# Aluminum Electrolytic Capacitors

YUSCON®

# TZ Series

- Ultra Low Impedance for Personal Computer and Storage Eqiupment
- Endurance with ripple current: 105℃ 2000 to 5000 hours
- Rohs compliance.

## ◆ SPECIFICATIONS

| Item | Characteristics |
|---|---|
| Operating Temperature Range | -40~+105℃ |
| Voltage Range | 6.3 ~ 100V.DC |
| Capacitance Tolerance | - 20% ~ + 20% (at 20℃, 120Hz) |
| Leakage Current | I = 0.01CV or 3(μA) whichever is greater.(after 2 minutes)<br>where,I: Max Leakage Current(μA), C: Nominal Capacitance(μF), V: Rated Voltage(V) (at 20℃) |

**Dissipation Factor (tanδ) ( at 120Hz, +20℃ )**

| Rated voltage(V.DC) | 6.3V | 10V | 16V | 25V | 35V | 50V | 63V | 80V | 100V |
|---|---|---|---|---|---|---|---|---|---|
| tan δ (max) | 0.22 | 0.19 | 0.16 | 0.14 | 0.12 | 0.1 | 0.09 | 0.09 | 0.08 |

Add 0.02 per 1,000 μ F for more than 1,000 μ F items

**Low Temp. Impedance Stability at 120Hz**

| | |
|---|---|
| Z ( - 25℃ ) / Z ( + 20℃ ) | 2 max. |
| Z ( - 40℃ ) / Z ( + 20℃ ) | 3 max. |

| | |
|---|---|
| Impedance( Ω ) | See Case Size Table |

**High Temp. Load Test**

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 for the specified period of time at 105℃.

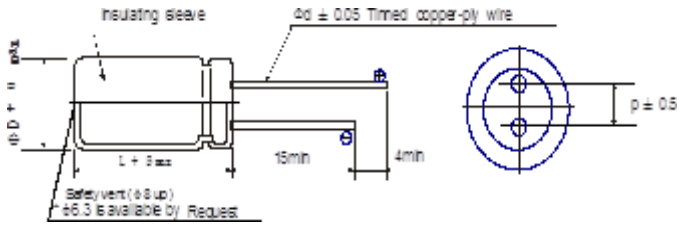
| | |
|---|---|
| Time | Φ5, Φ6.3: 2000 hours; Φ8: 3000 hours; Φ10: 4000 hours Φ13& Φ18: 5000hrs |
| Capacitance change | ≦±25% of the initial measured value |
| Tan δ | ≦ 200% of the initial specified value |
| DC Leakage Current | ≦ the initial specified value |

**High Temp. Non-Load Test**

The following specifications shall be satisfied when the capacitors are restored to 20℃ after exposing them for 1000 hours at 105℃ without voltage applied.

| | |
|---|---|
| Capacitance Change | ≦±25% of the initial measured value |
| Tan δ | ≦200% of the initial specified value |
| DC Leakage Current | ≦the initial specified value |

## ◆ DRAWING




| ΦD | 5 | 6.3 | 8 | 10 | 13 | 16 | 18 |
|---|---|---|---|---|---|---|---|
| P | 2.0 | 2.5 | 3.5 | 5.0 | 5.0 | 7.5 | 7.5 |
| Φd | 0.5 | 0.5 | 0.5 | 0.6 | 0.6 | 0.8 | 0.8 |
| β | 1.5 | | | | | | |
| α | 0.5 | | | | | | |

## ▼ MULTIPLIER FOR RIPPLE CURRENT

Frequency coefficient

| Cap ( μ F) \ Freq. (HZ) | 120 | 1K | 10K | 100K |
|---|---|---|---|---|
| 6.8 ~ 180 | 0.40 | 0.75 | 0.90 | 1.00 |
| 220 ~ 560 | 0.50 | 0.85 | 0.94 | 1.00 |
| 680 ~ 1800 | 0.60 | 0.87 | 0.95 | 1.00 |
| 2200 ~ 3900 | 0.75 | 0.90 | 0.95 | 1.00 |
| 4700 ~6800 | 0.85 | 0.95 | 0.98 | 1.00 |

