

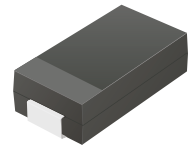
## TV06B5V0-HF Thru. TV06B441-HF

**Working Peak Reverse voltage: 5.0 to 440Volts**

**Power Dissipation: 600 Watts**

**RoHS Device**

**Halogen Free**

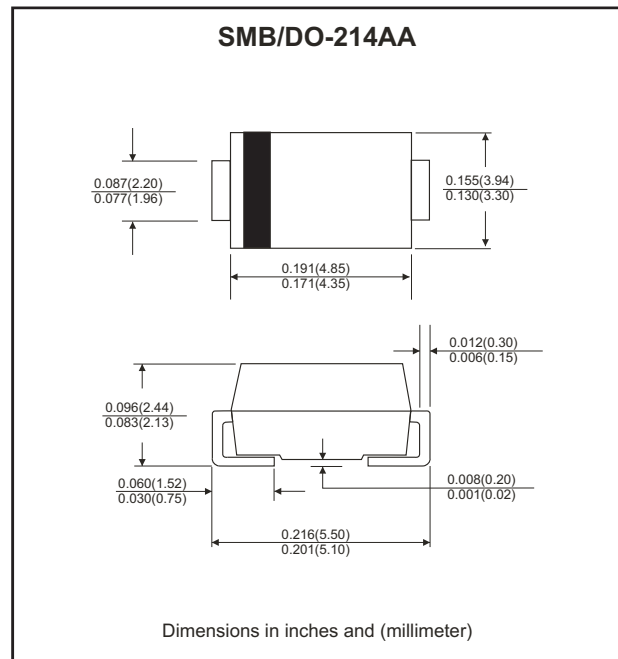


### Features

- Glass passivated chip.
- 600W 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: TV06B5V0J(B) thru. TV06B400J(B)

### Mechanical Data

- Case: JEDEC DO-214AA, molded plastic.
- Epoxy: UL 94V-0 rate flame retardant.
- Terminals: solderable per MIL-STD-750, method 2026
- Polarity: Color band denotes cathode end except Bipolar.
- Mounting position: Any.
- Weight: 0.108 gram (approx.)



### 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%.

| Parameter                                                                            | Symbol                            | Value          | Units |
|--------------------------------------------------------------------------------------|-----------------------------------|----------------|-------|
| Peak power dissipation with a 10/1000 $\mu$ s waveform (Note 1)                      | P <sub>PP</sub>                   | 600            | Watts |
| Peak pulse current with a 10/1000 $\mu$ s 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>                    | 5.0            | Watts |
| Peak forward surge current, 8.3ms single half sine-wave unidirectional only (Note 2) | I <sub>FSM</sub>                  | 100            | A     |
| Maximum instantaneous forward voltage at 50 A for unidirectional only (Note 3)       | V <sub>F</sub>                    | 3.5/5.0        | V     |
| Operating junction and Storage temperature range                                     | T <sub>J</sub> , T <sub>STG</sub> | -55 to +150    | °C    |

Note: 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

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## Rating and Characteristics Curves (TV06B5V0-HF Thru. TV06B441-HF)

