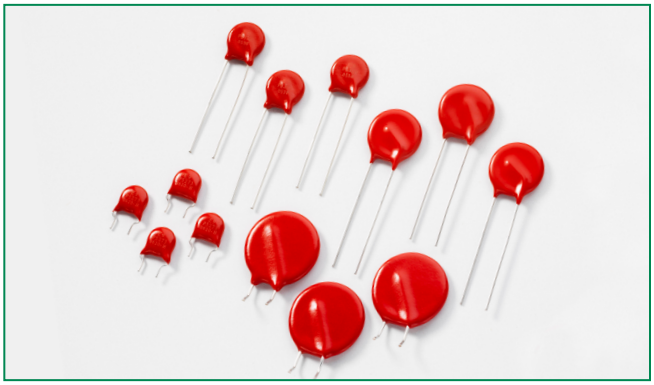
# LA Varistor Series



## Agency Approvals

| Agency | Agency Approval | Agency File Number |
|---|---|---|
| cULus | UL1449 | E320116 |
| VDE | CECC 42201-006<br>IEC 61051-1<br>IEC 61051-2<br>IEC 60950-1 (Annex Q) for 14mm and 20mm only | 116895 |
| SA | 22.2-1 | 91788 |
| SEMKO | CECC 42201-006<br>IEC 61051-1<br>IEC 61051-2<br>IEC 60950-1 (Annex Q) for 14mm and 20mm only | E1273/F |

## Description

The LA Varistor Series of transient voltage surge suppressors are radial leaded varistors (MOVs) that are designed to be operated continuously across AC power lines. These UL recognized varistors require very little mounting space, and are offered in various standard lead form options.

The LA Varistor Series are available in four model sizes: 7mm, 10mm, 14mm and 20mm; and have a $V_{M(AC)RMS}$ voltage range from 130V to 1000V, and an energy absorption capability up to 360J. Some LA Series model numbers are available with clamping voltage selections, designated by a model number suffix of either A or B. The 'A' selection is the standard model; the 'B' selection provides a lower clamping voltage. See LA Series Device Ratings and Specifications

## Features

- Lead–free, Halogen-Free and RoHS compliant.
- Energy absorption capability ($W_{TM}$) up to 360J
- Wide operating voltage range $V_{M(AC)RMS}$ 130V to 1000V
- No derating up to 85°C ambient
- Available in tape and reel or bulk pack

## Additional Information

Datasheet | Resources | Samples

## Absolute Maximum Ratings

• For ratings of individual members of a series, see Device Ratings and Specifications chart

| Continuous | LA Series | Units |
|---|---|---|
| Steady State Applied Voltage: | | |
| AC Voltage Range ($V_{M(AC)RMS}$) | 130 to 1000 | V |
| DC Voltage Range ($V_{M(DC)}$) | 175 to 1200 | V |
| Transients: | | |
| Peak Pulse Current ($I_{TM}$) | | |
| For 8/20$\mu$s Current Wave (See Figure 2) | 1200 to 6500 | A |
| Single Pulse Energy Range | | |
| For 10/1000$\mu$s Current Wave ($W_{TM}$) | 11 to 360 | J |
| Operating Ambient Temperature Range ($T_A$) | -55 to +85 | °C |
| Storage Temperature Range ($T_{STG}$) | -55 to +125 | °C |
| Temperature Coefficient ($a^V$) of Clamping Voltage ($V_C$) at Specified Test Current | <0.01 | %/°C |
| Hi-Pot Encapsulation (COATING Isolation Voltage Capability)<br>(Dielectric must withstand indicated DC voltage for one minute per MIL-STD 202, Method 301) | 2500 | V |
| COATING Insulation Resistance | 1000 | MΩ |

*CAUTION: Stresses above those listed in "Absolute Maximum Ratings" may cause permanent damage to the device. This is a stress only rating and operation of the device at these or any other conditions above those indicated in the operational sections of this specification is not implied.*

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## LA Series Ratings & Specifications

