

# M3 Varistor Series

## Radial Lead Varistors



### Additional Information



Resources






Accessories



Samples

### Agency Approvals

| Agency  | Standards   | Agency File Number |
|---|---|--------------------|
|  | UL 1449<br>CSA C22.2 No. 269-5  | E320116            |
|  | IEC 61051-1<br>IEC 61051-2<br>IEC 61051-2-2<br>Annex Q of IEC 60950-1<br>Annex G of IEC 62368-1 | J50453530          |
|  | GB/T 10193<br>GB/T 10194<br>GB 4943.1<br>GB 8898  | CQC19001232957     |

### Description

The M3 Varistor Series is a compact MOV with high surge current withstanding and energy absorption capabilities. It is designed to meet the 6 kV/3 kA (1.2/50  $\mu$ s, 8/20  $\mu$ s) combination wave surge as required by Annex G of IEC 62368-1, and 3 kA (E130~E420), 2 kA (E440~E625), Nominal Discharge Current (In) as required by UL 1449.

### Features & Benefits

- High operating temperature: 105° C
- UL 1449 and CSA C22.2 No. 269-5 Recognized. CQC, IEC 60950-1 Annex Q and IEC 62368-1 Annex G Compliant
- Passed Needle Flame Test per IEC 61051-1
- RoHS compliant, Halogen-free, and Pb-free
- More reliable and suitable for high operating temperature products
- Compliant with global safety standards
- Suitable for operational environments requiring V0 flammability rating
- Environment-friendly

### Applications

- Home appliance
- Outdoor LED lighting driver/power supply
- Switch Mode Power Supply (SMPS)
- Surge Protection Device (SPD) Type 2, Type 3, and Type 4CA
- Ground Fault Circuit Interrupter (GFCI)

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### Electrical Specifications

| Part Number | Maximum Continuous Operating Voltage (MCOV) |                     | Rated Energy (2 ms or 10/1000 $\mu$ s, 1x Pulse) | Maximum Peak Current (8/20 $\mu$ s, 1x Pulse) | Nominal Discharge Current (8/20 $\mu$ s, 15 Pulses) | Rated Average Dissipation Power | Combination Pulse (Voltage 1.2/50 $\mu$ s, Current 8/20 $\mu$ s 10 Pulses) |
|-------------|---|---------------------|--|---|---|---------------------------------|--|
|             | V <sub>RMS</sub> (V)                        | V <sub>DC</sub> (V) | W <sub>max</sub> (J)                             | I <sub>max</sub> (A)                          | I <sub>n</sub> (A)                                  | P <sub>max</sub> (W)            |  |
| M3E130E5LB7 | 130   | 170                 | 34   | 4500  | 3000  | 0.4                             | 6 kV / 3 kA  |
| M3E140E5LB7 | 140   | 180                 | 36   | 4500  | 3000  | 0.4                             | 6 kV / 3 kA  |
| M3E150E5LB7 | 150   | 200                 | 40   | 4500  | 3000  | 0.4                             | 6 kV / 3 kA  |
| M3E175E5LB7 | 175   | 225                 | 46   | 4500  | 3000  | 0.4                             | 6 kV / 3 kA  |
| M3E195E5LB7 | 195   | 250                 | 49   | 4500  | 3000  | 0.4                             | 6 kV / 3 kA  |
| M3E210E5LB7 | 210   | 275                 | 52   | 4500  | 3000  | 0.4                             | 6 kV / 3 kA  |
| M3E230E5LB7 | 230   | 300                 | 60   | 4500  | 3000  | 0.4                             | 6 kV / 3 kA  |
| M3E250E5LB7 | 250   | 320                 | 65   | 4500  | 3000  | 0.4                             | 6 kV / 3 kA  |
| M3E275E5LB7 | 275   | 350                 | 71   | 4500  | 3000  | 0.4                             | 6 kV / 3 kA  |
| M3E300E5LB7 | 300   | 385                 | 76   | 4500  | 3000  | 0.4                             | 6 kV / 3 kA  |
| M3E320E5LB7 | 320   | 420                 | 84   | 4500  | 3000  | 0.4                             | 6 kV / 3 kA  |
| M3E330E5LB7 | 330   | 435                 | 84   | 4500  | 3000  | 0.4                             | 6 kV / 3 kA  |
| M3E350E5LB7 | 350   | 460                 | 86   | 4500  | 3000  | 0.4                             | 6 kV / 3 kA  |
| M3E385E5LB7 | 385   | 505                 | 88   | 4500  | 3000  | 0.4                             | 6 kV / 3 kA  |
| M3E420E5LB7 | 420   | 560                 | 95   | 4500  | 3000  | 0.4                             | 6 kV / 3 kA  |
| M3E440E5LB7 | 440   | 585                 | 98   | 4500  | 2000  | 0.4                             | 4 kV / 2 kA  |
| M3E460E5LB7 | 460   | 615                 | 100  | 4500  | 2000  | 0.4                             | 4 kV / 2 kA  |
| M3E510E5LB7 | 510   | 670                 | 110  | 4500  | 2000  | 0.4                             | 4 kV / 2 kA  |
| M3E550E5LB7 | 550   | 745                 | 112  | 4500  | 2000  | 0.4                             | 4 kV / 2 kA  |
| M3E625E5LB7 | 625   | 825                 | 130  | 4500  | 2000  | 0.4                             | 4 kV / 2 kA  |

