

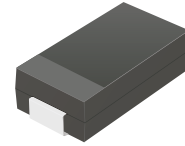
# SMD Transient Voltage Suppressor

## TV15C5V0-G Thru. TV15C441-G


Working Peak Reverse Voltage: 5.0 to 440 Volts

Power Dissipation: 1500Watts

RoHS Device

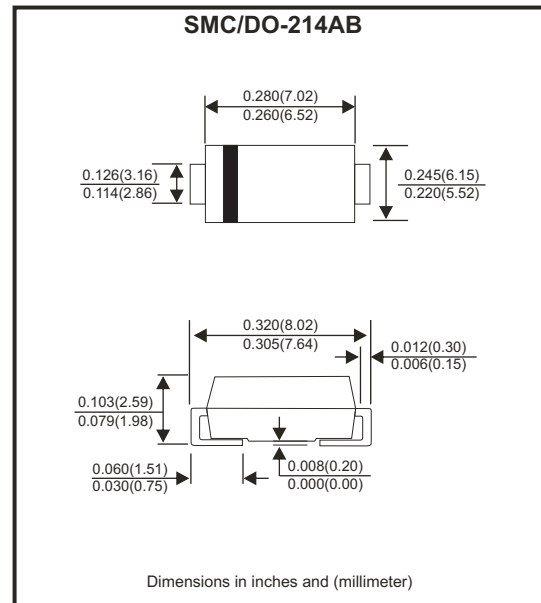


### Features

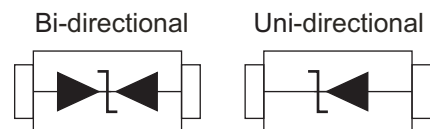
- Glass passivated chip.
- 1500W peak pulse power capability with a 10/1000 $\mu$ s waveform, repetitive rate (duty cycle):0.01%
- Low leakage.
- Uni and Bidirectional unit.
- Excellent clamping capability.
- Very fast response time.
- UL recognized file # E349157  Range: TV15C5V0J(B) thru. TV15C101J(B)

### Mechanical Data

- Case: DO-214AB/SMC molded plastic.
- Epoxy: UL 94V-0 rate flame retardant
- Terminals: Solderable per MIL-STD-750, method 2026.
- Polarity: Color band denoted cathode end except bipolar.
- Weight: 0.230 gram (approx.)