| Part Number | Branding | Model Size Disc Dia. (mm) | Maximum Rating (85°C) | | | | Specifications (25°C) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Continuous | | Transient | | Varistor Voltage at 1mA DC Test Current | | Maximum Clamping Voltage 8 x 20 $\mu$s | | Typical Capacitance $f$ = 1MHz |
| | | | $V_{RMS}$ | $V_{DC}$ | Energy 10 x 1000$\mu$s | Peak Current 8 x 20$\mu$s | | | | | |
| | | | $V_{M(AC)}$ | $V_{M(DC)}$ | $W_{TM}$ | $I_{TM}$ | $V_{NOM}$ Min | $V_{NOM}$ Max | $V_C$ | $I_{PK}$ | C |
| | | | (V) | (V) | (J) | (A) | (V) | (V) | (V) | (A) | (pF) |
| V130LA1P | P1301 | 7 | 130 | 175 | 11 | 1200 | 198 | 242 | 390 | 10 | 180 |
| V130LA2P | P1302 | 7 | 130 | 175 | 11 | 1200 | 184.5 | 225.5 | 340 | 10 | 180 |
| V130LA5P | P1305 | 10 | 130 | 175 | 20 | 2500 | 184.5 | 225.5 | 340 | 25 | 450 |
| V130LA10AP | P130L10 | 14 | 130 | 175 | 38 | 4500 | 184.5 | 225.5 | 340 | 50 | 1000 |
| V130LA20AP | P130L20 | 20 | 130 | 175 | 70 | 6500 | 184.5 | 225.5 | 340 | 100 | 1900 |
| V130LA20BP | P130L20B | 20 | 130 | 175 | 70 | 6500 | 190 | 220 | 325 | 100 | 1900 |
| V140LA2P | P1402 | 7 | 140 | 180 | 12 | 1200 | 198 | 242 | 360 | 10 | 160 |
| V140LA5P | P1405 | 10 | 140 | 180 | 22 | 2500 | 198 | 242 | 360 | 25 | 400 |
| V140LA10AP | P140L10 | 14 | 140 | 180 | 42 | 4500 | 198 | 242 | 360 | 50 | 900 |
| V140LA20AP | P140L20 | 20 | 140 | 180 | 75 | 6500 | 198 | 242 | 340 | 100 | 1750 |
| V150LA1P | P1501 | 7 | 150 | 200 | 13 | 1200 | 225 | 275 | 430 | 10 | 150 |
| V150LA2P | P1502 | 7 | 150 | 200 | 13 | 1200 | 216 | 264 | 395 | 10 | 150 |
| V150LA5P | P1505 | 10 | 150 | 200 | 25 | 2500 | 216 | 264 | 395 | 25 | 360 |
| V150LA10AP | P150L10 | 14 | 150 | 200 | 45 | 4500 | 216 | 264 | 395 | 50 | 800 |
| V150LA20AP | P150L20 | 20 | 150 | 200 | 80 | 6500 | 216 | 264 | 395 | 100 | 1600 |
| V150LA20BP | P150L20B | 20 | 150 | 200 | 80 | 6500 | 216 | 243 | 360 | 100 | 1600 |
| V175LA2P | P1752 | 7 | 175 | 225 | 15 | 1200 | 243 | 297 | 455 | 10 | 130 |
| V175LA5P | P1755 | 10 | 175 | 225 | 30 | 2500 | 243 | 297 | 455 | 25 | 350 |
| V175LA10AP | P175L10 | 14 | 175 | 225 | 55 | 4500 | 243 | 297 | 455 | 50 | 700 |
| V175LA20AP | P175L20 | 20 | 175 | 225 | 90 | 6500 | 243 | 297 | 455 | 100 | 1400 |
| V230LA4P | P2304 | 7 | 230 | 300 | 20 | 1200 | 324 | 396 | 595 | 10 | 100 |
| V230LA10P | P230L | 10 | 230 | 300 | 35 | 2500 | 324 | 396 | 595 | 25 | 250 |
| V230LA20AP | P230L20 | 14 | 230 | 300 | 70 | 4500 | 324 | 396 | 595 | 50 | 550 |
| V230LA40AP | P230L40 | 20 | 230 | 300 | 122 | 6500 | 324 | 396 | 595 | 100 | 1100 |
| V250LA2P | P2502 | 7 | 250 | 330 | 21 | 1200 | 369 | 451 | 730 | 10 | 90 |
| V250LA4P | P2504 | 7 | 250 | 330 | 21 | 1200 | 351 | 429 | 650 | 10 | 90 |
| V250LA10P | P250L | 10 | 250 | 330 | 40 | 2500 | 351 | 429 | 650 | 25 | 220 |
| V250LA20AP | P250L20 | 14 | 250 | 330 | 72 | 4500 | 351 | 429 | 650 | 50 | 500 |
| V250LA40AP | P250L40 | 20 | 250 | 330 | 130 | 6500 | 351 | 429 | 650 | 100 | 1000 |
| V250LA40BP | P250L40B | 20 | 250 | 330 | 130 | 6500 | 354 | 413 | 620 | 100 | 1000 |
| V275LA2P | P2752 | 7 | 275 | 369 | 23 | 1200 | 405 | 495 | 775 | 10 | 80 |
| V275LA4P | P2754 | 7 | 275 | 369 | 23 | 1200 | 387 | 473 | 710 | 10 | 80 |
| V275LA10P | P275L | 10 | 275 | 369 | 45 | 2500 | 387 | 473 | 710 | 25 | 200 |
| V275LA20AP | P275L20 | 14 | 275 | 369 | 75 | 4500 | 387 | 473 | 710 | 50 | 450 |
| V275LA40AP | P275L40 | 20 | 275 | 369 | 140 | 6500 | 387 | 473 | 710 | 100 | 900 |
| V275LA40BP | P275L40B | 20 | 275 | 369 | 140 | 6500 | 389 | 453 | 680 | 100 | 900 |
| V300LA2P | P3002 | 7 | 300 | 405 | 25 | 1200 | 441 | 539 | 870 | 10 | 70 |
| V300LA4P | P3004 | 7 | 300 | 405 | 25 | 1200 | 423 | 517 | 775 | 10 | 70 |
| V300LA10P | P300L | 10 | 300 | 405 | 46 | 2500 | 423 | 517 | 775 | 25 | 180 |
| V300LA20AP | P300L20 | 14 | 300 | 405 | 77 | 4500 | 423 | 517 | 775 | 50 | 400 |
| V300LA40AP | P300L40 | 20 | 300 | 405 | 165 | 6500 | 423 | 517 | 775 | 100 | 800 |
| V320LA7P | P3207 | 7 | 320 | 420 | 25 | 1200 | 459 | 561 | 850 | 10 | 65 |
| V320LA10P | P320L | 10 | 320 | 420 | 48 | 2500 | 459 | 561 | 850 | 25 | 170 |
| V320LA20AP | P320L20 | 14 | 320 | 420 | 80 | 4500 | 459 | 561 | 850 | 50 | 380 |
| V320LA40BP | P320L40 | 20 | 320 | 420 | 150 | 6500 | 462 | 540 | 810 | 100 | 750 |
| V385LA7P | P3857 | 7 | 385 | 505 | 27 | 1200 | 558 | 682 | 1025 | 10 | 60 |

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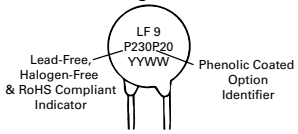
## LA Series Ratings & Specifications (Continued...)

| Part Number | Branding | Model Size Disc Dia. (mm) | Maximum Rating (85°C) | | | | Specifications (25°C) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Continuous | | Transient | | Varistor Voltage at 1mA DC Test Current | | Maximum Clamping Voltage 8 x 20 μs | | Typical Capacitance f = 1MHz |
| | | | $V_{RMS}$ | $V_{DC}$ | Energy 10 x 1000μs | Peak Current 8 x 20μs | | | | | |
| | | | $V_{M(AC)}$ | $V_{M(DC)}$ | $W_{TM}$ | $I_{TM}$ | $V_{NOM}$ Min | $V_{NOM}$ Max | $V_C$ | $I_{PK}$ | C |
| | | | (V) | (V) | (J) | (A) | (V) | (V) | (V) | (A) | (pF) |
| V385LA10P | P385L | 10 | 385 | 505 | 51 | 2500 | 558 | 682 | 1025 | 25 | 160 |
| V385LA20AP | P385L20 | 14 | 385 | 505 | 85 | 4500 | 558 | 682 | 1025 | 50 | 360 |
| V385LA40BP | P385L40 | 20 | 385 | 505 | 160 | 6500 | 558 | 682 | 1025 | 100 | 700 |
| V420LA7P | P4207 | 7 | 420 | 560 | 30 | 1200 | 612 | 748 | 1120 | 10 | 55 |
| V420LA10P | P420L | 10 | 420 | 560 | 55 | 2500 | 612 | 748 | 1120 | 25 | 140 |
| V420LA20AP | P420L20 | 14 | 420 | 560 | 90 | 4500 | 612 | 748 | 1120 | 50 | 300 |
| V420LA40BP | P420L40 | 20 | 420 | 560 | 160 | 6500 | 610 | 720 | 1060 | 100 | 600 |
| V460LA7P | P4607 | 7 | 460 | 615 | 37 | 1200 | 643.5 | 786.5 | 1190 | 10 | 55 |
| V460LA10P | P460L | 10 | 460 | 615 | 56 | 2500 | 643.5 | 786.5 | 1190 | 25 | 120 |
| V460LA20AP | P460L20 | 14 | 460 | 615 | 100 | 4500 | 643.5 | 786.5 | 1190 | 50 | 280 |
| V460LA40BP | P460L40 | 20 | 460 | 615 | 170 | 6500 | 643.5 | 755.5 | 1110 | 100 | 560 |
| V480LA7P | P4807 | 7 | 480 | 640 | 35 | 1200 | 675 | 825 | 1240 | 10 | 50 |
| V480LA10P | P480L | 10 | 480 | 640 | 60 | 2500 | 675 | 825 | 1240 | 25 | 120 |
| V480LA40AP | P480L40 | 14 | 480 | 640 | 105 | 4500 | 675 | 825 | 1240 | 50 | 270 |
| V480LA80BP | P480L80 | 20 | 480 | 640 | 180 | 6500 | 675 | 790 | 1160 | 100 | 550 |
| V510LA10P | P510L | 10 | 510 | 675 | 63 | 2500 | 738 | 902 | 1350 | 25 | 100 |
| V510LA40AP | P510L40 | 14 | 510 | 675 | 110 | 4500 | 738 | 902 | 1350 | 50 | 250 |
| V510LA80BP | P510L80 | 20 | 510 | 675 | 190 | 6500 | 738 | 860 | 1280 | 100 | 500 |
| V575LA10P | P575L | 10 | 575 | 730 | 65 | 2500 | 819 | 1001 | 1500 | 25 | 90 |
| V575LA40AP | P575L40 | 14 | 575 | 730 | 120 | 4500 | 819 | 1001 | 1500 | 50 | 220 |
| V575LA80BP | P575L80 | 20 | 575 | 730 | 220 | 6500 | 819 | 960 | 1410 | 100 | 450 |
| V625LA10P | P625L | 10 | 625 | 825 | 67 | 2500 | 900 | 1100 | 1650 | 25 | 80 |
| V625LA40AP | P625L40 | 14 | 625 | 825 | 125 | 4500 | 900 | 1100 | 1650 | 50 | 210 |
| V625LA80BP | P625L80 | 20 | 625 | 825 | 230 | 6500 | 900 | 1100 | 1650 | 100 | 425 |
| V680LA10P | P680L | 10 | 680 | 875 | 75 | 2500 | 990 | 1210 | 1875 | 25 | 65 |
| V680LA80AP | P680L80 | 14 | 680 | 875 | 145 | 4500 | 990 | 1210 | 1875 | 50 | 190 |
| V680LA100BP | P680L100 | 20 | 680 | 875 | 260 | 6500 | 990 | 1130 | 1700 | 100 | 380 |
| V660LA10P | P660L | 10 | 660 | 850 | 70 | 2500 | 972 | 1188 | 1820 | 25 | 70 |
| V660LA50AP | P660L50 | 14 | 660 | 850 | 140 | 4500 | 972 | 1188 | 1820 | 50 | 200 |
| V660LA100BP | P660L100 | 20 | 660 | 850 | 250 | 6500 | 940 | 1100 | 1650 | 100 | 400 |
| V1000LA80AP | P1000L8 | 14 | 1000 | 1200 | 220 | 4500 | 1500 | 1800 | 2700 | 50 | 130 |
| V1000LA160BP | P1000L16 | 20 | 1000 | 1200 | 360 | 6500 | 1425 | 1600 | 2420 | 100 | 250 |