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## Radial Lead Varistors

### Electrical Characteristics Under 25° C

| Part Number | Branding | Varistor Voltage at<br>1 mA DC | Varistor Voltage<br>Shift at 1 mA | Clamping Voltage<br>(8/20 $\mu$ s) |              | Typical<br>Capacitance at<br>1 kHz |
|-------------|----------|--------------------------------|-----------------------------------|------------------------------------|--------------|------------------------------------|
|             |          | $V_n$ (V)                      | %                                 | $V_c$ (V)                          | $I_{PK}$ (A) | $C_{TYP}$ (pF)                     |
| M3E130E5LB7 | E130     | 205                            | $\pm 10$                          | 340                                | 50           | 600                                |
| M3E140E5LB7 | E140     | 220                            | $\pm 10$                          | 360                                | 50           | 560                                |
| M3E150E5LB7 | E150     | 240                            | $\pm 10$                          | 395                                | 50           | 520                                |
| M3E175E5LB7 | E175     | 270                            | $\pm 10$                          | 455                                | 50           | 450                                |
| M3E195E5LB7 | E195     | 300                            | $\pm 10$                          | 495                                | 50           | 420                                |
| M3E210E5LB7 | E210     | 330                            | $\pm 10$                          | 545                                | 50           | 390                                |
| M3E230E5LB7 | E230     | 360                            | $\pm 10$                          | 595                                | 50           | 370                                |
| M3E250E5LB7 | E250     | 390                            | $\pm 10$                          | 650                                | 50           | 340                                |
| M3E275E5LB7 | E275     | 430                            | $\pm 10$                          | 710                                | 50           | 320                                |
| M3E300E5LB7 | E300     | 470                            | $\pm 10$                          | 775                                | 50           | 290                                |
| M3E320E5LB7 | E320     | 510                            | $\pm 10$                          | 840                                | 50           | 270                                |
| M3E330E5LB7 | E330     | 530                            | $\pm 10$                          | 875                                | 50           | 265                                |
| M3E350E5LB7 | E350     | 560                            | $\pm 10$                          | 930                                | 50           | 240                                |
| M3E385E5LB7 | E385     | 620                            | $\pm 10$                          | 1025                               | 50           | 230                                |
| M3E420E5LB7 | E420     | 680                            | $\pm 10$                          | 1120                               | 50           | 200                                |
| M3E440E5LB7 | E440     | 710                            | $\pm 10$                          | 1180                               | 50           | 175                                |
| M3E460E5LB7 | E460     | 750                            | $\pm 10$                          | 1240                               | 50           | 150                                |
| M3E510E5LB7 | E510     | 820                            | $\pm 10$                          | 1355                               | 50           | 140                                |
| M3E550E5LB7 | E550     | 910                            | $\pm 10$                          | 1500                               | 50           | 130                                |
| M3E625E5LB7 | E625     | 1000                           | $\pm 10$                          | 1650                               | 50           | 120                                |

