

### Snap-in Type

Series: **ED** Type: **TS**



#### ■ Features

- Endurance : 105 °C 3000 h
- High ripple current capability in high frequency range.
- RoHS directive compliant

#### ■ Specifications

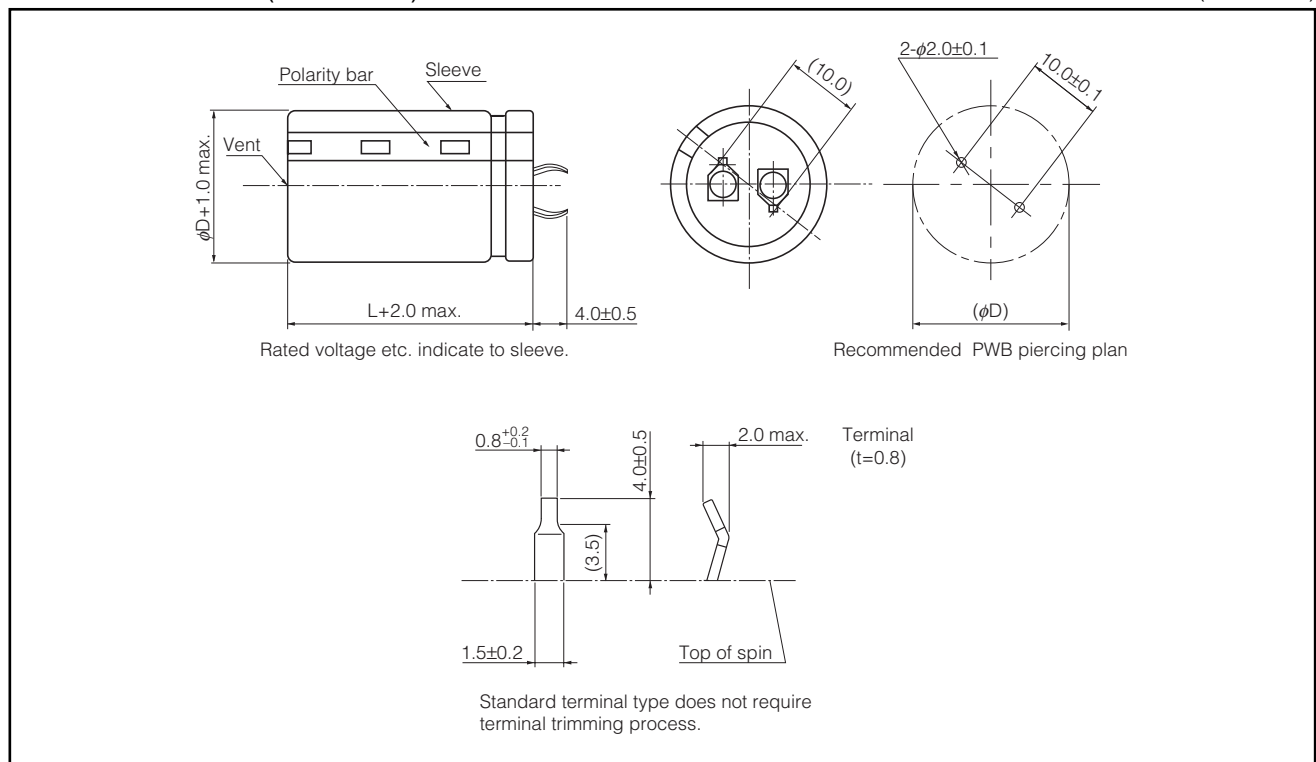
|                       |  |                                    |
|-----------------------|--|------------------------------------|
| Category Temp. Range  | -40 °C to + 105 °C   | -25 °C to +105 °C                  |
| Rated W.V. Range      | 200 V.DC to 250 V.DC   | 400 V.DC to 450 V.DC               |
| Nominal Cap. Range    | 220 µF to 2200 µF  | 56 µF to 560 µF                    |
| Capacitance Tolerance | ±20 % (120 Hz/+20 °C)  |                                    |
| DC Leakage Current    | 3√CV (µA) max. After 5 minutes application of rated working voltage at +20 °C<br>C : Capacitance (µF) V: W.V. (V.DC)   |                                    |
| tan δ                 | Please see the attached standard products list   |                                    |
| Endurance             | After 3000 hours application of DC voltage with specified ripple current (≤ rated DC working voltage) at +105 °C±2 °C, the capacitors shall meet the following limits.                       |                                    |
|                       | Capacitance change   | ≤±20 % of initial measured value   |
|                       | tan δ  | ≤ 200 % of initial specified value |
|                       | DC leakage current   | ≤ initial specified value          |
| Shelf Life            | After storage for 1000 hours at +105 °C±2 °C within no voltage applied and then being stabilized at +20 °C, capacitors shall meet the limits specified in Endurance (With voltage treatment) |                                    |