### Circuit Diagram



### 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

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

Fig.1 - Pulse Derating Curve

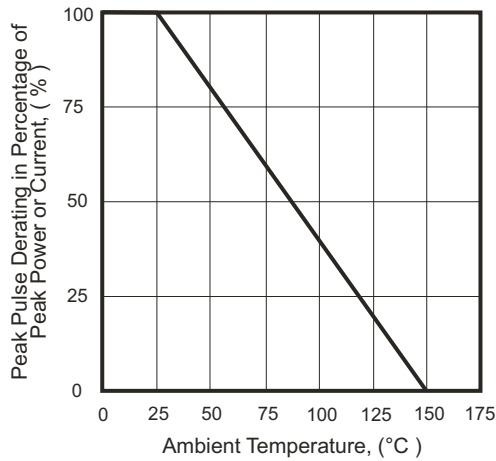


Fig.2 - Max. Non-Repetitive Surge Current

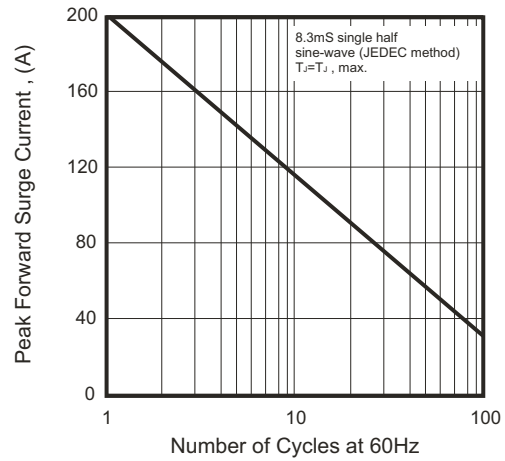


Fig.3 - Steady State Power Derating Curve

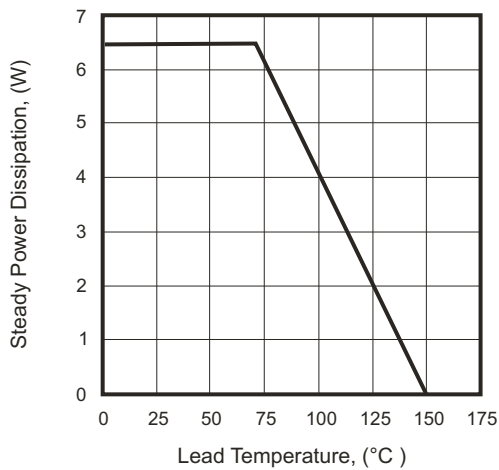


Fig.4 - Peak Pulse Power Rating Curve

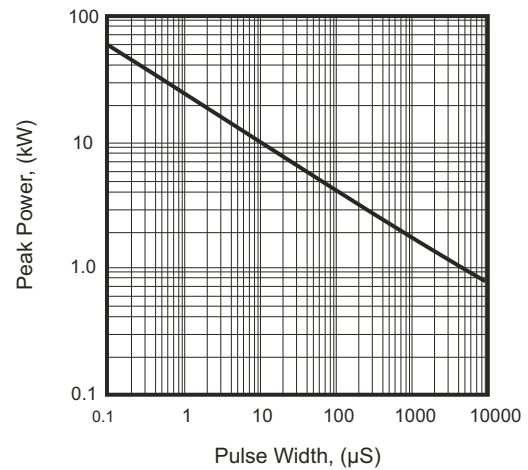


Fig.5 - Pulse Waveform

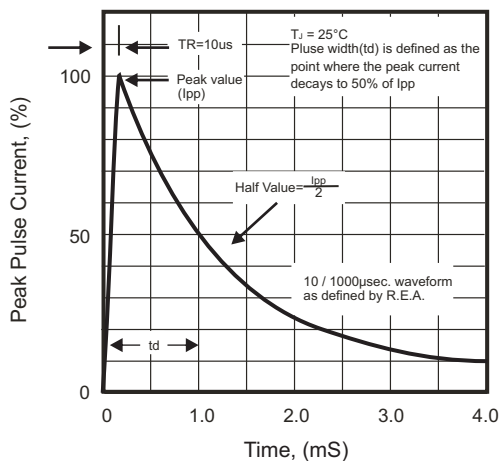
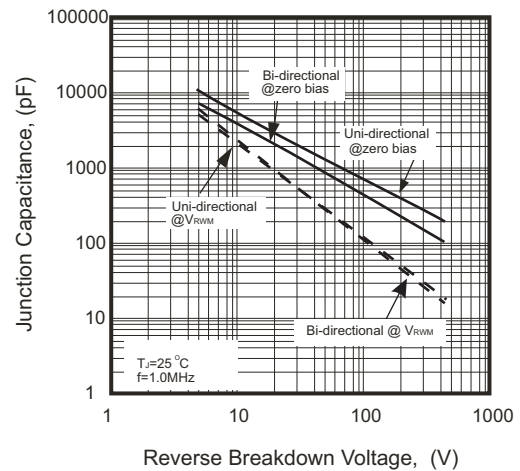