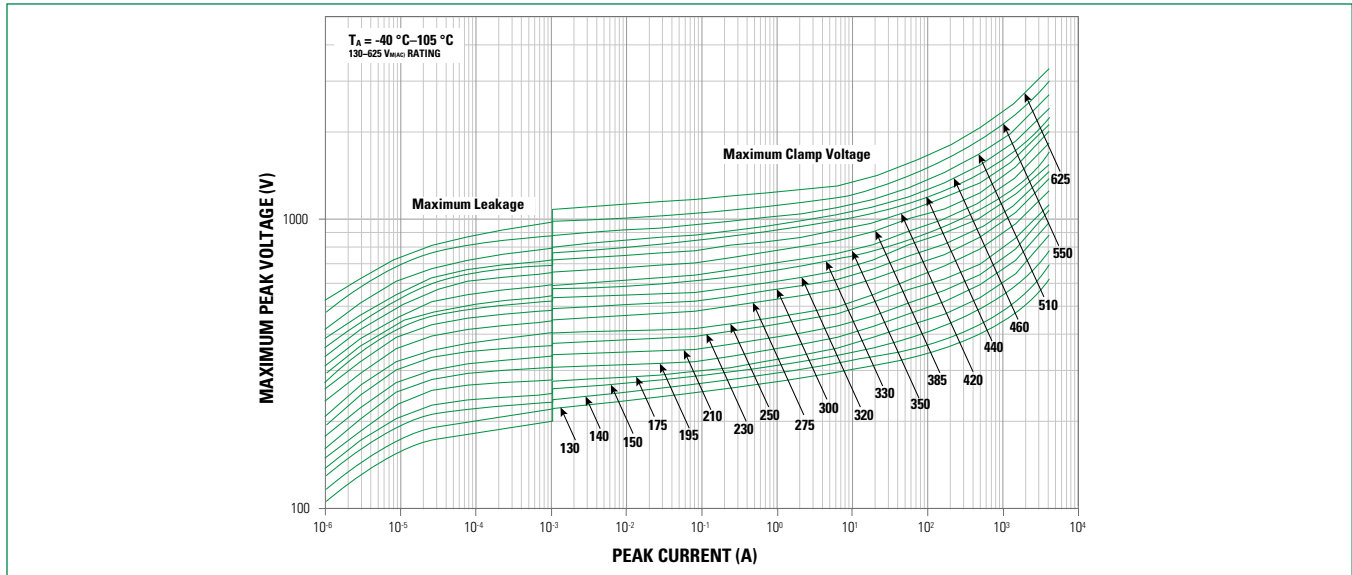
### General Technical Data

|                                    |                             |
|------------------------------------|-----------------------------|
| Operating temperature              | -40 to +105° C              |
