

# P4SMA Transient Voltage Suppressor Diode Series

**BOURNS®**

## Electrical Characteristics (@ T<sub>A</sub> = 25 °C Unless Otherwise Noted)

| Unidirectional Device |         | Bidirectional Device |         | Breakdown Voltage V <sub>BR</sub> (Volts) |       |                       | Working Peak Reverse Voltage | Maximum Reverse Leakage @ V <sub>RWM</sub> | Maximum Clamping Voltage @ I <sub>pp</sub> (10/1000 μs) | Maximum Peak Pulse Current (10/1000 μs) | Maximum Clamping Voltage @ I <sub>pp</sub> (8/20 μs) | Maximum Peak Pulse Current (8/20 μs) |
|-----------------------|---------|----------------------|---------|-------------------------------------------|-------|-----------------------|------------------------------|--------------------------------------------|---------------------------------------------------------|-----------------------------------------|------------------------------------------------------|--------------------------------------|
| Part No.              | Marking | Part No.             | Marking | Min.                                      | Max.  | @ I <sub>T</sub> (mA) | V <sub>RWM</sub> (V)         | I <sub>R</sub> (μA)                        | V <sub>c</sub> (V)                                      | I <sub>pp</sub> (A)                     | V <sub>c</sub> (V)                                   | I <sub>pp</sub> (A)                  |
| P4SMA6.8A             | 6V8A    | P4SMA6.8CA           | 6V8C    | 6.45                                      | 7.14  | 10                    | 5.8                          | 1000                                       | 10.5                                                    | 39                                      | 14                                                   | 195                                  |
| P4SMA7.5A             | 7V5A    | P4SMA7.5CA           | 7V5C    | 7.13                                      | 7.88  | 10                    | 6.4                          | 500                                        | 11.3                                                    | 36.3                                    | 14.7                                                 | 181.5                                |
| P4SMA8.2A             | 8V2A    | P4SMA8.2CA           | 8V2C    | 7.79                                      | 8.61  | 10                    | 7.02                         | 200                                        | 12.1                                                    | 33.9                                    | 15.7                                                 | 169.5                                |
| P4SMA9.1A             | 9V1A    | P4SMA9.1CA           | 9V1C    | 8.65                                      | 9.55  | 1                     | 7.78                         | 50                                         | 13.4                                                    | 30.6                                    | 17.4                                                 | 153.0                                |
| P4SMA10A              | 10A     | P4SMA10CA            | 10C     | 9.5                                       | 10.5  | 1                     | 8.55                         | 10                                         | 14.5                                                    | 28.3                                    | 18.9                                                 | 141.5                                |
| P4SMA11A              | 11A     | P4SMA11CA            | 11C     | 10.5                                      | 11.6  | 1                     | 9.4                          | 5                                          | 15.6                                                    | 26.3                                    | 20.3                                                 | 131.5                                |
| P4SMA12A              | 12A     | P4SMA12CA            | 12C     | 11.4                                      | 12.6  | 1                     | 10.2                         | 5                                          | 16.7                                                    | 24.6                                    | 21.7                                                 | 123.0                                |
| P4SMA13A              | 13A     | P4SMA13CA            | 13C     | 12.4                                      | 13.7  | 1                     | 11.1                         | 1                                          | 18.2                                                    | 22.5                                    | 23.7                                                 | 112.5                                |
| P4SMA15A              | 15A     | P4SMA15CA            | 15C     | 14.3                                      | 15.8  | 1                     | 12.8                         | 1                                          | 21.2                                                    | 19.3                                    | 27.6                                                 | 96.5                                 |
| P4SMA16A              | 16A     | P4SMA16CA            | 16C     | 15.2                                      | 16.8  | 1                     | 13.6                         | 1                                          | 22.5                                                    | 18.2                                    | 29.3                                                 | 91.0                                 |
| P4SMA18A              | 18A     | P4SMA18CA            | 18C     | 17.1                                      | 18.9  | 1                     | 15.3                         | 1                                          | 25.5                                                    | 16.1                                    | 33.2                                                 | 80.5                                 |
| P4SMA20A              | 20A     | P4SMA20CA            | 20C     | 19                                        | 21    | 1                     | 17.1                         | 1                                          | 27.7                                                    | 14.8                                    | 36.0                                                 | 74.0                                 |
| P4SMA22A              | 22A     | P4SMA22CA            | 22C     | 20.9                                      | 23.1  | 1                     | 18.8                         | 1                                          | 30.6                                                    | 13.4                                    | 39.8                                                 | 67.0                                 |
| P4SMA24A              | 24A     | P4SMA24CA            | 24C     | 22.8                                      | 25.2  | 1                     | 20.5                         | 1                                          | 33.2                                                    | 12.3                                    | 43.2                                                 | 61.5                                 |
