

# SMCJ 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)                  |
| SMCJ5.0A              | GDE     | SMCJ5.0CA            | BDE     | 6.40                                      | 7.00  | 10                    | 5                            | 800                                        | 9.2                                                     | 163                                     | 12                                                   | 815                                  |
| SMCJ6.0A              | GDG     | SMCJ6.0CA            | BDG     | 6.67                                      | 7.37  | 10                    | 6                            | 800                                        | 10.3                                                    | 145.7                                   | 13.4                                                 | 728.5                                |
| SMCJ6.5A              | GDK     | SMCJ6.5CA            | BDK     | 7.22                                      | 7.98  | 10                    | 6.5                          | 500                                        | 11.2                                                    | 134                                     | 15                                                   | 670                                  |
| SMCJ7.0A              | GDM     | SMCJ7.0CA            | BDM     | 7.78                                      | 8.60  | 10                    | 7                            | 200                                        | 12                                                      | 125                                     | 16                                                   | 625                                  |
| SMCJ7.5A              | GDP     | SMCJ7.5CA            | BDP     | 8.33                                      | 9.21  | 1                     | 7.5                          | 100                                        | 12.9                                                    | 116.3                                   | 16.8                                                 | 581.5                                |
| SMCJ8.0A              | GDR     | SMCJ8.0CA            | BDR     | 8.89                                      | 9.83  | 1                     | 8                            | 50                                         | 13.6                                                    | 110.3                                   | 17.7                                                 | 551.5                                |
| SMCJ8.5A              | GDT     | SMCJ8.5CA            | BDT     | 9.44                                      | 10.4  | 1                     | 8.5                          | 20                                         | 14.4                                                    | 104.2                                   | 18.7                                                 | 521.0                                |
| SMCJ9.0A              | GDV     | SMCJ9.0CA            | BDV     | 10.0                                      | 11.1  | 1                     | 9                            | 10                                         | 15.4                                                    | 97.4                                    | 20.0                                                 | 487.0                                |
| SMCJ10A               | GDX     | SMCJ10CA             | BDX     | 11.1                                      | 12.3  | 1                     | 10                           | 5                                          | 17                                                      | 88.3                                    | 22.1                                                 | 441.5                                |
| SMCJ11A               | GDZ     | SMCJ11CA             | BDZ     | 12.2                                      | 13.5  | 1                     | 11                           | 1                                          | 18.2                                                    | 82.5                                    | 23.7                                                 | 412.5                                |
| SMCJ12A               | GEE     | SMCJ12CA             | BEE     | 13.3                                      | 14.7  | 1                     | 12                           | 1                                          | 19.9                                                    | 75.4                                    | 25.9                                                 | 377.0                                |
| SMCJ13A               | GEG     | SMCJ13CA             | BEG     | 14.4                                      | 15.9  | 1                     | 13                           | 1                                          | 21.5                                                    | 69.8                                    | 28.0                                                 | 349.0                                |
| SMCJ14A               | GEK     | SMCJ14CA             | BEK     | 15.6                                      | 17.2  | 1                     | 14                           | 1                                          | 23.2                                                    | 64.7                                    | 30.2                                                 | 323.5                                |
| SMCJ15A               | GEM     | SMCJ15CA             | BEM     | 16.7                                      | 18.5  | 1                     | 15                           | 1                                          | 24.4                                                    | 61.5                                    | 31.7                                                 | 307.5                                |
| SMCJ16A               | GEP     | SMCJ16CA             | BEP     | 17.8                                      | 19.7  | 1                     | 16                           | 1                                          | 26                                                      | 57.7                                    | 33.8                                                 | 288.5                                |
| SMCJ17A               | GER     | SMCJ17CA             | BER     | 18.9                                      | 20.9  | 1                     | 17                           | 1                                          | 27.6                                                    | 54.4                                    | 35.9                                                 | 272.0                                |
| SMCJ18A               | GET     | SMCJ18CA             | BET     | 20.0                                      | 22.1  | 1                     | 18                           | 1                                          | 29.2                                                    | 51.4                                    | 38.0                                                 | 257.0                                |
| SMCJ20A               | GEV     | SMCJ20CA             | BEV     | 22.2                                      | 24.5  | 1                     | 20                           | 1                                          | 32.4                                                    | 46.3                                    | 42.1                                                 | 231.5                                |
| SMCJ22A               | GEX     | SMCJ22CA             | BEX     | 24.4                                      | 26.9  | 1                     | 22                           | 1                                          | 35.5                                                    | 42.3                                    | 46.2                                                 | 211.5                                |
