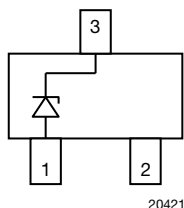
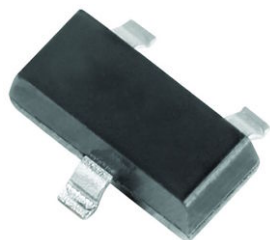


## Small Signal Zener Diodes



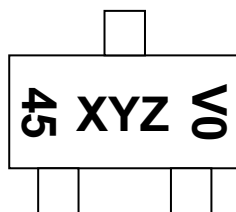
### FEATURES

- Silicon planar Zener diodes
- The Zener voltages are graded according to the international E24 standard. Standard Zener voltage tolerance is  $\pm 5\%$ , indicated by the "C" in the ordering code. Replace "C" with "B" for  $\pm 2\%$  tolerance.
- AEC-Q101 qualified available
- ESD capability acc. to AEC-Q101:  
human body model: > 8 kV,  
machine model: > 800 V
- Base P/N-E3 - RoHS-compliant, commercial grade
- Base P/N-HE3\_A - RoHS-compliant, AEC-Q101 qualified
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)

### LINKS TO ADDITIONAL RESOURCES



### MARKING (example only)



XYZ = type code  
45 = working week  
0 = year  
V = Vishay

### PRIMARY CHARACTERISTICS

| PARAMETER             | VALUE         | UNIT |
|-----------------------|---------------|------|
| $V_Z$ range nom.      | 2.2 to 75     | V    |
| Test current $I_{ZT}$ | 2; 5          | mA   |
| $V_Z$ specification   | Pulse current |      |
| Circuit configuration | Single        |      |

### ORDERING INFORMATION

| DEVICE NAME  | ORDERING CODE                           | ZENER VOLTAGE TOLERANCE | AEC-Q101 QUALIFIED | TAPED UNITS PER REEL              | MINIMUM ORDER QUANTITY |
|--------------|-----------------------------------------|-------------------------|--------------------|-----------------------------------|------------------------|
| BZX84 series | BZX84C2V4-E3-08 to BZX84C75-E3-08       | 5 %                     | no                 | 3000<br>(8 mm tape on 7" reel)    | 15 000                 |
|              | BZX84B2V4-E3-08 to BZX84B75-E3-08       | 2 %                     | no                 |                                   |                        |
|              | BZX84C2V4-HE3_A-08 to BZX84C75-HE3_A-08 | 5 %                     | yes                |                                   |                        |
|              | BZX84B2V4-HE3_A-08 to BZX84B75-HE3_A-08 | 2 %                     | yes                |                                   |                        |
|              | BZX84C2V4-E3-18 to BZX84C75-E3-18       | 5 %                     | no                 | 10 000<br>(8 mm tape on 13" reel) | 10 000                 |
|              | BZX84B2V4-E3-18 to BZX84B75-E3-18       | 2 %                     | no                 |                                   |                        |
|              | BZX84C2V4-HE3_A-18 to BZX84C75-HE3_A-18 | 5 %                     | yes                |                                   |                        |
|              | BZX84B2V4-HE3_A-18 to BZX84B75-HE3_A-18 | 2 %                     | yes                |                                   |                        |

### PACKAGE

| PACKAGE NAME | WEIGHT | MOLDING COMPOUND FLAMMABILITY RATING | MOISTURE SENSITIVITY LEVEL           | SOLDERING CONDITIONS         |
|--------------|--------|--------------------------------------|--------------------------------------|------------------------------|
| SOT-23       | 9.2 mg | UL 94 V-0                            | MSL level 1<br>(according J-STD-020) | Peak temperature max. 260 °C |

