

# Type LP 105 °C Snap-In Aluminum Electrolytic Capacitors

## Stable ESR, Long Life, Snap-In



Type LP radial snap-in aluminum electrolytic capacitors are small in size and are rated for low voltage applications. Their durable construction guarantees a long life while operating up to 105 °C with a stable ESR. These features make the Type LP ideal for use in switch-mode power supplies.

## Highlights

- High Reliability
- 105 °C
- 22 to 35 mm diameter with 10 mm lead spacing

## Specifications

**Capacitance Range:** 100 to 47,000 µF

**Voltage Range:** 16 to 250 Vdc

**Capacitance tolerance:** ±20%

**Operating Temperature Range:** -40 °C to +105 °C

**Dissipation Factor:**

| DF at 120 Hz, +25 °C |    |         |         |          |
|----------------------|----|---------|---------|----------|
| Vdc                  | 16 | 25 - 35 | 50 - 63 | 100- 250 |
| DF %                 | 30 | 25      | 20      | 15       |

For values that are >1000 µF, the DF (%) increases 2% for every additional 1000 µF

**DC Leakage Test:**

$I = .02CV$

C = capacitance in µF

V = rated voltage

I = leakage current in µA

**Voltage/Frequency Ripple Multipliers:**

| Rated<br>Vdc | Ripple Multipliers |        |        |         |        |         |
|--------------|--------------------|--------|--------|---------|--------|---------|
|              | 60 Hz              | 100 Hz | 300 Hz | 1000 Hz | 10 kHz | 100 kHz |
| 10 to 50     | 0.90               | 1.00   | 1.03   | 1.05    | 1.10   | 1.10    |
| 63 to 100    | 0.85               | 1.00   | 1.07   | 1.13    | 1.19   | 1.20    |
| 160 to 250   | 0.80               | 1.00   | 1.15   | 1.25    | 1.35   | 1.40    |

**Temperature Ripple Multipliers:**

| Temperature | Ripple Multiplier |
|-------------|-------------------|
| +85 °C      | 1.65              |
| +65 °C      | 2.25              |
| +45 °C      | 2.55              |

The maximum ripple current at 105 °C and 120 Hz are the Ratings Table. Adjust to other temperature and frequencies using the tables here.

**Load Life Test:**

1,000 h @ full load at +105 °C per EIA IS-749

Δ Capacitance ±20%

ESR 200% of limit

DCL 100% of limit

**Shelf Life:**

500 h @ 105 °C, capacitance, ≤200% ESR and DC ±20%, initial requirements

**Vibration:**

10 to 55 Hz, 0.06" and 10 g max, 2 h in each plane



Complies with the EU Directive 2002/95/EC requirement restricting the use of Lead (Pb), Mercury (Hg), Cadmium (Cd), Hexavalent chromium (Cr(VI)), PolyBrominated Biphenyls (PBB) and PolyBrominated Diphenyl Ethers (PBDE).

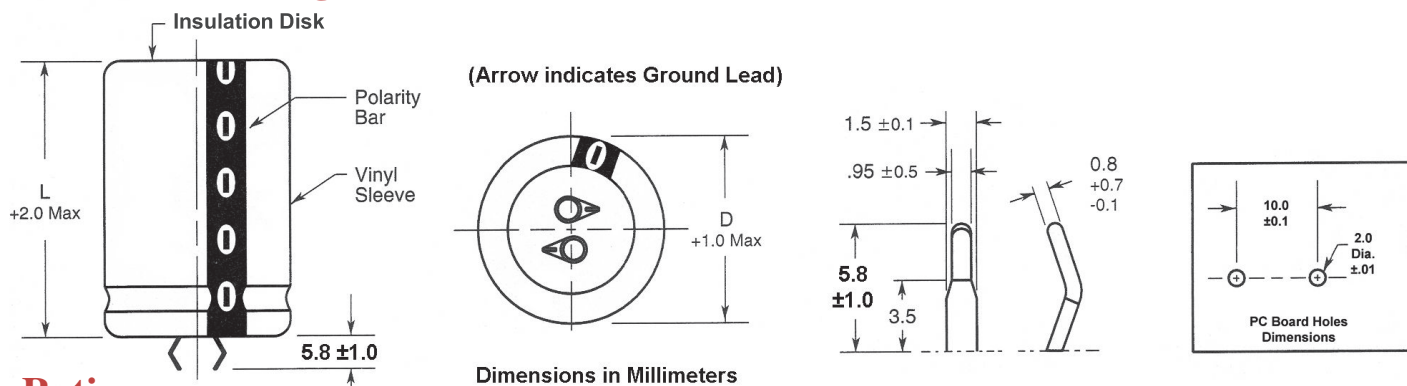
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## Part Numbering System