| Storage temperature                | -40 to +125° C              |
| Electric strength (Voltage Rating) | $\geq 2.5 \text{ kV}_{RMS}$ |
| Insulation resistance              | $\geq 100 \text{ M}\Omega$  |

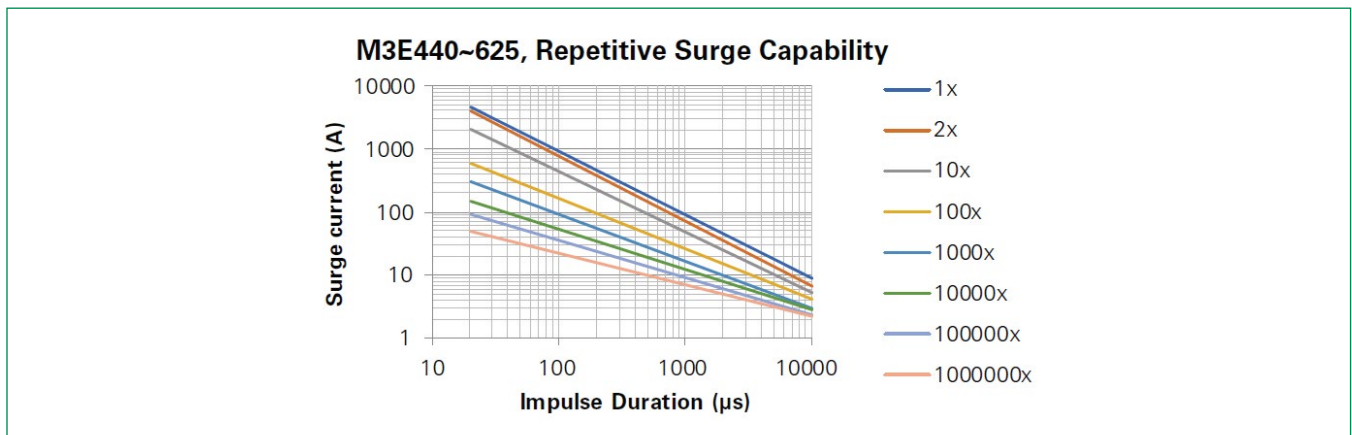
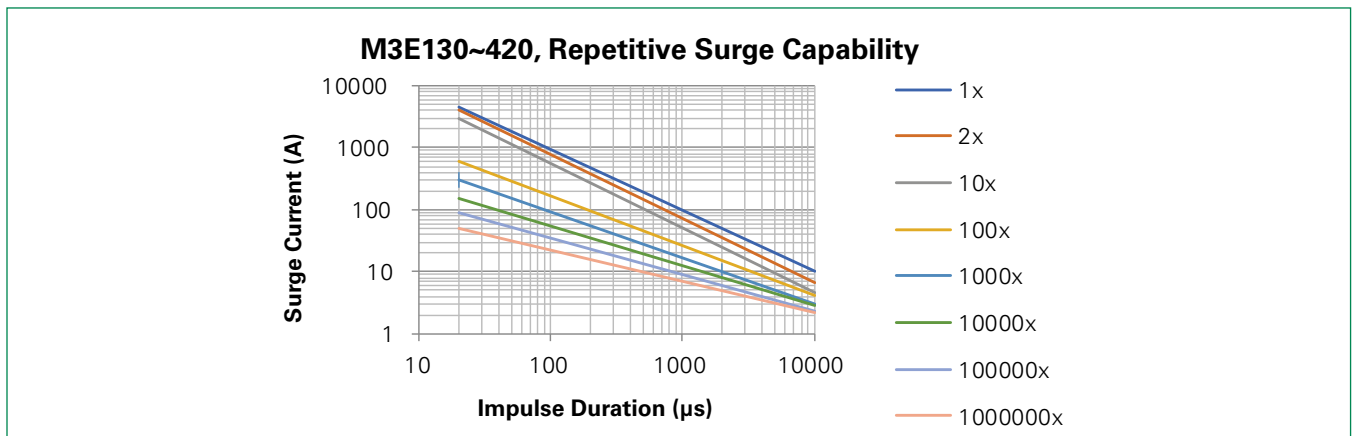
# M3 Varistor Series