**ABSOLUTE MAXIMUM RATINGS**

| PARAMETER                              | TEST CONDITION                                                              | SYMBOL     | VALUE       | UNIT |
|----------------------------------------|-----------------------------------------------------------------------------|------------|-------------|------|
| Power dissipation                      | $R_{thJL} = 250 \text{ K/W}$                                                | $P_{tot}$  | 500         | mW   |
|                                        | On FR-4 board with recommended soldering footprint                          | $P_{tot}$  | 300         | mW   |
| Thermal resistance junction to lead    |                                                                             | $R_{thJL}$ | 250         | K/W  |
| Thermal resistance junction to ambient | According to JEDEC® 51-3 on FR-4 board with recommended soldering footprint | $R_{thJA}$ | 420         | K/W  |
| Junction temperature                   |                                                                             | $T_j$      | 150         | °C   |
| Storage temperature range              |                                                                             | $T_{stg}$  | -65 to +150 | °C   |
| Operating temperature range            |                                                                             | $T_{op}$   | -55 to +150 | °C   |

**ELECTRICAL CHARACTERISTICS** ( $T_{amb} = 25 \text{ °C}$ , unless otherwise specified)

| PART NUMBER | MARKING CODE | ZENER VOLTAGE RANGE |      |       | TEST CURRENT |           | REVERSE LEAKAGE CURRENT |      | DYNAMIC RESISTANCE<br>$f = 1 \text{ kHz}$ |                       | TEMPERATURE COEFFICIENT    |      |
|-------------|--------------|---------------------|------|-------|--------------|-----------|-------------------------|------|-------------------------------------------|-----------------------|----------------------------|------|
|             |              | $V_Z$ at $I_{ZT1}$  |      |       | $I_{ZT1}$    | $I_{ZT2}$ | $I_R$ at $V_R$          |      | $Z_Z$ at $I_{ZT1}$                        | $Z_{ZK}$ at $I_{ZT2}$ | $\alpha_{VZ}$ at $I_{ZT1}$ |      |
|             |              | V                   |      |       | mA           |           | $\mu A$                 | V    | $\Omega$                                  |                       | $10^{-4}/^{\circ}C$        |      |
|             |              | MIN.                | NOM. | MAX.  |              |           |                         |      | MAX.                                      | MAX.                  | MIN.                       | MAX. |
| BZX84C2V2   | G49          | 2.09                | 2.2  | 2.31  | 5            | 1         | 100                     | 1    | 120                                       | 600                   | -9                         | -4   |
| BZX84C2V4   | G50          | 2.28                | 2.4  | 2.52  | 5            | 1         | 50                      | 1    | 100                                       | 600                   | -9                         | -4   |
| BZX84C2V7   | G51          | 2.57                | 2.7  | 2.84  | 5            | 1         | 20                      | 1    | 100                                       | 600                   | -9                         | -4   |
| BZX84C3V0   | G52          | 2.85                | 3.0  | 3.15  | 5            | 1         | 10                      | 1    | 95                                        | 600                   | -9                         | -3   |
| BZX84C3V3   | G53          | 3.14                | 3.3  | 3.47  | 5            | 1         | 5                       | 1    | 95                                        | 600                   | -8                         | -3   |
| BZX84C3V6   | G54          | 3.42                | 3.6  | 3.78  | 5            | 1         | 5                       | 1    | 90                                        | 600                   | -8                         | -3   |
| BZX84C3V9   | G55          | 3.71                | 3.9  | 4.10  | 5            | 1         | 3                       | 1    | 90                                        | 600                   | -7                         | -3   |
| BZX84C4V3   | G56          | 4.09                | 4.3  | 4.52  | 5            | 1         | 3                       | 1    | 90                                        | 600                   | -6                         | -1   |
| BZX84C4V7   | G57          | 4.47                | 4.7  | 4.94  | 5            | 1         | 3                       | 2    | 80                                        | 500                   | -5                         | 2    |
| BZX84C5V1   | G58          | 4.85                | 5.1  | 5.36  | 5            | 1         | 2                       | 2    | 60                                        | 480                   | -3                         | 4    |
| BZX84C5V6   | G59          | 5.32                | 5.6  | 5.88  | 5            | 1         | 1                       | 2    | 40                                        | 400                   | -2                         | 6    |
| BZX84C6V2   | G60          | 5.89                | 6.2  | 6.51  | 5            | 1         | 3                       | 4    | 10                                        | 150                   | -1                         | 7    |
| BZX84C6V8   | G61          | 6.46                | 6.8  | 7.14  | 5            | 1         | 2                       | 4    | 15                                        | 80                    | 2                          | 7    |
