

# KZN Series

- Adoption of innovative high stability electrolyte
- High ripple current and long endurance
- Rated voltage range : 6.3 to 100V<sub>dc</sub>, Capacitance range : 8.2 to 22,000μF
- Endurance with ripple current : 6,000 to 10,000 hours at 105°C
- Non solvent resistant type
- RoHS2 Compliant

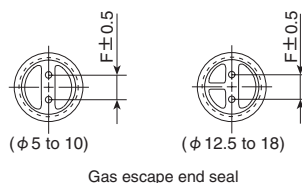
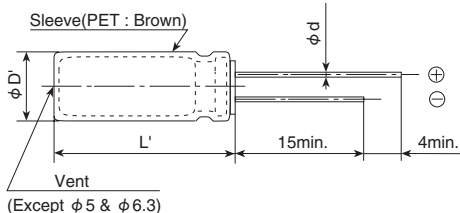


## SPECIFICATIONS

| Items                                                        | Characteristics                                                                                                                                                                                                                                                                     |                          |                                                               |             |             |               |                                       |      |      |      |
|--------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|---------------------------------------------------------------|-------------|-------------|---------------|---------------------------------------|------|------|------|
| Category                                                     | -40 to +105℃                                                                                                                                                                                                                                                                        |                          |                                                               |             |             |               |                                       |      |      |      |
| Temperature Range                                            |                                                                                                                                                                                                                                                                                     |                          |                                                               |             |             |               |                                       |      |      |      |
| Rated Voltage Range                                          | 6.3 to 100V <sub>dc</sub>                                                                                                                                                                                                                                                           |                          |                                                               |             |             |               |                                       |      |      |      |
| Capacitance Tolerance                                        | ± 20% (M) (at 20℃, 120Hz)                                                                                                                                                                                                                                                           |                          |                                                               |             |             |               |                                       |      |      |      |
| Leakage Current                                              | I=0.01CV or 3μA, whichever is greater.<br>Where, I : Max. leakage current (μA), C : Nominal capacitance (μF), V : Rated voltage (V) (at 20℃ after 2 minutes)                                                                                                                        |                          |                                                               |             |             |               |                                       |      |      |      |
| Dissipation Factor<br>(tan δ)                                | Rated voltage (V <sub>dc</sub> )                                                                                                                                                                                                                                                    | 6.3V                     | 10V                                                           | 16V         | 25V         | 35V           | 50V                                   | 63V  | 80V  | 100V |
|                                                              | tan δ (Max.)                                                                                                                                                                                                                                                                        | 0.22                     | 0.19                                                          | 0.16        | 0.14        | 0.12          | 0.10                                  | 0.09 | 0.09 | 0.08 |
|                                                              | When nominal capacitance exceeds 1,000μF, add 0.02 to the value above for each 1,000μF increase. (at 20℃, 120Hz)                                                                                                                                                                    |                          |                                                               |             |             |               |                                       |      |      |      |
| Low Temperature<br>Characteristics<br>(Max. Impedance Ratio) | Z (-25℃) / Z (+20℃)                                                                                                                                                                                                                                                                 | 2max.                    |                                                               |             |             |               |                                       |      |      |      |
|                                                              | Z (-40℃) / Z (+20℃)                                                                                                                                                                                                                                                                 | 3max.                    |                                                               |             |             |               |                                       |      |      |      |
| (at 120Hz)                                                   |                                                                                                                                                                                                                                                                                     |                          |                                                               |             |             |               |                                       |      |      |      |
| Endurance                                                    | The following specifications shall be satisfied when the capacitors are restored to 20℃ after subjected to DC voltage with the rated ripple current is applied (the peak voltage shall not exceed the rated voltage) for the specified period of time at 105℃.                      |                          |                                                               |             |             |               |                                       |      |      |      |
|                                                              | Time                                                                                                                                                                                                                                                                                | Case size                | φ 5& φ 6.3                                                    | φ 8× 11.5L  | φ 10× 12.5L | φ 8× 15L, 20L | φ 10× 16L, 20L, 25L<br>φ 12.5 to φ 18 |      |      |      |
|                                                              |                                                                                                                                                                                                                                                                                     | 6.3V <sub>dc</sub>       | 6,000 hours                                                   | 8,000 hours | 9,000 hours | 9,000 hours   | 10,000 hours                          |      |      |      |
|                                                              |                                                                                                                                                                                                                                                                                     | 10 to 50V <sub>dc</sub>  | 7,000 hours                                                   | 9,000 hours | 9,000 hours | 10,000 hours  | 10,000 hours                          |      |      |      |
|                                                              |                                                                                                                                                                                                                                                                                     | 63 to 100V <sub>dc</sub> | 6,000 hours                                                   | 8,000 hours | 9,000 hours | 9,000 hours   | 10,000 hours                          |      |      |      |
|                                                              | Capacitance change                                                                                                                                                                                                                                                                  |                          | ≤ ±25% of the initial value (6.3, 10V <sub>dc</sub> : ≤ ±30%) |             |             |               |                                       |      |      |      |
|                                                              | D.F. (tan δ)                                                                                                                                                                                                                                                                        |                          | ≤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℃ after exposing them for 500 hours at 105℃ without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to Item 4.1 of JIS C 5101-4. |                          |                                                               |             |             |               |                                       |      |      |      |
|                                                              | Capacitance change                                                                                                                                                                                                                                                                  |                          | ≤ ±25% of the initial value (6.3, 10V <sub>dc</sub> : ≤ ±30%) |             |             |               |                                       |      |      |      |
|                                                              | D.F. (tan δ)                                                                                                                                                                                                                                                                        |                          | ≤200% of the initial specified value                          |             |             |               |                                       |      |      |      |
|                                                              | Leakage current                                                                                                                                                                                                                                                                     |                          | ≤The initial specified value                                  |             |             |               |                                       |      |      |      |

