360J(B)-G | 36.0                             | 40.00               | 44.20               | 1              | 200              | 58.1                               | 25.82                            | 1            | GFP | BFP |
| TV15C400J(B)-G | 40.0                             | 44.40               | 49.10               | 1              | 200              | 64.5                               | 23.26                            | 1            | GFR | BFR |
| TV15C430J(B)-G | 43.0                             | 47.80               | 52.80               | 1              | 200              | 69.4                               | 21.61                            | 1            | GFT | BFT |
| TV15C450J(B)-G | 45.0                             | 50.00               | 55.30               | 1              | 200              | 72.7                               | 20.63                            | 1            | GFV | BFV |
| TV15C480J(B)-G | 48.0                             | 53.30               | 58.90               | 1              | 200              | 77.4                               | 19.38                            | 1            | GFX | BFX |
| TV15C510J(B)-G | 51.0                             | 56.70               | 62.70               | 1              | 200              | 82.4                               | 18.20                            | 1            | GFZ | BFZ |
| TV15C540J(B)-G | 54.0                             | 60.00               | 66.30               | 1              | 200              | 87.1                               | 17.22                            | 1            | GGE | BGE |
| TV15C580J(B)-G | 58.0                             | 64.40               | 71.20               | 1              | 200              | 93.6                               | 16.03                            | 1            | GGG | BGG |
| TV15C600J(B)-G | 60.0                             | 66.70               | 73.70               | 1              | 200              | 96.8                               | 15.50                            | 1            | GGK | BGK |
| TV15C640J(B)-G | 64.0                             | 71.10               | 78.60               | 1              | 200              | 103.0                              | 14.56                            | 1            | GGM | BGM |
| TV15C700J(B)-G | 70.0                             | 77.80               | 86.00               | 1              | 200              | 113.0                              | 13.27                            | 1            | GGP | BGP |
| TV15C750J(B)-G | 75.0                             | 83.30               | 92.10               | 1              | 200              | 121.0                              | 12.40                            | 1            | GGR | BGR |
| TV15C780J(B)-G | 78.0                             | 86.70               | 95.80               | 1              | 200              | 126.0                              | 11.90                            | 1            | GGT | BGT |
| TV15C800J(B)-G | 80.0                             | 88.80               | 97.60               | 1              | 200              | 129.6                              | 11.57                            | 1            | GGB | BGB |
| TV15C850J(B)-G | 85.0                             | 94.40               | 104.00              | 1              | 200              | 137.0                              | 10.95                            | 1            | GGV | BGV |
| TV15C900J(B)-G | 90.0                             | 100.00              | 111.00              | 1              | 200              | 146.0                              | 10.27                            | 1            | GGX | BGX |
| TV15C101J(B)-G | 100.0                            | 111.00              | 123.00              | 1              | 200              | 162.0                              | 9.26                             | 1            | GGZ | BGZ |
| TV15C111J(B)-G | 110.0                            | 122.00              | 135.00              | 1              | 200              | 177.0                              | 8.47                             | 1            | GHE | BHE |
| TV15C121J(B)-G | 120.0                            | 133.00              | 147.00              | 1              | 200              | 193.0                              | 7.77                             | 1            | GHG | BHG |
| TV15C131J(B)-G | 130.0                            | 144.00              | 159.00              | 1              | 200              | 209.0                              | 7.18                             | 1            | GHK | BHK |
| TV15C141J(B)-G | 140.0                            | 155.00              | 171.00              | 1              | 200              | 226.8                              | 6.61                             | 1            | GHB | BHB |
| TV15C151J(B)-G | 150.0                            | 167.00              | 185.00              | 1              | 200              | 243.0                              | 6.17                             | 1            | GHM | BHM |
| TV15C161J(B)-G | 160.0                            | 178.00              | 197.00              | 1              | 200              | 259.0                              | 5.79                             | 1            | GHP | BHP |

Company reserves the right to improve product design , functions and reliability without notice.