| BZX84C7V5   | G62          | 7.13                | 7.5  | 7.88  | 5            | 1         | 1                       | 5    | 15                                        | 80                    | 3                          | 7    |
| BZX84C8V2   | G63          | 7.79                | 8.2  | 8.61  | 5            | 1         | 0.7                     | 5    | 15                                        | 80                    | 4                          | 7    |
| BZX84C9V1   | G64          | 8.65                | 9.1  | 9.56  | 5            | 1         | 0.5                     | 6    | 15                                        | 100                   | 5                          | 8    |
| BZX84C10    | G65          | 9.50                | 10   | 10.50 | 5            | 1         | 0.2                     | 7    | 20                                        | 150                   | 5                          | 8    |
| BZX84C11    | G66          | 10.45               | 11   | 11.55 | 5            | 1         | 0.1                     | 8    | 20                                        | 150                   | 5                          | 9    |
| BZX84C12    | G67          | 11.40               | 12   | 12.60 | 5            | 1         | 0.1                     | 8    | 25                                        | 150                   | 6                          | 9    |
| BZX84C13    | G68          | 12.40               | 13   | 13.65 | 5            | 1         | 0.1                     | 8    | 30                                        | 170                   | 7                          | 9    |
| BZX84C15    | G69          | 14.25               | 15   | 15.60 | 5            | 1         | 0.05                    | 10.5 | 30                                        | 200                   | 7                          | 9    |
| BZX84C16    | G70          | 15.30               | 16   | 16.80 | 5            | 1         | 0.05                    | 11.2 | 40                                        | 200                   | 8                          | 9.5  |
| BZX84C18    | G71          | 17.10               | 18   | 18.90 | 5            | 1         | 0.05                    | 12.6 | 45                                        | 225                   | 8                          | 9.5  |
| BZX84C20    | G72          | 19.00               | 20   | 21.00 | 5            | 1         | 0.05                    | 14.0 | 55                                        | 225                   | 8                          | 10   |
| BZX84C22    | G73          | 20.90               | 22   | 23.10 | 5            | 1         | 0.05                    | 15.4 | 55                                        | 250                   | 8                          | 10   |
| BZX84C24    | G74          | 22.80               | 24   | 25.20 | 5            | 1         | 0.05                    | 16.8 | 70                                        | 250                   | 8                          | 10   |
| BZX84C27    | G75          | 25.65               | 27   | 28.35 | 2            | 0.5       | 0.05                    | 18.9 | 80                                        | 300                   | 8                          | 10   |
| BZX84C30    | G76          | 28.50               | 30   | 31.50 | 2            | 0.5       | 0.05                    | 21.0 | 80                                        | 300                   | 8                          | 10   |
| BZX84C33    | G77          | 31.35               | 33   | 34.65 | 2            | 0.5       | 0.05                    | 23.1 | 80                                        | 325                   | 8                          | 10   |
| BZX84C36    | G78          | 34.20               | 36   | 37.80 | 2            | 0.5       | 0.05                    | 25.2 | 90                                        | 350                   | 8                          | 10   |
| BZX84C39    | G79          | 37.05               | 39   | 40.95 | 2            | 0.5       | 0.05                    | 27.3 | 130                                       | 350                   | 10                         | 12   |
| BZX84C43    | G80          | 40.85               | 43   | 45.15 | 2            | 0.5       | 0.05                    | 30.1 | 150                                       | 375                   | 10                         | 12   |
| BZX84C47    | G81          | 44.65               | 47   | 49.35 | 2            | 0.5       | 0.05                    | 32.9 | 170                                       | 375                   | 10                         | 12   |
| BZX84C51    | G82          | 48.45               | 51   | 53.55 | 2            | 0.5       | 0.05                    | 35.7 | 180                                       | 400                   | 10                         | 12   |
| BZX84C56    | G83          | 53.20               | 56   | 58.80 | 2            | 0.5       | 0.05                    | 39.2 | 200                                       | 425                   | 9                          | 11   |
| BZX84C62    | G84          | 58.90               | 62   | 65.10 | 2            | 0.5       | 0.05                    | 43.4 | 215                                       | 450                   | 9                          | 12   |
| BZX84C68    | G85          | 64.60               | 68   | 71.40 | 2            | 0.5       | 0.05                    | 47.6 | 240                                       | 475                   | 10                         | 12   |
| BZX84C75    | G86          | 71.25               | 75   | 78.75 | 2            | 0.5       | 0.05                    | 52.5 | 255                                       | 500                   | 10                         | 12   |