#### ■ Frequency correction factor for ripple current

| Correction factor | Frequency (Hz) |      |      |      |      |      |         |
|-------------------|----------------|------|------|------|------|------|---------|
|                   | 50             | 60   | 100  | 120  | 500  | 1 k  | 10 k to |
|                   | 0.50           | 0.55 | 0.68 | 0.70 | 0.85 | 0.90 | 1.00    |

#### ■ Dimensions in mm (not to scale)

(Unit : mm)



Design and specifications are each subject to change without notice. Ask factory for the current technical specifications before purchase and/or use. Should a safety concern arise regarding this product, please be sure to contact us immediately.

00 Nov. 2012

### Standard Products

Endurance : 105 °C 3000 h

| W.V.<br>(V. DC) | Cap.<br>(120 Hz)<br>(±20 %)<br>(μF) | Case size    |                | Part No.<br>PET sleeve<br>Terminal Length<br>4.0 mm<br>(Without Top Plate) | Specification  |                                       | Min. Packaging Q'ty<br><br>(pcs) |
|-----------------|-------------------------------------|--------------|----------------|--|--|---------------------------------------|----------------------------------|
|                 |                                     | Dia.<br>(mm) | Length<br>(mm) |  | Ripple<br>Current<br>(50 kHz)<br>(+105 °C)<br>(A r.m.s.) | tan δ<br>(120 Hz)<br>(+20 °C)<br>max. |                                  |
| 200             | 270                                 | 22           | 25             | EETED2D271HJ   | 2.03   | 0.15                                  | 200                              |
|                 | 330                                 | 22           | 30             | EETED2D331HJ   | 2.23   | 0.15                                  | 200                              |
|                 | 390                                 | 22           | 30             | EETED2D391HJ   | 2.44   | 0.15                                  | 200                              |
|                 |                                     | 25           | 25             | EETED2D391JJ   | 2.44   | 0.15                                  | 200                              |
|                 | 470                                 | 22           | 35             | EETED2D471HJ   | 2.64   | 0.15                                  | 200                              |
|                 |                                     | 25           | 30             | EETED2D471JJ   | 2.64   | 0.15                                  | 200                              |
|                 | 560                                 | 22           | 40             | EETED2D561HJ   | 3.05   | 0.15                                  | 200                              |
|                 |                                     | 25           | 30             | EETED2D561JJ   | 3.05   | 0.15                                  | 200                              |
|                 |                                     | 30           | 25             | EETED2D561KJ   | 3.05   | 0.15                                  | 200                              |
|                 | 680                                 | 22           | 45             | EETED2D681HJ   | 3.45   | 0.15                                  | 200                              |
|                 |                                     | 25           | 35             | EETED2D681JJ   | 3.45   | 0.15                                  | 200                              |
|                 |                                     | 30           | 30             | EETED2D681KJ   | 3.45   | 0.15                                  | 200                              |
|                 | 820                                 | 22           | 50             | EETED2D821HJ   | 3.76   | 0.15                                  | 200                              |
|                 |                                     | 25           | 40             | EETED2D821JJ   | 3.76   | 0.15                                  | 200                              |
|                 |                                     | 30           | 30             | EETED2D821KJ   | 3.76   | 0.15                                  | 200                              |
|                 |                                     | 35           | 25             | EETED2D821LJ   | 3.76   | 0.15                                  | 200                              |
|                 | 1000                                | 25           | 45             | EETED2D102JJ   | 4.06   | 0.15                                  | 200                              |
|                 |                                     | 30           | 35             | EETED2D102KJ   | 4.06   | 0.15                                  | 100                              |
|                 |                                     | 35           | 30             | EETED2D102LJ   | 4.06   | 0.15                                  | 200                              |
|                 | 1200                                | 30           | 40             | EETED2D122KJ   | 4.47   | 0.15                                  | 100                              |
| 35              |                                     | 35           | EETED2D122LJ   | 4.47   | 0.15   | 100                                   |                                  |