| P4SMA27A              | 27A     | P4SMA27CA            | 27C     | 25.7                                      | 28.4  | 1                     | 23.1                         | 1                                          | 37.5                                                    | 10.9                                    | 48.8                                                 | 54.5                                 |
| P4SMA30A              | 30A     | P4SMA30CA            | 30C     | 28.5                                      | 31.5  | 1                     | 25.6                         | 1                                          | 41.4                                                    | 9.9                                     | 53.8                                                 | 49.5                                 |
| P4SMA33A              | 33A     | P4SMA33CA            | 33C     | 31.4                                      | 34.7  | 1                     | 28.2                         | 1                                          | 45.7                                                    | 9                                       | 59                                                   | 45                                   |
| P4SMA36A              | 36A     | P4SMA36CA            | 36C     | 34.2                                      | 37.8  | 1                     | 30.8                         | 1                                          | 49.9                                                    | 8.2                                     | 64.9                                                 | 41.0                                 |
| P4SMA39A              | 39A     | P4SMA39CA            | 39C     | 37.1                                      | 41    | 1                     | 33.3                         | 1                                          | 53.9                                                    | 7.6                                     | 70.1                                                 | 38.0                                 |
| P4SMA43A              | 43A     | P4SMA43CA            | 43C     | 40.9                                      | 45.2  | 1                     | 36.8                         | 1                                          | 59.3                                                    | 6.9                                     | 77.1                                                 | 34.5                                 |
| P4SMA47A              | 47A     | P4SMA47CA            | 47C     | 44.7                                      | 49.4  | 1                     | 40.2                         | 1                                          | 64.8                                                    | 6.3                                     | 84.2                                                 | 31.5                                 |
| P4SMA51A              | 51A     | P4SMA51CA            | 51C     | 48.5                                      | 53.6  | 1                     | 43.6                         | 1                                          | 70.1                                                    | 5.8                                     | 91.1                                                 | 29.0                                 |
| P4SMA56A              | 56A     | P4SMA56CA            | 56C     | 53.2                                      | 58.8  | 1                     | 47.8                         | 1                                          | 77                                                      | 5.3                                     | 100.1                                                | 26.5                                 |
| P4SMA62A              | 62A     | P4SMA62CA            | 62C     | 58.9                                      | 65.1  | 1                     | 53                           | 1                                          | 85                                                      | 4.8                                     | 110.5                                                | 24.0                                 |
| P4SMA68A              | 68A     | P4SMA68CA            | 68C     | 64.6                                      | 71.4  | 1                     | 58.1                         | 1                                          | 92                                                      | 4.5                                     | 119.6                                                | 22.5                                 |
| P4SMA75A              | 75A     | P4SMA75CA            | 75C     | 71.3                                      | 78.8  | 1                     | 64.1                         | 1                                          | 103                                                     | 4                                       | 134                                                  | 20                                   |
| P4SMA82A              | 82A     | P4SMA82CA            | 82C     | 77.9                                      | 86.1  | 1                     | 70.1                         | 1                                          | 113                                                     | 3.6                                     | 146.9                                                | 18.0                                 |
| P4SMA91A              | 91A     | P4SMA91CA            | 91C     | 86.5                                      | 95.5  | 1                     | 77.8                         | 1                                          | 125                                                     | 3.3                                     | 162.5                                                | 16.5                                 |
| P4SMA100A             | 100A    | P4SMA100CA           | 100C    | 95                                        | 105   | 1                     | 85.5                         | 1                                          | 137                                                     | 3                                       | 178                                                  | 15                                   |
| P4SMA110A             | 110A    | P4SMA110CA           | 110C    | 105                                       | 116   | 1                     | 94                           | 1                                          | 152                                                     | 2.7                                     | 197.6                                                | 13.5                                 |
| P4SMA120A             | 120A    | P4SMA120CA           | 120C    | 114                                       | 126   | 1                     | 102                          | 1                                          | 165                                                     | 2.5                                     | 214.5                                                | 12.5                                 |