|      |                                                                 |               |                               |           |               |                   |
|------|-----------------------------------------------------------------|---------------|-------------------------------|-----------|---------------|-------------------|
| LP   | 332                                                             | M             | 025                           | A1        | P             | 3                 |
| Type | Cap                                                             | Tolerance     | Voltage                       | Case Code | Polarity      | Insulating Sleeve |
| LP   | 821 = 820 $\mu$ F<br>332 = 3300 $\mu$ F<br>103 = 10,000 $\mu$ F | M = $\pm$ 20% | 025 = 25 Vdc<br>250 = 250 Vdc |           | P = Polarized | 3 = PVC           |

| Diameter |        | Length  |        |        |        |        |        |
|----------|--------|---------|--------|--------|--------|--------|--------|
|          |        | mm (in) |        |        |        |        |        |
|          |        | 25      | 30     | 35     | 40     | 45     | 50     |
|          |        | (1.00)  | (1.18) | (1.38) | (1.57) | (1.77) | (2.00) |
| mm       | (in)   |         |        |        |        |        |        |
| 22       | (0.87) | A1      | A3     | A5     | A7     | A4     | A9     |
| 25       | (1.00) | C1      | C3     | C5     | C7     | C4     | C9     |
| 30       | (1.18) | E1      | E3     | E5     | E7     | E4     | E9     |
| 35       | (1.38) | H1      | H3     | H5     | H7     | H4     | H9     |