## Radial Lead Varistors

Transient V-I Characteristic Curve: Maximum Clamping Voltage



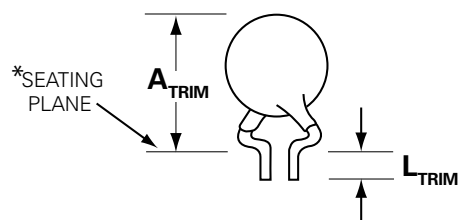
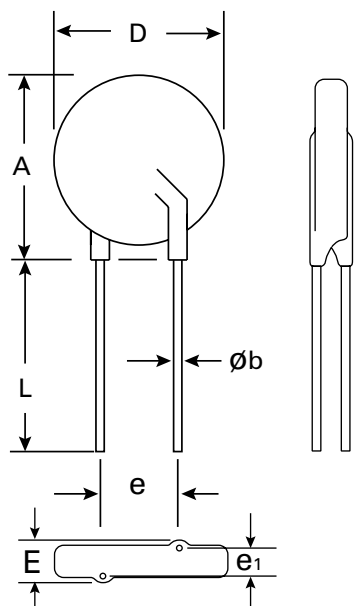
Pulse Rating Curve



# M3 Varistor Series

## Radial Lead Varistors

### Product Dimensions (mm)



\*Seating plane interpretation per IEC-717

| Part Number | A <sub>Max</sub> | A <sub>TRIM Max</sub> | Øb          | D <sub>Max</sub> | e         | e1        | E <sub>Max</sub> | L         | L <sub>TRIM</sub> = L4 |
|-------------|------------------|-----------------------|-------------|------------------|-----------|-----------|------------------|-----------|------------------------|
| M3E130E5LB7 | 16               | 19.5                  | 0.80 ± 0.05 | 12.5             | 7.5 ± 1.0 | 2.0 ± 1.0 | 6.0              | 5.0 ± 0.8 | 3.5 ± 1.0              |
| M3E140E5LB7 | 16               | 19.5                  | 0.80 ± 0.05 | 12.5             | 7.5 ± 1.0 | 2.0 ± 1.0 | 6.0              | 5.0 ± 0.8 | 3.5 ± 1.0              |
| M3E150E5LB7 | 16               | 19.5                  | 0.80 ± 0.05 | 12.5             | 7.5 ± 1.0 | 2.1 ± 1.0 | 6.0              | 5.0 ± 0.8 | 3.5 ± 1.0              |
| M3E175E5LB7 | 16               | 19.5                  | 0.80 ± 0.05 | 12.5             | 7.5 ± 1.0 | 2.1 ± 1.0 | 6.0              | 5.0 ± 0.8 | 3.5 ± 1.0              |
| M3E195E5LB7 | 16               | 19.5                  | 0.80 ± 0.05 | 12.5             | 7.5 ± 1.0 | 2.2 ± 1.0 | 6.2              | 5.0 ± 0.8 | 3.5 ± 1.0              |
| M3E210E5LB7 | 16               | 19.5                  | 0.80 ± 0.05 | 12.5             | 7.5 ± 1.0 | 2.4 ± 1.0 | 6.3              | 5.0 ± 0.8 | 3.5 ± 1.0              |
| M3E230E5LB7 | 16               | 19.5                  | 0.80 ± 0.05 | 12.5             | 7.5 ± 1.0 | 2.5 ± 1.0 | 6.5              | 5.0 ± 0.8 | 3.5 ± 1.0              |
| M3E250E5LB7 | 16               | 19.5                  | 0.80 ± 0.05 | 12.5             | 7.5 ± 1.0 | 2.6 ± 1.0 | 6.6              | 5.0 ± 0.8 | 3.5 ± 1.0              |
| M3E275E5LB7 | 16               | 19.5                  | 0.80 ± 0.05 | 12.5             | 7.5 ± 1.0 | 2.8 ± 1.0 | 6.8              | 5.0 ± 0.8 | 3.5 ± 1.0              |
| M3E300E5LB7 | 16               | 19.5                  | 0.80 ± 0.05 | 12.5             | 7.5 ± 1.0 | 3.0 ± 1.0 | 7.0              | 5.0 ± 0.8 | 3.5 ± 1.0              |
| M3E320E5LB7 | 16               | 19.5                  | 0.80 ± 0.05 | 12.5             | 7.5 ± 1.0 | 3.2 ± 1.0 | 7.2              | 5.0 ± 0.8 | 3.5 ± 1.0              |
| M3E330E5LB7 | 16               | 19.5                  | 0.80 ± 0.05 | 12.5             | 7.5 ± 1.0 | 3.3 ± 1.0 | 7.4              | 5.0 ± 0.8 | 3.5 ± 1.0              |
| M3E350E5LB7 | 16               | 19.5                  | 0.80 ± 0.05 | 12.5             | 7.5 ± 1.0 | 3.4 ± 1.0 | 7.5              | 5.0 ± 0.8 | 3.5 ± 1.0              |
| M3E385E5LB7 | 17               | 19.5                  | 0.80 ± 0.05 | 12.5             | 7.5 ± 1.0 | 3.7 ± 1.0 | 7.8              | 5.0 ± 0.8 | 3.5 ± 1.0              |
| M3E420E5LB7 | 17               | 19.5                  | 0.80 ± 0.05 | 12.5             | 7.5 ± 1.0 | 4.0 ± 1.0 | 8.1              | 5.0 ± 0.8 | 3.5 ± 1.0              |
| M3E440E5LB7 | 17               | 19.5                  | 0.80 ± 0.05 | 12.5             | 7.5 ± 1.0 | 3.6 ± 1.2 | 7.7              | 5.0 ± 0.8 | 3.5 ± 1.0              |
| M3E460E5LB7 | 17               | 19.5                  | 0.80 ± 0.05 | 12.5             | 7.5 ± 1.0 | 3.8 ± 1.5 | 7.9              | 5.0 ± 0.8 | 3.5 ± 1.0              |
| M3E510E5LB7 | 17               | 19.5                  | 0.80 ± 0.05 | 12.5             | 7.5 ± 1.0 | 4.1 ± 1.5 | 8.3              | 5.0 ± 0.8 | 3.5 ± 1.0              |
| M3E550E5LB7 | 17               | 19.5                  | 0.80 ± 0.05 | 12.5             | 7.5 ± 1.0 | 4.4 ± 1.5 | 8.8              | 5.0 ± 0.8 | 3.5 ± 1.0              |
| M3E625E5LB7 | 17               | 19.5                  | 0.80 ± 0.05 | 12.5             | 7.5 ± 1.0 | 4.8 ± 1.5 | 9.2              | 5.0 ± 0.8 | 3.5 ± 1.0              |