Fig.1 - Pulse Derating Curve

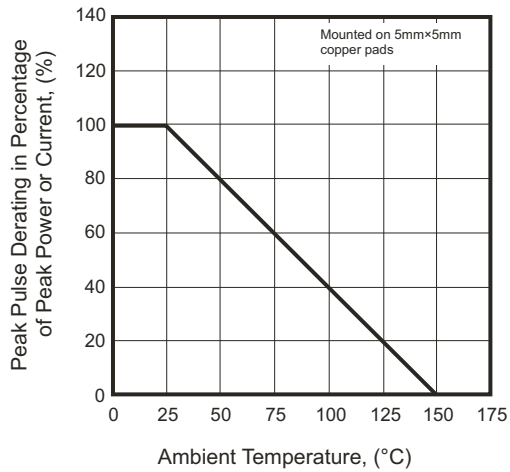


Fig.2 - Max. Non-Repetitive Surge Current

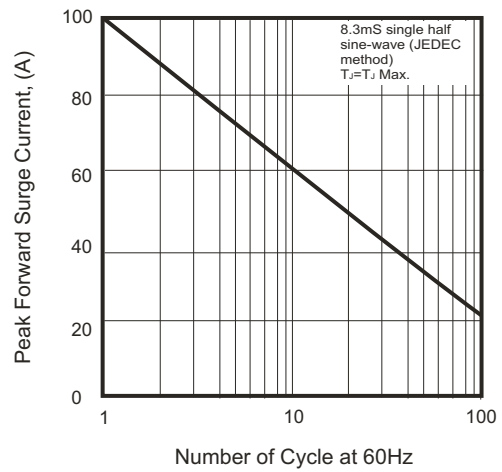


Fig.3 - Steady State Power Derating Curve

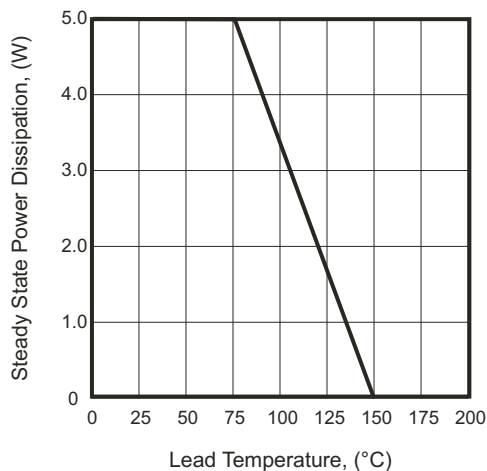


Fig.4 - Peak Pulse Power Rating Curve

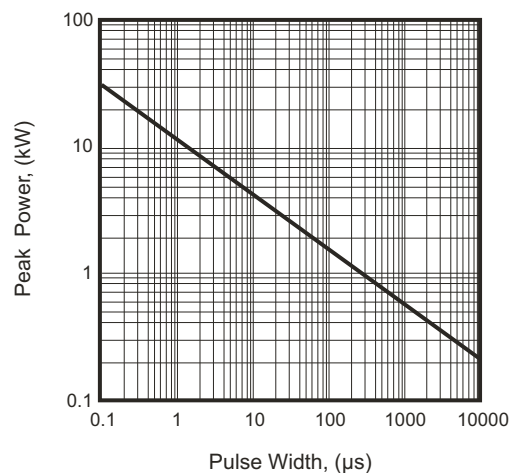


Fig.5 - Pulse Waveform

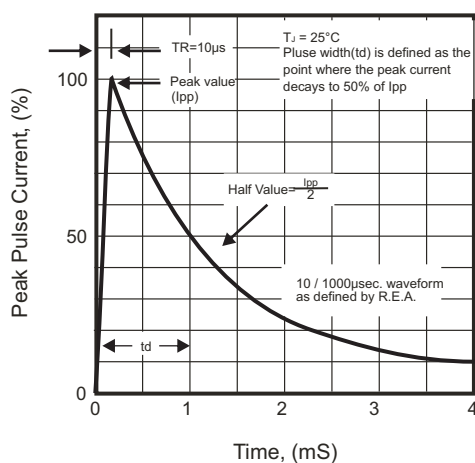
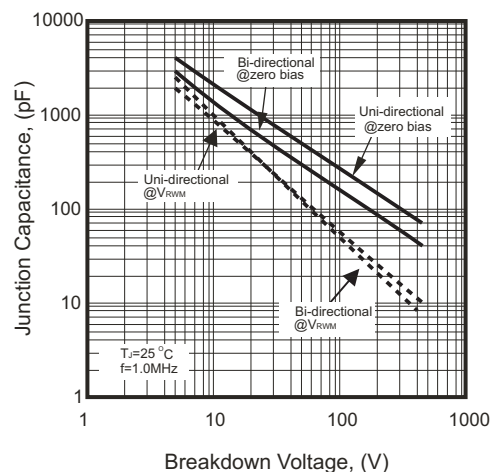