## Outline Drawing



## Ratings

| Cap<br>( $\mu$ F)    | Catalog<br>Part Number | Max ESR<br>@ 120 Hz<br>+25 °C<br>( $\Omega$ ) | Max Ripple<br>@ 120 Hz<br>+105 °C<br>(A) | Size<br>(Inches) |       | Size<br>(mm) |    |
|----------------------|------------------------|-----------------------------------------------|------------------------------------------|------------------|-------|--------------|----|
|                      |                        |                                               |                                          | D                | L     | D            | L  |
| 16 Vdc; 20 Vdc Surge |                        |                                               |                                          |                  |       |              |    |
| 4,700                | LP472M016A1P3          | 0.141                                         | 1.20                                     | 0.866            | 0.984 | 22           | 25 |
| 5,600                | LP562M016C1P3          | 0.120                                         | 1.43                                     | 0.984            | 0.984 | 25           | 25 |
| 8,200                | LP822M016A5P3          | 0.081                                         | 1.82                                     | 0.866            | 1.378 | 22           | 35 |
| 12,000               | LP123M016E3P3          | 0.055                                         | 2.38                                     | 1.181            | 1.181 | 30           | 30 |
| 15,000               | LP153M016H3P3          | 0.046                                         | 3.00                                     | 1.378            | 1.181 | 35           | 30 |
| 22,000               | LP223M016E7P3          | 0.030                                         | 3.53                                     | 1.181            | 1.575 | 30           | 40 |
| 27,000               | LP273M016H7P3          | 0.025                                         | 4.27                                     | 1.378            | 1.575 | 35           | 40 |
| 33,000               | LP333M016H9P3          | 0.020                                         | 5.00                                     | 1.378            | 1.969 | 35           | 50 |
| 47,000               | LP473M016E9P3          | 0.020                                         | 6.80                                     | 1.181            | 1.969 | 30           | 50 |
| 25 Vdc; 32 Vdc Surge |                        |                                               |                                          |                  |       |              |    |
| 2,700                | LP272M025C1P3          | 0.180                                         | 1.000                                    | 0.984            | 0.984 | 25           | 25 |
| 3,300                | LP332M025A1P3          | 0.151                                         | 1.160                                    | 0.866            | 0.984 | 22           | 25 |
| 3,300                | LP332M025C1P3          | 0.150                                         | 1.143                                    | 0.984            | 0.984 | 25           | 25 |
| 4,700                | LP472M025C1P3          | 0.106                                         | 1.480                                    | 0.984            | 0.984 | 25           | 25 |
| 5,600                | LP562M025E1P3          | 0.090                                         | 1.857                                    | 1.181            | 0.984 | 30           | 25 |
| 5,600                | LP562M025C3P3          | 0.089                                         | 1.730                                    | 0.984            | 1.181 | 25           | 30 |
| 6,800                | LP682M025C5P3          | 0.073                                         | 1.940                                    | 0.984            | 1.378 | 25           | 35 |
| 10,000               | LP103M025H3P3          | 0.050                                         | 3.333                                    | 1.378            | 1.181 | 35           | 30 |
| 12,000               | LP123M025H3P3          | 0.041                                         | 2.970                                    | 1.378            | 1.181 | 35           | 30 |
| 15,000               | LP153M025E7P3          | 0.033                                         | 3.360                                    | 1.181            | 1.575 | 30           | 40 |
| 22,000               | LP223M025H9P3          | 0.023                                         | 4.857                                    | 1.378            | 1.969 | 35           | 50 |

| Cap<br>( $\mu$ F)    | Catalog<br>Part Number | Max ESR<br>@ 120 Hz<br>+25 °C<br>( $\Omega$ ) | Max Ripple<br>@ 120 Hz<br>+105 °C<br>(A) | Size<br>(Inches) |       | Size<br>(mm) |    |
|----------------------|------------------------|-----------------------------------------------|------------------------------------------|------------------|-------|--------------|----|
|                      |                        |                                               |                                          | D                | L     | D            | L  |
| 35 Vdc; 44 Vdc Surge |                        |                                               |                                          |                  |       |              |    |
| 1,800                | LP182M035A1P3          | 0.188                                         | 1.040                                    | 0.866            | 0.984 | 22           | 25 |
| 2,700                | LP272M035C1P3          | 0.155                                         | 1.257                                    | 0.984            | 0.984 | 25           | 25 |
| 3,900                | LP392M035E1P3          | 0.108                                         | 1.571                                    | 1.181            | 0.984 | 30           | 25 |
| 5,600                | LP562M035E3P3          | 0.074                                         | 2.050                                    | 1.181            | 1.181 | 30           | 30 |
| 6,800                | LP682M035E5P3          | 0.060                                         | 2.286                                    | 1.181            | 1.378 | 30           | 35 |
| 6,800                | LP682M035C7P3          | 0.061                                         | 2.320                                    | 0.984            | 1.575 | 25           | 40 |
| 8,200                | LP822M035H3P3          | 0.051                                         | 2.690                                    | 1.378            | 1.181 | 35           | 30 |
| 10,000               | LP103M035E7P3          | 0.041                                         | 3.000                                    | 1.181            | 1.575 | 30           | 40 |
| 12,000               | LP123M035H7P3          | 0.035                                         | 3.590                                    | 1.378            | 1.575 | 35           | 40 |
| 15,000               | LP153M035H9P3          | 0.028                                         | 4.000                                    | 1.378            | 1.969 | 35           | 50 |
| 50 Vdc; 63 Vdc Surge |                        |                                               |                                          |                  |       |              |    |
| 1,200                | LP122M050A1P3          | 0.280                                         | 0.860                                    | 0.866            | 0.984 | 22           | 25 |
| 1,500                | LP152M050A1P3          | 0.225                                         | 0.983                                    | 0.866            | 0.984 | 22           | 25 |
| 2,200                | LP222M050A5P3          | 0.151                                         | 1.330                                    | 0.866            | 1.378 | 22           | 35 |
| 2,200                | LP222M050E1P3          | 0.150                                         | 1.429                                    | 1.181            | 0.984 | 30           | 25 |
| 3,300                | LP332M050E3P3          | 0.101                                         | 0.176                                    | 1.181            | 1.181 | 30           | 30 |
| 3,300                | LP332M050C5P3          | 0.101                                         | 1.710                                    | 0.984            | 1.378 | 25           | 35 |
| 3,300                | LP332M050C3P3          | 0.101                                         | 1.710                                    | 0.984            | 1.181 | 25           | 30 |
| 3,900                | LP392M050C7P3          | 0.085                                         | 1.970                                    | 0.984            | 1.575 | 25           | 40 |
| 4,700                | LP472M050H3P3          | 0.071                                         | 2.270                                    | 1.378            | 1.181 | 35           | 30 |