**Note:** "L" is measured as the shortest distance between the endpoint of epoxy coating and the endpoint of wire lead when facing MOV marking side.

# M3 Varistor Series

## Radial Lead Varistors

### Electrical Reliability

| Test Item                               | Reference Standard       | Test methods / Description   | Specification Limit   |
|---|--------------------------|--|---|
| Varistor Voltage (Vn or Uv)             | IEC 61051-1              | The voltage between the varistor leads with the measuring current of 1 mADC @ 30 ms  | To meet the specified value   |
| Clamping Voltage                        | IEC 61051-1              | The voltage measured across the varistor leads with the specified impulse current during the application of an 8/20 $\mu$ s current waveform   | To meet the specified value   |
| Maximum Peak Current                    | IEC 61051-1              | The maximum current that can be passed by a varistor with one pulse of 8/20 $\mu$ s waveform at ambient temperature of 25 °C   | $ \Delta V_n/V_n  \leq 10\%$ (measured in direction of surge current);<br>No visible damage |
| Rated Energy                            | IEC 61051-1              | The rated energy that the varistor is able to withstand one pulse when it is exposed to 2 ms rectangular waveform (or 10/1000 $\mu$ s waveform) at ambient temperature of 25 °C  | $ \Delta V_n/V_n  \leq 10\%$ (measured in direction of surge current);<br>No visible damage |
| Combination Pulse                       | IEC 61051-2              | Voltage 1.2/50 $\mu$ s, Current 8/20 $\mu$ s with $V_{RMS}$ MCOV applied, 10 pulses in one direction, one pulse per minute   | $ \Delta V_n/V_n  \leq 10\%$ (measured in direction of surge current);<br>No visible damage |
| Nominal Discharge Current               | UL 1449                  | 8/20 $\mu$ s waveform with $V_{RMS}$ MCOV applied, 15 pulses in 3 groups (30 minutes interval between every two groups, 1 minute interval between every two pulses)  | $ \Delta V_n/V_n  \leq 10\%$ (measured in direction of surge current);<br>No visible damage |
| Endurance at Upper Category Temperature | IEC 61051-1              | After having continuously applied $V_{RMS}$ MCOV at 105 $\pm$ 2 °C for 1000 hours, the specimen shall be stored at room temperature and normal humidity for 1 to 2 hours. Thereafter, the change of Vn shall be measured   | $ \Delta V_n/V_n  \leq 10\%$ ;<br>No visible damage   |
| Voltage Proof                           | IEC 61051-1              | Metal balls method, 2500 Vac for 60 $\pm$ 5 seconds. The complete varistor is placed in a container holding metal balls with maximum 1.6 mm diameter such that only the terminations of the varistor are protruding. The specified voltage shall be applied between both terminations of the specimen connected together and the electrode inserted into the metal balls   | No breakdown; No flashover  |
| Rapid Change of Temperature             | IEC 60068-2-14           | Test Na. 5 cycles*, -40 to 105 °C, dwell time 30 minutes at each extreme<br>*Tested additionally to 50 cycles  | $ \Delta V_n/V_n  \leq 10\%$ ;<br>No visible damage   |
| Climatic Sequence                       | IEC 61051-1              | The specimen shall be subjected to:<br>a) Dry heat at +105 °C, 16 hours, in accordance with Test Bb of IEC 60068-2-2<br>b) Damp heat, 1 <sup>st</sup> cycle: 55 °C, 93% RH, 24 hours, in accordance with Test Db of IEC 60068-2-30<br>c) Cold at -40 °C, 2 hours, in accordance with Test Ab of IEC 60068-2-1<br>d) Damp heat, additional 5 cycles: 55 °C, 93% RH, 24 h/cycle, in accordance with Test Db of IEC 60068-2-30.<br>e) Specimen shall be stored at room temperature and normal humidity for 1 to 2 hours | $ \Delta V_n/V_n  \leq 10\%$ ;<br>No visible damage   |
| High Temperature Storage (Dry Heat)     | MIL-STD-202, Method 108A | In accordance with Test Condition D, 125 $\pm$ 3 °C for 1000hrs, without voltage applied. After completion of the test, the specimen shall be allowed to recover at room temperature for 1 to 2 hours  | $ \Delta V_n/V_n  \leq 10\%$ ;<br>No visible damage   |
| Damp Heat, Steady State                 | IEC 61051-1              | Conducted in accordance with Test Cab of IEC 60068-2-78. The specimen are divided into two groups. Both groups shall be subjected to 40 $\pm$ 2 °C, 90 to 95% RH for 56 days with Group 1 without voltage applied and Group 2 with 10% of VDC MCOV. Both groups are then stored at room temperature and normal humidity for 1 to 2 hours.  | $ \Delta V_n/V_n  \leq 10\%$ ;<br>No visible damage   |

