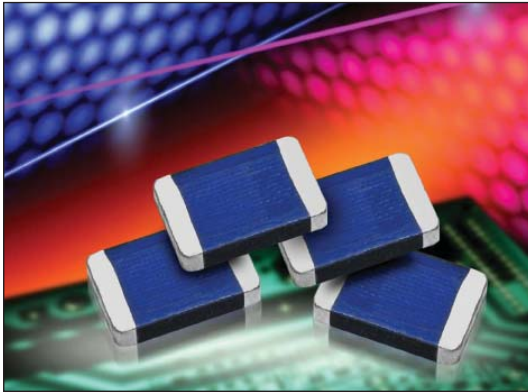


# Single Layer Varistors

## VC32 Series

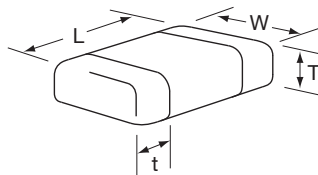


### GENERAL DESCRIPTION

The VC32 Series offers the designer a surface mount solution with higher voltage ratings and transient energy ratings than typical multi-layer varistors (MLVs). Think of this series as *surface mountable MOVs*. This series, based on our proven zinc oxide formulation, operates from -55°C to 125°C. Additionally, the top and bottom surfaces of the chip are protected with a glass coating.

### APPLICATIONS

- MOV (Radial) Replacement
- Suppression of transient on line voltage
- Electric Meters
- Industrial Equipment
- Mains PSUs
- Telecommunications
- Consumer Electronics



### PART DIMENSIONS

mm (inches)

| L                              | W                              | T                       | t                              |
|--------------------------------|--------------------------------|-------------------------|--------------------------------|
| 7.90 - 8.51<br>(0.311 - 0.335) | 4.70 - 5.26<br>(0.185 - 0.207) | 2.03 MAX<br>(0.080 MAX) | 0.40 - 1.30<br>(0.016 - 0.051) |

### PART SPECIFICATIONS

| Part No.      | V1mA<br>(nominal) | Vrms | Vdc | Leakage<br>Current<br>(max. $\mu$ A) | Maximum<br>Clamping<br>Voltage (80/20 $\mu$ s) |        | Maximum<br>peak current<br>(8/20 $\mu$ s) Ip(A) |          |          |           | Maximum<br>absorption<br>(10/1000 $\mu$ s) | Typical<br>capacitance<br>1kHz/0.5V |
|---------------|-------------------|------|-----|--------------------------------------|------------------------------------------------|--------|-------------------------------------------------|----------|----------|-----------|--------------------------------------------|-------------------------------------|
|               | V                 | V    | V   | $\mu$ A                              | Vp (V)                                         | Ip (A) | 2 Surge                                         | 10 Surge | 20 Surge | 100 Surge | J                                          | pF                                  |
| VC32M01750K-- | 270               | 175  | 225 | 200                                  | 455                                            | 10     | 200                                             | 100      | 80       | 50        | 15.0                                       | 135                                 |
| VC32M00231K-- | 360               | 230  | 300 | 50                                   | 595                                            | 10     | 200                                             | 100      | 80       | 50        | 20.0                                       | 100                                 |
| VC32M00251K-- | 390               | 250  | 330 | 50                                   | 650                                            | 10     | 200                                             | 100      | 80       | 50        | 21.0                                       | 90                                  |
| VC32M02750K-- | 430               | 275  | 368 | 50                                   | 710                                            | 10     | 200                                             | 100      | 80       | 50        | 23.0                                       | 80                                  |
| VC32M00301K-- | 470               | 300  | 385 | 50                                   | 775                                            | 10     | 200                                             | 100      | 80       | 50        | 23.0                                       | 70                                  |

### HOW TO ORDER

**VC32**



**Type**  
VC3220

**M0**



**Series**  
M = General Applications

**0251**



**AC Operating Voltage**  
EIA Coding  
e.g. 0251 = 250V<sub>AC</sub>

**K**



**Tolerance of 1mA**  
K = 10%

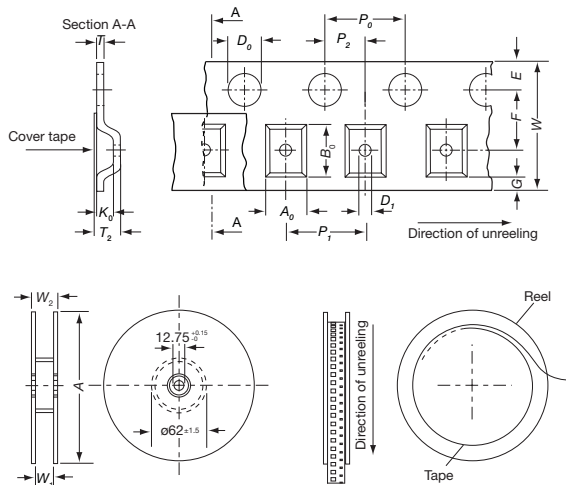
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**Packaging Suffix**  
-- = Bulk  
BG = Tape and Reel