| 1500            | 30                                  | 50           | EETED2D152KJ   | 5.08   | 0.15   | 100                                   |                                  |
|                 | 35                                  | 40           | EETED2D152LJ   | 5.08   | 0.15   | 100                                   |                                  |
| *               | 1800                                | 35           | 45             | EETED2D182LJ   | 5.48   | 0.15                                  | 100                              |
| *               | 2200                                | 35           | 50             | EETED2D222LJ   | 5.89   | 0.15                                  | 100                              |
| 220             | 270                                 | 22           | 30             | EETED2Q271HJ   | 2.03   | 0.15                                  | 200                              |
|                 | 330                                 | 22           | 30             | EETED2Q331HJ   | 2.23   | 0.15                                  | 200                              |
|                 |                                     | 25           | 25             | EETED2Q331JJ   | 2.23   | 0.15                                  | 200                              |
|                 | 390                                 | 22           | 35             | EETED2Q391HJ   | 2.44   | 0.15                                  | 200                              |
|                 |                                     | 25           | 30             | EETED2Q391JJ   | 2.44   | 0.15                                  | 200                              |
|                 | 470                                 | 22           | 40             | EETED2Q471HJ   | 2.64   | 0.15                                  | 200                              |
|                 |                                     | 25           | 30             | EETED2Q471JJ   | 2.64   | 0.15                                  | 200                              |
|                 |                                     | 30           | 25             | EETED2Q471KJ   | 2.64   | 0.15                                  | 200                              |
|                 | 560                                 | 22           | 45             | EETED2Q561HJ   | 3.05   | 0.15                                  | 200                              |
|                 |                                     | 25           | 35             | EETED2Q561JJ   | 3.05   | 0.15                                  | 200                              |
|                 |                                     | 30           | 30             | EETED2Q561KJ   | 3.05   | 0.15                                  | 200                              |
|                 | 680                                 | 25           | 40             | EETED2Q681JJ   | 3.45   | 0.15                                  | 200                              |
|                 |                                     | 30           | 30             | EETED2Q681KJ   | 3.45   | 0.15                                  | 200                              |
|                 |                                     | 35           | 25             | EETED2Q681LJ   | 3.45   | 0.15                                  | 200                              |
|                 | 820                                 | 25           | 45             | EETED2Q821JJ   | 3.76   | 0.15                                  | 200                              |
|                 |                                     | 30           | 35             | EETED2Q821KJ   | 3.76   | 0.15                                  | 100                              |
|                 |                                     | 35           | 30             | EETED2Q821LJ   | 3.76   | 0.15                                  | 200                              |
|                 | 1000                                | 30           | 40             | EETED2Q102KJ   | 4.06   | 0.15                                  | 100                              |
|                 |                                     | 35           | 35             | EETED2Q102LJ   | 4.06   | 0.15                                  | 100                              |
|                 | 1200                                | 30           | 45             | EETED2Q122KJ   | 4.47   | 0.15                                  | 100                              |
| 35              |                                     | 40           | EETED2Q122LJ   | 4.47   | 0.15   | 100                                   |                                  |
| *               | 1500                                | 35           | 45             | EETED2Q152LJ   | 5.08   | 0.15                                  | 100                              |
| *               | 1800                                | 35           | 50             | EETED2Q182LJ   | 5.48   | 0.15                                  | 100                              |

\* When capacitors of φ35×45L and φ35×50L are mounted on PWB, reinforce them with mounting clamp or adhesives.  
(Avoid using adhesives including halogenated compositions.)