# Type LP 105 °C Snap-In Aluminum Electrolytic Capacitors

| Cap<br>(µF)            | Catalog<br>Part Number | Max ESR<br>@ 120 Hz<br>+25 °C<br>(Ω) | Max Ripple<br>@ 120 Hz<br>+105 °C<br>(A) | Size<br>(Inches) |       | Size<br>(mm) |    |
|------------------------|------------------------|--------------------------------------|------------------------------------------|------------------|-------|--------------|----|
|                        |                        |                                      |                                          | D                | L     | D            | L  |
| 50 Vdc; 63 Vdc Surge   |                        |                                      |                                          |                  |       |              |    |
| 5,600                  | LP562M050H5P3          | 0.059                                | 2.60                                     | 1.378            | 1.378 | 35           | 35 |
| 6,800                  | LP682M050E7P3          | 0.049                                | 3.16                                     | 1.181            | 1.575 | 30           | 40 |
| 6,800                  | LP682M050E9P3          | 0.049                                | 3.16                                     | 1.181            | 1.969 | 30           | 50 |
| 8,200                  | LP822M050H9P3          | 0.040                                | 3.43                                     | 1.378            | 1.969 | 35           | 50 |
| 63 Vdc; 75 Vdc Surge   |                        |                                      |                                          |                  |       |              |    |
| 820                    | LP821M063A1P3          | 0.300                                | 0.77                                     | 0.866            | 0.984 | 22           | 25 |
| 1,200                  | LP122M063C1P3          | 0.210                                | 0.99                                     | 0.984            | 0.984 | 25           | 25 |
| 1,800                  | LP182M063A7P3          | 0.138                                | 1.34                                     | 0.866            | 1.575 | 22           | 40 |
| 1,800                  | LP182M063E1P3          | 0.140                                | 1.37                                     | 1.181            | 0.984 | 30           | 25 |
| 2,200                  | LP222M063E3P3          | 0.113                                | 1.55                                     | 1.181            | 1.181 | 30           | 30 |
| 3,300                  | LP332M063H3P3          | 0.076                                | 1.20                                     | 1.378            | 1.181 | 35           | 30 |
| 4,700                  | LP472M063E9P3          | 0.053                                | 2.84                                     | 1.181            | 1.969 | 30           | 50 |
| 6,800                  | LP682M063H9P3          | 0.037                                | 3.36                                     | 1.378            | 1.969 | 35           | 50 |
| 100 Vdc; 125 Vdc Surge |                        |                                      |                                          |                  |       |              |    |
| 820                    | LP821M100E1P3          | 0.3                                  | 0.98                                     | 1.181            | 0.984 | 30           | 25 |
| 2,200                  | LP222M100H7P3          | 0.113                                | 2.03                                     | 1.378            | 1.575 | 35           | 40 |
| 2,700                  | LP272M100H9P3          | 0.092                                | 2.32                                     | 1.378            | 1.969 | 35           | 50 |
| 2,700                  | LP272M100H7P3          | 0.092                                | 2.32                                     | 1.378            | 1.575 | 35           | 40 |
| 200 Vdc; 250 Vdc Surge |                        |                                      |                                          |                  |       |              |    |
| 150                    | LP151M200C1P3          | 1.650                                | 0.509                                    | 0.984            | 0.984 | 25           | 25 |
| 150                    | LP151M200A1P3          | 1.650                                | 0.509                                    | 0.866            | 0.984 | 22           | 25 |
| 180                    | LP181M200C1P3          | 1.400                                | 0.571                                    | 0.984            | 0.984 | 25           | 25 |
| 220                    | LP221M200C1P3          | 1.100                                | 0.646                                    | 0.984            | 0.984 | 25           | 25 |
| 220                    | LP221M200E1P3          | 1.100                                | 0.646                                    | 1.181            | 0.984 | 30           | 25 |
| 220                    | LP221M200A3P3          | 1.130                                | 0.660                                    | 0.866            | 1.181 | 22           | 30 |
| 270                    | LP271M200E1P3          | 0.920                                | 0.790                                    | 1.181            | 0.984 | 30           | 25 |
| 270                    | LP271M200C3P3          | 0.920                                | 0.790                                    | 0.984            | 1.181 | 25           | 30 |
| 330                    | LP331M200E3P3          | 0.750                                | 0.886                                    | 1.181            | 1.181 | 30           | 30 |
| 390                    | LP391M200C5P3          | 0.640                                | 0.980                                    | 0.984            | 1.378 | 25           | 35 |
| 470                    | LP471M200E5P3          | 0.540                                | 1.143                                    | 1.181            | 1.378 | 30           | 35 |