| P4SMA130A             | 130A    | P4SMA130CA           | 130C    | 124                                       | 137   | 1                     | 111                          | 1                                          | 179                                                     | 2.3                                     | 232.7                                                | 11.5                                 |
| P4SMA150A             | 150A    | P4SMA150CA           | 150C    | 143                                       | 158   | 1                     | 128                          | 1                                          | 207                                                     | 2                                       | 269                                                  | 10                                   |
| P4SMA160A             | 160A    | P4SMA160CA           | 160C    | 152                                       | 168   | 1                     | 136                          | 1                                          | 219                                                     | 1.9                                     | 284.7                                                | 9.5                                  |
| P4SMA170A             | 170A    | P4SMA170CA           | 170C    | 162                                       | 179   | 1                     | 145                          | 1                                          | 234                                                     | 1.8                                     | 304.2                                                | 9.0                                  |
| P4SMA180A             | 180A    | P4SMA180CA           | 180C    | 171                                       | 189   | 1                     | 154                          | 1                                          | 246                                                     | 1.7                                     | 319.8                                                | 8.5                                  |
| P4SMA200A             | 200A    | P4SMA200CA           | 200C    | 190                                       | 210   | 1                     | 171                          | 1                                          | 274                                                     | 1.5                                     | 356.2                                                | 7.5                                  |
| P4SMA220A             | 220A    | P4SMA220CA           | 220C    | 209                                       | 231   | 1                     | 185                          | 1                                          | 328                                                     | 1.3                                     | 426.4                                                | 6.5                                  |
| P4SMA250A             | 250A    | P4SMA250CA           | 250C    | 237                                       | 263   | 1                     | 214                          | 1                                          | 344                                                     | 1.2                                     | 447.2                                                | 6.0                                  |
| P4SMA300A             | 300A    | P4SMA300CA           | 300C    | 285                                       | 315   | 1                     | 256                          | 1                                          | 414                                                     | 1                                       | 538                                                  | 5                                    |
| P4SMA350A             | 350A    | P4SMA350CA           | 350C    | 332                                       | 368   | 1                     | 300                          | 1                                          | 482                                                     | 0.9                                     | 626.6                                                | 4.3                                  |
| P4SMA400A             | 400A    | P4SMA400CA           | 400C    | 380                                       | 420   | 1                     | 342                          | 1                                          | 548                                                     | 0.8                                     | 712.4                                                | 3.8                                  |
| P4SMA440A             | 440A    | P4SMA440CA           | 440C    | 418                                       | 462   | 1                     | 376                          | 1                                          | 602                                                     | 0.7                                     | 782.6                                                | 3.4                                  |
| P4SMA480A             | 480A    | P4SMA480CA           | 480C    | 456                                       | 504   | 1                     | 408                          | 1                                          | 658                                                     | 0.6                                     | 855.4                                                | 3.1                                  |
| P4SMA510A             | 510A    | P4SMA510CA           | 510C    | 485                                       | 535   | 1                     | 434                          | 1                                          | 698                                                     | 0.6                                     | 907.4                                                | 2.9                                  |
| P4SMA530A             | 530A    | P4SMA530CA           | 530C    | 503.5                                     | 556.5 | 1                     | 477                          | 1                                          | 725                                                     | 0.6                                     | 942.5                                                | 2.8                                  |
| P4SMA540A             | 540A    | P4SMA540CA           | 540C    | 513                                       | 567   | 1                     | 486                          | 1                                          | 740                                                     | 0.5                                     | 962.0                                                | 2.7                                  |
| P4SMA550A             | 550A    | P4SMA550CA           | 550C    | 522.5                                     | 577.5 | 1                     | 495                          | 1                                          | 760                                                     | 0.5                                     | 988.0                                                | 2.6                                  |