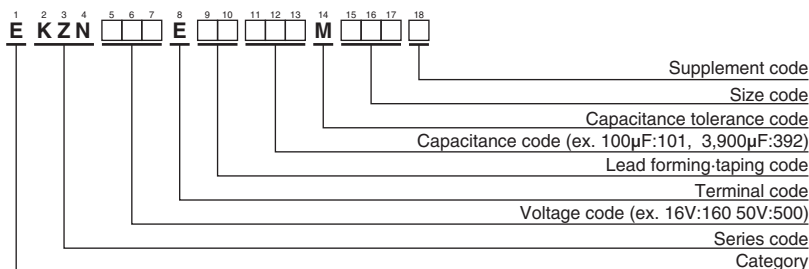
## DIMENSIONS [mm]

### Terminal Code : E



| φ D | 5             | 6.3 | 8   | 10  | 12.5 | 16  | 18  |
|-----|---------------|-----|-----|-----|------|-----|-----|
| φ d | 0.5           | 0.5 | 0.6 | 0.6 | 0.6  | 0.8 | 0.8 |
| F   | 2.0           | 2.5 | 3.5 | 5.0 | 5.0  | 7.5 | 7.5 |
| D'  | φ D + 0.5max. |     |     |     |      |     |     |
| L'  | L + 1.5max.   |     |     |     |      |     |     |

## PART NUMBERING SYSTEM



Please refer to "Product code guide (radial lead type)"

