

## RATING AND CHARACTERISTIC CURVES (TV04A5V0-HF thru TV04A441-HF)

Fig.1- Pulse Derating Curve

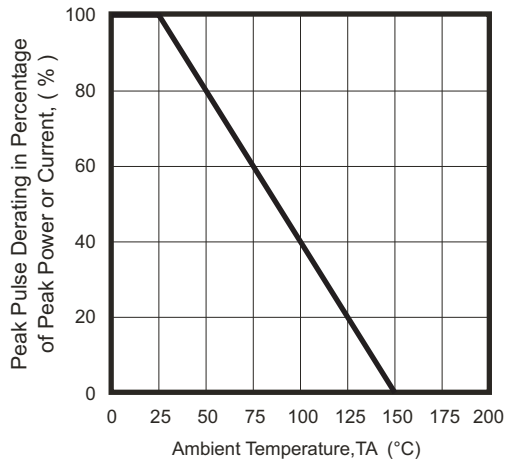


Fig.2- Maximum Non-Repetitive Surge Current

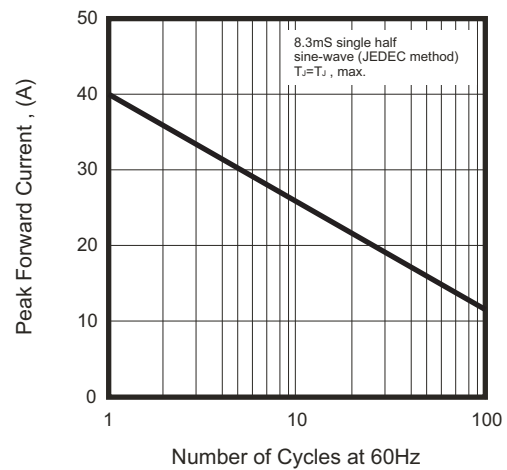


Fig.3- Steady State Power Derating Curve

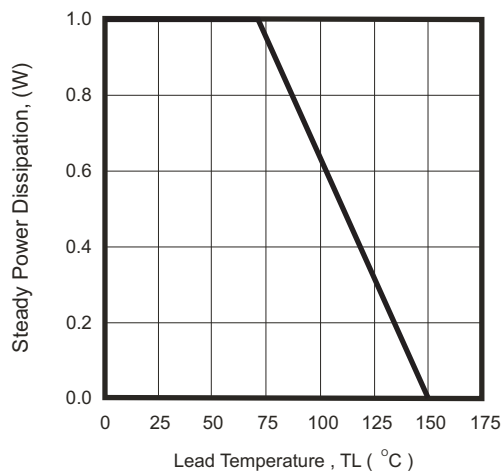


Fig.4- Peak Pulse Power Rating Curve

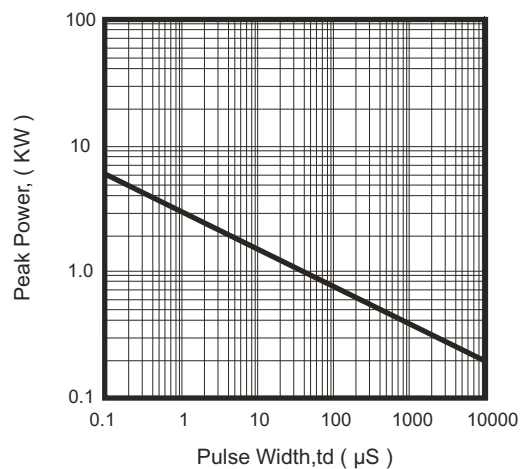


Fig.5- Pulse Waveform

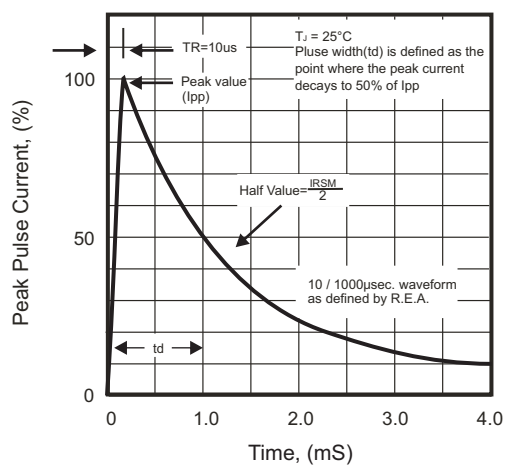
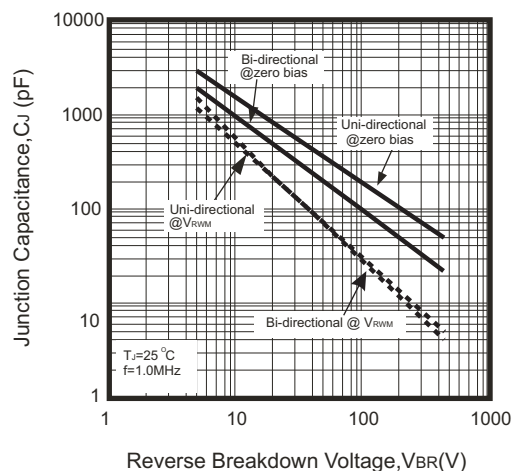