### PACKAGING



### Tape Dimensions

mm (inches)

| Tape Size                       | 16 (0.630) VC32              | Tolerance                                  |
|---------------------------------|------------------------------|--------------------------------------------|
| A <sub>0</sub> x B <sub>0</sub> | 5.3 x 8.7<br>(0.209 x 0.043) | ±0.50 (0.20)                               |
| K <sub>0</sub>                  | 2.50 (0.098)                 | max.                                       |
| T <sub>2</sub>                  | 3.00 (0.118)                 | max.                                       |
| T                               | 0.30 (0.012)                 | ±0.10 (0.004)                              |
| D <sub>0</sub>                  | 1.50 (0.059)                 | +0.10/-0 (0.004/-0)                        |
| D <sub>1</sub>                  | 1.50 (0.059)                 | min.                                       |
| P <sub>0</sub>                  | 4.00 (0.157)                 | ±0.10 <sup>1)</sup> (0.004 <sup>1)</sup> ) |
| P <sub>2</sub>                  | 2.00 (0.079)                 | ±0.10 (0.004)                              |
| P <sub>1</sub>                  | 8.00 (0.315)                 | ±0.10 (0.004)                              |
| W                               | 16.00 (0.630)                | ±0.30 (0.012)                              |
| E                               | 1.75 (0.069)                 | ±0.10 (0.004)                              |
| F                               | 7.50 (0.295)                 | ±0.10 (0.004)                              |
| G                               | 0.75 (0.030)                 | min.                                       |

1) ±0.2 (0.008) over 10 sprocket holes

### Reel Dimensions

| Size           | VC 32                   |
|----------------|-------------------------|
| A (mm)         | 330 <sub>-2</sub>       |
| W <sub>1</sub> | 16.4 <sub>+1.5/-0</sub> |
| W <sub>2</sub> | 22.4                    |

### Packing Quantity

| Type  | Pieces/reel |
|-------|-------------|
| VC 32 | 1000        |



# Single Layer Varistors VC32 Series



## RELIABILITY TESTING

| Test Description                   | Test Condition                                                                                                                                                                                                                                                                                                                                                                  | Test Requirement                                                                     |
|------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
| SURGE CURRENT<br>(8/20μs Waveform) | CECC 42000 Test C 2.1<br>100 surges in the same direction at<br>2 pulses/min at the max. peak current                                                                                                                                                                                                                                                                           | $\Delta V/V \leq 10\%$<br>No visible damage                                          |
| SOLDERABILITY                      | IEC 68-2-20, 235°C $\pm$ 2°C, 4s $\pm$ 1s                                                                                                                                                                                                                                                                                                                                       | Coverage > 90%                                                                       |
| TEMPERATURE<br>CYCLING             | IEC 68-2-14<br>Ta = -40°C $\pm$ 3°C; Tb = +125°C $\pm$ 2°C<br>Duration: 1 Hr / cycle, 5 cycles                                                                                                                                                                                                                                                                                  | $\Delta V/V \leq 5\%$<br>No visible damage.                                          |
| ENVIRONMENTAL<br>TESTING           | CECC 42000, Test 4.16<br>a) Dry heat - Test Ba. (IEC 68-2-2)<br>Temperature: 125°C<br>Duration: 2H<br>b) Damp heat cyclic (IEC 68-2-30)<br>Temperature: 55°C $\pm$ 2°C<br>Duration: 24H<br>Humidity: 95 - 100% RH<br>c) Cold - Test Aa (IEC 68-2-1)<br>Temperature: -40°C $\pm$ 3°C<br>Duration: 2H<br>d) Damp heat cyclic test (IEC 68-2-30)<br>5 humidity cycles<br>24H/cycle | $\Delta V/V \leq 10\%$<br>Insulation Resistance $\geq 1M\Omega$<br>No visible damage |
| LIFE TEST                          | IEC 68-2-2<br>Applied voltage: max continuous AC Voltage<br>Temperature: 125°C $\pm$ 2°C<br>Duration: 1000H                                                                                                                                                                                                                                                                     | $\Delta V/V \leq 10\%$<br>Insulation Resistance $\geq 1M\Omega$<br>No visible damage |
| DAMP HEAT,<br>STEADY STATE         | IEC 68-2-3<br>Tested with no voltage applied and 10% of<br>maximum continuous DC voltage applied<br>Temperature: 40°C $\pm$ 2°C<br>Duration: 56 days<br>Humidity: 93% $\pm$ 2, -3% RH                                                                                                                                                                                           | Delta V/V $\leq 10\%$<br>Insulation Resistance min 1MΩ<br>No visible damage          |
| FLAMMABILITY<br>NEEDLE FLAME       | IEC 695-2-2<br>Duration: 10 s +0s, -1s<br>Orientation: Vertical                                                                                                                                                                                                                                                                                                                 | Visual<br>No spreading of fire                                                       |

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