### Standard Products

Endurance : 105 °C 3000 h

| W.V.<br>(V. DC) | Cap.<br>(120 Hz)<br>(±20 %)<br>(μF) | Case size    |                | Part No.<br>PET sleeve<br>Terminal Length<br>4.0 mm<br>(Without Top Plate) | Specification  |                                       | Min. Packaging Q'ty<br><br>(pcs) |
|-----------------|-------------------------------------|--------------|----------------|--|--|---------------------------------------|----------------------------------|
|                 |                                     | Dia.<br>(mm) | Length<br>(mm) |  | Ripple<br>Current<br>(50 kHz)<br>(+105 °C)<br>(A r.m.s.) | tan δ<br>(120 Hz)<br>(+20 °C)<br>max. |                                  |
| 250             | 220                                 | 22           | 30             | EETED2E221HJ   | 1.83   | 0.15                                  | 200                              |
|                 | 270                                 | 22           | 30             | EETED2E271HJ   | 2.03   | 0.15                                  | 200                              |
|                 |                                     | 25           | 25             | EETED2E271JJ   | 2.03   | 0.15                                  | 200                              |
|                 | 330                                 | 22           | 35             | EETED2E331HJ   | 2.23   | 0.15                                  | 200                              |
|                 |                                     | 25           | 30             | EETED2E331JJ   | 2.23   | 0.15                                  | 200                              |
|                 | 390                                 | 22           | 40             | EETED2E391HJ   | 2.44   | 0.15                                  | 200                              |
|                 |                                     | 25           | 30             | EETED2E391JJ   | 2.44   | 0.15                                  | 200                              |
|                 |                                     | 30           | 25             | EETED2E391KJ   | 2.44   | 0.15                                  | 200                              |
|                 | 470                                 | 22           | 45             | EETED2E471HJ   | 2.64   | 0.15                                  | 200                              |
|                 |                                     | 25           | 35             | EETED2E471JJ   | 2.64   | 0.15                                  | 200                              |
|                 |                                     | 30           | 30             | EETED2E471KJ   | 2.64   | 0.15                                  | 200                              |
|                 | 560                                 | 25           | 40             | EETED2E561JJ   | 3.05   | 0.15                                  | 200                              |
|                 |                                     | 30           | 30             | EETED2E561KJ   | 3.05   | 0.15                                  | 200                              |
|                 |                                     | 35           | 25             | EETED2E561LJ   | 3.05   | 0.15                                  | 200                              |
|                 | 680                                 | 25           | 45             | EETED2E681JJ   | 3.45   | 0.15                                  | 200                              |
|                 |                                     | 30           | 35             | EETED2E681KJ   | 3.45   | 0.15                                  | 100                              |
|                 |                                     | 35           | 30             | EETED2E681LJ   | 3.45   | 0.15                                  | 200                              |
|                 | 820                                 | 30           | 40             | EETED2E821KJ   | 3.76   | 0.15                                  | 100                              |
| 35              |                                     | 35           | EETED2E821LJ   | 3.76   | 0.15   | 100                                   |                                  |
| 1000            | 30                                  | 50           | EETED2E102KJ   | 4.06   | 0.15   | 100                                   |                                  |
|                 | 35                                  | 40           | EETED2E102LJ   | 4.06   | 0.15   | 100                                   |                                  |
| *               | 1200                                | 35           | 45             | EETED2E122LJ   | 4.47   | 0.15                                  | 100                              |
| *               | 1500                                | 35           | 50             | EETED2E152LJ   | 5.08   | 0.15                                  | 100                              |
| 400             | 82                                  | 22           | 25             | EETED2G820HJ   | 1.14   | 0.15                                  | 200                              |
|                 | 100                                 | 22           | 30             | EETED2G101HJ   | 1.30   | 0.15                                  | 200                              |
|                 |                                     | 25           | 25             | EETED2G101JJ   | 1.30   | 0.15                                  | 200                              |
|                 | 120                                 | 22           | 35             | EETED2G121HJ   | 1.46   | 0.15                                  | 200                              |
|                 |                                     | 25           | 30             | EETED2G121JJ   | 1.46   | 0.15                                  | 200                              |
|                 | 150                                 | 22           | 40             | EETED2G151HJ   | 1.53   | 0.15                                  | 200                              |
|                 |                                     | 25           | 30             | EETED2G151JJ   | 1.53   | 0.15                                  | 200                              |
|                 |                                     | 30           | 25             | EETED2G151KJ   | 1.53   | 0.15                                  | 200                              |
|                 | 180                                 | 22           | 45             | EETED2G181HJ   | 1.60   | 0.15                                  | 200                              |
|                 |                                     | 25           | 35             | EETED2G181JJ   | 1.60   | 0.15                                  | 200                              |
|                 |                                     | 30           | 30             | EETED2G181KJ   | 1.60   | 0.15                                  | 200                              |
|                 | 220                                 | 22           | 50             | EETED2G221HJ   | 2.03   | 0.15                                  | 200                              |
|                 |                                     | 25           | 40             | EETED2G221JJ   | 2.03   | 0.15                                  | 200                              |
|                 |                                     | 30           | 30             | EETED2G221KJ   | 2.03   | 0.15                                  | 200                              |
|                 |                                     | 35           | 25             | EETED2G221LJ   | 2.03   | 0.15                                  | 200                              |
|                 | 270                                 | 25           | 45             | EETED2G271JJ   | 2.23   | 0.15                                  | 200                              |
|                 |                                     | 30           | 35             | EETED2G271KJ   | 2.23   | 0.15                                  | 100                              |
|                 |                                     | 35           | 30             | EETED2G271LJ   | 2.23   | 0.15                                  | 200                              |
| 330             | 30                                  | 40           | EETED2G331KJ   | 2.44   | 0.15   | 100                                   |                                  |
|                 | 35                                  | 30           | EETED2G331LJ   | 2.44   | 0.15   | 200                                   |                                  |
| 390             | 30                                  | 45           | EETED2G391KJ   | 2.64   | 0.15   | 100                                   |                                  |
|                 | 35                                  | 35           | EETED2G391LJ   | 2.64   | 0.15   | 100                                   |                                  |
| 470             | 35                                  | 40           | EETED2G471LJ   | 2.84   | 0.15   | 100                                   |                                  |
| *               | 560                                 | 35           | 45             | EETED2G561LJ   | 3.05   | 0.15                                  | 100                              |