**ELECTRICAL CHARACTERISTICS** ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified)

| PART NUMBER | MARKING CODE | ZENER VOLTAGE RANGE |      |       | TEST CURRENT |           | REVERSE LEAKAGE CURRENT |      | DYNAMIC RESISTANCE<br>$f = 1\text{ kHz}$ |                    | TEMPERATURE COEFFICIENT    |      |
|-------------|--------------|---------------------|------|-------|--------------|-----------|-------------------------|------|------------------------------------------|--------------------|----------------------------|------|
|             |              | $V_Z$ at $I_{ZT1}$  |      |       | $I_{ZT1}$    | $I_{ZT2}$ | $I_R$ at $V_R$          |      | $Z_Z$ at $I_{ZT1}$                       | $Z_Z$ at $I_{ZT2}$ | $\alpha_{VZ}$ at $I_{ZT1}$ |      |
|             |              | V                   |      |       | mA           |           | $\mu\text{A}$           | V    | $\Omega$                                 |                    | $10^{-4}/^{\circ}\text{C}$ |      |
|             |              | MIN.                | NOM. | MAX.  |              |           |                         |      | MAX.                                     | MAX.               | MIN.                       | MAX. |
| BZX84B2V2   | H49          | 2.16                | 2.2  | 2.24  | 5            | 1         | 100                     | 1    | 120                                      | 600                | -9                         | -4   |
| BZX84B2V4   | H50          | 2.35                | 2.4  | 2.45  | 5            | 1         | 50                      | 1    | 100                                      | 600                | -9                         | -4   |
| BZX84B2V7   | H51          | 2.65                | 2.7  | 2.75  | 5            | 1         | 20                      | 1    | 100                                      | 600                | -9                         | -4   |
| BZX84B3V0   | H52          | 2.94                | 3.0  | 3.06  | 5            | 1         | 10                      | 1    | 95                                       | 600                | -9                         | -3   |
| BZX84B3V3   | H53          | 3.23                | 3.3  | 3.37  | 5            | 1         | 5                       | 1    | 95                                       | 600                | -8                         | -3   |
| BZX84B3V6   | H54          | 3.53                | 3.6  | 3.67  | 5            | 1         | 5                       | 1    | 90                                       | 600                | -8                         | -3   |
| BZX84B3V9   | H55          | 3.82                | 3.9  | 3.98  | 5            | 1         | 3                       | 1    | 90                                       | 600                | -7                         | -3   |
| BZX84B4V3   | H56          | 4.21                | 4.3  | 4.39  | 5            | 1         | 3                       | 1    | 90                                       | 600                | -6                         | -1   |
| BZX84B4V7   | H57          | 4.61                | 4.7  | 4.79  | 5            | 1         | 3                       | 2    | 80                                       | 500                | -5                         | 2    |
| BZX84B5V1   | H58          | 5.00                | 5.1  | 5.20  | 5            | 1         | 2                       | 2    | 60                                       | 480                | -3                         | 4    |
| BZX84B5V6   | H59          | 5.49                | 5.6  | 5.71  | 5            | 1         | 1                       | 2    | 40                                       | 400                | -2                         | 6    |
| BZX84B6V2   | H60          | 6.08                | 6.2  | 6.32  | 5            | 1         | 3                       | 4    | 10                                       | 150                | -1                         | 7    |
| BZX84B6V8   | H61          | 6.66                | 6.8  | 6.94  | 5            | 1         | 2                       | 4    | 15                                       | 80                 | 2                          | 7    |
| BZX84B7V5   | H62          | 7.35                | 7.5  | 7.65  | 5            | 1         | 1                       | 5    | 15                                       | 80                 | 3                          | 7    |
| BZX84B8V2   | H63          | 8.04                | 8.2  | 8.36  | 5            | 1         | 0.7                     | 5    | 15                                       | 80                 | 4                          | 7    |
| BZX84B9V1   | H64          | 8.92                | 9.1  | 9.28  | 5            | 1         | 0.5                     | 6    | 15                                       | 100                | 5                          | 8    |