# M3 Varistor Series

## Radial Lead Varistors

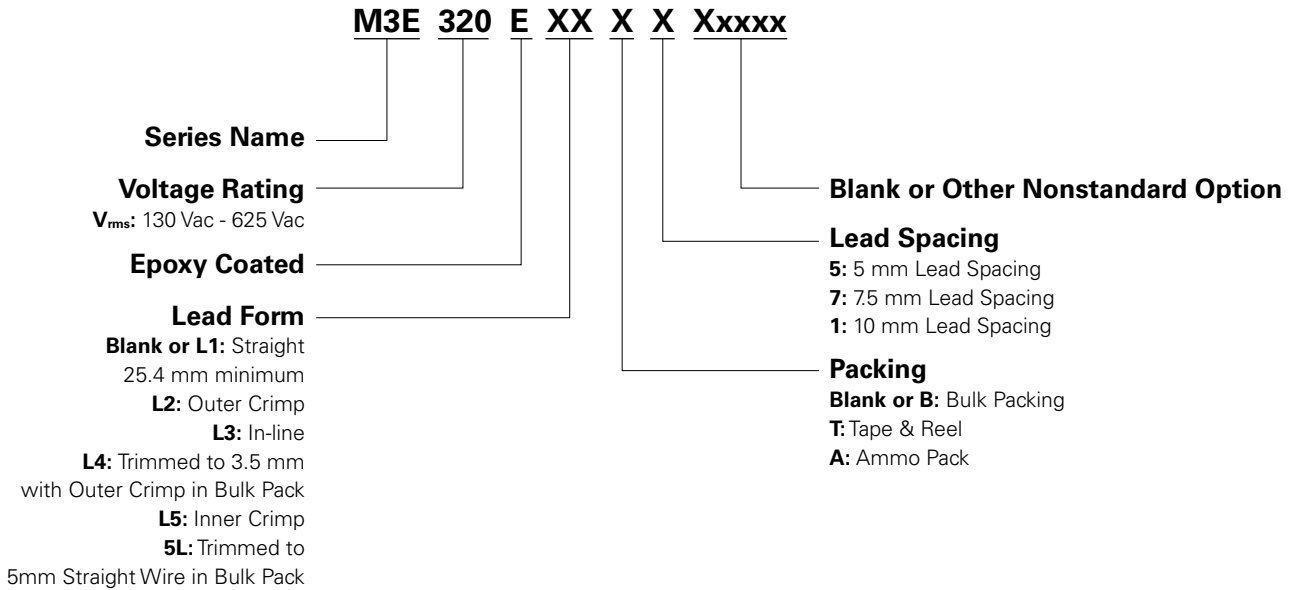
| Test Item                    | Reference Standard      | Test methods / Description  | Specification Limit  |
|------------------------------|-------------------------|---|--|
| Solderability                | IEC 61051-1             | In accordance with Test Ta, Method 1 (solder bath) of IEC 60068-2-20, Lead Free Solder (Sn96.5Ag3Cu.5): $245 \pm 3^\circ \text{C}$ , $3 \pm 0.3$ seconds. After dipping the terminations to a depth of approximately 3 mm from the varistor body in a soldering bath of $245^\circ \text{C}$ for 3 seconds, the terminations shall be visually examined with normal eyesight or with the assistance of a magnifier capable of giving a magnification of 4X to 25X | At least 95% of the dipped surface is covered by new solder.<br>No more than small amount of scattered imperfections such as pin-holes or un-wetted or de-wetted areas |
| Resistance to Soldering Heat | IEC 61051-1             | In accordance with Test Tb, Method 1 (solder bath) of IEC 60068-2-20 shall be dipped into a solder bath having a temperature of $260 \pm 3^\circ \text{C}$ to a point 2.0~2.5 mm from varistor body of the specimen, be held there for $10 \pm 1$ seconds, and then be stored at room temperature and normal humidity for 1 to 2 hours. Thereafter, the change of $V_n$ shall be measured and the specimen shall be visually examined                             | $ \Delta V_n/V_n  \leq 5\%$ ;<br>No visible damage   |
| Tensile Strength             | IEC 61051-1             | In accordance with Test Ua <sub>1</sub> of IEC 60068-2-21 applying the force specified below and keeping the unit fixed for 10 seconds.<br>Force for wire diameter:<br>$\varnothing 0.6 \text{ mm} = 10 \text{ N}$<br>$\varnothing 0.8 \text{ mm} = 10 \text{ N}$<br>$\varnothing 1.0 \text{ mm} = 20 \text{ N}$  | $ \Delta V_n/V_n  \leq 5\%$ ;<br>No break of solder joint, no wire break   |
| Vibration                    | IEC 61051-1             | After repeatedly applying a sinusoidal harmonic vibration as below, the change of $V_n$ and mechanical damages shall be examined.<br>Pulse shape: Sine wave<br>Amplitude: 0.75 mm<br>Frequency range: 10 Hz to 55 Hz<br>Duration: 6 hours (2 hours each, 3 directions)  | $ \Delta V_n/V_n  \leq 5\%$ ;<br>No visible damage   |
| Shock                        | IEC 61051-1             | In accordance with Test Ea of IEC 60068-2-27. A half-sine pulse with $11 \text{ m/s}^2$ duration and $490 \text{ m/s}^2$ maximum acceleration shall be used. Three shocks in each axis (x, y, and z) and direction (positive and negative) were applied (totaling 36 shocks in total)   | $ \Delta V_n/V_n  \leq 5\%$ ;<br>No visible damage   |
| Fire Hazard                  | IEC 61051-1             | Test methods/Description: Needle flame test method in accordance with IEC 60695-11-5 for a duration of 30 s   | No ignition of MOV or ignition of underlying layer   |
| Resistance to solvents       | MIL-STD-202 Method 215K | Solvent 1, inspect at 3X maximum for marking; Inspect at 10X maximum for part damage  | $ \Delta V_n/V_n  \leq 5\%$ ;<br>Marking visible; Coating not damaged  |

**Note:** Nominal varistor voltage per UL 1449 is  $V_n$  and  $U_v$  per IEC 61051-1

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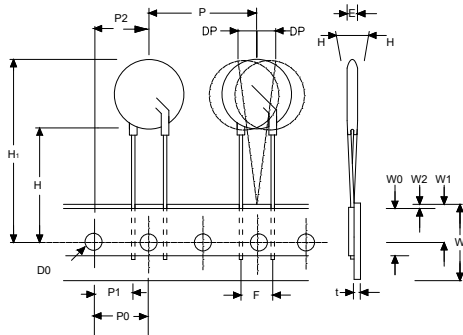
## Radial Lead Varistors