Fig.6- Typical Junction Capacitance



# SMD Transient Voltage Suppressor

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

| 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)                                 | I <sub>PP</sub> (A) | (uA)                              | Uni          | Bi |
| TV04A4V0J(B)-HF | 4.00                              | 5.89                 | 6.51                 | 10             | 40               | 8.60                                | 46.50               | 800                               | AC           | WC |
| TV04A5V0J(B)-HF | 5.00                              | 6.40                 | 7.00                 | 10             | 40               | 9.20                                | 43.48               | 800                               | AE           | WE |
| TV04A6V0J(B)-HF | 6.00                              | 6.67                 | 7.37                 | 10             | 40               | 10.3                                | 38.83               | 800                               | AG           | WG |
| TV04A6V5J(B)-HF | 6.50                              | 7.22                 | 7.98                 | 10             | 40               | 11.2                                | 35.71               | 500                               | AK           | WK |
| TV04A7V0J(B)-HF | 7.00                              | 7.78                 | 8.60                 | 10             | 40               | 12.0                                | 33.33               | 200                               | AM           | WM |
| TV04A7V5J(B)-HF | 7.50                              | 8.33                 | 9.21                 | 1              | 40               | 12.9                                | 31.01               | 100                               | AP           | WP |
| TV04A8V0J(B)-HF | 8.00                              | 8.89                 | 9.83                 | 1              | 40               | 13.6                                | 29.41               | 50                                | AR           | WR |
| TV04A8V5J(B)-HF | 8.50                              | 9.44                 | 10.40                | 1              | 40               | 14.4                                | 27.78               | 10                                | AT           | WT |
| TV04A9V0J(B)-HF | 9.00                              | 10.00                | 11.10                | 1              | 40               | 15.4                                | 25.97               | 5                                 | AV           | WV |
| TV04A100J(B)-HF | 10.0                              | 11.10                | 12.30                | 1              | 40               | 17.0                                | 23.53               | 5                                 | AX           | WX |
| TV04A110J(B)-HF | 11.0                              | 12.20                | 13.50                | 1              | 40               | 18.2                                | 21.98               | 1                                 | AZ           | WZ |
| TV04A120J(B)-HF | 12.0                              | 13.30                | 14.70                | 1              | 40               | 19.9                                | 20.10               | 1                                 | BE           | XE |
| TV04A130J(B)-HF | 13.0                              | 14.40                | 15.90                | 1              | 40               | 21.5                                | 18.60               | 1                                 | BG           | XG |
| TV04A140J(B)-HF | 14.0                              | 15.60                | 17.20                | 1              | 40               | 23.2                                | 17.24               | 1                                 | BK           | XK |
| TV04A150J(B)-HF | 15.0                              | 16.70                | 18.50                | 1              | 40               | 24.4                                | 16.39               | 1                                 | BM           | XM |
| TV04A160J(B)-HF | 16.0                              | 17.80                | 19.70                | 1              | 40               | 26.0                                | 15.38               | 1                                 | BP           | XP |
| TV04A170J(B)-HF | 17.0                              | 18.90                | 20.90                | 1              | 40               | 27.6                                | 14.49               | 1                                 | BR           | XR |
| TV04A180J(B)-HF | 18.0                              | 20.00                | 22.10                | 1              | 40               | 29.2                                | 13.70               | 1                                 | BT           | XT |
| TV04A190J(B)-HF | 19.0                              | 21.10                | 23.30                | 1              | 40               | 30.8                                | 13.00               | 1                                 | BB           | XB |
| TV04A200J(B)-HF | 20.0                              | 22.20                | 24.50                | 1              | 40               | 32.4                                | 12.35               | 1                                 | BV           | XV |
| TV04A220J(B)-HF | 22.0                              | 24.40                | 26.90                | 1              | 40               | 35.5                                | 11.27               | 1                                 | BX           | XX |
| TV04A240J(B)-HF | 24.0                              | 26.70                | 29.50                | 1              | 40               | 38.9                                | 10.28               | 1                                 | BZ           | XZ |
| TV04A260J(B)-HF | 26.0                              | 28.90                | 31.90                | 1              | 40               | 42.1                                | 9.50                | 1                                 | CE           | YE |
| TV04A280J(B)-HF | 28.0                              | 31.10                | 34.40                | 1              | 40               | 45.4                                | 8.81                | 1                                 | CG           | YG |
| TV04A300J(B)-HF | 30.0                              | 33.30                | 36.80                | 1              | 40               | 48.4                                | 8.26                | 1                                 | CK           | YK |