| BZX84B10    | H65          | 9.80                | 10   | 10.20 | 5            | 1         | 0.2                     | 7    | 20                                       | 150                | 5                          | 8    |
| BZX84B11    | H66          | 10.78               | 11   | 11.22 | 5            | 1         | 0.1                     | 8    | 20                                       | 150                | 5                          | 9    |
| BZX84B12    | H67          | 11.76               | 12   | 12.24 | 5            | 1         | 0.1                     | 8    | 25                                       | 150                | 6                          | 9    |
| BZX84B13    | H68          | 12.74               | 13   | 13.26 | 5            | 1         | 0.1                     | 8    | 30                                       | 170                | 7                          | 9    |
| BZX84B15    | H69          | 14.70               | 15   | 15.30 | 5            | 1         | 0.05                    | 10.5 | 30                                       | 200                | 7                          | 9    |
| BZX84B16    | H70          | 15.68               | 16   | 16.32 | 5            | 1         | 0.05                    | 11.2 | 40                                       | 200                | 8                          | 9.5  |
| BZX84B18    | H71          | 17.64               | 18   | 18.36 | 5            | 1         | 0.05                    | 12.6 | 45                                       | 225                | 8                          | 9.5  |
| BZX84B20    | H72          | 19.60               | 20   | 20.40 | 5            | 1         | 0.05                    | 14   | 55                                       | 225                | 8                          | 10   |
| BZX84B22    | H73          | 21.56               | 22   | 22.44 | 5            | 1         | 0.05                    | 15.4 | 55                                       | 250                | 8                          | 10   |
| BZX84B24    | H74          | 23.52               | 24   | 24.48 | 5            | 1         | 0.05                    | 16.8 | 70                                       | 250                | 8                          | 10   |
| BZX84B27    | H75          | 26.46               | 27   | 27.54 | 2            | 0.5       | 0.05                    | 18.9 | 80                                       | 300                | 8                          | 10   |
| BZX84B30    | H76          | 29.40               | 30   | 30.60 | 2            | 0.5       | 0.05                    | 21   | 80                                       | 300                | 8                          | 10   |
| BZX84B33    | H77          | 32.34               | 33   | 33.66 | 2            | 0.5       | 0.05                    | 23.1 | 80                                       | 325                | 8                          | 10   |
| BZX84B36    | H78          | 35.28               | 36   | 36.72 | 2            | 0.5       | 0.05                    | 25.2 | 90                                       | 350                | 8                          | 10   |
| BZX84B39    | H79          | 38.22               | 39   | 39.78 | 2            | 0.5       | 0.05                    | 27.3 | 130                                      | 350                | 10                         | 12   |
| BZX84B43    | H80          | 42.14               | 43   | 43.86 | 2            | 0.5       | 0.05                    | 30.1 | 150                                      | 375                | 10                         | 12   |
| BZX84B47    | H81          | 46.06               | 47   | 47.94 | 2            | 0.5       | 0.05                    | 32.9 | 170                                      | 375                | 10                         | 12   |
| BZX84B51    | H82          | 49.98               | 51   | 52.02 | 2            | 0.5       | 0.05                    | 35.7 | 180                                      | 400                | 10                         | 12   |
| BZX84B56    | H83          | 54.88               | 56   | 57.12 | 2            | 0.5       | 0.05                    | 39.2 | 200                                      | 425                | 9                          | 11   |
| BZX84B62    | H84          | 60.76               | 62   | 63.24 | 2            | 0.5       | 0.05                    | 43.4 | 215                                      | 450                | 9                          | 12   |
| BZX84B68    | H85          | 66.64               | 68   | 69.36 | 2            | 0.5       | 0.05                    | 47.6 | 240                                      | 475                | 10                         | 12   |
| BZX84B75    | H86          | 73.50               | 75   | 76.50 | 2            | 0.5       | 0.05                    | 52.5 | 255                                      | 500                | 10                         | 12   |