## ◆STANDARD RATINGS

| WV<br>(V <sub>dc</sub> ) | Cap<br>(μF) | Case size<br>φD×L(mm) | Impedance<br>(Ω max./100kHz) |       | Rated ripple<br>current<br>(mA rms/<br>105°C,<br>100kHz) | Part No.           | WV<br>(V <sub>dc</sub> ) | Cap<br>(μF) | Case size<br>φD×L(mm) | Impedance<br>(Ω max./100kHz) |       | Rated ripple<br>current<br>(mA rms/<br>105°C,<br>100kHz) | Part No.           |
|--------------------------|-------------|-----------------------|------------------------------|-------|----------------------------------------------------------|--------------------|--------------------------|-------------|-----------------------|------------------------------|-------|----------------------------------------------------------|--------------------|
|                          |             |                       | 20°C                         | -10°C |                                                          |                    |                          |             |                       | 20°C                         | -10°C |                                                          |                    |
| 6.3                      | 220         | 5×11                  | 0.38                         | 1.2   | 345                                                      | EKZN6R3E□□221ME11D | 16                       | 3,300       | 12.5×30               | 0.018                        | 0.054 | 3,660                                                    | EKZN160E□□332MK30S |
|                          | 470         | 6.3×11                | 0.17                         | 0.51  | 540                                                      | EKZN6R3E□□471MF11D |                          | 3,900       | 12.5×35               | 0.016                        | 0.048 | 4,120                                                    | EKZN160E□□392MK35S |
|                          | 820         | 8×11.5                | 0.075                        | 0.23  | 945                                                      | EKZN6R3E□□821MHB5D |                          | 3,900       | 16×20                 | 0.021                        | 0.063 | 3,330                                                    | EKZN160E□□392ML20S |
|                          | 1,200       | 8×15                  | 0.059                        | 0.18  | 1,250                                                    | EKZN6R3E□□122MH15D |                          | 4,700       | 18×20                 | 0.020                        | 0.060 | 3,450                                                    | EKZN160E□□472MM20S |
|                          | 1,200       | 10×12.5               | 0.053                        | 0.16  | 1,330                                                    | EKZN6R3E□□122MJC5S |                          | 5,600       | 16×25                 | 0.017                        | 0.051 | 3,810                                                    | EKZN160E□□562ML25S |
|                          | 1,500       | 8×20                  | 0.041                        | 0.13  | 1,500                                                    | EKZN6R3E□□152MH20D |                          | 6,800       | 16×31.5               | 0.016                        | 0.048 | 4,100                                                    | EKZN160E□□682MLN3S |
|                          | 1,800       | 10×16                 | 0.038                        | 0.12  | 1,760                                                    | EKZN6R3E□□182MJ16S |                          | 6,800       | 18×25                 | 0.016                        | 0.048 | 3,880                                                    | EKZN160E□□682MM25S |
|                          | 2,700       | 10×20                 | 0.028                        | 0.084 | 1,960                                                    | EKZN6R3E□□272MJ20S |                          | 8,200       | 16×35.5               | 0.014                        | 0.042 | 4,280                                                    | EKZN160E□□822MLP1S |
|                          | 2,700       | 12.5×16               | 0.035                        | 0.11  | 1,900                                                    | EKZN6R3E□□272MK16S |                          | 8,200       | 18×31.5               | 0.014                        | 0.042 | 4,190                                                    | EKZN160E□□822MMN3S |
|                          | 3,300       | 10×25                 | 0.026                        | 0.072 | 2,250                                                    | EKZN6R3E□□332MJ25S |                          | 10,000      | 16×40                 | 0.013                        | 0.039 | 4,580                                                    | EKZN160E□□103ML40S |
|                          | 3,900       | 12.5×20               | 0.025                        | 0.075 | 2,480                                                    | EKZN6R3E□□392MK20S |                          | 10,000      | 18×35.5               | 0.012                        | 0.036 | 4,380                                                    | EKZN160E□□103MMP1S |
|                          | 5,600       | 12.5×25               | 0.019                        | 0.057 | 2,900                                                    | EKZN6R3E□□562MK25S |                          | 12,000      | 18×40                 | 0.011                        | 0.033 | 4,960                                                    | EKZN160E□□123MM40S |
|                          | 6,800       | 12.5×30               | 0.018                        | 0.054 | 3,450                                                    | EKZN6R3E□□682MK30S | 25                       | 68          | 5×11                  | 0.38                         | 1.2   | 450                                                      | EKZN250E□□680ME11D |
|                          | 6,800       | 16×20                 | 0.021                        | 0.063 | 3,250                                                    | EKZN6R3E□□682ML20S |                          | 150         | 6.3×11                | 0.17                         | 0.51  | 700                                                      | EKZN250E□□151MF11D |
|                          | 8,200       | 12.5×35               | 0.016                        | 0.048 | 3,570                                                    | EKZN6R3E□□822MK35S |                          | 270         | 8×11.5                | 0.075                        | 0.23  | 1,200                                                    | EKZN250E□□271MHB5D |
|                          | 8,200       | 18×20                 | 0.020                        | 0.060 | 3,450                                                    | EKZN6R3E□□822MM20S |                          | 470         | 8×15                  | 0.059                        | 0.18  | 1,600                                                    | EKZN250E□□471MH15D |
|                          | 10,000      | 16×25                 | 0.017                        | 0.051 | 3,630                                                    | EKZN6R3E□□103ML25S |                          | 470         | 10×12.5               | 0.053                        | 0.16  | 1,700                                                    | EKZN250E□□471MJC5S |
|                          | 12,000      | 16×31.5               | 0.016                        | 0.048 | 4,100                                                    | EKZN6R3E□□123MLN3S |                          | 560         | 8×20                  | 0.041                        | 0.13  | 1,960                                                    | EKZN250E□□561MH20D |