| TV04A330J(B)-HF | 33.0                              | 36.70                | 40.60                | 1              | 40               | 53.3                                | 7.50                | 1                                 | CM           | YM |
| TV04A360J(B)-HF | 36.0                              | 40.00                | 44.20                | 1              | 40               | 58.1                                | 6.88                | 1                                 | CP           | YP |
| TV04A400J(B)-HF | 40.0                              | 44.40                | 49.10                | 1              | 40               | 64.5                                | 6.20                | 1                                 | CR           | YR |
| TV04A430J(B)-HF | 43.0                              | 47.80                | 52.80                | 1              | 40               | 69.4                                | 5.76                | 1                                 | CT           | YT |
| TV04A450J(B)-HF | 45.0                              | 50.00                | 55.30                | 1              | 40               | 72.7                                | 5.50                | 1                                 | CV           | YV |
| TV04A480J(B)-HF | 48.0                              | 53.30                | 58.90                | 1              | 40               | 77.4                                | 5.17                | 1                                 | CX           | YX |
| TV04A510J(B)-HF | 51.0                              | 56.70                | 62.70                | 1              | 40               | 82.4                                | 4.85                | 1                                 | CZ           | YZ |
| TV04A540J(B)-HF | 54.0                              | 60.00                | 66.30                | 1              | 40               | 87.1                                | 4.59                | 1                                 | RE           | ZE |
| TV04A580J(B)-HF | 58.0                              | 64.40                | 71.20                | 1              | 40               | 93.6                                | 4.27                | 1                                 | RG           | ZG |
| TV04A600J(B)-HF | 60.0                              | 66.70                | 73.70                | 1              | 40               | 96.8                                | 4.13                | 1                                 | RK           | ZK |
| TV04A640J(B)-HF | 64.0                              | 71.10                | 78.60                | 1              | 40               | 103.0                               | 3.88                | 1                                 | RM           | ZM |
| TV04A700J(B)-HF | 70.0                              | 77.80                | 86.00                | 1              | 40               | 113.0                               | 3.54                | 1                                 | RP           | ZP |
| TV04A750J(B)-HF | 75.0                              | 83.30                | 92.10                | 1              | 40               | 121.0                               | 3.31                | 1                                 | RR           | ZR |
| TV04A780J(B)-HF | 78.0                              | 86.70                | 95.80                | 1              | 40               | 126.0                               | 3.17                | 1                                 | RT           | ZT |
| TV04A800J(B)-HF | 80.0                              | 88.80                | 97.60                | 1              | 40               | 129.6                               | 3.09                | 1                                 | RB           | ZB |
| TV04A850J(B)-HF | 85.0                              | 94.40                | 104.00               | 1              | 40               | 137.0                               | 2.92                | 1                                 | RV           | ZV |
| TV04A900J(B)-HF | 90.0                              | 100.00               | 111.00               | 1              | 40               | 146.0                               | 2.74                | 1                                 | RX           | ZX |
| TV04A101J(B)-HF | 100.0                             | 111.00               | 123.00               | 1              | 40               | 162.0                               | 2.47                | 1                                 | RZ           | ZZ |
| TV04A111J(B)-HF | 110.0                             | 122.00               | 135.00               | 1              | 40               | 177.0                               | 2.26                | 1                                 | SE           | VE |
| TV04A121J(B)-HF | 120.0                             | 133.00               | 147.00               | 1              | 40               | 193.0                               | 2.07                | 1                                 | SG           | VG |
| TV04A131J(B)-HF | 130.0                             | 144.00               | 159.00               | 1              | 40               | 209.0                               | 1.91                | 1                                 | SK           | VK |
| TV04A141J(B)-HF | 140.0                             | 155.00               | 171.00               | 1              | 40               | 226.8                               | 1.76                | 1                                 | SB           | VB |
| TV04A151J(B)-HF | 150.0                             | 167.00               | 185.00               | 1              | 40               | 243.0                               | 1.65                | 1                                 | SM           | VM |
| TV04A161J(B)-HF | 160.0                             | 178.00               | 197.00               | 1              | 40               | 259.0                               | 1.54                | 1                                 | SP           | VP |
| TV04A171J(B)-HF | 170.0                             | 189.00               | 209.00               | 1              | 40               | 275.0                               | 1.45                | 1                                 | SR           | VR |
| TV04A181J(B)-HF | 180.0                             | 200.00               | 220.00               | 1              | 40               | 291.6                               | 1.37                | 1                                 | ST           | VT |
| TV04A191J(B)-HF | 190.0                             | 211.00               | 232.00               | 1              | 40               | 307.8                               | 1.30                | 1                                 | SV           | VV |