### TYPICAL CHARACTERISTICS ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified)

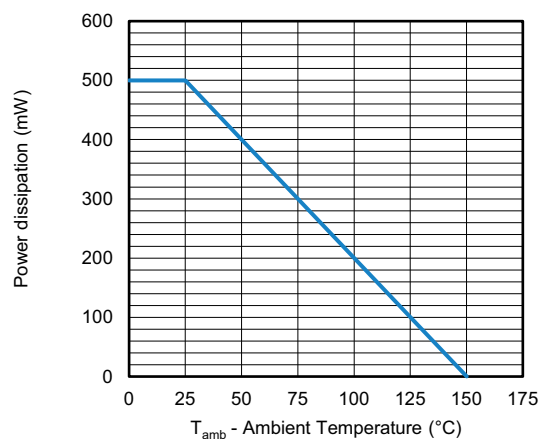


Fig. 1 - Admissible Power Dissipation vs. Ambient Temperature

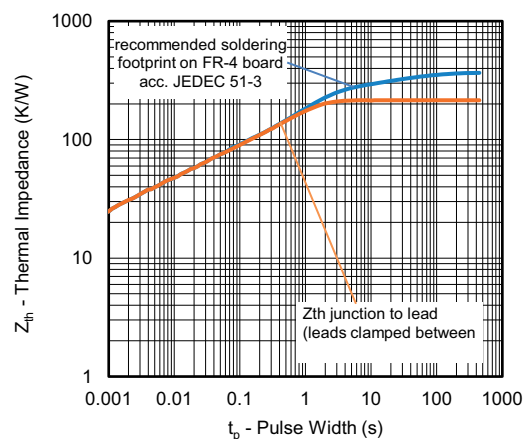
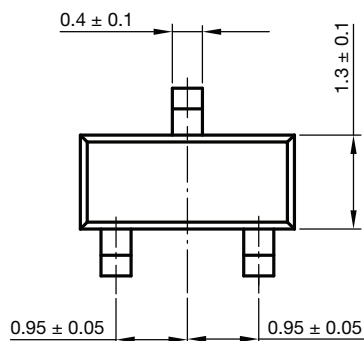
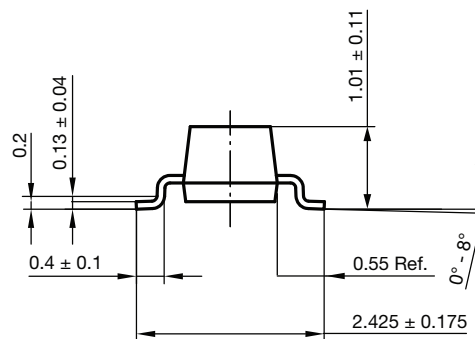
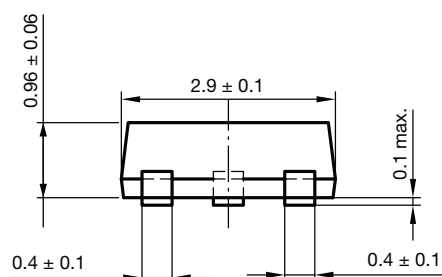
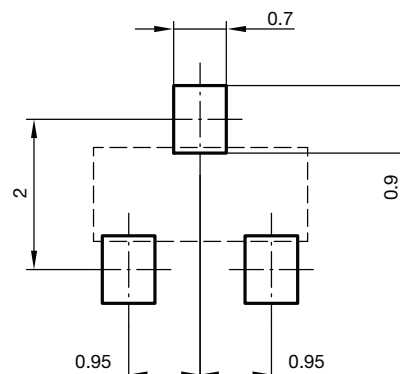