NOTE: Average power dissipation of transients not to exceed 0.25W, 0.4W, 0.6W or 1W for model sizes 7mm, 10mm, 14mm and 20mm, respectively.

## Phenolic Coating Option -- LA Series Varistors for Hi-Temperature Operating Conditions:

- Phenolic–coated LA Series devices are available with improved maximum operating maximum temperature 125°C.
- These devices also have improved temperature cycling performance capability.
- Ratings and Specifications are as per standard LA Series except Hi–Pot Encapsulation (Isolation Voltage Capability) = 500V.
- These devices are not UL, CSA, VDE or CECC certified.
- To order: add X1347 to end of part number (e.g. V230LA20A**PX1347**).
- Product marking:

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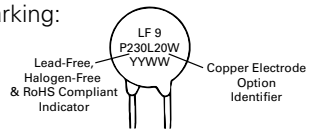
## Copper Electrode Option:

- Add 'W' to the end of the part number (e.g. V230LA20AP**W**)
- Product marking:




## Current Energy and Power Dissipation Ratings

Should transients occur in rapid succession, the average power dissipation is the energy (watt-seconds) per pulse times the number of pulses per second. The power so developed must be within the specifications shown on the Device Ratings and Specifications Table for the specific device. The operating values of a MOV need to be derated at high temperatures as shown above. Because varistors only dissipate a relatively small amount of average power they are not suitable for repetitive applications that involve substantial amounts of average power dissipation.

**Figure 1A - Power Derating for Epoxy Coated**

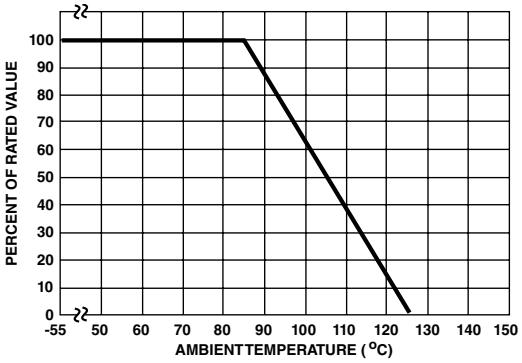
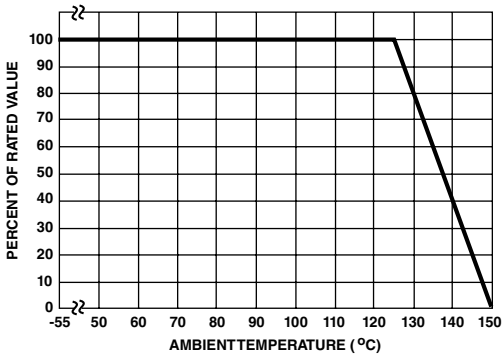



**Figure 1B - Power Derating for Phenolic Coated**




## Peak Pulse Current Test Waveform

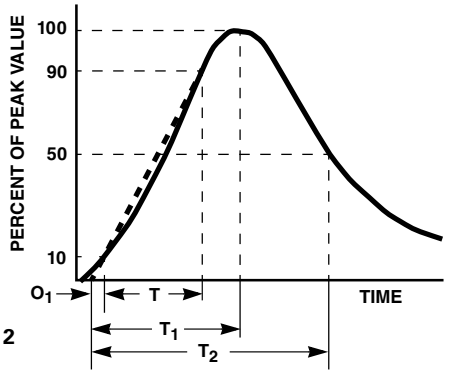



Figure 2

$0_1$ = Virtual Origin of Wave
T = Time from 10% to 90% of Peak
$T_1$ = Rise Time = 1.25 x T
$T_2$ = Decay Time

**Example** - For an 8/20 $\mu$s Current Waveform:
8$\mu$s = $T_1$ = Rise Time
20$\mu$s = $T_2$ = Decay Time

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## Transient V-I Characteristics Curves