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

REV:E

# SMD Transient Voltage Suppressor

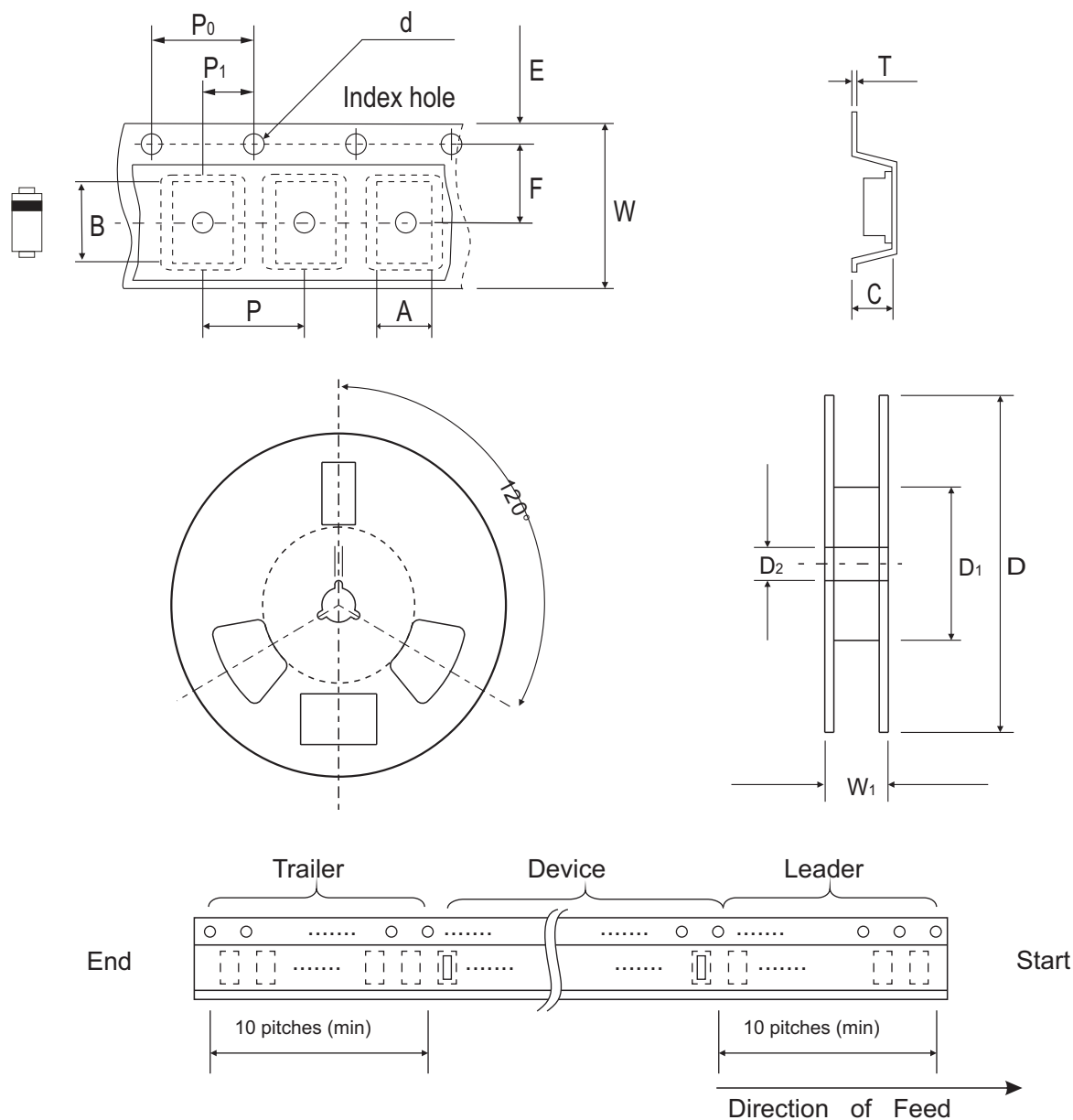
## Electrical Characteristics (TV04A5V0-HF Thru. TV04A441-HF )