Fig.6 - Typical Junction Capacitance



## Electrical Characteristics (TV06B5V0-HF Thru. TV06B441-HF)

| Part No.        | Breakdown voltage<br>V <sub>BR</sub> @ I <sub>T</sub> |             |                        | Maximum<br>Reverse<br>Leakage<br>@V <sub>RRM</sub><br>I <sub>R</sub> (uA) | Working<br>Peak<br>Reverse<br>Voltage<br>V <sub>RRM</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 |
| TV06B5V0J(B)-HF | 6.40                                                  | 7.00        | 10                     | 800                                                                       | 5.0                                                           | 65.22                                                         | 9.2                                                                      | KE                        | AE |
| TV06B6V0J(B)-HF | 6.67                                                  | 7.37        | 10                     | 800                                                                       | 6.0                                                           | 58.25                                                         | 10.3                                                                     | KG                        | AG |
| TV06B6V5J(B)-HF | 7.22                                                  | 7.98        | 10                     | 500                                                                       | 6.5                                                           | 53.57                                                         | 11.2                                                                     | KK                        | AK |
| TV06B7V0J(B)-HF | 7.78                                                  | 8.60        | 10                     | 200                                                                       | 7.0                                                           | 50.00                                                         | 12.0                                                                     | KM                        | AM |
| TV06B7V5J(B)-HF | 8.33                                                  | 9.21        | 1                      | 100                                                                       | 7.5                                                           | 46.51                                                         | 12.9                                                                     | KP                        | AP |
| TV06B8V0J(B)-HF | 8.89                                                  | 9.83        | 1                      | 50                                                                        | 8.0                                                           | 44.12                                                         | 13.6                                                                     | KR                        | AR |
| TV06B8V5J(B)-HF | 9.44                                                  | 10.40       | 1                      | 20                                                                        | 8.5                                                           | 41.67                                                         | 14.4                                                                     | KT                        | AT |
| TV06B9V0J(B)-HF | 10.00                                                 | 11.10       | 1                      | 10                                                                        | 9.0                                                           | 38.96                                                         | 15.4                                                                     | KV                        | AV |
| TV06B100J(B)-HF | 11.10                                                 | 12.30       | 1                      | 5.0                                                                       | 10.0                                                          | 35.29                                                         | 17.0                                                                     | KX                        | AX |
| TV06B110J(B)-HF | 12.20                                                 | 13.50       | 1                      | 1.0                                                                       | 11.0                                                          | 32.97                                                         | 18.2                                                                     | KZ                        | AZ |
| TV06B120J(B)-HF | 13.30                                                 | 14.70       | 1                      | 1.0                                                                       | 12.0                                                          | 30.15                                                         | 19.9                                                                     | LE                        | BE |
| TV06B130J(B)-HF | 14.40                                                 | 15.90       | 1                      | 1.0                                                                       | 13.0                                                          | 27.91                                                         | 21.5                                                                     | LG                        | BG |
| TV06B140J(B)-HF | 15.60                                                 | 17.20       | 1                      | 1.0                                                                       | 14.0                                                          | 25.86                                                         | 23.2                                                                     | LK                        | BK |
| TV06B150J(B)-HF | 16.70                                                 | 18.50       | 1                      | 1.0                                                                       | 15.0                                                          | 24.59                                                         | 24.4                                                                     | LM                        | BM |
| TV06B160J(B)-HF | 17.80                                                 | 19.70       | 1                      | 1.0                                                                       | 16.0                                                          | 23.08                                                         | 26.0                                                                     | LP                        | BP |
| TV06B170J(B)-HF | 18.90                                                 | 20.90       | 1                      | 1.0                                                                       | 17.0                                                          | 21.74                                                         | 27.6                                                                     | LR                        | BR |
| TV06B180J(B)-HF | 20.00                                                 | 22.10       | 1                      | 1.0                                                                       | 18.0                                                          | 20.55                                                         | 29.2                                                                     | LT                        | BT |
| TV06B190J(B)-HF | 21.10                                                 | 23.30       | 1                      | 1.0                                                                       | 19.0                                                          | 19.49                                                         | 30.8                                                                     | LB                        | BB |
| TV06B200J(B)-HF | 22.20                                                 | 24.50       | 1                      | 1.0                                                                       | 20.0                                                          | 18.52                                                         | 32.4                                                                     | LV                        | BV |
| TV06B220J(B)-HF | 24.40                                                 | 26.90       | 1                      | 1.0                                                                       | 22.0                                                          | 16.90                                                         | 35.5                                                                     | LX                        | BX |
| TV06B240J(B)-HF | 26.70                                                 | 29.50       | 1                      | 1.0                                                                       | 24.0                                                          | 15.42                                                         | 38.9                                                                     | LZ                        | BZ |
| TV06B260J(B)-HF | 28.90                                                 | 31.90       | 1                      | 1.0                                                                       | 26.0                                                          | 14.25                                                         | 42.1                                                                     | ME                        | CE |