\* When capacitors of  $\phi 35 \times 45L$  and  $\phi 35 \times 50L$  are mounted on PWB, reinforce them with mounting clamp or adhesives. (Avoid using adhesives including halogenated compositions.)

### Standard Products

Endurance : 105 °C 3000 h

| W.V.<br>(V. DC) | Cap.<br>(120 Hz)<br>(±20 %)<br>(μF) | Case size    |                | Part No.<br><br>PET sleeve<br>Terminal Length<br>4.0 mm<br>(Without Top Plate) | Specification  |                                       | Min. Packaging Q'ty<br><br>(pcs) |
|-----------------|-------------------------------------|--------------|----------------|--|--|---------------------------------------|----------------------------------|
|                 |                                     | Dia.<br>(mm) | Length<br>(mm) |  | Ripple<br>Current<br>(50 kHz)<br>(+105 °C)<br>(A r.m.s.) | tan δ<br>(120 Hz)<br>(+20 °C)<br>max. |                                  |
| 420             | 68                                  | 22           | 25             | EETED2S680HJ   | 1.08   | 0.15                                  | 200                              |
|                 | 82                                  | 22           | 30             | EETED2S820HJ   | 1.14   | 0.15                                  | 200                              |
|                 |                                     | 25           | 25             | EETED2S820JJ   | 1.14   | 0.15                                  | 200                              |
|                 | 100                                 | 22           | 30             | EETED2S101HJ   | 1.30   | 0.15                                  | 200                              |
|                 |                                     | 25           | 25             | EETED2S101JJ   | 1.30   | 0.15                                  | 200                              |
|                 | 120                                 | 22           | 35             | EETED2S121HJ   | 1.46   | 0.15                                  | 200                              |
|                 |                                     | 25           | 30             | EETED2S121JJ   | 1.46   | 0.15                                  | 200                              |
|                 | 150                                 | 22           | 40             | EETED2S151HJ   | 1.53   | 0.15                                  | 200                              |
|                 |                                     | 25           | 35             | EETED2S151JJ   | 1.53   | 0.15                                  | 200                              |
|                 |                                     | 30           | 25             | EETED2S151KJ   | 1.53   | 0.15                                  | 200                              |
|                 | 180                                 | 22           | 45             | EETED2S181HJ   | 1.60   | 0.15                                  | 200                              |
|                 |                                     | 25           | 40             | EETED2S181JJ   | 1.60   | 0.15                                  | 200                              |
|                 |                                     | 30           | 30             | EETED2S181KJ   | 1.60   | 0.15                                  | 200                              |
|                 |                                     | 35           | 25             | EETED2S181LJ   | 1.60   | 0.15                                  | 200                              |
|                 | 220                                 | 25           | 45             | EETED2S221JJ   | 2.03   | 0.15                                  | 200                              |
|                 |                                     | 30           | 35             | EETED2S221KJ   | 2.03   | 0.15                                  | 100                              |
|                 |                                     | 35           | 30             | EETED2S221LJ   | 2.03   | 0.15                                  | 200                              |
|                 | 270                                 | 25           | 50             | EETED2S271JJ   | 2.40   | 0.15                                  | 200                              |
|                 |                                     | 30           | 40             | EETED2S271KJ   | 2.40   | 0.15                                  | 100                              |
|                 |                                     | 35           | 30             | EETED2S271LJ   | 2.40   | 0.15                                  | 200                              |
| 330             | 30                                  | 45           | EETED2S331KJ   | 2.54   | 0.15   | 100                                   |                                  |
|                 | 35                                  | 35           | EETED2S331LJ   | 2.54   | 0.15   | 100                                   |                                  |
| 390             | 30                                  | 50           | EETED2S391KJ   | 2.73   | 0.15   | 100                                   |                                  |
|                 | 35                                  | 40           | EETED2S391LJ   | 2.73   | 0.15   | 100                                   |                                  |
