

# RZ series

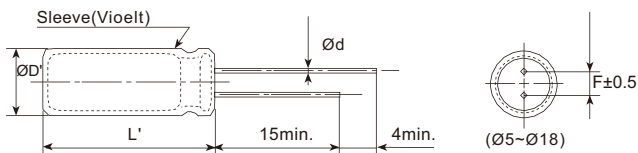
- Miniaturized, long life, low impedance
- High ripple current, high reliability
- Endurance: 6,000~10,000 hours at 105°C
- **RoHS Compliant**



## SPECIFICATIONS

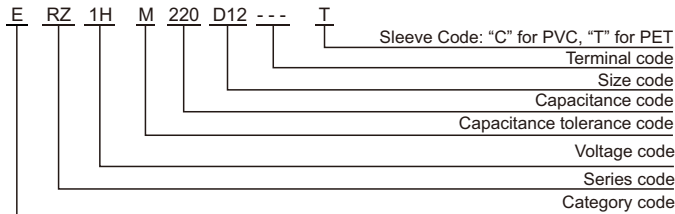
| Items   | Characteristics  |  |      |  |               |                   |          |       |                           |       |         |        |      |      |      |
|---|--|--|------|--|---------------|-------------------|----------|-------|---------------------------|-------|---------|--------|------|------|------|
| Category Temperature Range  | -40~+105°C   |  |      |  |               |                   |          |       |                           |       |         |        |      |      |      |
| Rated Working Voltage Range   | 6.3~50 V <sub>dc</sub>   |  |      |  |               |                   |          |       |                           |       |         |        |      |      |      |
| Capacitance Tolerance   | ±20%(M) (at 20°C, 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°C after 2 minutes)   |  |      |  |               |                   |          |       |                           |       |         |        |      |      |      |
| Dissipation Factor (tanδ)   | <table border="1"> <tr> <td>Rated Voltage(V<sub>dc</sub>)</td> <td>6.3</td> <td>10</td> <td>16</td> <td>25</td> <td>35</td> <td>50</td> </tr> <tr> <td>Dissipation Factor (max.)</td> <td>0.22</td> <td>0.19</td> <td>0.16</td> <td>0.14</td> <td>0.12</td> <td>0.10</td> </tr> </table> | Rated Voltage(V <sub>dc</sub> )                            | 6.3  | 10   | 16            | 25                | 35       | 50    | Dissipation Factor (max.) | 0.22  | 0.19    | 0.16   | 0.14 | 0.12 | 0.10 |
|   | Rated Voltage(V <sub>dc</sub> )  | 6.3  | 10   | 16   | 25            | 35                | 50       |       |                           |       |         |        |      |      |      |
| Dissipation Factor (max.)   | 0.22   | 0.19   | 0.16 | 0.14   | 0.12          | 0.10              |          |       |                           |       |         |        |      |      |      |
| When nominal capacitance exceeds 1,000μF, add 0.02 to the value above for each 1,000μF increase. (at 20°C, 120Hz) |  |  |      |  |               |                   |          |       |                           |       |         |        |      |      |      |
| Low Temperature Characteristics (Max. Impedance Ratio)  | Rated Voltage(V <sub>dc</sub> )  | 6.3  | 10   | 16~50  |               |                   |          |       |                           |       |         |        |      |      |      |
|   | Z(-25°C)/Z(+20°C)  | 3  |      |  |               |                   |          |       |                           |       |         |        |      |      |      |
|   | Z(-40°C)/Z(+20°C)  | 6  | 4    | 3  |               |                   |          |       |                           |       |         |        |      |      |      |
| (at 120Hz)  |  |  |      |  |               |                   |          |       |                           |       |         |        |      |      |      |
| Endurance   | The following specifications shall be satisfied when the capacitors are restored to 20°C after DC voltage plus the rated ripple current is applied for a specified period of time at 105°C.  |  |      |  |               |                   |          |       |                           |       |         |        |      |      |      |
|   | Capacitance Change   | ≤±25% of the initial value (6.3~10V <sub>dc</sub> : ≤±30%) |      | <table border="1"> <tr> <td>Case Dia.(mm)</td> <td>Load life (hours)</td> </tr> <tr> <td>ØD ≤ 6.3</td> <td>6,000</td> </tr> <tr> <td>ØD = 8</td> <td>8,000</td> </tr> <tr> <td>ØD ≥ 10</td> <td>10,000</td> </tr> </table> | Case Dia.(mm) | Load life (hours) | ØD ≤ 6.3 | 6,000 | ØD = 8                    | 8,000 | ØD ≥ 10 | 10,000 |      |      |      |
|   | Case Dia.(mm)  | Load life (hours)  |      |  |               |                   |          |       |                           |       |         |        |      |      |      |
|   | ØD ≤ 6.3   | 6,000  |      |  |               |                   |          |       |                           |       |         |        |      |      |      |
| ØD = 8  | 8,000  |  |      |  |               |                   |          |       |                           |       |         |        |      |      |      |
| ØD ≥ 10   | 10,000   |  |      |  |               |                   |          |       |                           |       |         |        |      |      |      |
| Dissipation Factor  | ≤200% of the initial specified value   |  |      |  |               |                   |          |       |                           |       |         |        |      |      |      |
| Leakage Current   | ≤The initial specified value   |  |      |  |               |                   |          |       |                           |       |         |        |      |      |      |
| Shelf Life  | The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1,000 hours at 105°C without voltage applied.   |  |      |  |               |                   |          |       |                           |       |         |        |      |      |      |
|   | Capacitance Change   | ≤±25% of the initial value (6.3~10V <sub>dc</sub> : ≤±30%) |      |  |               |                   |          |       |                           |       |         |        |      |      |      |
|   | Dissipation Factor   | ≤200% of the initial specified value                       |      |  |               |                   |          |       |                           |       |         |        |      |      |      |
|   | Leakage Current  | ≤200% of the initial specified value                       |      |  |               |                   |          |       |                           |       |         |        |      |      |      |