Fig. 2 - Thermal Impedance vs. Time

### PACKAGE DIMENSIONS in millimeters (inches): SOT-23



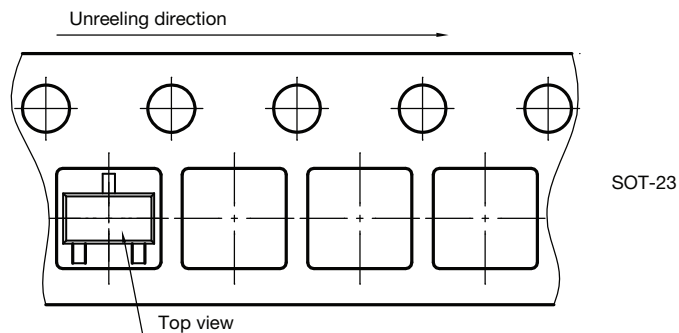
Foot print recommendation:



Document no.: S8-V-3929.01-009 (4)  
Created - Date: 18. Oct. 2021  
Rev. 01 - Date: 18. Jan. 2022

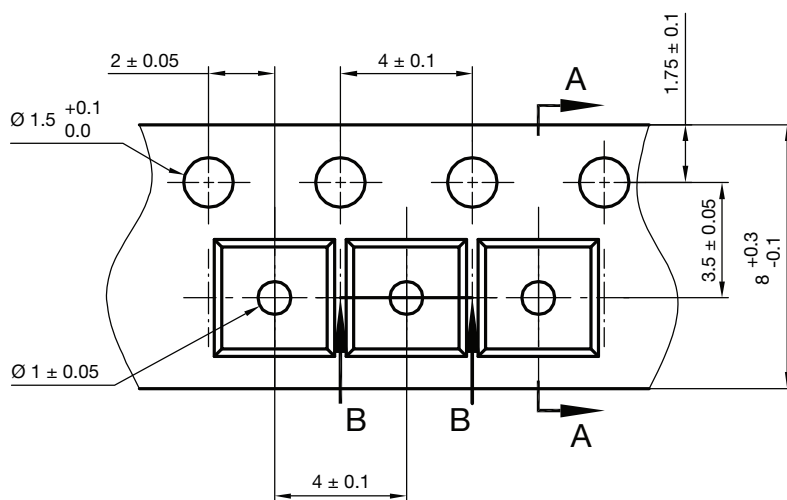


## ORIENTATION IN CARRIER TAPE

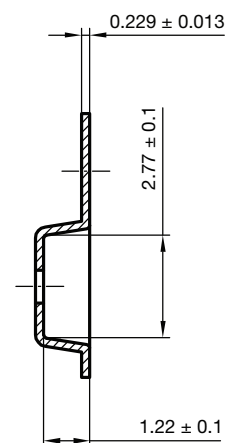


S8-V-3929.01-006 (4)  
Created Date: 04.02.2010  
Rev. 02 Date: 07.11.2022

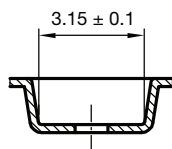
## CARRIER TAPE



A-A Section



B-B Section



Document no.: S8-V-3929.01-005 (4)  
Created - Date: 04. Feb. 2010



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