Fig.6 - Typical Junction Capacitance



# SMD Transient Voltage Suppressor



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

| Part No.       | Breakdown voltage<br>V <sub>BR</sub> @ I <sub>T</sub> |             |                        | Maximum<br>Reverse<br>Leakage<br>@V <sub>RWM</sub><br>I <sub>R</sub> (uA) | Working<br>Peak<br>Reverse<br>Voltage<br>V <sub>RWM</sub> (V) | Maximum<br>Reverse<br>Surge<br>Current<br>I <sub>PP</sub> (A) | Maximum<br>Clamping<br>Voltage<br>@I <sub>PP</sub><br>V <sub>c</sub> (V) | Device<br>Marking<br>Code |     |
|----------------|---|-------------|------------------------|---|---|---|--|---------------------------|-----|
|                | Min.<br>(V)   | Max.<br>(V) | I <sub>T</sub><br>(mA) |   |   |   |  | UNI                       | BI  |
| TV15C5V0J(B)-G | 6.40  | 7.00        | 10                     | 800   | 5.0   | 163.04  | 9.2  | GDE                       | BDE |
| TV15C6V0J(B)-G | 6.67  | 7.37        | 10                     | 800   | 6.0   | 145.63  | 10.3   | GDG                       | BDG |
| TV15C6V5J(B)-G | 7.22  | 7.98        | 10                     | 500   | 6.5   | 133.93  | 11.2   | GDK                       | BDK |
| TV15C7V0J(B)-G | 7.78  | 8.60        | 10                     | 200   | 7.0   | 125.00  | 12.0   | GDM                       | BDM |
| TV15C7V5J(B)-G | 8.33  | 9.21        | 1                      | 100   | 7.5   | 116.28  | 12.9   | GDP                       | BDP |
| TV15C8V0J(B)-G | 8.89  | 9.83        | 1                      | 50  | 8.0   | 110.29  | 13.6   | GDR                       | BDR |
| TV15C8V5J(B)-G | 9.44  | 10.40       | 1                      | 20  | 8.5   | 104.17  | 14.4   | GDT                       | BDT |
| TV15C9V0J(B)-G | 10.00   | 11.10       | 1                      | 10  | 9.0   | 97.40   | 15.4   | GDV                       | BDV |
| TV15C100J(B)-G | 11.10   | 12.30       | 1                      | 5.0   | 10.0  | 88.24   | 17.0   | GDX                       | BDX |
| TV15C110J(B)-G | 12.20   | 13.50       | 1                      | 1.0   | 11.0  | 82.42   | 18.2   | GDZ                       | BDZ |
| TV15C120J(B)-G | 13.30   | 14.70       | 1                      | 1.0   | 12.0  | 75.38   | 19.9   | GEE                       | BEE |
| TV15C130J(B)-G | 14.40   | 15.90       | 1                      | 1.0   | 13.0  | 69.77   | 21.5   | GEG                       | BEG |
| TV15C140J(B)-G | 15.60   | 17.20       | 1                      | 1.0   | 14.0  | 64.66   | 23.2   | GEK                       | BEK |
| TV15C150J(B)-G | 16.70   | 18.50       | 1                      | 1.0   | 15.0  | 61.48   | 24.4   | GEM                       | BEM |
| TV15C160J(B)-G | 17.80   | 19.70       | 1                      | 1.0   | 16.0  | 57.69   | 26.0   | GEP                       | BEP |
| TV15C170J(B)-G | 18.90   | 20.90       | 1                      | 1.0   | 17.0  | 54.35   | 27.6   | GER                       | BER |
| TV15C180J(B)-G | 20.00   | 22.10       | 1                      | 1.0   | 18.0  | 51.37   | 29.2   | GET                       | BET |
| TV15C190J(B)-G | 21.10   | 23.30       | 1                      | 1.0   | 19.0  | 48.73   | 30.8   | GEB                       | BEB |
| TV15C200J(B)-G | 22.20   | 24.50       | 1                      | 1.0   | 20.0  | 46.30   | 32.4   | GEV                       | BEV |
| TV15C220J(B)-G | 24.40   | 26.90       | 1                      | 1.0   | 22.0  | 42.25   | 35.5   | GEX                       | BEX |
| TV15C240J(B)-G | 26.70   | 29.50       | 1                      | 1.0   | 24.0  | 38.56   | 38.9   | GEZ                       | BEZ |
| TV15C260J(B)-G | 28.90   | 31.90       | 1                      | 1.0   | 26.0  | 35.63   | 42.1   | GFE                       | BFE |
| TV15C280J(B)-G | 31.10   | 34.40       | 1                      | 1.0   | 28.0  | 33.04   | 45.4   | GFG                       | BFG |
| TV15C300J(B)-G | 33.30   | 36.80       | 1                      | 1.0   | 30.0  | 30.99   | 48.4   | GFK                       | BFK |
| TV15C330J(B)-G | 36.70   | 40.60       | 1                      | 1.0   | 33.0  | 28.14   | 53.3   | GFM                       | BFM |
| TV15C360J(B)-G | 40.00   | 44.20       | 1                      | 1.0   | 36.0  | 25.82   | 58.1   | GFP                       | BFP |
| TV15C400J(B)-G | 44.40   | 49.10       | 1                      | 1.0   | 40.0  | 23.26   | 64.5   | GFR                       | BFR |
| TV15C430J(B)-G | 47.80   | 52.80       | 1                      | 1.0   | 43.0  | 21.61   | 69.4   | GFT                       | BFT |
| TV15C450J(B)-G | 50.00   | 55.30       | 1                      | 1.0   | 45.0  | 20.63   | 72.7   | GFV                       | BFV |
| TV15C480J(B)-G | 53.30   | 58.90       | 1                      | 1.0   | 48.0  | 19.38   | 77.4   | GFX                       | BFX |
| TV15C510J(B)-G | 56.70   | 62.70       | 1                      | 1.0   | 51.0  | 18.20   | 82.4   | GFZ                       | BFZ |
| TV15C540J(B)-G | 60.00   | 66.30       | 1                      | 1.0   | 54.0  | 17.22   | 87.1   | GGE                       | BGE |
| TV15C580J(B)-G | 64.40   | 71.20       | 1                      | 1.0   | 58.0  | 16.03   | 93.6   | GGG                       | BGG |
| TV15C600J(B)-G | 66.70   | 73.70       | 1                      | 1.0   | 60.0  | 15.50   | 96.8   | GGK                       | BGK |
| TV15C640J(B)-G | 71.10   | 78.60       | 1                      | 1.0   | 64.0  | 14.56   | 103.0  | GGM                       | BGM |
| TV15C700J(B)-G | 77.80   | 86.00       | 1                      | 1.0   | 70.0  | 13.27   | 113.0  | GGP                       | BGP |
| TV15C750J(B)-G | 83.30   | 92.10       | 1                      | 1.0   | 75.0  | 12.40   | 121.0  | GGR                       | BGR |
| TV15C780J(B)-G | 86.70   | 95.80       | 1                      | 1.0   | 78.0  | 11.90   | 126.0  | GGT                       | BGT |
| TV15C800J(B)-G | 88.80   | 97.60       | 1                      | 1.0   | 80.0  | 11.57   | 129.6  | GGB                       | BGB |
| TV15C850J(B)-G | 94.40   | 104.00      | 1                      | 1.0   | 85.0  | 10.95   | 137.0  | GGV                       | BGV |
| TV15C900J(B)-G | 100.00  | 111.00      | 1                      | 1.0   | 90.0  | 10.27   | 146.0  | GGX                       | BGX |
| TV15C101J(B)-G | 111.00  | 123.00      | 1                      | 1.0   | 100.0   | 9.26  | 162.0  | GGZ                       | BGZ |
| TV15C111J(B)-G | 122.00  | 135.00      | 1                      | 1.0   | 110.0   | 8.47  | 177.0  | GHE                       | BHE |
| TV15C121J(B)-G | 133.00  | 147.00      | 1                      | 1.0   | 120.0   | 7.77  | 193.0  | GHG                       | BHG |