## DIMENSIONS [mm]



|     |            |     |     |     |      |     |     |
|-----|------------|-----|-----|-----|------|-----|-----|
| ØD  | 5          | 6.3 | 8   | 10  | 12.5 | 16  | 18  |
| Ød  | 0.5        | 0.5 | 0.5 | 0.6 | 0.6  | 0.8 | 0.8 |
| F   | 2.0        | 2.5 | 3.5 | 5.0 | 5.0  | 7.5 | 7.5 |
| ØD' | ØD+0.5max. |     |     |     |      |     |     |
| L'  | L+2max.    |     |     |     |      |     |     |

## PART NUMBERING SYSTEM



## RATED RIPPLE CURRENT MULTIPLIERS

Frequency correction factor for ripple current

| Freq.(Hz)<br>Cap.(μF) | 120  | 1k   | 10k  | 100k |
|-----------------------|------|------|------|------|
| Cap.<220              | 0.40 | 0.75 | 0.90 | 1.00 |
| 220≤Cap.<680          | 0.50 | 0.85 | 0.94 | 1.00 |
| 680≤Cap.<2200         | 0.60 | 0.87 | 0.95 | 1.00 |
| 2200≤Cap.<4700        | 0.75 | 0.90 | 0.95 | 1.00 |
| Cap.≥4700             | 0.85 | 0.95 | 0.98 | 1.00 |