## ◆ PART NUMBERING SYSTEM

| TZ | □□□ | □ | □□□ | □ | □□ |
|---|---|---|---|---|---|
| Series | Rated Cap. | Cap. Tolerance | Rated Voltage | Case Size D | Case Size L |

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■STANDARD RATINGS

| WV(Vdc) / Parameter / Cap (μF) | 35 | | | |
|---|---|---|---|---|
| | ΦDxL(mm) | Ripple Current | Impedance | |
| | | (mArrms) | 20℃ | –10℃ |
| | | 105℃ 100KHZ | 100KHZ | 100KHZ |
| 33 | 5x11 | 250 | 0.3 | 1 |
| 56 | 6.3X11 | 405 | 0.13 | 0.41 |
| 150 | 8X11.5 | 760 | 0.072 | 0.22 |
| 220 | 8X15 | 995 | 0.056 | 0.17 |
| 330 | 8X20 | 1250 | 0.041 | 0.13 |
| 470 | 10X12.5 | 1030 | 0.053 | 0.16 |
| 560 | 10X16 | 1430 | 0.038 | 0.12 |
| 680 | 10X20 | 1820 | 0.023 | 0.069 |
| 680 | 10x25 | 2150 | 0.022 | 0.066 |
| 1000 | 13x20 | 2360 | 0.021 | 0.053 |
| 1200 | 13X25 | 2770 | 0.018 | 0.045 |
| 1500 | 13X30 | 3290 | 0.016 | 0.041 |
| 1200 | 13X35 | 3400 | 0.015 | 0.039 |
| 1800 | 16X20 | 3140 | 0.018 | 0.045 |
| 2200 | 16X25 | 3460 | 0.016 | 0.043 |

| WV(Vdc) / Parameter / Cap (μF) | 50 | | | |
|---|---|---|---|---|
| | ΦDxL(mm) | Ripple Current | Impedance | |
| | | (mArrms) | 20℃ | –10℃ |
| | | 105℃ 100KHZ | 100KHZ | 100KHZ |
| 22 | 5x11 | 238 | 0.34 | 1 |
| 56 | 6.3X11 | 385 | 0.14 | 0.41 |
| 100 | 8X11.5 | 724 | 0.074 | 0.22 |
| 120 | 8X15 | 950 | 0.061 | 0.17 |
| 180 | 8X20 | 1190 | 0.046 | 0.13 |
| 150 | 10X12.5 | 979 | 0.061 | 0.16 |
| 220 | 10X16 | 1370 | 0.042 | 0.12 |
| 270 | 10X20 | 1580 | 0.030 | 0.069 |
| 330 | 10x25 | 1870 | 0.028 | 0.066 |
| 470 | 13x20 | 2050 | 0.027 | 0.053 |
| 560 | 13X25 | 2410 | 0.023 | 0.045 |
| 680 | 13X30 | 2860 | 0.021 | 0.041 |
| 820 | 13X35 | 2960 | 0.019 | 0.039 |
| 820 | 16X20 | 2730 | 0.023 | 0.045 |
| 1000 | 16X25 | 3010 | 0.021 | 0.043 |

| WV(Vdc) / Parameter / Cap (μF) | 63 | | | |
|---|---|---|---|---|
| | ΦDxL(mm) | Ripple Current | Impedance | |
| | | (mArrms) | 20℃ | –10℃ |
| | | 105℃ 100KHZ | 100KHZ | 100KHZ |
| 15 | 5x11 | 165 | 0.88 | 3.5 |
| 33 | 6.3X11 | 265 | 0.35 | 1.4 |
| 56 | 8X11.5 | 500 | 0.22 | 0.88 |
| 82 | 8X15 | 665 | 0.160 | 0.64 |
| 120 | 8X20 | 820 | 0.120 | 0.48 |
| 82 | 10X12.5 | 690 | 0.110 | 0.44 |
| 120 | 10X16 | 950 | 0.076 | 0.31 |
| 180 | 10X20 | 1150 | 0.056 | 0.23 |
| 220 | 10X25 | 1350 | 0.046 | 0.19 |
| 180 | 13X16 | 1150 | 0.072 | 0.29 |
| 270 | 13X20 | 1500 | 0.072 | 0.13 |
| 390 | 13X25 | 1900 | 0.072 | 0.093 |
| 470 | 13X30 | 2300 | 0.072 | 0.084 |
| 560 | 13X35 | 2500 | 0.072 | 0.072 |
| 680 | 13X40 | 2800 | 0.072 | 0.063 |
| 470 | 16X20 | 2000 | 0.072 | 0.096 |
| 680 | 16X25 | 2600 | 0.072 | 0.075 |
| 820 | 16X31.5 | 2850 | 0.072 | 0.063 |
| 1000 | 16X35.5 | 2900 | 0.072 | 0.057 |
| 1200 | 16X40 | 3400 | 0.072 | 0.054 |
| 680 | 18X20 | 2500 | 0.072 | 0.090 |
| 820 | 18X25 | 2800 | 0.072 | 0.072 |
| 1200 | 18X31.5 | 3300 | 0.072 | 0.060 |
| 1500 | 18X35.5 | 3400 | 0.072 | 0.054 |
| 1800 | 18X40 | 3500 | 0.072 | 0.051 |