| TV06B280J(B)-HF | 31.10                                                 | 34.40       | 1                      | 1.0                                                                       | 28.0                                                          | 13.22                                                         | 45.4                                                                     | MG                        | CG |
| TV06B300J(B)-HF | 33.30                                                 | 36.80       | 1                      | 1.0                                                                       | 30.0                                                          | 12.40                                                         | 48.4                                                                     | MK                        | CK |
| TV06B330J(B)-HF | 36.70                                                 | 40.60       | 1                      | 1.0                                                                       | 33.0                                                          | 11.26                                                         | 53.3                                                                     | MM                        | CM |
| TV06B360J(B)-HF | 40.00                                                 | 44.20       | 1                      | 1.0                                                                       | 36.0                                                          | 10.33                                                         | 58.1                                                                     | MP                        | CP |
| TV06B400J(B)-HF | 44.40                                                 | 49.10       | 1                      | 1.0                                                                       | 40.0                                                          | 9.30                                                          | 64.5                                                                     | MR                        | CR |
| TV06B430J(B)-HF | 47.80                                                 | 52.80       | 1                      | 1.0                                                                       | 43.0                                                          | 8.65                                                          | 69.4                                                                     | MT                        | CT |
| TV06B450J(B)-HF | 50.00                                                 | 55.30       | 1                      | 1.0                                                                       | 45.0                                                          | 8.25                                                          | 72.7                                                                     | MV                        | CV |
| TV06B480J(B)-HF | 53.30                                                 | 58.90       | 1                      | 1.0                                                                       | 48.0                                                          | 7.75                                                          | 77.4                                                                     | MX                        | CX |
| TV06B510J(B)-HF | 56.70                                                 | 62.70       | 1                      | 1.0                                                                       | 51.0                                                          | 7.28                                                          | 82.4                                                                     | MZ                        | CZ |
| TV06B540J(B)-HF | 60.00                                                 | 66.30       | 1                      | 1.0                                                                       | 54.0                                                          | 6.89                                                          | 87.1                                                                     | NE                        | DE |
| TV06B580J(B)-HF | 64.40                                                 | 71.20       | 1                      | 1.0                                                                       | 58.0                                                          | 6.41                                                          | 93.6                                                                     | NG                        | DG |
| TV06B600J(B)-HF | 66.70                                                 | 73.70       | 1                      | 1.0                                                                       | 60.0                                                          | 6.20                                                          | 96.8                                                                     | NK                        | DK |
| TV06B640J(B)-HF | 71.10                                                 | 78.60       | 1                      | 1.0                                                                       | 64.0                                                          | 5.83                                                          | 103.0                                                                    | NM                        | DM |
| TV06B700J(B)-HF | 77.80                                                 | 86.00       | 1                      | 1.0                                                                       | 70.0                                                          | 5.31                                                          | 113.0                                                                    | NP                        | DP |
| TV06B750J(B)-HF | 83.30                                                 | 92.10       | 1                      | 1.0                                                                       | 75.0                                                          | 4.96                                                          | 121.0                                                                    | NR                        | DR |
| TV06B780J(B)-HF | 86.70                                                 | 95.80       | 1                      | 1.0                                                                       | 78.0                                                          | 4.76                                                          | 126.0                                                                    | NT                        | DT |
| TV06B800J(B)-HF | 88.80                                                 | 97.60       | 1                      | 1.0                                                                       | 80.0                                                          | 4.63                                                          | 129.6                                                                    | NB                        | DB |
| TV06B850J(B)-HF | 94.40                                                 | 104.00      | 1                      | 1.0                                                                       | 85.0                                                          | 4.38                                                          | 137.0                                                                    | NV                        | DV |
| TV06B900J(B)-HF | 100.00                                                | 111.00      | 1                      | 1.0                                                                       | 90.0                                                          | 4.11                                                          | 146.0                                                                    | NX                        | DX |
| TV06B101J(B)-HF | 111.00                                                | 123.00      | 1                      | 1.0                                                                       | 100.0                                                         | 3.70                                                          | 162.0                                                                    | NZ                        | DZ |
| TV06B111J(B)-HF | 122.00                                                | 135.00      | 1                      | 1.0                                                                       | 110.0                                                         | 3.39                                                          | 177.0                                                                    | PE                        | EE |
| TV06B121J(B)-HF | 133.00                                                | 147.00      | 1                      | 1.0                                                                       | 120.0                                                         | 3.11                                                          | 193.0                                                                    | PG                        | EG |