### Maximum Clamping Voltage for 7mm Parts

**V130LA1(P) - V300LA2(P)**

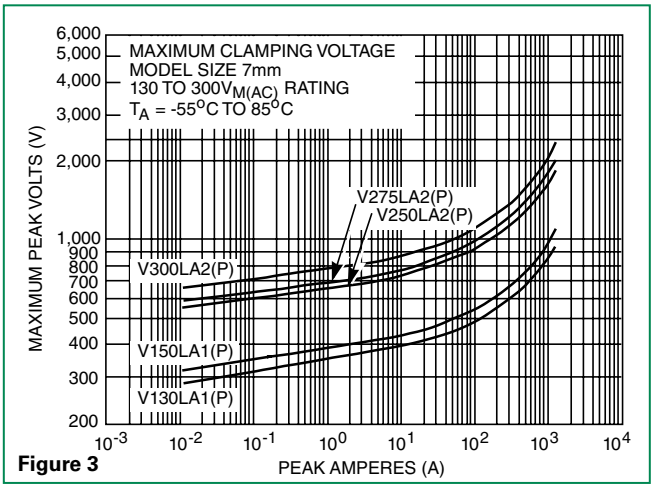


**Figure 3**

**V130LA2(P) - V300LA4(P)**

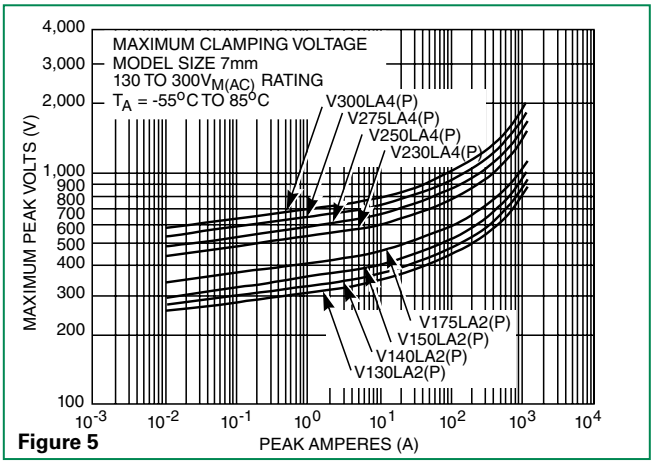


**Figure 5**

**V320LA7(P) - V480LA7(P)**

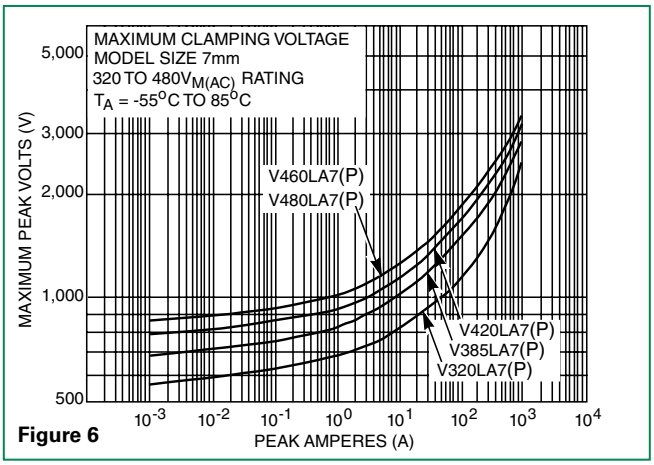


**Figure 6**

## Pulse Rating Curves

### Repetitive Surge Capability for 7mm Parts

**V130LA1(P) - V480LA7(P)**

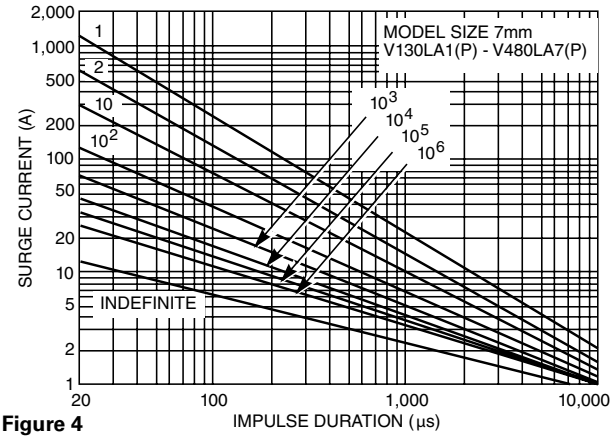


**Figure 4**

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## Transient V-I Characteristics Curves (Continued...)

### Maximum Clamping Voltage for 10mm Parts

**V130LA5(P) - V420LA10(P)**

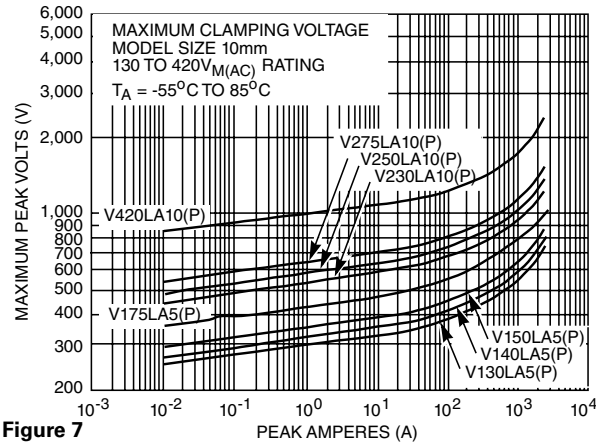


**Figure 7**

**V300LA10(P) - V680LA10(P)**

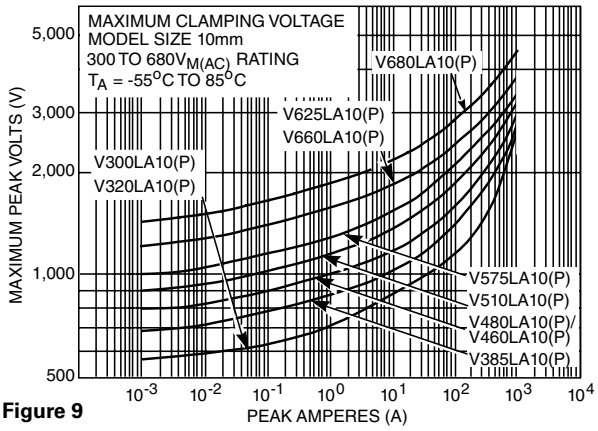


**Figure 9**

## Pulse Rating Curves (Continued...)

### Repetitive Surge Capability for 10mm Parts

**V130LA5(P) - V680LA10(P)**

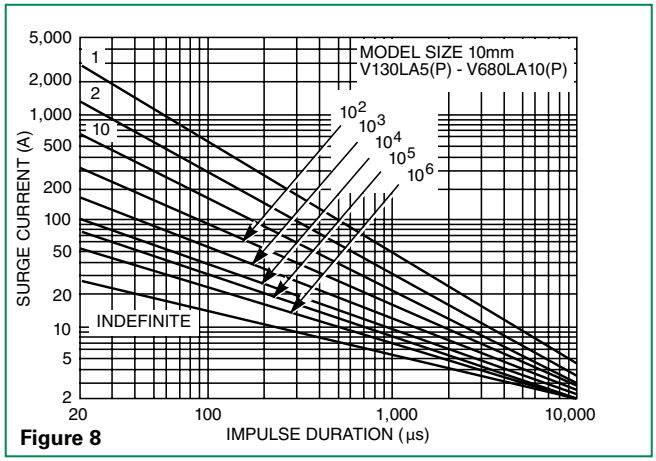


**Figure 8**

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## Transient V-I Characteristics Curves (Continued...)