| 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        | (V)                                              | I <sub>PP</sub> (A) | (uA)                             | Uni          | Bi |
| TV04A201J(B)-HF | 200.0                                          | 224.00               | 247.00               | 1              | 40               | 324.0                                            | 1.23                | 1                                | SW           | VW |
| TV04A221J(B)-HF | 220.0                                          | 246.00               | 272.00               | 1              | 40               | 356.0                                            | 1.12                | 1                                | SX           | VX |
| TV04A251J(B)-HF | 250.0                                          | 279.00               | 309.00               | 1              | 40               | 405.0                                            | 0.99                | 1                                | SZ           | VZ |
| TV04A301J(B)-HF | 300.0                                          | 335.00               | 371.00               | 1              | 40               | 486.0                                            | 0.82                | 1                                | DE           | HE |
| TV04A351J(B)-HF | 350.0                                          | 391.00               | 432.00               | 1              | 40               | 567.0                                            | 0.71                | 1                                | DG           | HG |
| TV04A401J(B)-HF | 400.0                                          | 447.00               | 494.00               | 1              | 40               | 648.0                                            | 0.62                | 1                                | DK           | HK |
| TV04A441J(B)-HF | 440.0                                          | 492.00               | 543.00               | 1              | 40               | 713.0                                            | 0.56                | 1                                | 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



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

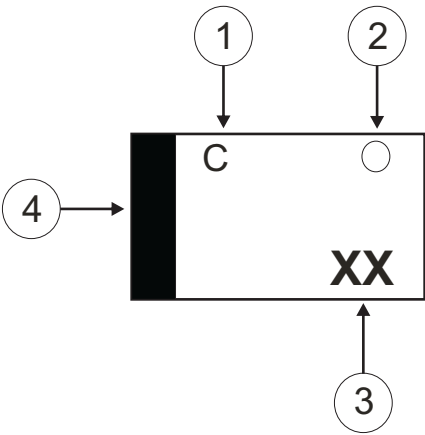
|              | SYMBOL | E                 | F                 | P                 | P0                | P1                | W                 | W1        |
|--------------|--------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-----------|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

## Marking Code

- 1. C: COMCHIP
- 2. ○: Package

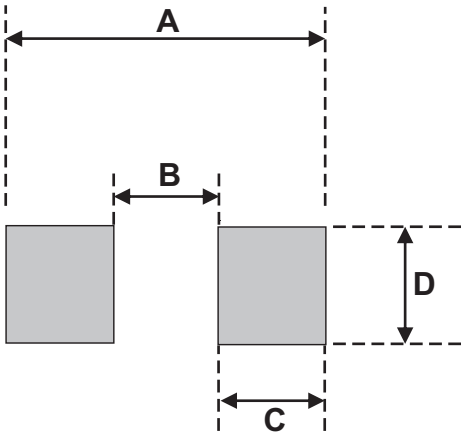
|   |     |
|---|-----|
| ○ | PKG |
| A | SMA |
| B | SMB |
| C | SMC |

- 3. XX: Marking code(see Page. 3~5)
- 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    | Qty Per Reel | Reel Size |
|--------------|--------------|-----------|
|              | (Pcs)        | (inch)    |
| SMA/DO-214AC | 5,000        | 13        |