| SMCJ24A               | GEZ     | SMCJ24CA             | BEZ     | 26.7                                      | 29.5  | 1                     | 24                           | 1                                          | 38.9                                                    | 38.6                                    | 50.6                                                 | 193.0                                |
| SMCJ26A               | GFE     | SMCJ26CA             | BFE     | 28.9                                      | 31.9  | 1                     | 26                           | 1                                          | 42.1                                                    | 35.7                                    | 54.7                                                 | 178.5                                |
| SMCJ28A               | GFG     | SMCJ28CA             | BFG     | 31.1                                      | 34.4  | 1                     | 28                           | 1                                          | 45.4                                                    | 33.1                                    | 59.0                                                 | 165.5                                |
| SMCJ30A               | GFK     | SMCJ30CA             | BFK     | 33.3                                      | 36.8  | 1                     | 30                           | 1                                          | 48.4                                                    | 31                                      | 63                                                   | 155                                  |
| SMCJ33A               | GFM     | SMCJ33CA             | BFM     | 36.7                                      | 40.6  | 1                     | 33                           | 1                                          | 53.3                                                    | 28.1                                    | 69.3                                                 | 141.0                                |
| SMCJ36A               | GFP     | SMCJ36CA             | BFP     | 40                                        | 44.2  | 1                     | 36                           | 1                                          | 58.1                                                    | 25.9                                    | 75.5                                                 | 129.5                                |
| SMCJ40A               | GFR     | SMCJ40CA             | BFR     | 44.4                                      | 49.1  | 1                     | 40                           | 1                                          | 64.5                                                    | 23.3                                    | 83.9                                                 | 116.5                                |
| SMCJ43A               | GFT     | SMCJ43CA             | BFT     | 47.8                                      | 52.8  | 1                     | 43                           | 1                                          | 69.4                                                    | 21.7                                    | 90.2                                                 | 108.5                                |
| SMCJ45A               | GFV     | SMCJ45CA             | BFV     | 50                                        | 55.3  | 1                     | 45                           | 1                                          | 72.7                                                    | 20.6                                    | 94.5                                                 | 103.0                                |
| SMCJ48A               | GFX     | SMCJ48CA             | BFX     | 53.3                                      | 58.9  | 1                     | 48                           | 1                                          | 77.4                                                    | 19.4                                    | 100.6                                                | 97.0                                 |
| SMCJ51A               | GFZ     | SMCJ51CA             | BFZ     | 56.7                                      | 62.7  | 1                     | 51                           | 1                                          | 82.4                                                    | 18.2                                    | 107.1                                                | 91.0                                 |
| SMCJ54A               | GGE     | SMCJ54CA             | BGE     | 60                                        | 66.3  | 1                     | 54                           | 1                                          | 87.1                                                    | 17.3                                    | 113.2                                                | 86.5                                 |
| SMCJ58A               | GGG     | SMCJ58CA             | BGG     | 64.4                                      | 71.2  | 1                     | 58                           | 1                                          | 93.6                                                    | 16.1                                    | 121.7                                                | 80.5                                 |
| SMCJ60A               | GGK     | SMCJ60CA             | BGK     | 66.7                                      | 73.7  | 1                     | 60                           | 1                                          | 96.8                                                    | 15.5                                    | 125.8                                                | 77.5                                 |
| SMCJ64A               | GGM     | SMCJ64CA             | BGM     | 71.1                                      | 78.6  | 1                     | 64                           | 1                                          | 103                                                     | 14.6                                    | 133.9                                                | 73.0                                 |
| SMCJ70A               | GGP     | SMCJ70CA             | BGP     | 77.8                                      | 86.0  | 1                     | 70                           | 1                                          | 113                                                     | 13.3                                    | 146.9                                                | 66.5                                 |
| SMCJ75A               | GGR     | SMCJ75CA             | BGR     | 83.3                                      | 92.1  | 1                     | 75                           | 1                                          | 121                                                     | 12.4                                    | 157.3                                                | 62.0                                 |
| SMCJ78A               | GGT     | SMCJ78CA             | BGT     | 86.7                                      | 95.8  | 1                     | 78                           | 1                                          | 126                                                     | 11.9                                    | 163.8                                                | 59.5                                 |