|                          | 12,000      | 18×25                 | 0.016                        | 0.048 | 3,880                                                    | EKZN6R3E□□123MM25S |                          | 680         | 10×16                 | 0.038                        | 0.12  | 2,000                                                    | EKZN250E□□681MJ16S |
|                          | 15,000      | 16×35.5               | 0.014                        | 0.042 | 4,280                                                    | EKZN6R3E□□153MLP1S |                          | 820         | 10×20                 | 0.028                        | 0.084 | 2,500                                                    | EKZN250E□□821MJ20S |
|                          | 15,000      | 18×31.5               | 0.014                        | 0.042 | 4,190                                                    | EKZN6R3E□□153MMN3S |                          | 1,000       | 12.5×16               | 0.035                        | 0.11  | 2,400                                                    | EKZN250E□□102MK16S |
|                          | 18,000      | 16×40                 | 0.013                        | 0.039 | 4,580                                                    | EKZN6R3E□□183ML40S |                          | 1,200       | 10×25                 | 0.026                        | 0.072 | 2,900                                                    | EKZN250E□□122MJ25S |
|                          | 18,000      | 18×35.5               | 0.012                        | 0.036 | 4,380                                                    | EKZN6R3E□□183MMP1S |                          | 1,500       | 12.5×20               | 0.025                        | 0.075 | 2,600                                                    | EKZN250E□□152MK20S |
|                          | 22,000      | 18×40                 | 0.011                        | 0.033 | 4,960                                                    | EKZN6R3E□□223MM40S |                          | 1,800       | 12.5×25               | 0.019                        | 0.057 | 3,200                                                    | EKZN250E□□182MK25S |
| 10                       | 150         | 5×11                  | 0.38                         | 1.2   | 450                                                      | EKZN100E□□151ME11D |                          | 2,200       | 12.5×30               | 0.018                        | 0.054 | 3,660                                                    | EKZN250E□□222MK30S |
|                          | 330         | 6.3×11                | 0.17                         | 0.51  | 700                                                      | EKZN100E□□331MF11D |                          | 2,200       | 16×20                 | 0.021                        | 0.063 | 3,330                                                    | EKZN250E□□222ML20S |
|                          | 560         | 8×11.5                | 0.075                        | 0.23  | 1,200                                                    | EKZN100E□□561MHB5D |                          | 2,700       | 12.5×35               | 0.016                        | 0.048 | 4,120                                                    | EKZN250E□□272MK35S |
|                          | 820         | 8×15                  | 0.059                        | 0.18  | 1,600                                                    | EKZN100E□□821MH15D |                          | 3,300       | 16×25                 | 0.017                        | 0.051 | 3,810                                                    | EKZN250E□□332ML25S |
|                          | 1,000       | 8×20                  | 0.041                        | 0.13  | 1,960                                                    | EKZN100E□□102MH20D |                          | 3,300       | 18×20                 | 0.020                        | 0.060 | 3,450                                                    | EKZN250E□□332MM20S |
|                          | 1,000       | 10×12.5               | 0.053                        | 0.16  | 1,700                                                    | EKZN100E□□102MJC5S |                          | 4,700       | 16×31.5               | 0.016                        | 0.048 | 4,100                                                    | EKZN250E□□472MLN3S |
|                          | 1,200       | 10×16                 | 0.038                        | 0.12  | 2,000                                                    | EKZN100E□□122MJ16S |                          | 4,700       | 18×25                 | 0.016                        | 0.048 | 3,880                                                    | EKZN250E□□472MM25S |
|                          | 1,800       | 10×20                 | 0.028                        | 0.084 | 2,500                                                    | EKZN100E□□182MJ20S |                          | 5,600       | 16×35.5               | 0.014                        | 0.042 | 4,280                                                    | EKZN250E□□562MLP1S |
|                          | 1,800       | 12.5×16               | 0.035                        | 0.11  | 2,400                                                    | EKZN100E□□182MK16S |                          | 5,600       | 18×31.5               | 0.014                        | 0.042 | 4,190                                                    | EKZN250E□□562MMN3S |
|                          | 2,200       | 10×25                 | 0.026                        | 0.072 | 2,900                                                    | EKZN100E□□222MJ25S |                          | 6,800       | 16×40                 | 0.013                        | 0.039 | 4,580                                                    | EKZN250E□□682ML40S |
|                          | 2,700       | 12.5×20               | 0.025                        | 0.075 | 2,600                                                    | EKZN100E□□272MK20S |                          | 6,800       | 18×35.5               | 0.012                        | 0.036 | 4,380                                                    | EKZN250E□□682MMP1S |
|                          | 3,900       | 12.5×25               | 0.019                        | 0.057 | 3,200                                                    | EKZN100E□□392MK25S |                          | 8,200       | 18×40                 | 0.011                        | 0.033 | 4,960                                                    | EKZN250E□□822MM40S |
|                          | 4,700       | 12.5×30               | 0.018                        | 0.054 | 3,660                                                    | EKZN100E□□472MK30S | 35                       | 47          | 5×11                  | 0.38                         | 1.2   | 450                                                      | EKZN350E□□470ME11D |
|                          | 4,700       | 16×20                 | 0.021                        | 0.063 | 3,330                                                    | EKZN100E□□472ML20S |                          | 100         | 6.3×11                | 0.17                         | 0.51  | 700                                                      | EKZN350E□□101MF11D |
|                          | 5,600       | 12.5×35               | 0.016                        | 0.048 | 4,120                                                    | EKZN100E□□562MK35S |                          | 180         | 8×11.5                | 0.075                        | 0.23  | 1,200                                                    | EKZN350E□□181MHB5D |