### Maximum Clamping Voltage for 14mm Parts

**V130LA10A(P) - V320LA20A**

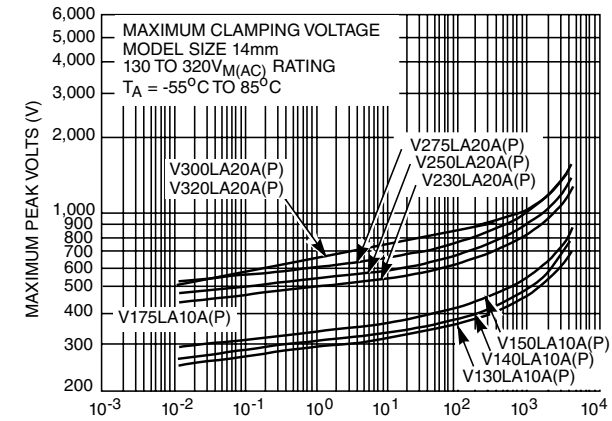


**Figure 10**

**V385LA20A(P) V1000LA80A(P)**

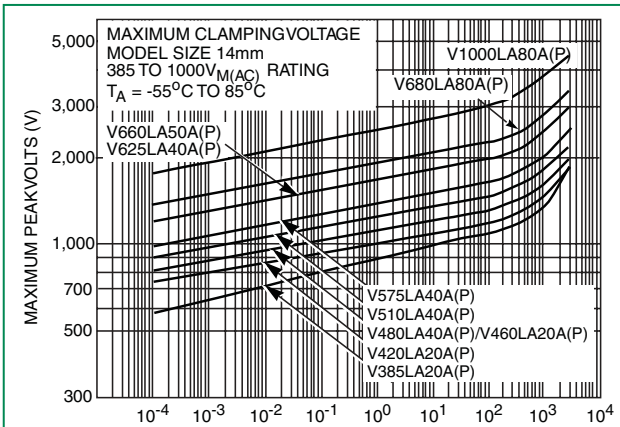


**Figure 12**

## Pulse Rating Curves (Continued...)

### Repetitive Surge Capability for 14mm Parts

**V130LA10A(P) - V320LA20A(P)**

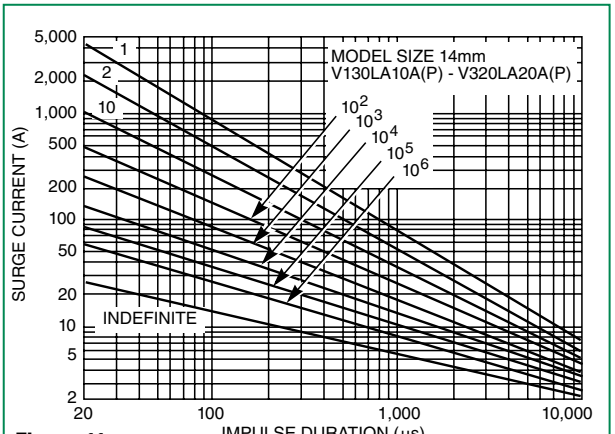


**Figure 11**

**V385LA20A(P) - V1000LA80A(P)**

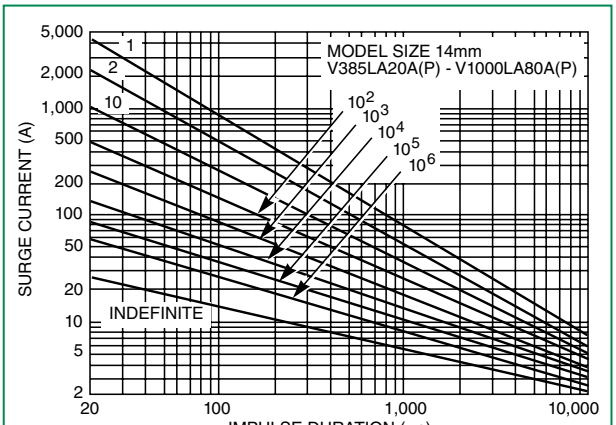


**Figure 13**

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## Transient V-I Characteristics Curves (Continued...)

### Maximum Clamping Voltage for 20mm Parts

**V130LA20A(P) - V275LA40A(P)**

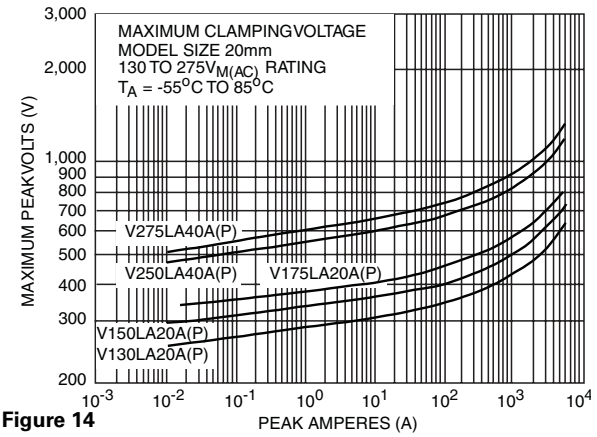


**Figure 14**

**V130LA20B(P) - V275LA40(P)**

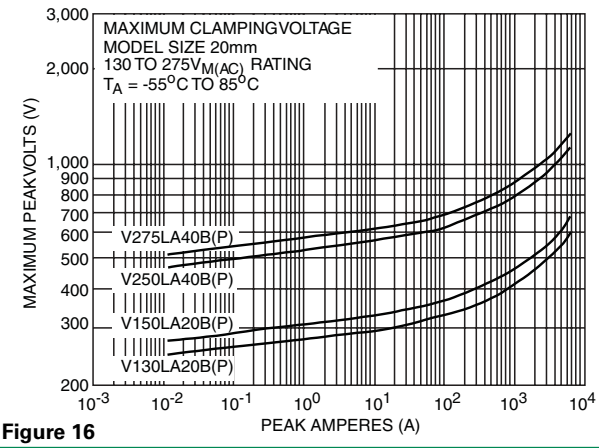


**Figure 16**

**V130LA20A(P) - V275LA40A(P)**

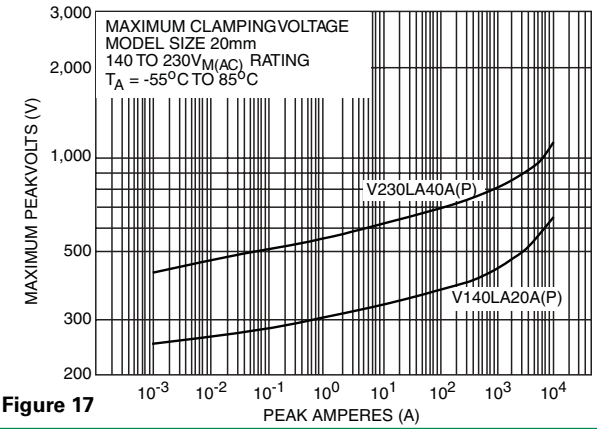


**Figure 17**

NOTE: If pulse ratings are exceeded, a shift of $V_{N(DC)}$ (at specified current) of more than +/-10% could result. This type of shift, which normally results in a decrease of $V_{N(DC)}$, may result in the device not meeting the original published specifications, but does not prevent the device from continuing to function, and to provide ample protection.