| SMCJ85A               | GGV     | SMCJ85CA             | BGV     | 94.4                                      | 104   | 1                     | 85                           | 1                                          | 137                                                     | 11                                      | 178                                                  | 55                                   |
| SMCJ90A               | GGX     | SMCJ90CA             | BGX     | 100                                       | 111   | 1                     | 90                           | 1                                          | 146                                                     | 10.3                                    | 189.8                                                | 51.5                                 |
| SMCJ100A              | GGZ     | SMCJ100CA            | BGZ     | 111                                       | 123   | 1                     | 100                          | 1                                          | 162                                                     | 9.3                                     | 210.6                                                | 46.5                                 |
| SMCJ110A              | GHE     | SMCJ110CA            | BHE     | 122                                       | 135   | 1                     | 110                          | 1                                          | 177                                                     | 8.4                                     | 230.1                                                | 42.5                                 |
| SMCJ120A              | GHG     | SMCJ120CA            | BHG     | 133                                       | 147   | 1                     | 120                          | 1                                          | 193                                                     | 7.9                                     | 250.9                                                | 39.0                                 |
| SMCJ130A              | GHK     | SMCJ130CA            | BHK     | 144                                       | 159   | 1                     | 130                          | 1                                          | 209                                                     | 7.2                                     | 271.7                                                | 36.0                                 |
| SMCJ150A              | GHM     | SMCJ150CA            | BHM     | 167                                       | 185   | 1                     | 150                          | 1                                          | 243                                                     | 6.2                                     | 315.9                                                | 31.0                                 |
| SMCJ160A              | GHP     | SMCJ160CA            | BHP     | 178                                       | 197   | 1                     | 160                          | 1                                          | 259                                                     | 5.8                                     | 336.7                                                | 29.0                                 |
| SMCJ170A              | GHR     | SMCJ170CA            | BHR     | 189                                       | 209   | 1                     | 170                          | 1                                          | 275                                                     | 5.5                                     | 357.5                                                | 27.5                                 |
| SMCJ180A              | GHT     | SMCJ180CA            | BHT     | 201                                       | 222   | 1                     | 180                          | 1                                          | 292                                                     | 5.1                                     | 379.6                                                | 25.5                                 |
| SMCJ200A              | GHV     | SMCJ200CA            | BHV     | 224                                       | 247   | 1                     | 200                          | 1                                          | 324                                                     | 4.6                                     | 421.2                                                | 23.0                                 |
| SMCJ220A              | GHX     | SMCJ220CA            | BHX     | 246                                       | 272   | 1                     | 220                          | 1                                          | 356                                                     | 4.2                                     | 462.8                                                | 21.0                                 |
| SMCJ250A              | GHZ     | SMCJ250CA            | BHZ     | 279                                       | 309   | 1                     | 250                          | 1                                          | 405                                                     | 3.7                                     | 526.5                                                | 18.5                                 |
| SMCJ300A              | GJE     | SMCJ300CA            | BJE     | 335                                       | 371   | 1                     | 300                          | 1                                          | 486                                                     | 3.1                                     | 631.8                                                | 15.5                                 |
| SMCJ350A              | GJG     | SMCJ350CA            | BJG     | 391                                       | 432   | 1                     | 350                          | 1                                          | 567                                                     | 2.6                                     | 737.1                                                | 13.0                                 |
| SMCJ400A              | GJK     | SMCJ400CA            | BJK     | 447                                       | 494   | 1                     | 400                          | 1                                          | 648                                                     | 2.3                                     | 842.4                                                | 11.5                                 |
| SMCJ408A              | 408A    | SMCJ408CA            | 408CA   | 456                                       | 504   | 1                     | 408                          | 1                                          | 658                                                     | 2.3                                     | 855.4                                                | 11.4                                 |
| SMCJ440A              | GJM     | SMCJ440CA            | BJM     | 492                                       | 543   | 1                     | 440                          | 1                                          | 713                                                     | 2.1                                     | 926.9                                                | 10.5                                 |
| SMCJ495A              | 495A    | SMCJ495CA            | 495CA   | 522.5                                     | 577.5 | 1                     | 495                          | 1                                          | 760                                                     | 2.0                                     | 988.0                                                | 9.9                                  |