| WV(Vdc) / Parameter / Cap (μF) | 100 | | | |
|---|---|---|---|---|
| | ΦDxL(mm) | Ripple Current | Impedance | |
| | | (mArrms) | 20℃ | –10℃ |
| | | 105℃ 100KHZ | 100KHZ | 100KHZ |
| 6.8 | 5x11 | 125 | 1.4 | 5.6 |
| 15 | 6.3X11 | 205 | 0.57 | 2.3 |
| 27 | 8X11.5 | 355 | 0.36 | 1.4 |
| 39 | 8X15 | 450 | 0.250 | 1 |
| 56 | 8X20 | 565 | 0.190 | 0.76 |
| 47 | 10X12.5 | 480 | 0.170 | 0.66 |
| 68 | 10X16 | 600 | 0.110 | 0.47 |
| 82 | 10X20 | 800 | 0.084 | 0.34 |
| 120 | 10X25 | 900 | 0.069 | 0.28 |
| 100 | 13X16 | 750 | 0.110 | 0.34 |
| 150 | 13X20 | 1100 | 0.062 | 0.18 |
| 220 | 13X25 | 1250 | 0.047 | 0.14 |
| 270 | 13X30 | 1500 | 0.042 | 0.13 |
| 330 | 13X35 | 1650 | 0.036 | 0.11 |
| 390 | 13X40 | 1800 | 0.032 | 0.095 |
| 220 | 16X20 | 1350 | 0.048 | 0.15 |
| 330 | 16X25 | 1700 | 0.038 | 0.12 |
| 470 | 16X31.5 | 1850 | 0.032 | 0.095 |
| 560 | 16X35.5 | 2000 | 0.029 | 0.086 |
| 680 | 16X40 | 2200 | 0.027 | 0.081 |
| 330 | 18X20 | 1500 | 0.045 | 0.140 |
| 470 | 18X25 | 1750 | 0.036 | 0.110 |
| 560 | 18X31.5 | 1900 | 0.030 | 0.090 |
| 680 | 18X35.5 | 2200 | 0.027 | 0.081 |
| 820 | 18X40 | 2700 | 0.026 | 0.077 |