## Pulse Rating Curves (Continued...)

**V300LA40A - V1000LA160B**

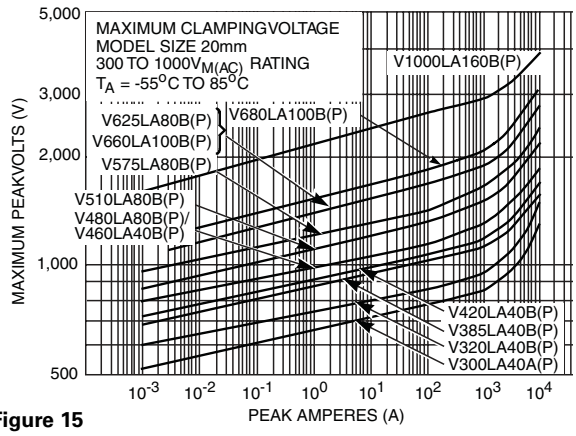


**Figure 15**

### Repetitive Surge Capability for 20mm Parts

**V130LA20A(P) - V320LA40B(P)**

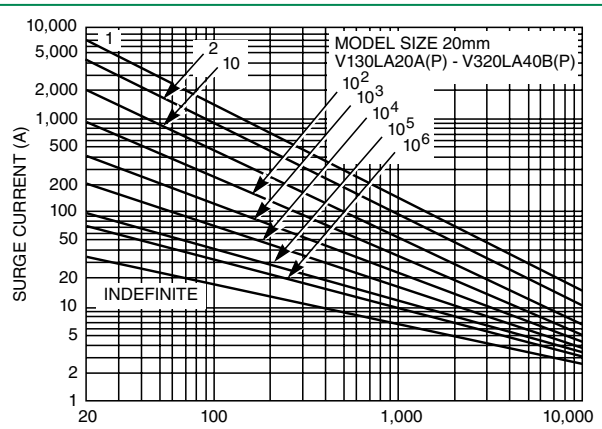


**Figure 18**

**V385LA40B(P) - V1000LA160B(P)**

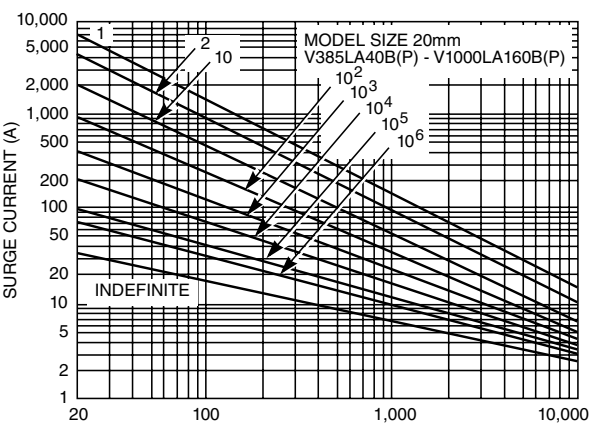


**Figure 19**

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## Wave Solder Profile

### Non Lead–free Profile

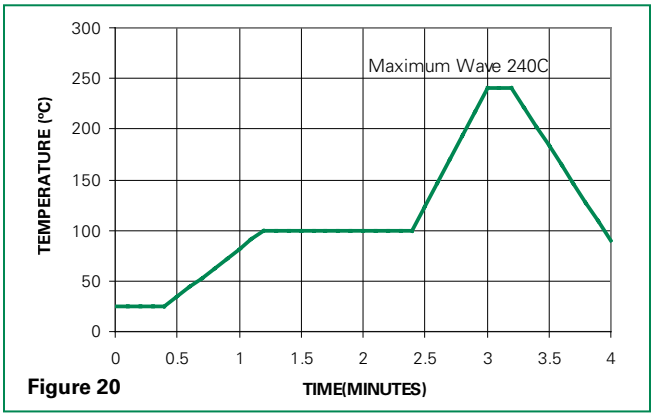


**Figure 20**

### Lead–free Profile

**Figure 21**

## Physical Specifications

| | |
|---|---|
| **Lead Material** | Copper Clad Steel Wire |
| **Soldering Characteristics** | Solderability per MIL–STD–202, Method 208 |
| **Insulating Material** | Cured, flame retardant epoxy polymer meets UL94V–0 requirements |
| **Device Labeling** | Marked with LF, voltage, UL/CSA logos, and date code |

## Environmental Specifications

| | |
|---|---|
| **Operating Ambient Temperature Range** | -55°C to +85°C |
| **Storage Temperature Range** | -55°C to +125°C |
| **Humidity Aging** | +85°C, 85% RH, 1000 hours<br>+/-10% typical voltage change |
| **Thermal Shock** | +85°C to -40°C 5 times<br>+/-10% typical voltage change |
| **Solvent Resistance** | MIL–STD–202, Method 215 |
| **Moisture Sensitivity** | Level 1, J-STD-020 |

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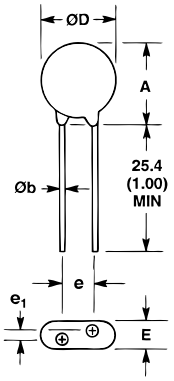
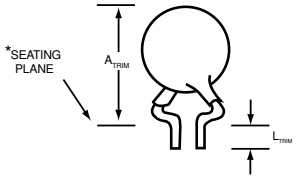
## Product Dimensions (mm)




**CRIMPED AND TRIMMED LEAD**

Crimped leads are standard on LA types supplied in tape and reel and are denoted by the model letter "T." Model letter "S" denotes straight leads and letter "U" denotes special under-crimped leads.

*Seating plane interpretation per IEC-717

| Dimension | $V_{RMS}$ Voltage Model | 7mm Size | | 10mm Size | | 14mm Size | | 20mm Size | |
|---|---|---|---|---|---|---|---|---|---|
| | | Min. mm (in) | Max. mm (in) | Min. mm (in) | Max. mm (in) | Min. mm (in) | Max. mm (in) | Min. mm (in) | Max. mm (in) |
| **A** | V130LA-V320LA | - | 12 (0.472) | - | 16 (0.630) | - | 20 (0.787) | - | 26.5 (1.043) |
| | V385LA-V1000LA | - | 13 (0.0512) | - | 17 (0.689) | - | 20.5 (0.807) | - | 28 (1.102) |
| **ØD** | All | - | 9 (0.354) | - | 12.5 (0.492) | - | 17 (0.669) | - | 23 (0.906) |
| **e** | All | 4 (0.157) | 6 (0.236) | 6.5 (0.256) | 8.5 (0.335) | 6.5 (0.256) | 8.5 (0.335) | 6.5 (0.256) (Note 2) | 8.5 (Note 2) |
| **$e_1$** | V130LA-V320LA | 1.5 (0.059) | 3.5 (0.138) | 1.5 (0.059) | 3.5 (0.138) | 1.5 (0.059) | 3.5 (0.138) | 1.5 (0.059) | 3.5 (0.138) |
| | V385LA-V1000LA | 2.5 (0.098) | 5.5 (0.217) | 2.5 (0.098) | 5.5 (0.217) | 2.5 (0.098) | 5.5 (0.217) | 2.5 (0.098) | 5.5 (0.217) |
| **E** | V130LA-V320LA | - | 5.6 (0.220) | - | 5.6 (0.220) | - | 5.6 (0.220) | - | 5.6 (0.220) |
| | V385LA-V510LA | - | 7.3 (0.287) | - | 7.3 (0.287) | - | 7.3 (0.287) | - | 7.3 (0.287) |
| | V550LA-V680LA | - | 8.3 (0.327) | - | 8.3 (0.327) | - | 8.3 (0.327) | - | 8.3 (0.327) |
| | V1000LA | - | - | - | - | - | 10.8 (0.425) | - | 10.8 (0.425) |
| **Øb** | All (Note 3) | 0.585 (0.023) | 0.685 (0.027) | 0.76 (0.030) | 0.86 (0.034) | 0.76 (0.030) | 0.86 (0.034) | 0.76 (0.030) (Note 2) | 0.86 (0.034) (Note 2) |
| **$A_{TRIM}$** | All | - | 15 (0.591) | - | 19.5 (0.768) | - | 22.5 (0.886) (NOTE 4) | - | 29.0 (1.142) |
| **$L_{TRIM}$** | All | 2.41 (0.095) | 4.69 (0.185) | 2.41 (0.095) | 4.69 (0.185) | 2.41 (0.095) | 4.69 (0.185) | 2.41 (0.095) | 4.69 (0.185) |