|                          | 5,600       | 18×20                 | 0.020                        | 0.060 | 3,450                                                    | EKZN100E□□562MM20S |                          | 220         | 8×15                  | 0.059                        | 0.18  | 1,600                                                    | EKZN350E□□221MH15D |
|                          | 6,800       | 16×25                 | 0.017                        | 0.051 | 3,810                                                    | EKZN100E□□682ML25S |                          | 270         | 10×12.5               | 0.053                        | 0.16  | 1,700                                                    | EKZN350E□□271MJC5S |
|                          | 8,200       | 16×31.5               | 0.016                        | 0.048 | 4,100                                                    | EKZN100E□□822MLN3S |                          | 330         | 8×20                  | 0.041                        | 0.13  | 1,960                                                    | EKZN350E□□331MH20D |
|                          | 8,200       | 18×25                 | 0.016                        | 0.048 | 3,880                                                    | EKZN100E□□822MM25S |                          | 390         | 10×16                 | 0.038                        | 0.12  | 2,000                                                    | EKZN350E□□391MJ16S |
|                          | 10,000      | 16×35.5               | 0.014                        | 0.042 | 4,280                                                    | EKZN100E□□103MLP1S |                          | 470         | 10×20                 | 0.028                        | 0.084 | 2,500                                                    | EKZN350E□□471MJ20S |
|                          | 10,000      | 18×31.5               | 0.014                        | 0.042 | 4,190                                                    | EKZN100E□□103MMN3S |                          | 560         | 12.5×16               | 0.035                        | 0.11  | 2,400                                                    | EKZN350E□□561MK16S |
|                          | 12,000      | 16×40                 | 0.013                        | 0.039 | 4,580                                                    | EKZN100E□□123ML40S |                          | 680         | 10×25                 | 0.026                        | 0.072 | 2,900                                                    | EKZN350E□□681MJ25S |
|                          | 12,000      | 18×35.5               | 0.012                        | 0.036 | 4,380                                                    | EKZN100E□□123MMP1S |                          | 820         | 12.5×20               | 0.025                        | 0.075 | 2,600                                                    | EKZN350E□□821MK20S |
|                          | 15,000      | 18×40                 | 0.011                        | 0.033 | 4,960                                                    | EKZN100E□□153MM40S |                          | 1,200       | 12.5×25               | 0.019                        | 0.057 | 3,200                                                    | EKZN350E□□122MK25S |
| 16                       | 120         | 5×11                  | 0.38                         | 1.2   | 450                                                      | EKZN160E□□121ME11D |                          | 1,500       | 12.5×30               | 0.018                        | 0.054 | 3,660                                                    | EKZN350E□□152MK30S |
|                          | 270         | 6.3×11                | 0.17                         | 0.51  | 700                                                      | EKZN160E□□271MF11D |                          | 1,500       | 16×20                 | 0.021                        | 0.063 | 3,330                                                    | EKZN350E□□152ML20S |
|                          | 470         | 8×11.5                | 0.075                        | 0.23  | 1,200                                                    | EKZN160E□□471MHB5D |                          | 1,800       | 12.5×35               | 0.016                        | 0.048 | 4,120                                                    | EKZN350E□□182MK35S |
|                          | 680         | 8×15                  | 0.059                        | 0.18  | 1,600                                                    | EKZN160E□□681MH15D |                          | 1,800       | 16×25                 | 0.017                        | 0.051 | 3,810                                                    | EKZN350E□□182ML25S |
|                          | 680         | 10×12.5               | 0.053                        | 0.16  | 1,700                                                    | EKZN160E□□681MJC5S |                          | 1,800       | 18×20                 | 0.020                        | 0.060 | 3,450                                                    | EKZN350E□□182MM20S |
|                          | 820         | 8×20                  | 0.041                        | 0.13  | 1,960                                                    | EKZN160E□□821MH20D |                          | 2,700       | 16×31.5               | 0.016                        | 0.048 | 4,100                                                    | EKZN350E□□272MLN3S |
|                          | 1,000       | 10×16                 | 0.038                        | 0.12  | 2,000                                                    | EKZN160E□□102MJ16S |                          | 2,700       | 18×25                 | 0.016                        | 0.048 | 3,880                                                    | EKZN350E□□272MM25S |
|                          | 1,500       | 10×20                 | 0.028                        | 0.084 | 2,500                                                    | EKZN160E□□152MJ20S |                          | 3,300       | 16×35.5               | 0.014                        | 0.042 | 4,280                                                    | EKZN350E□□332MLP1S |
|                          | 1,500       | 12.5×16               | 0.035                        | 0.11  | 2,400                                                    | EKZN160E□□152MK16S |                          | 3,300       | 18×31.5               | 0.014                        | 0.042 | 4,190                                                    | EKZN350E□□332MMN3S |
|                          | 1,800       | 10×25                 | 0.026                        | 0.072 | 2,900                                                    | EKZN160E□□182MJ25S |                          | 3,900       | 16×40                 | 0.013                        | 0.039 | 4,580                                                    | EKZN350E□□392ML40S |
|                          | 2,200       | 12.5×20               | 0.025                        | 0.075 | 2,600                                                    | EKZN160E□□222MK20S |                          | 3,900       | 18×35.5               | 0.012                        | 0.036 | 4,380                                                    | EKZN350E□□392MMP1S |
|                          | 2,700       | 12.5×25               | 0.019                        | 0.057 | 3,200                                                    | EKZN160E□□272MK25S |                          | 4,700       | 18×40                 | 0.011                        | 0.033 | 4,960                                                    | EKZN350E□□472MM40S |