# RZ series

■ STANDARD RATINGS

| WV (V <sub>dc</sub> ) | Cap (μF) | Size ΦDxL(mm) | Impedance (Ω <sub>max</sub> /20°C, 100kHz) | Rated ripple current (mA <sub>RMS</sub> /105°C, 100kHz) | Part Number      |
|-----------------------|----------|---------------|--|---|------------------|
| 6.3                   | 220      | 5×12          | 0.22                                       | 345   | ERZ0JM221D12---T |
|                       | 220      | 6.3×9         | 0.30                                       | 310   | ERZ0JM221E09---T |
|                       | 470      | 6.3×12        | 0.094                                      | 540   | ERZ0JM471E12---T |
|                       | 470      | 8×9           | 0.120                                      | 485   | ERZ0JM471F09---T |
|                       | 820      | 8×12          | 0.056                                      | 945   | ERZ0JM821F12---T |
|                       | 820      | 10×9          | 0.072                                      | 850   | ERZ0JM821G09---T |
|                       | 1200     | 8×16          | 0.045                                      | 1250  | ERZ0JM122F16---T |
|                       | 1200     | 10×13         | 0.039                                      | 1330  | ERZ0JM122G13---T |
|                       | 1500     | 8×20          | 0.029                                      | 1500  | ERZ0JM152F20---T |
|                       | 1800     | 10×16         | 0.028                                      | 1760  | ERZ0JM182G16---T |
|                       | 2200     | 10×20         | 0.020                                      | 1960  | ERZ0JM222G20---T |
|                       | 2700     | 10×25         | 0.018                                      | 2250  | ERZ0JM272G25---T |
|                       | 3900     | 12.5×20       | 0.017                                      | 2480  | ERZ0JM392W20---T |
|                       | 4700     | 12.5×25       | 0.015                                      | 2900  | ERZ0JM472W25---T |
|                       | 5600     | 12.5×30       | 0.013                                      | 3450  | ERZ0JM562W30---T |
|                       | 6800     | 12.5×35       | 0.012                                      | 3570  | ERZ0JM682W35---T |
|                       | 6800     | 16×20         | 0.015                                      | 3250  | ERZ0JM682L20---T |
|                       | 8200     | 16×25         | 0.013                                      | 3630  | ERZ0JM822L25---T |
|                       | 10000    | 18×25         | 0.012                                      | 3650  | ERZ0JM103M25---T |
|                       | 10       | 150           | 5×12                                       | 0.22  | 345              |
| 150                   |          | 6.3×9         | 0.30                                       | 310   | ERZ1AM151E09---T |
| 330                   |          | 6.3×12        | 0.094                                      | 540   | ERZ1AM331E12---T |
| 330                   |          | 8×9           | 0.120                                      | 485   | ERZ1AM331F09---T |
| 680                   |          | 8×11          | 0.056                                      | 945   | ERZ1AM681F11---T |
| 680                   |          | 10×9          | 0.072                                      | 850   | ERZ1AM681G09---T |
| 1000                  |          | 8×16          | 0.045                                      | 1250  | ERZ1AM102F16---T |
| 1000                  |          | 10×13         | 0.039                                      | 1330  | ERZ1AM102G13---T |
| 1500                  |          | 8×20          | 0.029                                      | 1500  | ERZ1AM152F20---T |