Notes :
1. Dimensions in millimeters, (inches) in parentheses.
2. 10mm (9mm Min. & 11mm Max.) ALSO AVAILABLE; see additional lead style options
3. 1000V parts supplied with lead wire of diameter 1.00 -/+ 0.05 (0.039 -/+ 0.002)
4. 'A' Max. for V1000LC80A (P) = 24.00 (0.945")

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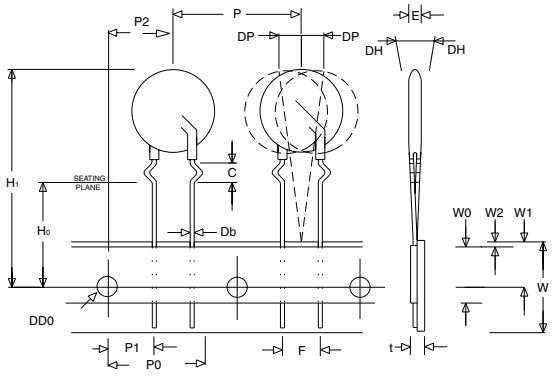
## Tape and Reel Specifications

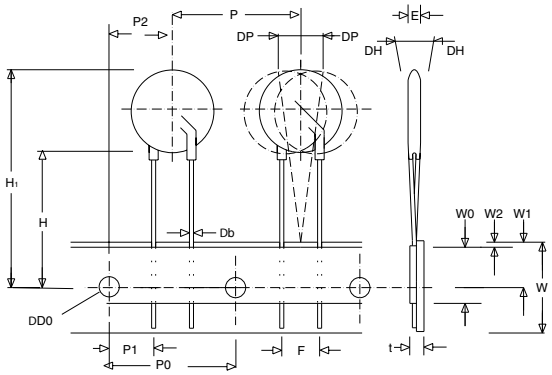
(Dimensions presented on following page.)

### 7mm Devices

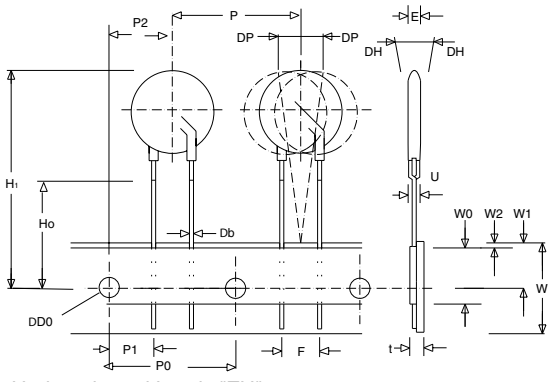
CRIMPED LEADS "LT"




STRAIGHT LEADS "LS"

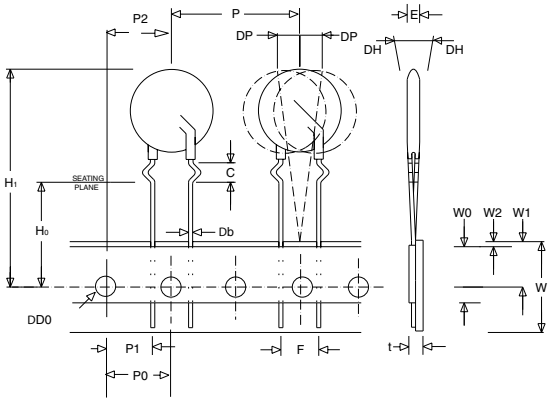



UNDER-CRIMPED LEADS "LU"

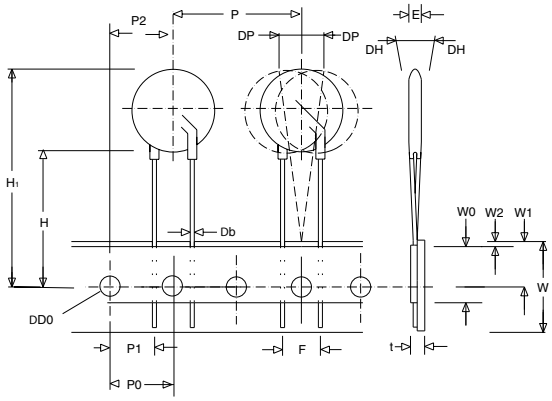



### 10, 14 and 20mm Devices

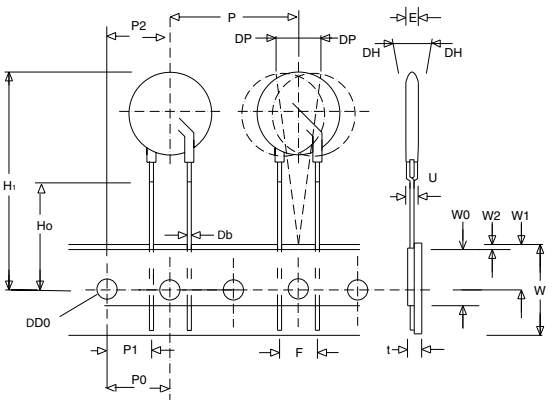
CRIMPED LEADS "LT"




STRAIGHT LEADS "LS"




UNDER-CRIMPED LEADS "LU"

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## Tape and Reel Specifications (continued)