Notes: 1. Suffix 'A' denotes a 5 % tolerance unidirectional device. 3. For bidirectional devices with a V<sub>R</sub> of 10 volts or less, the I<sub>R</sub> limit is double.  
2. Suffix 'CA' denotes a 5 % tolerance bidirectional device.

Specifications are subject to change without notice.

Users should verify actual device performance in their specific applications.

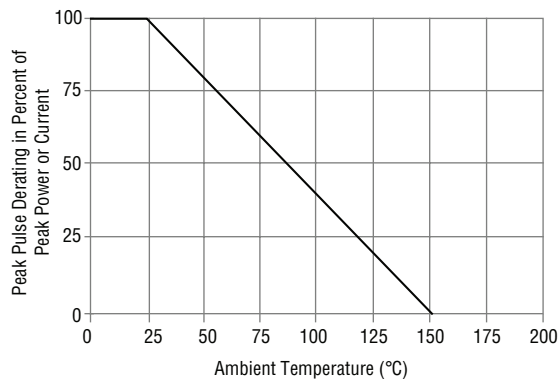
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# P4SMA Transient Voltage Suppressor Diode Series

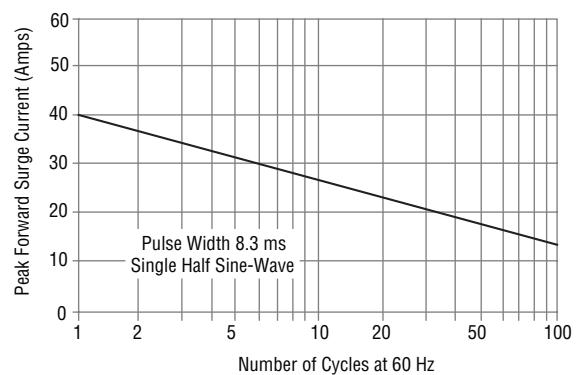
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## Rating & Characteristic Curves

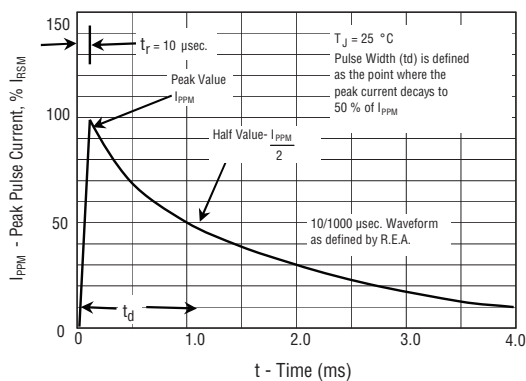
### Pulse Derating Curve



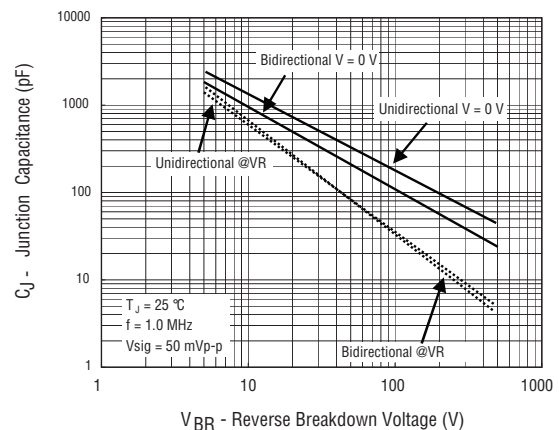
### Maximum Non-Repetitive Surge Current



