

# CLE Series

- •For LED light circuit and other long life applications
- Downsize and long life
- •Endurance with ripple current : 8,000 to 10,000 hours at 105°C
- Non solvent resistant type
- ●RoHS Compliant

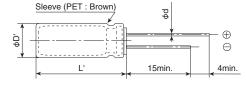


## **♦** SPECIFICATION

| Items  | Characteristics   |                                       |           |             |                   |                                 |  |  |
|--|---|---------------------------------------|-----------|-------------|-------------------|---------------------------------|--|--|
| Category<br>Temperature Range                                  | -40 to +105°C   |                                       |           |             |                   |                                 |  |  |
| Rated Voltage Range  | 400V <sub>dc</sub>  |                                       |           |             |                   |                                 |  |  |
| Capacitance Tolerance  | ±20% (M) (at 20°C,120Hz)  |                                       |           |             |                   |                                 |  |  |
| Leakage Current  | CV ≦ 1,000  |                                       |           |             |                   |                                 |  |  |
|  | I=0.1CV+40  | I=0.04CV+100                          |           |             |                   |                                 |  |  |
|  | Where, I: Max. leakage  | curren                                | t (µA), ( | C : Nominal | capacitance (μF), | V : Rated voltage (V) (at 20°C) |  |  |
| Dissipation Factor (tanδ)                                      | 0.24 Max. (at 20°C,120Hz)   |                                       |           |             |                   |                                 |  |  |
| Low Temperature  | Rated voltage (V <sub>dc</sub> )  |                                       | 400V      |             |                   |                                 |  |  |
| Characteristics  | Z(-25°C)/Z(+20°C)   | Ф8                                    | 4         |             |                   |                                 |  |  |
| (Max. Impedance Ratio)   |   | Ф10                                   | 4         |             |                   |                                 |  |  |
|  | Z(-40°C)/Z(+20°C)   | Ф8                                    | 8         |             |                   |                                 |  |  |
|  |   | Ф10                                   | 6         |             |                   | (at 120Hz)                      |  |  |
| Endurance  | The following specifications shall be satisfied when the capacitors are restored to 20°C after subjected to DC voltage with the               |                                       |           |             |                   |                                 |  |  |
|  | ripple current is applied (the peak voltage shall not exceed the rated voltage) for 8,000 hours (10,000 hours for Φ10×16L) at 105°C.          |                                       |           |             |                   |                                 |  |  |
|  | Capacitance change  | ≤ ±20% of the initial value           |           |             |                   |                                 |  |  |
|  | D.F. (tanδ)   | ≤ 200% of the initial specified value |           |             |                   |                                 |  |  |
|  | Leakage current   | ≦ The initial specified value         |           |             |                   |                                 |  |  |
| Shelf Life   | The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1,000 hours at 105°C without |                                       |           |             |                   |                                 |  |  |
|  | voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to Item 4.1 of                   |                                       |           |             |                   |                                 |  |  |
|  | Capacitance change  | ≤ ±20% of the initial value           |           |             |                   |                                 |  |  |
| D.F. $(tan\delta)$ $\leq 200\%$ of the initial specified value |   |                                       |           |             |                   |                                 |  |  |
|  | Leakage current   | ≦ 500                                 |           |             |                   |                                 |  |  |

## ◆ DIMENSIONS [mm]

#### •Terminal Code : E

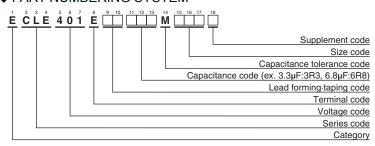




Gas escape end seal

|   | ΦD | 8          | 10        |  |  |
|---|----|------------|-----------|--|--|
|   | Фd | 0.6        | 0.6       |  |  |
|   | F  | 3.5        | 5.0       |  |  |
| ı | D' | ФD+0.5max. |           |  |  |
| ı | L' | L+1.5max.  | L+2.0max. |  |  |

## **◆ PART NUMBERING SYSTEM**



Specifications in this bulletin are subject to change without notice.



## **♦ STANDARD RATINGS**

| wv                 | Сар  | Case size<br>ФD×L(mm) | tanδ | Rated ripple curre | nt(mArms/ 105°C ) | Part No.           |  |
|--------------------|------|-----------------------|------|--------------------|-------------------|--------------------|--|
| (V <sub>dc</sub> ) | (µF) |                       | tano | 120Hz              | 100kHz            | i ditino.          |  |
|                    | 2.2  | 8 × 11.5              | 0.24 | 40                 | 100               | ECLE401E□□2R2MHB5D |  |
|                    | 2.7  | 8 × 11.5              | 0.24 | 45                 | 110               | ECLE401E□□2R7MHB5D |  |
|                    | 3.3  | 8 × 11.5              | 0.24 | 50                 | 125               | ECLE401E□□3R3MHB5D |  |
| 400                | 3.3  | 10 × 12.5             | 0.24 | 60                 | 150               | ECLE401E□□3R3MJC5S |  |
| 400                | 3.9  | 8 × 15                | 0.24 | 65                 | 160               | ECLE401E□□3R9MH15D |  |
|                    | 4.7  | 10 × 16               | 0.24 | 90                 | 225               | ECLE401E□□4R7MJ16S |  |
|                    | 5.6  | 10 × 16               | 0.24 | 100                | 250               | ECLE401E□□5R6MJ16S |  |
|                    | 6.8  | 10 × 16               | 0.24 | 115                | 285               | ECLE401E□□6R8MJ16S |  |

 $<sup>\</sup>square\,\square$  : Enter the appropriate lead forming or taping code.

## **♦ RATED RIPPLE CURRENT MULTIPLIERS**

#### •Frequency Multipliers

| Capacitance(µF) | 50   | 120  | 300  | 1k   | 10k  | 100k |
|-----------------|------|------|------|------|------|------|
| 2.2 to 6.8      | 0.65 | 1.00 | 1.35 | 1.75 | 2.30 | 2.50 |

The endurance of capacitors is reduced with internal heating produced by ripple current at the rate of halving the lifetime with every  $5^{\circ}$ C rise. When long life performance is required in actual use, the rms ripple current has to be reduced.

2

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NEVH1.0M250AB NEVH3.3M250BB NEVH3.3M450CC KME50VB100M-8X11.5 SG220M1CSA-0407 ES5107M016AE1DA

ESMG160ETD102MJ16S ESX472M16B 227RZS050M 476CKH100MSA 477RZS050M B41793A9108Q1 UVX1V101KPA1FA

UVX1V222MHA1CA KME25VB100M-6.3X11 VTL100S10 VTL470S10 VTL470S16A 511D336M250EK5D 052687X ECE-A1CF471

NRE-S560M16V6.3X7TBSTF RGA221M1CTA-0611G ERZA630VHN182UP54N UPL1A331MPH NEV1000M6.3DE NEV100M16CB

NEV100M50DD-BULK NEV2200M16FF NEV220M50EE NEV2.2M50AA NEV330M63EF NEV4700M35HI NEV4.7M100BA

NEV47M16BA NEV47M50CB-BULK NEVH1.0M350AB