| Cap<br><br>(μF)        | Catalog<br><br>Part Number | Max ESR  | Max Ripple | Size     |       | Size |    |
|------------------------|----------------------------|----------|------------|----------|-------|------|----|
|                        |                            | @ 120 Hz | @ 120 Hz   | Size     |       | Size |    |
|                        |                            | +25 °C   | +105 °C    | (Inches) |       | (mm) |    |
|                        |                            | (Ω)      | (A)        | D        | L     | D    | L  |
| 200 Vdc; 250 Vdc Surge |                            |          |            |          |       |      |    |
| 470                    | LP471M200E1P3              | 0.540    | 1.140      | 1.181    | 0.984 | 30   | 25 |
| 470                    | LP471M200H3P3              | 0.540    | 1.143      | 1.378    | 1.181 | 35   | 30 |
| 560                    | LP561M200H3P3              | 0.440    | 1.310      | 1.378    | 1.181 | 35   | 30 |
| 680                    | LP681M200E3P3              | 0.370    | 1.520      | 1.181    | 1.181 | 30   | 30 |
| 680                    | LP681M200E5P3              | 0.370    | 1.510      | 1.181    | 1.378 | 30   | 35 |
| 680                    | LP681M200H1P3              | 0.370    | 1.510      | 1.378    | 0.984 | 35   | 25 |
| 820                    | LP821M200H7P3              | 0.300    | 1.750      | 1.378    | 1.575 | 35   | 40 |
| 820                    | LP821M200H3P3              | 0.300    | 1.750      | 1.378    | 1.181 | 35   | 30 |
| 1,000                  | LP102M200H9P3              | 0.250    | 2.114      | 1.378    | 1.969 | 35   | 50 |
| 1,000                  | LP102M200H5P3              | 0.250    | 2.114      | 1.378    | 1.378 | 35   | 35 |
| 1200                   | LP122M200E9P3              | 0.165    | 2.810      | 1.181    | 1.969 | 30   | 50 |
| 1,200                  | LP122M200H5P3              | 0.165    | 2.740      | 1.378    | 1.378 | 35   | 35 |
| 1,500                  | LP152M200H4P3              | 0.134    | 3.330      | 1.378    | 1.772 | 35   | 45 |
| 1,800                  | LP182M200H9P3              | 0.112    | 3.800      | 1.378    | 1.969 | 35   | 50 |
| 250 Vdc; 300 Vdc Surge |                            |          |            |          |       |      |    |
| 100                    | LP101M250A1P3              | 2.500    | 0.410      | 0.866    | 0.984 | 22   | 25 |
| 150                    | LP151M250C1P3              | 1.660    | 0.540      | 0.984    | 0.984 | 25   | 25 |
| 180                    | LP181M250C3P3              | 1.400    | 0.686      | 0.984    | 1.181 | 25   | 30 |
| 220                    | LP221M250E1P3              | 1.130    | 0.710      | 1.181    | 0.984 | 30   | 25 |
| 270                    | LP271M250C3P3              | 0.922    | 0.840      | 0.984    | 1.181 | 25   | 30 |
| 330                    | LP331M250E3P3              | 0.750    | 0.914      | 1.181    | 1.181 | 30   | 30 |
| 390                    | LP391M250H3P3              | 0.640    | 1.090      | 1.378    | 1.181 | 35   | 30 |
| 470                    | LP471M250E7P3              | 0.530    | 1.260      | 1.181    | 1.575 | 30   | 40 |
| 470                    | LP471M250H1P3              | 0.530    | 1.260      | 1.378    | 0.984 | 35   | 25 |
| 560                    | LP561M250H3P3              | 0.347    | 1.800      | 1.378    | 1.181 | 35   | 30 |
| 680                    | LP681M250E9P3              | 0.370    | 1.920      | 1.181    | 1.969 | 30   | 50 |
| 680                    | LP681M250H5P3              | 0.370    | 2.070      | 1.378    | 1.378 | 35   | 35 |
| 820                    | LP821M250H7P3              | 0.243    | 2.400      | 1.378    | 1.575 | 35   | 40 |
| 1,000                  | LP102M250H4P3              | 0.200    | 2.720      | 1.378    | 1.772 | 35   | 45 |
| 1,200                  | LP122M250H9P3              | 0.165    | 3.100      | 1.378    | 1.969 | 35   | 50 |