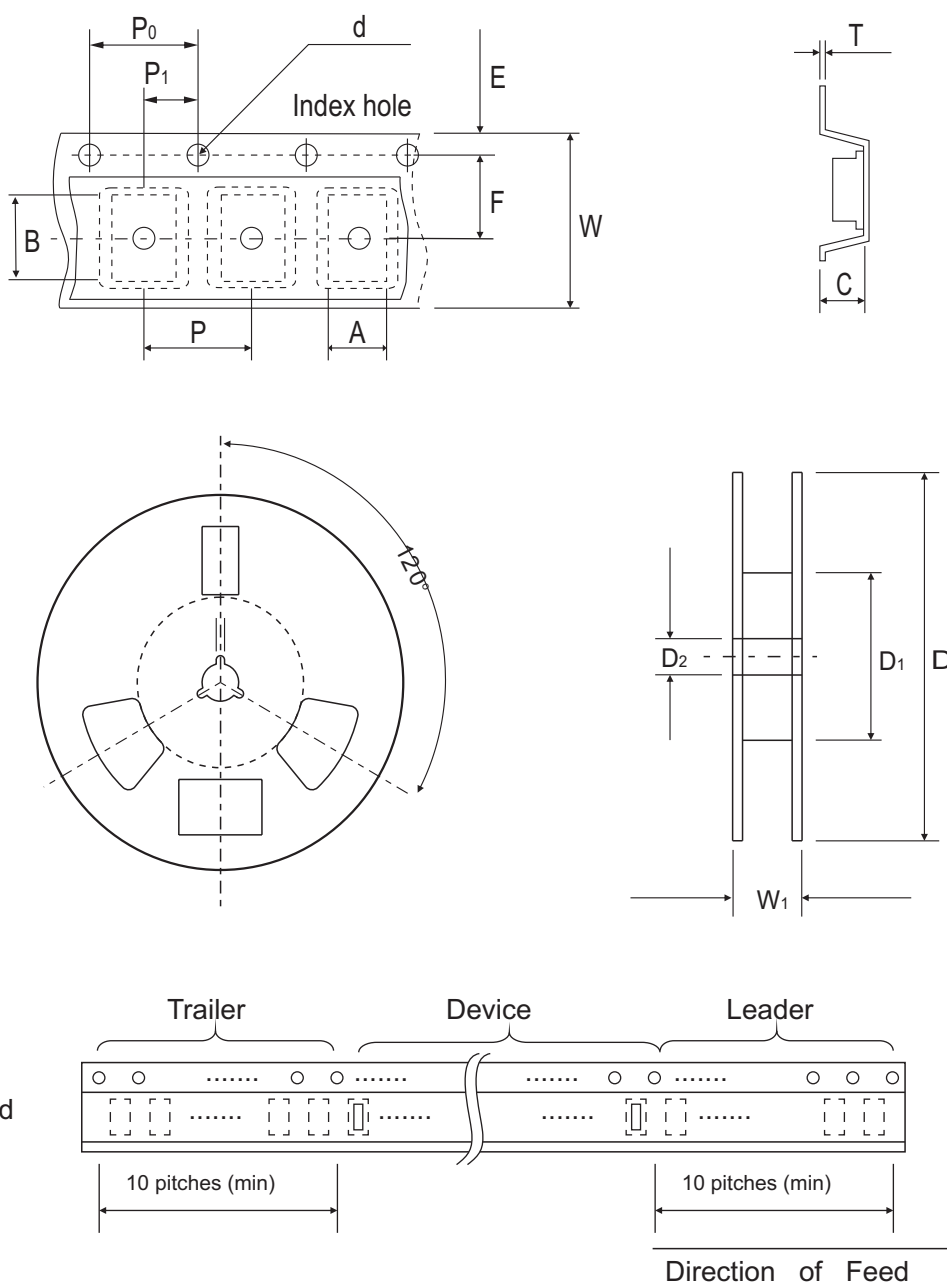
## Electrical Characteristics (TV06B5V0-HF Thru. TV06B441-HF)