□□ : Enter the appropriate lead forming or taping code.

## ◆STANDARD RATINGS

| WV<br>(V <sub>dc</sub> ) | Cap<br>(μF) | Case size<br>φD×L(mm) | Impedance<br>(Ω max./100kHz) |       | Rated<br>ripple<br>current<br>(mA <sub>rms</sub> /105°C, 100kHz) | Part No.           |
|--------------------------|-------------|-----------------------|------------------------------|-------|------------------------------------------------------------------|--------------------|
|                          |             |                       | 20°C                         | -10°C |                                                                  |                    |
| 50                       | 27          | 5×11                  | 0.40                         | 1.3   | 450                                                              | EKZN500E□□270ME11D |
|                          | 56          | 6.3×11                | 0.18                         | 0.54  | 700                                                              | EKZN500E□□560MF11D |
|                          | 100         | 8×11.5                | 0.085                        | 0.26  | 1,200                                                            | EKZN500E□□101MHB5D |
|                          | 120         | 8×15                  | 0.065                        | 0.20  | 1,600                                                            | EKZN500E□□121MH15D |
|                          | 150         | 10×12.5               | 0.073                        | 0.22  | 1,280                                                            | EKZN500E□□151MJC5S |
|                          | 180         | 8×20                  | 0.049                        | 0.16  | 1,960                                                            | EKZN500E□□181MH20D |
|                          | 220         | 10×16                 | 0.053                        | 0.16  | 1,650                                                            | EKZN500E□□221MJ16S |
|                          | 330         | 10×20                 | 0.038                        | 0.12  | 2,060                                                            | EKZN500E□□331MJ20S |
|                          | 330         | 12.5×16               | 0.045                        | 0.14  | 2,160                                                            | EKZN500E□□331MK16S |
|                          | 390         | 10×25                 | 0.032                        | 0.10  | 2,420                                                            | EKZN500E□□391MJ25S |
|                          | 470         | 12.5×20               | 0.032                        | 0.10  | 2,300                                                            | EKZN500E□□471MK20S |
|                          | 680         | 12.5×25               | 0.025                        | 0.080 | 2,800                                                            | EKZN500E□□681MK25S |
|                          | 820         | 12.5×30               | 0.023                        | 0.074 | 3,370                                                            | EKZN500E□□821MK30S |
|                          | 820         | 16×20                 | 0.026                        | 0.084 | 3,070                                                            | EKZN500E□□821ML20S |
|                          | 1,000       | 12.5×35               | 0.021                        | 0.067 | 3,810                                                            | EKZN500E□□102MK35S |
|                          | 1,200       | 16×25                 | 0.022                        | 0.070 | 3,510                                                            | EKZN500E□□122ML25S |
|                          | 1,200       | 18×20                 | 0.025                        | 0.075 | 3,120                                                            | EKZN500E□□122MM20S |
|                          | 1,500       | 16×31.5               | 0.019                        | 0.057 | 4,030                                                            | EKZN500E□□152MLN3S |
|                          | 1,500       | 18×25                 | 0.021                        | 0.063 | 3,530                                                            | EKZN500E□□152MM25S |
|                          | 1,800       | 16×35.5               | 0.016                        | 0.048 | 4,220                                                            | EKZN500E□□182MLP1S |
| 63                       | 2,200       | 16×40                 | 0.014                        | 0.042 | 4,500                                                            | EKZN500E□□222ML40S |
|                          | 2,200       | 18×31.5               | 0.016                        | 0.048 | 4,080                                                            | EKZN500E□□222MMN3S |
|                          | 2,700       | 18×35.5               | 0.013                        | 0.039 | 4,270                                                            | EKZN500E□□272MMP1S |
|                          | 3,300       | 18×40                 | 0.012                        | 0.036 | 4,850                                                            | EKZN500E□□332MM40S |
|                          | 18          | 5×11                  | 0.52                         | 2.3   | 240                                                              | EKZN630E□□180ME11D |
|                          | 39          | 6.3×11                | 0.24                         | 1.1   | 420                                                              | EKZN630E□□390MF11D |
|                          | 68          | 8×11.5                | 0.15                         | 0.68  | 720                                                              | EKZN630E□□680MHB5D |
|                          | 100         | 8×15                  | 0.10                         | 0.45  | 990                                                              | EKZN630E□□101MH15D |
|                          | 120         | 8×20                  | 0.077                        | 0.35  | 1,200                                                            | EKZN630E□□121MH20D |
|                          | 120         | 10×12.5               | 0.090                        | 0.36  | 990                                                              | EKZN630E□□121MJC5S |
|                          | 180         | 10×16                 | 0.061                        | 0.25  | 1,200                                                            | EKZN630E□□181MJ16S |
|                          | 270         | 10×20                 | 0.045                        | 0.18  | 1,570                                                            | EKZN630E□□271MJ20S |
|                          | 270         | 12.5×16               | 0.058                        | 0.18  | 1,570                                                            | EKZN630E□□271MK16S |
|                          | 330         | 10×25                 | 0.037                        | 0.12  | 1,990                                                            | EKZN630E□□331MJ25S |
|                          | 390         | 12.5×20               | 0.033                        | 0.10  | 1,990                                                            | EKZN630E□□391MK20S |