### Notes:

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

Specifications are subject to change without notice.

Users should verify actual device performance in their specific applications.

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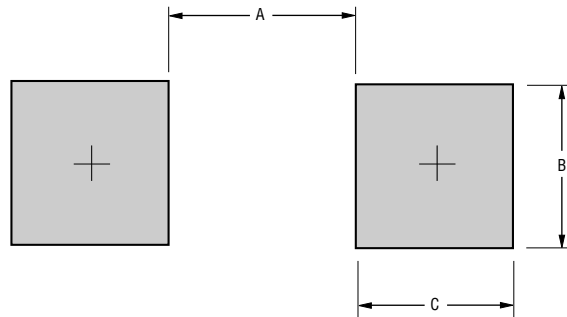
## Product Dimensions



| Dimension | SMC (DO-214AB)                         |
|-----------|----------------------------------------|
| A         | $\frac{6.60 - 7.11}{(0.260 - 0.280)}$  |
| B         | $\frac{5.59 - 6.22}{(0.220 - 0.245)}$  |
| C         | $\frac{2.90 - 3.20}{(0.115 - 0.125)}$  |
| D         | $\frac{0.15 - 0.31}{(0.006 - 0.012)}$  |
| E         | $\frac{7.75 - 8.13}{(0.305 - 0.320)}$  |
| F         | $\frac{0.05 - 0.202}{(0.002 - 0.008)}$ |
| G         | $\frac{2.00 - 2.62}{(0.079 - 0.103)}$  |
| H         | $\frac{0.76 - 1.52}{(0.030 - 0.060)}$  |

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

## Recommended Footprint



| Dimension | SMC (DO-214AB)         |
|-----------|------------------------|
| A (Max.)  | $\frac{4.69}{(0.185)}$ |
| B (Min.)  | $\frac{3.07}{(0.121)}$ |
| C (Min.)  | $\frac{1.52}{(0.060)}$ |

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  
 Weight .....0.21 grams

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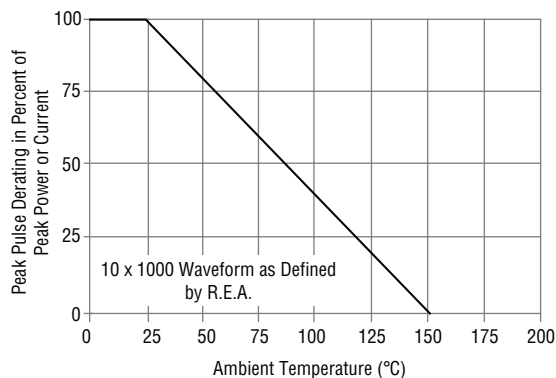
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# SMCJ Transient Voltage Suppressor Diode Series