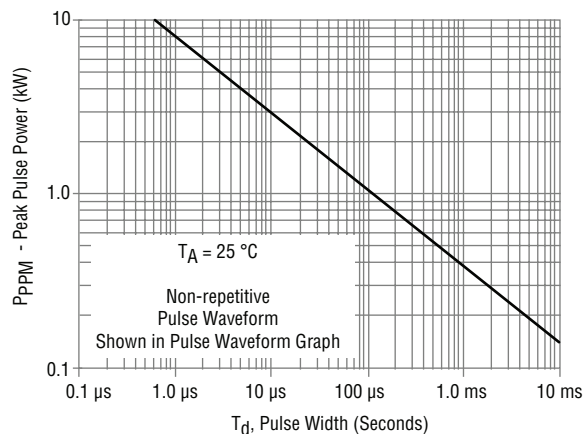
### Pulse Waveform



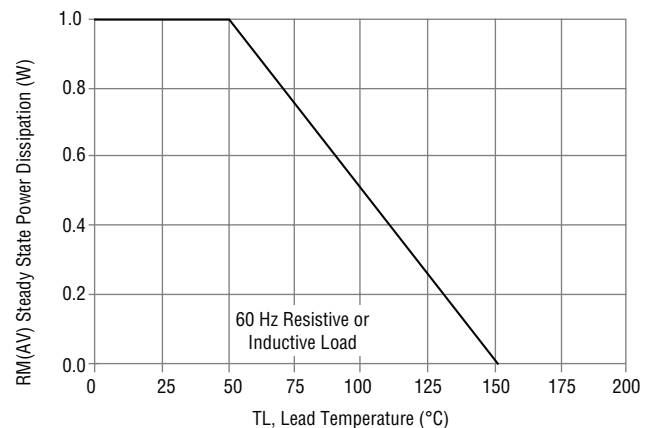
### Typical Junction Capacitance



### Pulse Rating Curve



### Steady State Power Derating Curve



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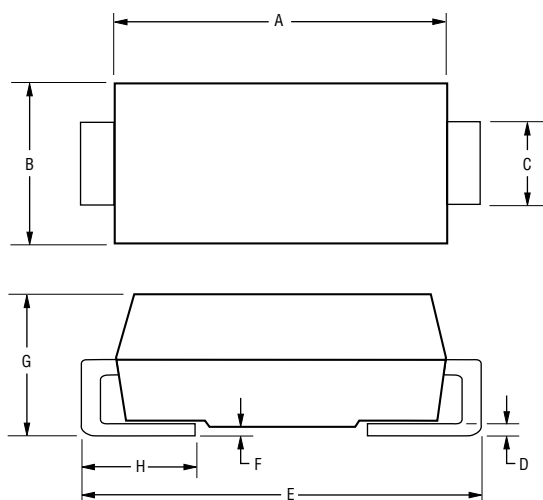
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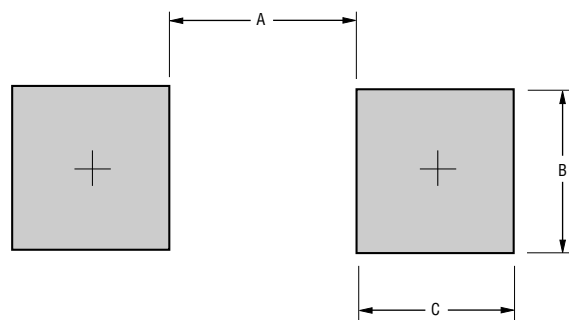
## Product Dimensions



| Dimension | SMA (DO-214AC)                        |
|-----------|---------------------------------------|
| A         | $\frac{3.99 - 4.50}{(0.157 - 0.177)}$ |
| B         | $\frac{2.54 - 2.79}{(0.100 - 0.110)}$ |
| C         | $\frac{1.25 - 1.65}{(0.049 - 0.065)}$ |
| D         | $\frac{0.15 - 0.31}{(0.006 - 0.112)}$ |
| E         | $\frac{4.93 - 5.28}{(0.194 - 0.208)}$ |
| F         | $\frac{0.203}{(0.008)}$ MAX.          |
| G         | $\frac{1.98 - 2.29}{(0.078 - 0.090)}$ |
| H         | $\frac{0.76 - 1.52}{(0.030 - 0.060)}$ |

DIMENSIONS:  $\frac{\text{MM}}{(\text{INCHES})}$

## Recommended Footprint



| Dimension | SMA (DO-214AC)         |
|-----------|------------------------|
| a (Max.)  | $\frac{2.70}{(0.106)}$ |
| b (Min.)  | $\frac{2.10}{(0.083)}$ |
| c (Min.)  | $\frac{1.27}{(0.050)}$ |

DIMENSIONS:  $\frac{\text{MM}}{(\text{INCHES})}$

## Physical Specifications

Case .....Molded plastic per UL Class 94V-0  
 Polarity..... Cathode band indicates unidirectional device  
 No cathode band indicates bidirectional device