### Part Numbering System

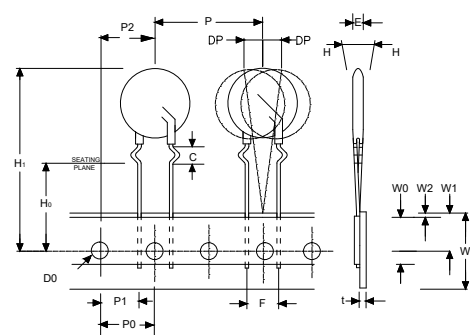


### Tape Specifications for Reel and Ammo Pack Items

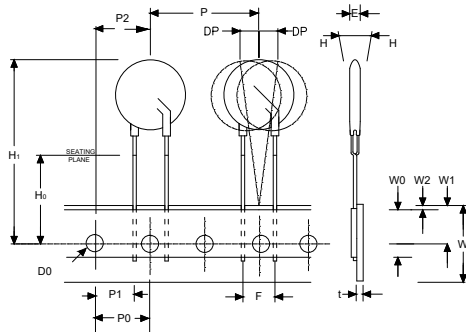
#### Straight Leads L1



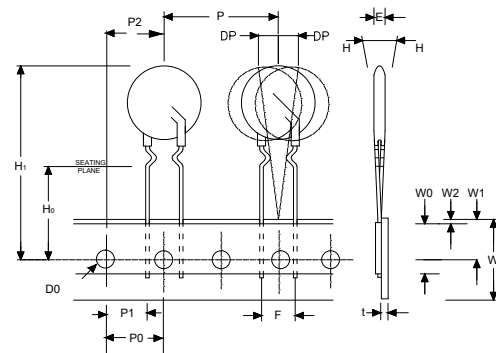
#### Crimped Leads L2



#### In-line Leads L3



#### Inner Crimped Leads L5



#### Notes:

- Confirms to ANSI and EIA specifications
- Can be supplied to IEC Publication 286-2
- Radial devices on tape are offered with crimped leads, straight leads, or on-line leads. See Ordering Information
- For 10mm devices, 'P' (Component Pitch) is 12.7 mm, when 'F' (Lead Space) is 5 mm
- 10 mm parts are available on tape and reel up to 510 Vac only
- 10 mm devices with 5.0mm lead spacing option will be taped at 12.7 mm component pitch and 1000 pieces per reel



# M3 Varistor Series

## Radial Lead Varistors

| Symbol               | Description                               | Model Size        |
|----------------------|---|-------------------|
|                      |   | 10 mm             |
| <b>B<sub>1</sub></b> | Component Top to Seating Place            | 19.5 Max          |
| <b>C</b>             | Crimp Length                              | 2.6 Typ           |
| <b>P</b>             | Pitch of Component                        | 25.4±1.0          |
| <b>P<sub>0</sub></b> | Feed Hole Pitch                           | 12.7±0.2          |
| <b>P<sub>1</sub></b> | Feed Hole Center to Pitch                 | 8.85±0.7          |
| <b>P<sub>2</sub></b> | Hole Center to Component Center           | 12.7±0.7          |
| <b>F</b>             | Lead to Lead Distance                     | 7.5±0.8           |
| <b>Δh</b>            | Component Alignment                       | 2.0 Max           |
| <b>W</b>             | Tape Width                                | 18.0+1.0/-0.52    |
| <b>W<sub>0</sub></b> | Hold Down Tape Width                      | 12.0±0.3          |
| <b>W<sub>1</sub></b> | Hole Position                             | 9.0+0.75/-0.50    |
| <b>W<sub>2</sub></b> | Hold Down Tape Position                   | 0.5 Max           |
| <b>H</b>             | Height from Tape Center to Component Base | 18.0+2.0/-0.0     |
| <b>H<sub>0</sub></b> | Seating Plane Height                      | 16.0±0.5          |
| <b>H<sub>1</sub></b> | Component Height                          | 36.0 Max          |
| <b>D<sub>0</sub></b> | Feed Hole Diameter                        | 4.0±0.2           |
| <b>t</b>             | Total Tape Thickness                      | 0.7±0.2           |
| <b>Δp</b>            | Component Alignment                       | 3° C Max, 1.00 mm |

For information on tape and reel packaging quantities, please refer to the Ordering Notes section at the end of this document.

### Ordering Notes

For standard parts, use the **BASE PART** designator only.

For parts with non-standard options (such as additional form, packaging and lead space options) use, **BASE PART + OPTION CODE**.

**OPTION CODE** items are subject to availability and minimum order requirements. Please contact a Littelfuse representative if you require additional information

#### OPTION CODES:

**X2855:** Nickel Barrier **COATED WIRE OPTION**

All standard parts use tinned copper clad steel wire. Nickel Barrier Coated Wire is available as an option, consisting of Copper Wire with a flashing of Nickel followed by a top coating of Tin.

**To order:** append standard model **BASE PART** number with "X2855." Example:

| Standard Model | Order As         |
|----------------|------------------|
| M3E320E5LB7    | M3E320E5LB7X2855 |

#### PACKAGING:

Littelfuse M3 Varistor Series are shipped standard in bulk pack with straight leads and lead spacing outlined in the dimensions sections of this document. Contact a Littelfuse representative to discuss non-standard options.

#### Standard Bulk Pack Quantity

| V <sub>RMS</sub> MCOV | Standard Bulk Pack Quantity |
|-----------------------|-----------------------------|
| 130–275               | 1000                        |
| 300–625               | 700                         |

#### Tape and Reel Quantity

| V <sub>RMS</sub> MCOV | Shipping Quantity/Reel |
|-----------------------|------------------------|
| 130–625               | 500                    |

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