| *               | 470                                 | 35           | 45             | EETED2S471LJ   | 3.18   | 0.15                                  | 100                              |
| 450             | 56                                  | 22           | 25             | EETED2W560HJ   | 0.95   | 0.15                                  | 200                              |
|                 | 68                                  | 22           | 30             | EETED2W680HJ   | 1.08   | 0.15                                  | 200                              |
|                 |                                     | 25           | 25             | EETED2W680JJ   | 1.08   | 0.15                                  | 200                              |
|                 | 82                                  | 22           | 30             | EETED2W820HJ   | 1.14   | 0.15                                  | 200                              |
|                 |                                     | 25           | 25             | EETED2W820JJ   | 1.14   | 0.15                                  | 200                              |
|                 | 100                                 | 22           | 35             | EETED2W101HJ   | 1.30   | 0.15                                  | 200                              |
|                 |                                     | 25           | 30             | EETED2W101JJ   | 1.30   | 0.15                                  | 200                              |
|                 | 120                                 | 22           | 40             | EETED2W121HJ   | 1.46   | 0.15                                  | 200                              |
|                 |                                     | 25           | 35             | EETED2W121JJ   | 1.46   | 0.15                                  | 200                              |
|                 |                                     | 30           | 25             | EETED2W121KJ   | 1.46   | 0.15                                  | 200                              |
|                 | 150                                 | 22           | 45             | EETED2W151HJ   | 1.53   | 0.15                                  | 200                              |
|                 |                                     | 25           | 40             | EETED2W151JJ   | 1.53   | 0.15                                  | 200                              |
|                 |                                     | 30           | 30             | EETED2W151KJ   | 1.53   | 0.15                                  | 200                              |
|                 |                                     | 35           | 25             | EETED2W151LJ   | 1.53   | 0.15                                  | 200                              |
|                 | 180                                 | 22           | 50             | EETED2W181HJ   | 1.60   | 0.15                                  | 200                              |
|                 |                                     | 25           | 40             | EETED2W181JJ   | 1.60   | 0.15                                  | 200                              |
|                 |                                     | 30           | 30             | EETED2W181KJ   | 1.60   | 0.15                                  | 200                              |
|                 |                                     | 35           | 25             | EETED2W181LJ   | 1.60   | 0.15                                  | 200                              |
|                 | 220                                 | 25           | 45             | EETED2W221JJ   | 2.03   | 0.15                                  | 200                              |
|                 |                                     | 30           | 35             | EETED2W221KJ   | 2.03   | 0.15                                  | 100                              |
| 35              |                                     | 30           | EETED2W221LJ   | 2.03   | 0.15   | 200                                   |                                  |
| 270             | 30                                  | 40           | EETED2W271KJ   | 2.45   | 0.15   | 100                                   |                                  |
|                 | 35                                  | 35           | EETED2W271LJ   | 2.45   | 0.15   | 100                                   |                                  |
| 330             | 30                                  | 50           | EETED2W331KJ   | 2.64   | 0.15   | 100                                   |                                  |
|                 | 35                                  | 40           | EETED2W331LJ   | 2.64   | 0.15   | 100                                   |                                  |
| 390             | 35                                  | 40           | EETED2W391LJ   | 2.82   | 0.15   | 100                                   |                                  |
| *               | 470                                 | 35           | 50             | EETED2W471LJ   | 3.53   | 0.15                                  | 100                              |

\* When capacitors of φ35×45L and φ35×50L are mounted on PWB, reinforce them with mounting clamp or adhesives.  
(Avoid using adhesives including halogenated compositions.)

## X-ON Electronics

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