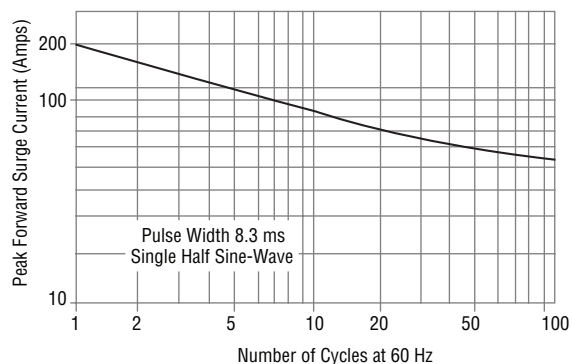
**BOURNS®**

## Rating & Characteristic Curves

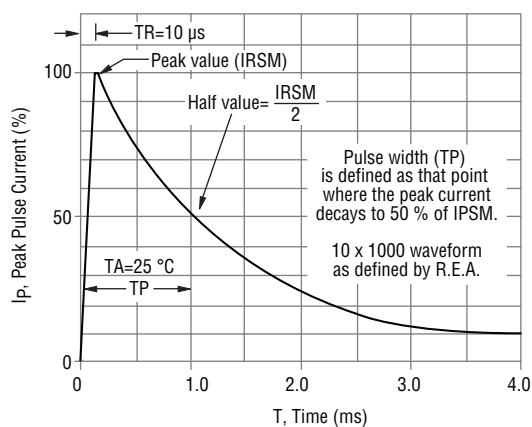
### Pulse Derating Curve



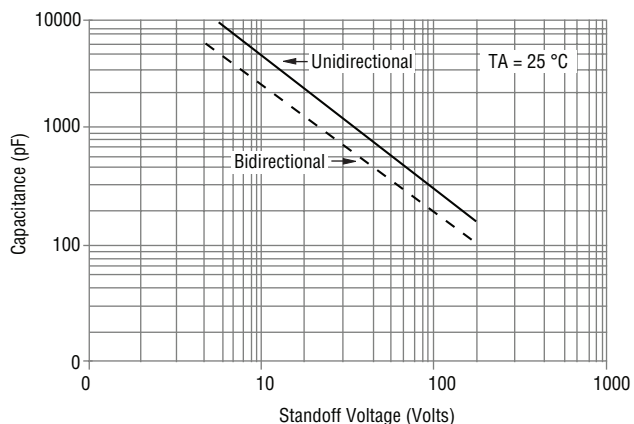
### Maximum Non-Repetitive Surge Current