|                          | 560         | 12.5×25               | 0.026                        | 0.080 | 2,460                                                            | EKZN630E□□561MK25S |
|                          | 680         | 12.5×30               | 0.024                        | 0.075 | 2,760                                                            | EKZN630E□□681MK30S |
|                          | 680         | 16×20                 | 0.027                        | 0.085 | 2,380                                                            | EKZN630E□□681ML20S |
|                          | 820         | 12.5×35               | 0.022                        | 0.068 | 3,040                                                            | EKZN630E□□821MK35S |
|                          | 820         | 18×20                 | 0.026                        | 0.078 | 2,530                                                            | EKZN630E□□821MM20S |
| 80                       | 1,000       | 16×25                 | 0.024                        | 0.072 | 2,890                                                            | EKZN630E□□102ML25S |
|                          | 1,200       | 16×31.5               | 0.020                        | 0.060 | 3,280                                                            | EKZN630E□□122MLN3S |
|                          | 1,200       | 18×25                 | 0.022                        | 0.066 | 2,930                                                            | EKZN630E□□122MM25S |
|                          | 1,500       | 16×35.5               | 0.018                        | 0.054 | 3,440                                                            | EKZN630E□□152MLP1S |
|                          | 1,500       | 18×31.5               | 0.018                        | 0.054 | 3,380                                                            | EKZN630E□□152MMN3S |
|                          | 1,800       | 16×40                 | 0.016                        | 0.048 | 3,690                                                            | EKZN630E□□182ML40S |
|                          | 1,800       | 18×35.5               | 0.017                        | 0.051 | 3,550                                                            | EKZN630E□□182MMP1S |
|                          | 2,200       | 18×40                 | 0.015                        | 0.045 | 3,930                                                            | EKZN630E□□222MM40S |
|                          | 12          | 5×11                  | 0.72                         | 3.2   | 235                                                              | EKZN800E□□120ME11D |
|                          | 27          | 6.3×11                | 0.34                         | 1.5   | 390                                                              | EKZN800E□□270MF11D |
|                          | 47          | 8×11.5                | 0.20                         | 0.90  | 650                                                              | EKZN800E□□470MHB5D |
|                          | 68          | 8×15                  | 0.14                         | 0.63  | 820                                                              | EKZN800E□□680MH15D |
|                          | 82          | 8×20                  | 0.12                         | 0.54  | 1,090                                                            | EKZN800E□□820MH20D |
|                          | 82          | 10×12.5               | 0.14                         | 0.56  | 860                                                              | EKZN800E□□820MJC5S |
|                          | 100         | 10×12.5               | 0.14                         | 0.56  | 860                                                              | EKZN800E□□101MJC5S |
|                          | 120         | 10×16                 | 0.090                        | 0.36  | 1,150                                                            | EKZN800E□□121MJ16S |
|                          | 150         | 10×16                 | 0.090                        | 0.36  | 1,150                                                            | EKZN800E□□151MJ16S |
|                          | 180         | 10×20                 | 0.068                        | 0.28  | 1,570                                                            | EKZN800E□□181MJ20S |
|                          | 180         | 12.5×16               | 0.090                        | 0.27  | 1,430                                                            | EKZN800E□□181MK16S |
|                          | 220         | 10×20                 | 0.068                        | 0.28  | 1,570                                                            | EKZN800E□□221MJ20S |
| 100                      | 220         | 10×25                 | 0.055                        | 0.22  | 1,780                                                            | EKZN800E□□221MJ25S |
|                          | 220         | 12.5×16               | 0.090                        | 0.27  | 1,430                                                            | EKZN800E□□221MK16S |
|                          | 270         | 10×25                 | 0.055                        | 0.22  | 1,780                                                            | EKZN800E□□271MJ25S |
|                          | 270         | 12.5×20               | 0.048                        | 0.15  | 1,800                                                            | EKZN800E□□271MK20S |
|                          | 330         | 12.5×20               | 0.048                        | 0.15  | 1,800                                                            | EKZN800E□□331MK20S |
|                          | 390         | 12.5×25               | 0.038                        | 0.12  | 2,210                                                            | EKZN800E□□391MK25S |
|                          | 470         | 12.5×30               | 0.033                        | 0.11  | 2,520                                                            | EKZN800E□□471MK30S |
|                          | 470         | 16×20                 | 0.036                        | 0.12  | 2,150                                                            | EKZN800E□□471ML20S |
|                          | 560         | 12.5×35               | 0.026                        | 0.078 | 2,860                                                            | EKZN800E□□561MK35S |
|                          | 680         | 12.5×40               | 0.026                        | 0.078 | 3,150                                                            | EKZN800E□□681MK40S |
|                          | 680         | 16×25                 | 0.028                        | 0.084 | 2,620                                                            | EKZN800E□□681ML25S |
|                          | 680         | 18×20                 | 0.032                        | 0.096 | 2,280                                                            | EKZN800E□□681MM20S |
|                          | 820         | 16×31.5               | 0.022                        | 0.066 | 2,900                                                            | EKZN800E□□821MLN3S |
|                          | 820         | 18×25                 | 0.027                        | 0.081 | 2,750                                                            | EKZN800E□□821MM25S |