REV:E

# SMD Transient Voltage Suppressor

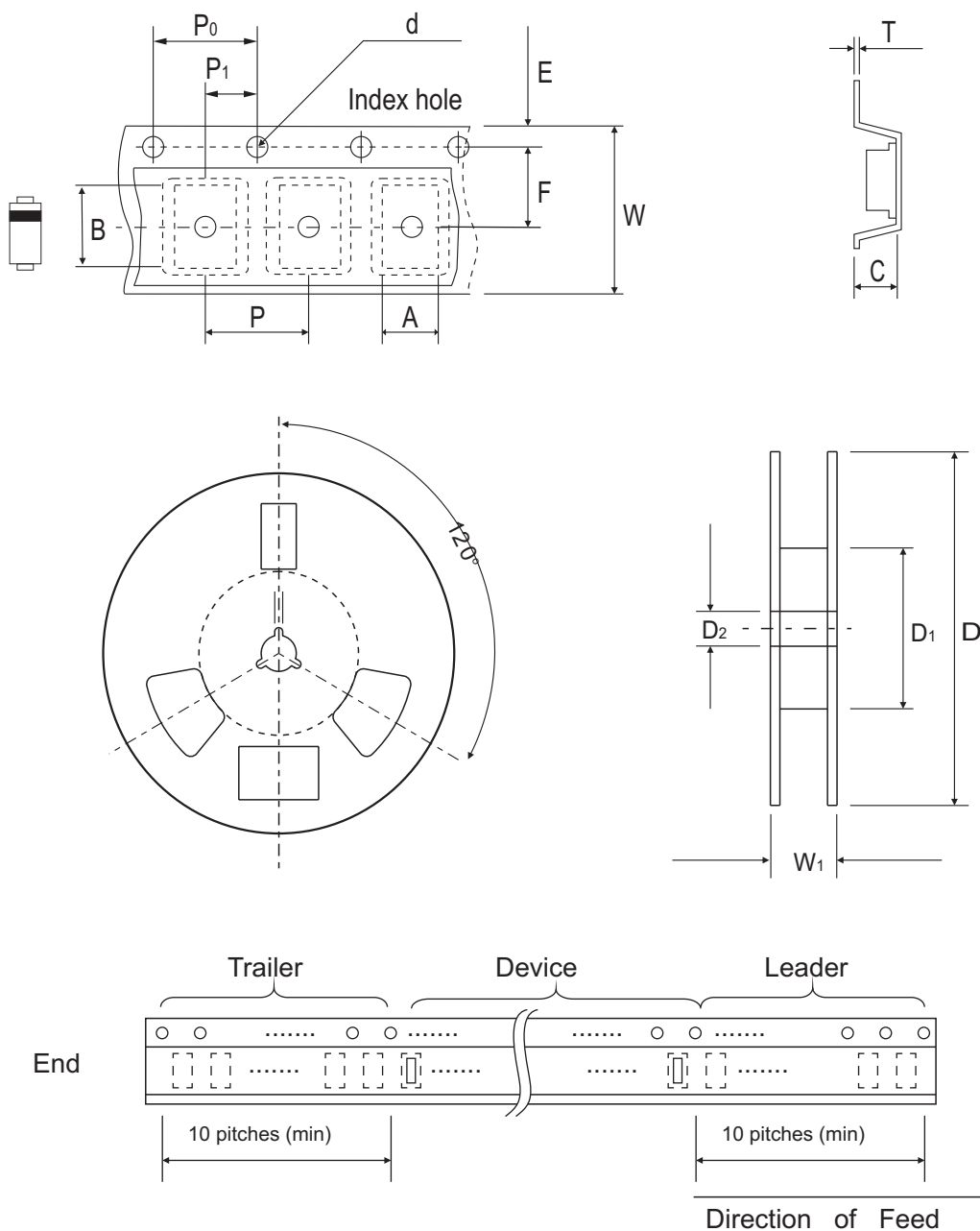
## Electrical Characteristics (TV15C5V0-G Thru. TV15C441-G)