| 1500                  |          | 10×16         | 0.028                                      | 1760  | ERZ1AM152G16---T |
| 1800                  |          | 10×20         | 0.020                                      | 1960  | ERZ1AM182G20---T |
| 2200                  |          | 10×25         | 0.018                                      | 2250  | ERZ1AM222G25---T |
| 3300                  |          | 12.5×20       | 0.017                                      | 2480  | ERZ1AM332W20---T |
| 3900                  |          | 12.5×25       | 0.015                                      | 2900  | ERZ1AM392W25---T |
| 4700                  |          | 12.5×30       | 0.013                                      | 3450  | ERZ1AM472W30---T |
| 4700                  |          | 16×20         | 0.015                                      | 3250  | ERZ1AM472L20---T |
| 5600                  | 12.5×35  | 0.012         | 3570                                       | ERZ1AM562W35---T  |                  |
| 6800                  | 16×25    | 0.013         | 3630                                       | ERZ1AM682L25---T  |                  |
| 8200                  | 18×25    | 0.012         | 3650                                       | ERZ1AM822M25---T  |                  |
| 16                    | 100      | 5×12          | 0.22                                       | 345   | ERZ1CM101D12---T |
|                       | 100      | 6.3×9         | 0.30                                       | 310   | ERZ1CM101E09---T |
|                       | 220      | 6.3×12        | 0.094                                      | 540   | ERZ1CM221E12---T |
|                       | 220      | 8×9           | 0.120                                      | 485   | ERZ1CM221F09---T |
|                       | 470      | 8×12          | 0.056                                      | 945   | ERZ1CM471F12---T |
|                       | 470      | 10×9          | 0.072                                      | 850   | ERZ1CM471G09---T |
|                       | 680      | 8×16          | 0.045                                      | 1250  | ERZ1CM681F16---T |
|                       | 680      | 10×13         | 0.039                                      | 1330  | ERZ1CM681G13---T |
|                       | 1000     | 8×20          | 0.029                                      | 1500  | ERZ1CM102F20---T |
|                       | 1000     | 10×16         | 0.028                                      | 1760  | ERZ1CM102G16---T |
|                       | 1500     | 10×20         | 0.020                                      | 1960  | ERZ1CM152G20---T |
|                       | 1800     | 10×25         | 0.018                                      | 2250  | ERZ1CM182G25---T |
|                       | 2200     | 12.5×20       | 0.017                                      | 2480  | ERZ1CM222W20---T |
|                       | 2700     | 12.5×25       | 0.015                                      | 2900  | ERZ1CM272W25---T |
|                       | 3300     | 12.5×30       | 0.013                                      | 3450  | ERZ1CM332W30---T |
|                       | 3300     | 16×20         | 0.015                                      | 3250  | ERZ1CM332L20---T |
|                       | 3900     | 12.5×35       | 0.012                                      | 3570  | ERZ1CM392W35---T |
|                       | 4700     | 16×25         | 0.013                                      | 3630  | ERZ1CM472L25---T |
| 5600                  | 18×25    | 0.012         | 3650                                       | ERZ1CM562M25---T  |                  |