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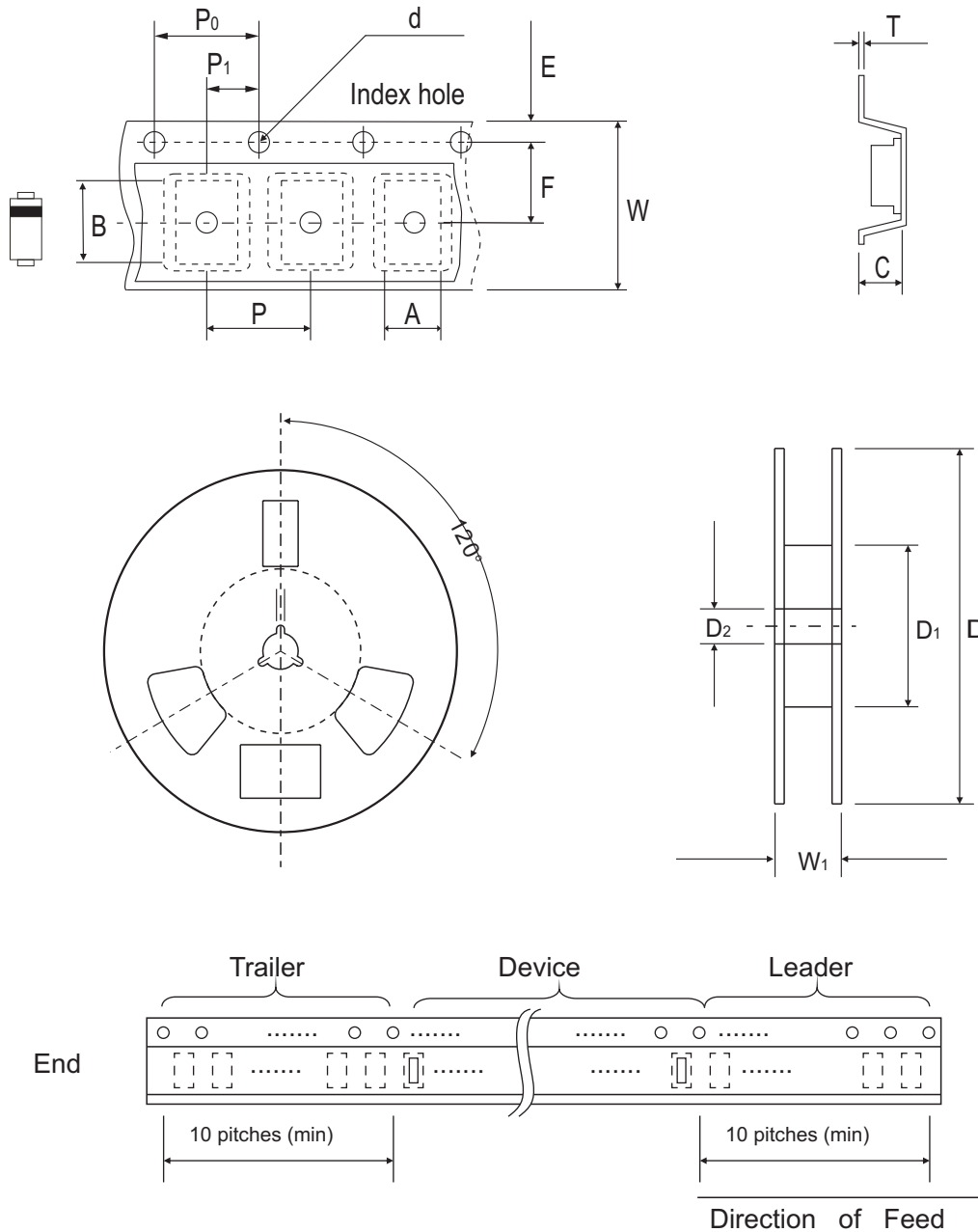
## Electrical Characteristics (TV15C5V0-G Thru. TV15C441-G)