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■STANDARD RATINGS

| WV(Vdc) / Parameter / Cap (μF) | 6.3 | | | | 10 | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | ΦDxL(mm) | Ripple Current | Impedance | | ΦDxL(mm) | Ripple Current | Impedance | |
| | | (mArrms) | 20℃ | –10℃ | | (mArrms) | 20℃ | –10℃ |
| | | 105℃ 100KHZ | 100KHZ | 100KHZ | | 105℃ 100KHZ | 100KHZ | 100KHZ |
| 150 | 5x11 | 250 | 0.3 | 1 | 100 | 5x11 | 250 | 0.3 | 1 |
| 330 | 6.3X11 | 405 | 0.13 | 0.41 | 220 | 6.3X11 | 405 | 0.13 | 0.41 |
| 560 | 8X11.5 | 760 | 0.072 | 0.22 | 470 | 8X14 | 760 | 0.072 | 0.22 |
| 820 | 8X16 | 995 | 0.056 | 0.17 | 680 | 8X16 | 995 | 0.056 | 0.17 |
| 1200 | 8X20 | 1250 | 0.041 | 0.13 | 1000 | 8X20 | 1250 | 0.041 | 0.13 |
| 1000 | 8X16 | 1030 | 0.053 | 0.16 | 680 | 10X12.5 | 1030 | 0.053 | 0.16 |
| 1200 | 10X16 | 1430 | 0.038 | 0.12 | 1000 | 10X16 | 1430 | 0.038 | 0.12 |
| 1500 | 10X20 | 1820 | 0.023 | 0.069 | 1200 | 10X20 | 1820 | 0.023 | 0.069 |
| 2200 | 10x25 | 2150 | 0.022 | 0.066 | 1500 | 10x25 | 2150 | 0.022 | 0.066 |
| 3300 | 13x20 | 2360 | 0.021 | 0.053 | 2200 | 13x20 | 2360 | 0.021 | 0.053 |
| 3900 | 13X25 | 2770 | 0.018 | 0.045 | 3300 | 13X25 | 2770 | 0.018 | 0.045 |
| 4700 | 13X30 | 3290 | 0.016 | 0.041 | 3900 | 13X30 | 3290 | 0.016 | 0.041 |
| 5600 | 13X34 | 3400 | 0.015 | 0.039 | 4700 | 13X34 | 3400 | 0.015 | 0.039 |
| 5600 | 16X20 | 3140 | 0.018 | 0.045 | 3900 | 16X20 | 3140 | 0.018 | 0.045 |
| 6800 | 16X25 | 3460 | 0.016 | 0.043 | 5600 | 16X25 | 3460 | 0.016 | 0.043 |

| WV(Vdc) / Parameter / Cap (μF) | | 16 | | | 25 | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | ΦDxL(mm) | Ripple Current | Impedance | | ΦDxL(mm) | Ripple Current | Impedance | |
| | | (mArrms) | 20℃ | –10℃ | | (mArrms) | 20℃ | –10℃ |
| | | 105℃ 100KHZ | 100KHZ | 100KHZ | | 105℃ 100KHZ | 100KHZ | 100KHZ |
| 56 | 5x11 | 250 | 0.30 | 1.0 | 47 | 5x11 | 250 | 0.3 | 1 |
| 120 | 6.3X11 | 405 | 0.13 | 0.41 | 100 | 6.3X11 | 405 | 0.13 | 0.41 |
| 330 | 8X11.5 | 760 | | 0.22 | 220 | 8X11.5 | 760 | 0.072 | 0.22 |
| 470 | 8X16 | 995 | 0.056 | 0.17 | 330 | 8X16 | 995 | 0.056 | 0.17 |
| 680 | 8X20 | 1250 | 0.041 | 0.13 | 470 | 8X20 | 1250 | 0.041 | 0.13 |
| 470 | 10X12.5 | 1030 | 0.053 | 0.16 | 330 | 10X12.5 | 1030 | 0.053 | 0.16 |
| 680 | 10X16 | 1430 | 0.038 | 0.12 | 470 | 10X16 | 1430 | 0.038 | 0.12 |
| 1000 | 10X20 | 1820 | 0.023 | 0.069 | 680 | 10X20 | 1820 | 0.023 | 0.069 |
| 1200 | 10x25 | 2150 | 0.022 | 0.066 | 820 | 10X25 | 2150 | 0.022 | 0.066 |
| 1500 | 13x20 | 2360 | 0.021 | 0.053 | 1000 | 13X20 | 2360 | 0.021 | 0.053 |
| 2200 | 13X25 | 2770 | 0.018 | 0.045 | 1500 | 13X25 | 2770 | 0.018 | 0.045 |
| 2700 | 13X30 | 3290 | 0.016 | 0.041 | 1800 | 13X30 | 3290 | 0.016 | 0.041 |
| 3300 | 13X34 | 3400 | 0.015 | 0.039 | 2200 | 13X34 | 3400 | 0.015 | 0.039 |
| 2700 | 16X20 | 3140 | 0.018 | 0.045 | 1800 | 16X20 | 3140 | 0.018 | 0.045 |
| 3900 | 16X25 | 3460 | 0.016 | 0.043 | 2700 | 16X25 | 3460 | 0.016 | 0.043 |