| WV (V <sub>dc</sub> ) | Cap (μF) | Size ΦDxL(mm) | Impedance (Ω <sub>max</sub> /20°C, 100kHz) | Rated ripple current (mA <sub>RMS</sub> /105°C, 100kHz) | Part Number      |
|-----------------------|----------|---------------|--|---|------------------|
| 25                    | 68       | 5×12          | 0.22                                       | 345   | ERZ1EM680D12---T |
|                       | 68       | 6.3×9         | 0.30                                       | 310   | ERZ1EM680E09---T |
|                       | 150      | 6.3×12        | 0.094                                      | 540   | ERZ1EM151E12---T |
|                       | 150      | 8×9           | 0.120                                      | 485   | ERZ1EM151F09---T |
|                       | 330      | 8×12          | 0.056                                      | 945   | ERZ1EM331F12---T |
|                       | 330      | 10×9          | 0.072                                      | 850   | ERZ1EM331G09---T |
|                       | 390      | 8×16          | 0.045                                      | 1250  | ERZ1EM391F16---T |
|                       | 470      | 10×13         | 0.039                                      | 1330  | ERZ1EM471G13---T |
|                       | 560      | 8×20          | 0.029                                      | 1500  | ERZ1EM561F20---T |
|                       | 680      | 10×16         | 0.028                                      | 1760  | ERZ1EM681G16---T |
|                       | 820      | 10×20         | 0.020                                      | 1960  | ERZ1EM821G20---T |
|                       | 1000     | 10×25         | 0.018                                      | 2250  | ERZ1EM102G25---T |
|                       | 1500     | 12.5×20       | 0.017                                      | 2480  | ERZ1EM152W20---T |
|                       | 1800     | 12.5×25       | 0.015                                      | 2900  | ERZ1EM182W25---T |
|                       | 2200     | 12.5×30       | 0.013                                      | 3450  | ERZ1EM222W30---T |
|                       | 2200     | 16×20         | 0.015                                      | 3250  | ERZ1EM222L20---T |
|                       | 2700     | 12.5×35       | 0.012                                      | 3570  | ERZ1EM272W35---T |
|                       | 3300     | 16×25         | 0.013                                      | 3630  | ERZ1EM332L25---T |
|                       | 3900     | 18×25         | 0.012                                      | 3650  | ERZ1EM392M25---T |
|                       | 35       | 47            | 5×12                                       | 0.22  | 345              |
| 47                    |          | 6.3×9         | 0.30                                       | 310   | ERZ1VM470E09---T |
| 100                   |          | 6.3×12        | 0.094                                      | 540   | ERZ1VM101E12---T |
| 100                   |          | 8×9           | 0.120                                      | 485   | ERZ1VM101F09---T |
| 220                   |          | 8×16          | 0.056                                      | 945   | ERZ1VM221F16---T |
| 270                   |          | 8×20          | 0.045                                      | 1250  | ERZ1VM271F20---T |
| 330                   |          | 10×13         | 0.039                                      | 1330  | ERZ1VM331G13---T |
| 390                   |          | 8×20          | 0.029                                      | 1500  | ERZ1VM391F20---T |
| 470                   |          | 10×16         | 0.028                                      | 1760  | ERZ1VM471G16---T |
| 560                   |          | 10×20         | 0.020                                      | 1960  | ERZ1VM561G20---T |
| 680                   |          | 10×25         | 0.018                                      | 2250  | ERZ1VM681G25---T |
| 1000                  |          | 12.5×20       | 0.017                                      | 2480  | ERZ1VM102W20---T |
| 1200                  |          | 12.5×25       | 0.015                                      | 2900  | ERZ1VM122W25---T |
| 1500                  |          | 12.5×30       | 0.013                                      | 3450  | ERZ1VM152W30---T |
| 1500                  |          | 16×20         | 0.015                                      | 3250  | ERZ1VM152L20---T |
| 1800                  |          | 12.5×35       | 0.012                                      | 3570  | ERZ1VM182W35---T |
| 2200                  | 16×25    | 0.013         | 3630                                       | ERZ1VM222L25---T  |                  |
| 2700                  | 18×25    | 0.012         | 3650                                       | ERZ1VM272M25---T  |                  |
| 50                    | 22       | 5×12          | 0.34                                       | 238   | ERZ1HM220D12---T |
|                       | 22       | 6.3×9         | 0.44                                       | 214   | ERZ1HM220E09---T |
|                       | 56       | 6.3×12        | 0.14                                       | 385   | ERZ1HM560E12---T |
|                       | 56       | 8×9           | 0.18                                       | 345   | ERZ1HM560F09---T |
|                       | 100      | 8×12          | 0.074                                      | 724   | ERZ1HM101F12---T |
|                       | 100      | 10×9          | 0.096                                      | 650   | ERZ1HM101G09---T |
|                       | 120      | 8×16          | 0.061                                      | 950   | ERZ1HM121F16---T |
|                       | 150      | 10×13         | 0.061                                      | 979   | ERZ1HM151G13---T |
|                       | 180      | 8×20          | 0.046                                      | 1190  | ERZ1HM181F20---T |
|                       | 220      | 10×16         | 0.042                                      | 1370  | ERZ1HM221G16---T |
|                       | 270      | 10×20         | 0.030                                      | 1580  | ERZ1HM271G20---T |
|                       | 330      | 10×25         | 0.028                                      | 1870  | ERZ1HM331G25---T |
|                       | 470      | 12.5×20       | 0.027                                      | 2050  | ERZ1HM471W20---T |
|                       | 560      | 12.5×25       | 0.023                                      | 2410  | ERZ1HM561W25---T |
|                       | 680      | 12.5×30       | 0.021                                      | 2860  | ERZ1HM681W30---T |
|                       | 820      | 12.5×35       | 0.019                                      | 2960  | ERZ1HM821W35---T |
|                       | 820      | 16×20         | 0.023                                      | 2730  | ERZ1HM821L20---T |
|                       | 1000     | 16×25         | 0.021                                      | 3010  | ERZ1HM102L25---T |
| 1500                  | 18×25    | 0.019         | 3290                                       | ERZ1HM152M25---T  |                  |

※ Specifications subject to change without notice.