## Environmental Specifications

Moisture Sensitivity Level .....1  
 ESD Classification (HBM) ..... 3B

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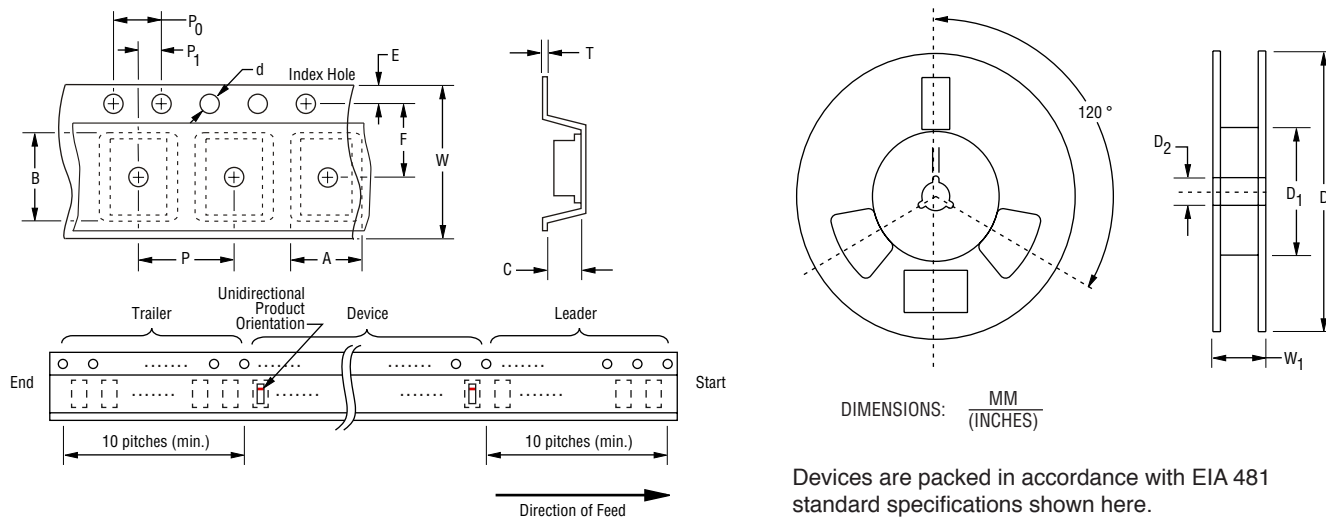
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# P4SMA Transient Voltage Suppressor Diode Series

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## Packaging Information

The product will be dispensed in tape and reel format (see diagram below).



| Item                   | Symbol         | SMA (DO-214AC)                      |                        |
|------------------------|----------------|-------------------------------------|------------------------|
|                        |                | 7 Inch Reel                         | 13 Inch Reel           |
| Carrier Width          | A              | $2.90 \pm 0.20$<br>(0.114 ± 0.008)  |                        |
| Carrier Length         | B              | $5.50 \pm 0.20$<br>(0.217 ± 0.008)  |                        |
| Carrier Depth          | C              | $2.26 \pm 0.20$<br>(0.089 ± 0.008)  |                        |
| Sprocket Hole          | d              | $1.50 \pm 0.10$<br>(0.061 ± 0.004)  |                        |
| Reel Outside Diameter  | D              | $\frac{178}{(7.008)}$               | $\frac{330}{(12.992)}$ |
| Reel Inner Diameter    | D <sub>1</sub> | $\frac{50.0}{(1.969)}$ MIN.         |                        |
| Feed Hole Diameter     | D <sub>2</sub> | $13.0 \pm 0.20$<br>(0.512 ± 0.008)  |                        |
| Sprocket Hole Position | E              | $1.75 \pm 0.10$<br>(0.069 ± 0.004)  |                        |
| Punch Hole Position    | F              | $5.50 \pm 0.05$<br>(0.217 ± 0.002)  |                        |
| Punch Hole Pitch       | P              | $4.00 \pm 0.10$<br>(0.157 ± 0.004)  |                        |
| Sprocket Hole Pitch    | P <sub>0</sub> | $4.00 \pm 0.10$<br>(0.157 ± 0.004)  |                        |
| Embossment Center      | P <sub>1</sub> | $2.00 \pm 0.05$<br>(0.079 ± 0.002)  |                        |
| Overall Tape Thickness | T              | $0.30 \pm 0.10$<br>(0.012 ± 0.004)  |                        |
| Tape Width             | W              | $12.00 \pm 0.30$<br>(0.472 ± 0.012) |                        |
| Reel Width             | W <sub>1</sub> | $\frac{18.4}{(0.724)}$ MAX.         |                        |
| Quantity per Reel      | --             | 1000                                | 5,000                  |

REV. 03/20

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