Компания «Life Electronics» занимается поставками электронных компонентов импортного и отечественного производства от производителей и со складов крупных дистрибьюторов Европы, Америки и Азии.

С конца 2013 года компания активно расширяет линейку поставок компонентов по направлению коаксиальный кабель, кварцевые генераторы и конденсаторы (керамические, пленочные, электролитические), за счёт заключения дистрибьюторских договоров

Мы предлагаем:

- Конкурентоспособные цены и скидки постоянным клиентам.
- Специальные условия для постоянных клиентов.
- Подбор аналогов.
- Поставку компонентов в любых объемах, удовлетворяющих вашим потребностям.
- Приемлемые сроки поставки, возможна ускоренная поставка.
- Доставку товара в любую точку России и стран СНГ.
- Комплексную поставку.
- Работу по проектам и поставку образцов.
- Формирование склада под заказчика.
- Сертификаты соответствия на поставляемую продукцию (по желанию клиента).
- Тестирование поставляемой продукции.
- Поставку компонентов, требующих военную и космическую приемку.
- Входной контроль качества.
- Наличие сертификата ISO.

В составе нашей компании организован Конструкторский отдел, призванный помогать разработчикам, и инженерам.

Конструкторский отдел помогает осуществить:

- Регистрацию проекта у производителя компонентов.
- Техническую поддержку проекта.
- Защиту от снятия компонента с производства.
- Оценку стоимости проекта по компонентам.
- Изготовление тестовой платы монтаж и пусконаладочные работы.



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