| Part No.        | Breakdown voltage<br>VBR @ IT |             |            | Maximum<br>Reverse<br>Leakage<br>@VRWM<br>IR (uA) | Working<br>Peak<br>Reverse<br>Voltage<br>VRWM (V) | Maximum<br>Reverse<br>Surge<br>Current<br>IPP (A) | Maximum<br>Clamping<br>Voltage<br>@IPP<br>VC (V) | Device<br>Marking<br>Code |    |
|-----------------|-------------------------------|-------------|------------|---------------------------------------------------|---------------------------------------------------|---------------------------------------------------|--------------------------------------------------|---------------------------|----|
|                 | Min.<br>(V)                   | Max.<br>(V) | IT<br>(mA) |                                                   |                                                   |                                                   |                                                  | UNI                       | BI |
| TV06B131J(B)-HF | 144.0                         | 159.0       | 1          | 1.0                                               | 130.0                                             | 2.87                                              | 209.0                                            | PK                        | EK |
| TV06B141J(B)-HF | 155.0                         | 171.0       | 1          | 1.0                                               | 140.0                                             | 2.65                                              | 226.8                                            | PB                        | EB |
| TV06B151J(B)-HF | 167.0                         | 185.0       | 1          | 1.0                                               | 150.0                                             | 2.47                                              | 243.0                                            | PM                        | EM |
| TV06B161J(B)-HF | 178.0                         | 197.0       | 1          | 1.0                                               | 160.0                                             | 2.32                                              | 259.0                                            | PP                        | EP |
| TV06B171J(B)-HF | 189.0                         | 209.0       | 1          | 1.0                                               | 170.0                                             | 2.18                                              | 275.0                                            | PR                        | ER |
| TV06B181J(B)-HF | 200.0                         | 220.0       | 1          | 1.0                                               | 180.0                                             | 2.06                                              | 291.6                                            | PT                        | ET |
| TV06B191J(B)-HF | 211.0                         | 232.0       | 1          | 1.0                                               | 190.0                                             | 1.95                                              | 307.8                                            | PV                        | EV |
| TV06B201J(B)-HF | 224.0                         | 247.0       | 1          | 1.0                                               | 200.0                                             | 1.85                                              | 324.0                                            | PW                        | EW |
| TV06B221J(B)-HF | 246.0                         | 272.0       | 1          | 1.0                                               | 220.0                                             | 1.69                                              | 356.0                                            | PX                        | EX |
| TV06B251J(B)-HF | 279.0                         | 309.0       | 1          | 1.0                                               | 250.0                                             | 1.48                                              | 405.0                                            | PZ                        | EZ |
| TV06B301J(B)-HF | 335.0                         | 371.0       | 1          | 1.0                                               | 300.0                                             | 1.23                                              | 486.0                                            | QE                        | FE |
| TV06B351J(B)-HF | 391.0                         | 432.0       | 1          | 1.0                                               | 350.0                                             | 1.06                                              | 567.0                                            | QG                        | FG |
| TV06B401J(B)-HF | 447.0                         | 494.0       | 1          | 1.0                                               | 400.0                                             | 0.93                                              | 648.0                                            | QK                        | FK |
| TV06B441J(B)-HF | 492.0                         | 543.0       | 1          | 1.0                                               | 440.0                                             | 0.84                                              | 713.0                                            | QM                        | FM |