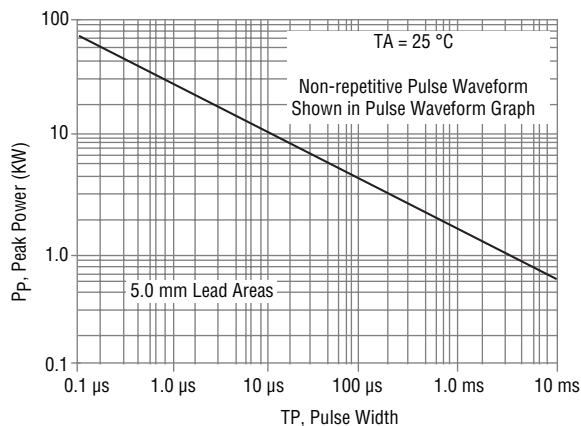
### Pulse Waveform



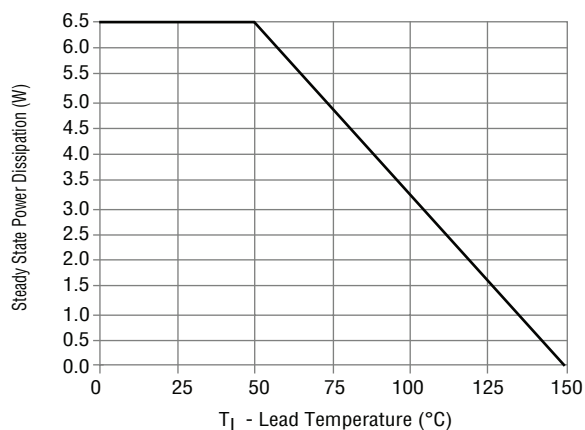
### Typical Junction Capacitance



### Pulse Rating Curve



### Steady State Power Derating Curve



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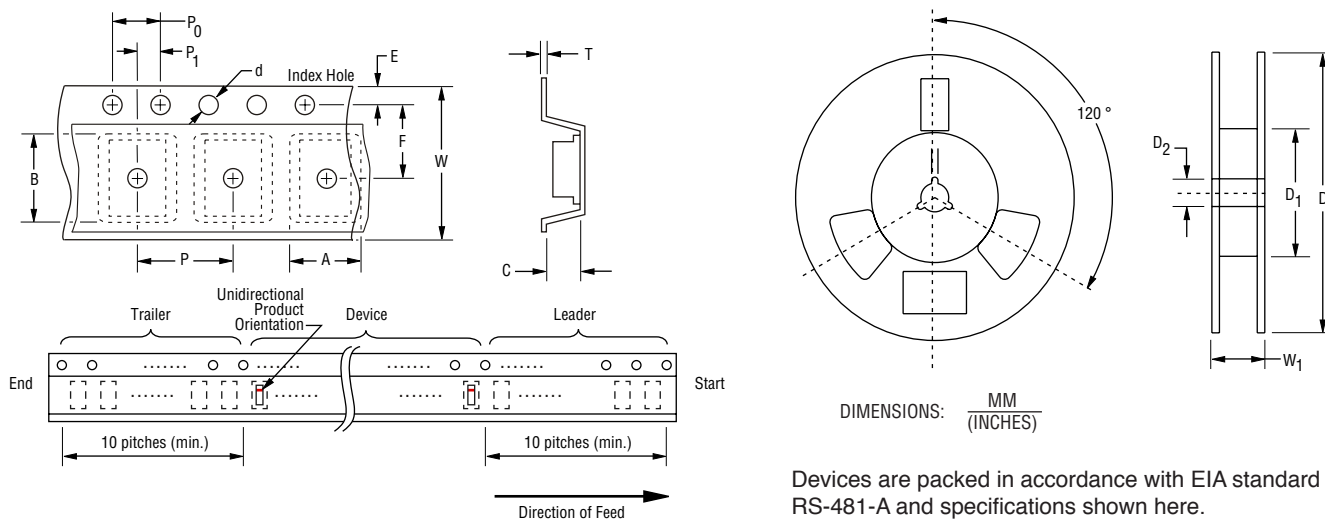
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## Packaging Information

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



| Item                   | Symbol         | SMC (DO-214AB)                              |                        |
|------------------------|----------------|---------------------------------------------|------------------------|
|                        |                | 7 Inch Reel                                 | 13 Inch Reel           |
| Carrier Width          | A              | $6.0 \pm 2.0$<br>(0.236 - 0.079)            |                        |
| Carrier Length         | B              | $8.3 \pm 0.20$<br>(0.327 $\pm$ 0.008)       |                        |
| Carrier Depth          | C              | $2.5 \pm 0.20$<br>(0.098 $\pm$ 0.008)       |                        |
| Sprocket Hole          | d              | $1.50 \pm 0.10$<br>(0.059 $\pm$ 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> | $13.0 +0.50/-0.20$<br>(0.512 +0.020/-0.008) |                        |
| Sprocket Hole Position | E              | $1.75 \pm 0.10$<br>(0.069 $\pm$ 0.004)      |                        |
| Punch Hole Position    | F              | $7.50 \pm 0.10$<br>(0.295 $\pm$ 0.004)      |                        |
| Punch Hole Pitch       | P              | $8.00 \pm 0.10$<br>(0.315 $\pm$ 0.004)      |                        |
| Sprocket Hole Pitch    | P <sub>0</sub> | $4.00 \pm 0.10$<br>(0.157 $\pm$ 0.004)      |                        |
| Embossment Center      | P <sub>1</sub> | $2.00 \pm 0.10$<br>(0.079 $\pm$ 0.004)      |                        |
| Overall Tape Thickness | T              | $0.30 \pm 0.10$<br>(0.012 $\pm$ 0.004)      |                        |
| Tape Width             | W              | $16.00 \pm 0.30$<br>(0.630 $\pm$ 0.012)     |                        |
| Reel Width             | W <sub>1</sub> | $\frac{22.4}{(0.882)}$ MAX.                 |                        |
| Quantity per Reel      | --             | 500                                         | 3,000                  |

REV. 03/20

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