- Can be supplied to IEC Publication 286-2
- Radial devices on tape are supplied with crimped leads, straight leads, or under-crimped leads
- 7mm parts are available on tape and reel up to 480 VAC only
- 10mm parts are available on tape and reel up to 510 VAC only
- 14mm and 20mm parts are available on tape and reel up to 550 VAC only

| Symbol | Description | Model Size | | | |
|---|---|---|---|---|---|
| | | 7mm | 10mm | 14mm | 20mm |
| **P** | Pitch of Component | 12.7 +/- 1.0 | 25.4 +/- 1.0 | 25.4 +/- 1.0 | 25.4 +/- 1.0 |
| **$P_0$** | Feed Hole Pitch | 12.7 +/- 0.2 | 12.7 +/- 0.2 | 12.7 +/- 0.2 | 12.7 +/- 0.2 |
| **$P_1$** | Feed Hole Center to Pitch | 3.85 +/- 0.7 | 8.85 +/- 0.7 | 8.85 +/- 0.7 | 8.85 +/- 0.7 |
| **$P_2$** | Hole Center to Component Center | 6.35 +/- 0.7 | 12.7 +/- 0.7 | 12.7 +/- 0.7 | 12.7 +/- 0.7 |
| **F** | Lead to Lead Distance | 5.0 +/- 0.8 | 7.5 +/-0.8 | 7.5 +/- 0.8 | 7.5 +/- 0.8 |
| **h** | Component Alignment | 2.0 Max | 2.0 Max | 2.0 Max | 2.0 Max |
| **W** | Tape Width | 18.0 +1.0 / -0.5 | 18.0 +1.0 / -0.5 | 18.0 +1.0 / -0.5 | 18.0 +1.0 / -0.5 |
| **$W_0$** | Hold Down Tape Width | 12.0 +/- 0.3 | 12.0 +/- 0.3 | 12.0 +/- 0.3 | 12.0 +/- 0.3 |
| **$W_1$** | Hole Position | 9.0 +0.75 / -0.50 | 9.0 +0.75 / -0.50 | 9.0 +0.75 / -0.50 | 9.0 +0.75 / -0.50 |
| **$W_2$** | Hold Down Tape Position | 0.5 Max | 0.5 Max | 0.5 Max | 0.5 Max |
| **H** | Height from Tape Center to Component Base | 18.0 +2.0 / -0.0 | 18.0 +2.0 / -0.0 | 18.0 +2.0 / -0.0 | 18.0 +2.0 / -0.0 |
| **$H_0$** | Seating Plane Height | 16.0 +/- 0.5 | 16.0 +/- 0.5 | 16.0 +/- 0.5 | 16.0 +/- 0.5 |
| **$H_1$** | Component Height | 32.0 Max | 36.0 Max | 40.0 Max | 46.5 Max |
| **$D_0$** | Feed Hole Diameter | 4.0 +/- 0.2 | 4.0 +/- 0.2 | 4.0 +/- 0.2 | 4.0 +/- 0.2 |
| **T** | Total Tape Thickness | 0.7 +/- 0.2 | 0.7 +/- 0.2 | 0.7 +/- 0.2 | 0.7 +/- 0.2 |
| **U** | Under-crimp Width | 8.0 Max | 8.0 Max | 8.0 Max | 8.0 Max |
| **P** | Component Alignment | 3° Max 1.00mm | 3° Max 1.00mm | 3° Max 1.00mm | 3° Max |

NOTE: Dimensions are in mm.

## Standard Bulk Pack Quantity

| Varistor Voltage Model | Standard Bulk Pack Quantity | | | |
|---|---|---|---|---|
| | Varistor Model Size | | | |
| | 7mm | 10mm | 14mm | 20mm |
| 130-275 | 1500 | 1000 | 700 | 500 |
| 300-460 | 1500 | 1000 | 600 | 400 |
| 510-625 | 1500 | 1000 | 500 | 400 |
| 660 | N/A | 1000 | 500 | 400 |
| 680 | N/A | 1000 | 400 | 300 |
| 1000 | N/A | N/A | 300 | 200 |

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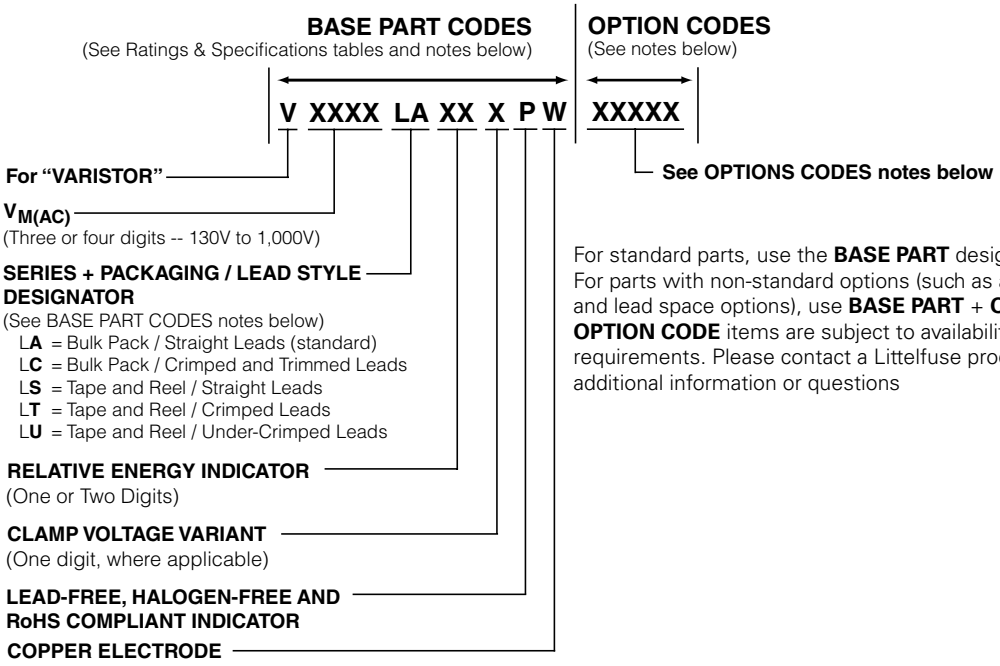
## Part Numbering System




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 products representative for additional information or questions

## Ordering Notes:

### BASE PART CODES:

### Series + Packaging / Lead Style Designators:

Ordering examples:

| Straight Lead Bulk Pack (standard) | Straight Lead Tape & Reel | Crimped Lead Tape & Reel | Crimped & Trimmed Lead Bulk Pack | Under-Crimp Lead Tape & Reel |
|---|---|---|---|---|
| V130**LA**2P | V130**LS**2P | V130**LT**2P | V130**LC**2P | V130**LU**2P |

Crimped leads are standard on LA Series varistors supplied in tape and reel, denoted with "LT." For crimped leads without trimming and any varitions other than that described above, please contact Littelfuse.

Littelfuse LA Series varistors are shipped standard in bulk pack with straight leads and lead spacing outlined in the Package Dimensions section of this data sheet. Contact your Littelfuse sales representative to discuss non-standard options.

### OPTION CODES:

**X10:** 10mm lead spacing option –

For 10 (-/+1) mm lead spacing (available on 20mm diameter models only), append standard model BASE PART number with "X10." Example:

| Standard Model | Order As |
|---|---|
| V130LA20AP | V130LA20AP**X10** |

**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 |
|---|---|
| V130LA20AP | V130LA20AP**X2855** |

**X1347:** Hi-Temperature phenolic coating option –

Phenolic Coated LA Series devices are available with improved maximum operating maximum temperature of 125°C.

To order, add X1347 to end of part number (Example: V230LA20AP**X1347**).

For additional information please refer to the section labeled "Phenolic Coating Option" on the third page of this document under the "Electrical Characteristics" table.

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