| Part No.       | Absolute Maximum Rating(Ta=25°C) |                     |                     |                |                  | Electrical Characteristic(Ta=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        | (V)                                | IPP(A) | (uA)                             | UNI          | BI  |
| TV15C171J(B)-G | 170.0                            | 189.00              | 209.00              | 1              | 200              | 275.0                              | 5.45   | 1                                | GHR          | BHR |
| TV15C181J(B)-G | 180.0                            | 200.00              | 220.00              | 1              | 200              | 291.6                              | 5.14   | 1                                | GHT          | BHT |
| TV15C191J(B)-G | 190.0                            | 211.00              | 232.00              | 1              | 200              | 307.8                              | 4.87   | 1                                | GHV          | BHV |
| TV15C201J(B)-G | 200.0                            | 224.00              | 247.00              | 1              | 200              | 324.0                              | 4.60   | 1                                | GHW          | BHW |
| TV15C221J(B)-G | 220.0                            | 246.00              | 272.00              | 1              | 200              | 356.0                              | 4.20   | 1                                | GHX          | BHX |
| TV15C251J(B)-G | 250.0                            | 279.00              | 309.00              | 1              | 200              | 405.0                              | 3.70   | 1                                | GHZ          | BHZ |
| TV15C301J(B)-G | 300.0                            | 335.00              | 371.00              | 1              | 200              | 486.0                              | 3.10   | 1                                | GJE          | BJE |
| TV15C351J(B)-G | 350.0                            | 391.00              | 432.00              | 1              | 200              | 567.0                              | 2.60   | 1                                | GJG          | BJG |
| TV15C401J(B)-G | 400.0                            | 447.00              | 494.00              | 1              | 200              | 648.0                              | 2.30   | 1                                | GJK          | BJK |
| TV15C441J(B)-G | 440.0                            | 492.00              | 543.00              | 1              | 200              | 713.0                              | 2.10   | 1                                | GJM          | BJM |

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             | D      | D <sub>1</sub> | D <sub>2</sub> |
|-------------------|--------|---------------|---------------|-------------|---------------|--------|----------------|----------------|
|                   | (mm)   | 6.05 ± 0.10   | 8.31 ± 0.10   | 3.29 (max)  | 1.55 ± 0.10   | 330.00 | 50.00 (min)    | 13.00 ± 0.20   |
|                   | (inch) | 0.238 ± 0.004 | 0.327 ± 0.004 | 0.130 (max) | 0.061 ± 0.004 | 13.000 | 1.969 (min)    | 0.512 ± 0.008  |

| DO-214AB<br>(SMC) | SYMBOL | E             | F             | P             | P <sub>0</sub> | P <sub>1</sub> | W             | W <sub>1</sub> |
|-------------------|--------|---------------|---------------|---------------|----------------|----------------|---------------|----------------|
|                   | (mm)   | 1.75 ± 0.10   | 7.50 ± 0.10   | 8.00 ± 0.10   | 4.00 ± 0.10    | 2.00 ± 0.10    | 16.00 ± 0.30  | 22.40 (max)    |
|                   | (inch) | 0.069 ± 0.004 | 0.295 ± 0.004 | 0.315 ± 0.004 | 0.157 ± 0.004  | 0.079 ± 0.004  | 0.630 ± 0.012 | 0.882 (max)    |

## Marking Code

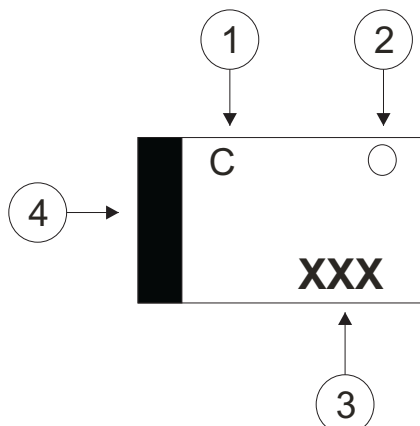
1. C: COMCHIP

2. O: Package

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

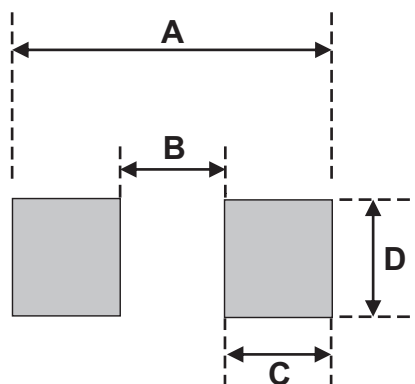
3. XXX: Marking code (see Page.3~5)

4. : Cathod Band



## Suggested PAD Layout

| SIZE | DO-214AB(SMC) |           |
|------|---------------|-----------|
|      | (mm)          | (inch)    |
| A    | 8.13          | 0.320     |
| B    | 4.69 MAX      | 0.185 MAX |
| C    | 1.52 MIN      | 0.06 MIN  |
| D    | 3.20 MIN      | 0.126 MIN |



## Standard Packaging

| Case Type         | REEL PACK       |                     |
|-------------------|-----------------|---------------------|
|                   | REEL<br>( pcs ) | Reel Size<br>(inch) |
| DO-214AB<br>(SMC) | 3,000           | 13                  |