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 VR of 10 volts and under, the IR limit is double.

## Reel Taping Specification



| DO-214AA<br>(SMB) | SYMBOL | A                 | B                 | C           | d                 | D      | D1          | D2                |
|-------------------|--------|-------------------|-------------------|-------------|-------------------|--------|-------------|-------------------|
|                   | (mm)   | $3.67 \pm 0.10$   | $5.69 \pm 0.10$   | 4.50 (max)  | $1.55 \pm 0.10$   | 330.00 | 50.00 (min) | $13.00 \pm 0.20$  |
|                   | (inch) | $0.144 \pm 0.004$ | $0.224 \pm 0.004$ | 0.177 (max) | $0.061 \pm 0.004$ | 13.000 | 1.969 (min) | $0.512 \pm 0.008$ |

| DO-214AA<br>(SMB) | SYMBOL | E                 | F                 | P                 | $P_0$             | $P_1$             | W                 | $W_1$       |
|-------------------|--------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------|
|                   | (mm)   | $1.75 \pm 0.10$   | $5.50 \pm 0.05$   | $8.00 \pm 0.10$   | $4.00 \pm 0.10$   | $2.00 \pm 0.05$   | $12.00 \pm 0.30$  | 18.40 (max) |
|                   | (inch) | $0.069 \pm 0.004$ | $0.217 \pm 0.002$ | $0.315 \pm 0.004$ | $0.157 \pm 0.004$ | $0.079 \pm 0.002$ | $0.472 \pm 0.012$ | 0.724 (max) |

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REV:D

## Marking Code

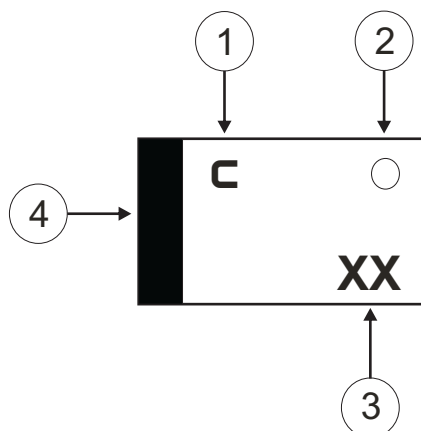
1. **C**: COMCHIP

2. **○**: Package

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

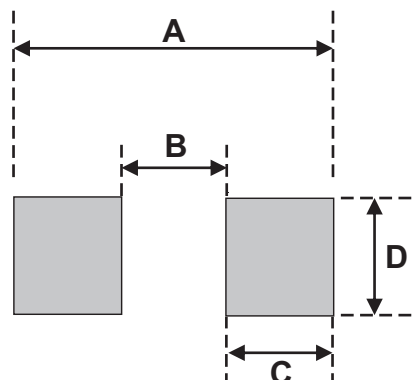
3. **XX**: Marking code (see Page. 3~4)

4. **■**: Cathod Band



## Suggested PAD Layout

| SIZE | DO-214AA(SMB) |           |
|------|---------------|-----------|
|      | (mm)          | (inch)    |
| A    | 5.60          | 0.220     |
| B    | 2.16 MAX      | 0.085 MAX |
| C    | 1.52 MIN      | 0.060 MIN |
| D    | 2.18 MIN      | 0.086 MIN |



## Standard Packaging

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