| Part No.       | Breakdown voltage<br>V <sub>BR</sub> @ I <sub>T</sub> |             |                        | Maximum<br>Reverse<br>Leakage<br>@V <sub>RWM</sub><br>I <sub>R</sub> (uA) | Working<br>Peak<br>Reverse<br>Voltage<br>V <sub>RWM</sub> (V) | Maximum<br>Reverse<br>Surge<br>Current<br>I <sub>PP</sub> (A) | Maximum<br>Clamping<br>Voltage<br>@I <sub>PP</sub><br>V <sub>c</sub> (V) | Device<br>Marking<br>Code |     |
|----------------|---|-------------|------------------------|---|---|---|--|---------------------------|-----|
|                | Min.<br>(V)   | Max.<br>(V) | I <sub>T</sub><br>(mA) |   |   |   |  | UNI                       | BI  |
| TV15C131J(B)-G | 144.0   | 159.0       | 1                      | 1.0   | 130.0   | 7.18  | 209.0  | GHK                       | BHK |
| TV15C141J(B)-G | 155.0   | 171.0       | 1                      | 1.0   | 140.0   | 6.61  | 226.8  | GHB                       | BHB |
| TV15C151J(B)-G | 167.0   | 185.0       | 1                      | 1.0   | 150.0   | 6.17  | 243.0  | GHM                       | BHM |
| TV15C161J(B)-G | 178.0   | 197.0       | 1                      | 1.0   | 160.0   | 5.79  | 259.0  | GHP                       | BHP |
| TV15C171J(B)-G | 189.0   | 209.0       | 1                      | 1.0   | 170.0   | 5.45  | 275.0  | GHR                       | BHR |
| TV15C181J(B)-G | 200.0   | 220.0       | 1                      | 1.0   | 180.0   | 5.14  | 291.6  | GHT                       | BHT |
| TV15C191J(B)-G | 211.0   | 232.0       | 1                      | 1.0   | 190.0   | 4.87  | 307.8  | GHV                       | BHV |
| TV15C201J(B)-G | 224.0   | 247.0       | 1                      | 1.0   | 200.0   | 4.60  | 324.0  | GHW                       | BHW |
| TV15C221J(B)-G | 246.0   | 272.0       | 1                      | 1.0   | 220.0   | 4.20  | 356.0  | GHX                       | BHX |
| TV15C251J(B)-G | 279.0   | 309.0       | 1                      | 1.0   | 250.0   | 3.70  | 405.0  | GHZ                       | BHZ |
| TV15C301J(B)-G | 335.0   | 371.0       | 1                      | 1.0   | 300.0   | 3.10  | 486.0  | GJE                       | BJE |
| TV15C351J(B)-G | 391.0   | 432.0       | 1                      | 1.0   | 350.0   | 2.60  | 567.0  | GJG                       | BJG |
| TV15C401J(B)-G | 447.0   | 494.0       | 1                      | 1.0   | 400.0   | 2.30  | 648.0  | GJK                       | BJK |
| TV15C441J(B)-G | 492.0   | 543.0       | 1                      | 1.0   | 440.0   | 2.10  | 713.0  | 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      | D1          | D2            |
|                   | (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             | P0            | P1            | W             | W1          |
|                   | (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) |

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