|                          | 1,000       | 18×25                 | 0.027                        | 0.081 | 2,750                                                            | EKZN800E□□102MM25S |
|                          | 1,000       | 16×35.5               | 0.020                        | 0.060 | 3,150                                                            | EKZN800E□□102MLP1S |
|                          | 1,200       | 16×40                 | 0.018                        | 0.054 | 3,710                                                            | EKZN800E□□122ML40S |
|                          | 1,200       | 18×31.5               | 0.020                        | 0.060 | 3,150                                                            | EKZN800E□□122MMN3S |
|                          | 1,500       | 18×35.5               | 0.018                        | 0.054 | 3,710                                                            | EKZN800E□□152MMP1S |
|                          | 1,800       | 18×40                 | 0.017                        | 0.051 | 4,060                                                            | EKZN800E□□182MM40S |
| 100                      | 8.2         | 5×11                  | 0.72                         | 3.2   | 235                                                              | EKZN101E□□8R2ME11D |
|                          | 18          | 6.3×11                | 0.34                         | 1.5   | 390                                                              | EKZN101E□□180MF11D |
|                          | 33          | 8×11.5                | 0.20                         | 0.90  | 650                                                              | EKZN101E□□330MHB5D |
|                          | 47          | 8×15                  | 0.14                         | 0.63  | 820                                                              | EKZN101E□□470MH15D |
|                          | 56          | 8×20                  | 0.12                         | 0.54  | 1,090                                                            | EKZN101E□□560MH20D |
|                          | 56          | 10×12.5               | 0.14                         | 0.56  | 860                                                              | EKZN101E□□560MJC5S |
|                          | 82          | 10×16                 | 0.090                        | 0.36  | 1,150                                                            | EKZN101E□□820MJ16S |
|                          | 100         | 10×20                 | 0.068                        | 0.28  | 1,570                                                            | EKZN101E□□101MJ20S |
|                          | 120         | 10×20                 | 0.068                        | 0.28  | 1,570                                                            | EKZN101E□□121MJ20S |
|                          | 120         | 12.5×16               | 0.090                        | 0.27  | 1,430                                                            | EKZN101E□□121MK16S |
|                          | 150         | 10×25                 | 0.055                        | 0.22  | 1,780                                                            | EKZN101E□□151MJ25S |
|                          | 180         | 12.5×20               | 0.048                        | 0.15  | 1,800                                                            | EKZN101E□□181MK20S |
|                          | 220         | 12.5×25               | 0.038                        | 0.12  | 2,210                                                            | EKZN101E□□221MK25S |
|                          | 270         | 12.5×30               | 0.033                        | 0.11  | 2,520                                                            | EKZN101E□□271MK30S |
|                          | 270         | 16×20                 | 0.036                        | 0.12  | 2,150                                                            | EKZN101E□□271ML20S |
|                          | 330         | 16×20                 | 0.036                        | 0.12  | 2,150                                                            | EKZN101E□□331ML20S |
|                          | 390         | 12.5×35               | 0.026                        | 0.078 | 2,860                                                            | EKZN101E□□391MK35S |
|                          | 390         | 16×25                 | 0.028                        | 0.084 | 2,620                                                            | EKZN101E□□391ML25S |
|                          | 390         | 18×20                 | 0.032                        | 0.096 | 2,280                                                            | EKZN101E□□391MM20S |
|                          | 470         | 12.5×40               | 0.026                        | 0.078 | 3,150                                                            | EKZN101E□□471MK40S |
| 100                      | 470         | 16×31.5               | 0.022                        | 0.066 | 2,900                                                            | EKZN101E□□471MLN3S |
|                          | 560         | 16×31.5               | 0.022                        | 0.066 | 2,900                                                            | EKZN101E□□561MLN3S |
|                          | 560         | 16×35.5               | 0.020                        | 0.060 | 3,150                                                            | EKZN101E□□561MLP1S |
|                          | 560         | 18×25                 | 0.027                        | 0.081 | 2,750                                                            | EKZN101E□□561MM25S |
|                          | 680         | 16×35.5               | 0.020                        | 0.060 | 3,150                                                            | EKZN101E□□681MLP1S |
|                          | 680         | 16×40                 | 0.018                        | 0.054 | 3,710                                                            | EKZN101E□□681ML40S |
|                          | 680         | 18×31.5               | 0.020                        | 0.060 | 3,150                                                            | EKZN101E□□681MMN3S |
|                          | 820         | 16×40                 | 0.018                        | 0.054 | 3,710                                                            | EKZN101E□□821ML40S |
|                          | 820         | 18×35.5               | 0.018                        | 0.054 | 3,710                                                            | EKZN101E□□821MMP1S |
|                          | 1,000       | 18×40                 | 0.017                        | 0.051 | 4,060                                                            | EKZN101E□□102MM40S |

□ □ : Enter the appropriate lead forming or taping code.



## ◆RATED RIPPLE CURRENT MULTIPLIERS

### ● Frequency Multipliers

| Capacitance(μF) \ Frequency(Hz) | 120  | 1k   | 10k  | 100k |
|---------------------------------|------|------|------|------|
| 8.2 to 180                      | 0.40 | 0.75 | 0.90 | 1.00 |
| 220 to 560                      | 0.50 | 0.85 | 0.94 | 1.00 |
| 680 to 1,800                    | 0.60 | 0.87 | 0.95 | 1.00 |
| 2,200 to 3,900                  | 0.75 | 0.90 | 0.95 | 1.00 |
| 4,700 to 22,000                 | 0.85 | 0.95 | 0.98 | 1.00 |

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