

HP series

- 105°C 5000hours, Screw terminal type.
- High temperature, high ripple current resistance and long life.
- RoHS Compliance
- 105°C 5000小時螺栓型端子。
- 耐高溫、高紋波電流、長壽命。



SPECIFICATIONS

| Items 項目 | Characteristics 特性 | | | | | | | | | | | | |
|---------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------|---------|------|------|------|---------------|---------|------|------|---------|---------|------|
| Capacitance Tolerance 靜電容量誤差 | ± 20%(120Hz,20°C) | | | | | | | | | | | | |
| Operating Temperature Range 適用溫度範圍 | - 40 ~ +105°C | | | | | | - 25 ~ +105°C | | | | | | |
| Rated Voltage Range 額定電壓範圍 | 10 ~ 100VDC | | | | | | 160 ~ 450VDC | | | | | | |
| Rated Capacitance Range 容量範圍 | 220 ~ 1,000,000µF | | | | | | | | | | | | |
| Leakage Current 洩漏電流 | I ≤ 0.02CV (µA) or 5mA, whichever is smaller. (After 5 minutes application of DC rated voltage, at 20 °C) | | | | | | | | | | | | |
| Dissipation Factor 散逸因素(tan δ) | Measurement Frequency: 120Hz. Temperature: 20°C | | | | | | | | | | | | |
| | Rated Voltage(V) | | 10 | 16 | 25 | 35 | 50 | 63 | 80 | 100 | 160~250 | 350~450 | |
| | tan δ (MAX) | 35Ø | 80~140 | 0.65 | 0.45 | 0.40 | 0.30 | 0.25 | 0.25 | 0.20 | 0.12 | 0.15 | 0.20 |
| | | 51Ø | 80~140 | 0.90 | 0.60 | 0.50 | 0.40 | 0.25 | 0.25 | 0.20 | 0.15 | 0.15 | 0.20 |
| | | 64Ø | 120~190 | 1.20 | 0.80 | 0.70 | 0.50 | 0.35 | 0.30 | 0.25 | 0.20 | 0.20 | 0.20 |
| | | 76Ø | 120~190 | 2.00 | 1.20 | 0.90 | 0.70 | 0.55 | 0.50 | 0.35 | 0.30 | 0.20 | 0.20 |
| | | 90Ø | 150~190 | 2.40 | 2.00 | 1.50 | 1.00 | 0.75 | 0.60 | 0.40 | 0.30 | 0.25 | 0.20 |
| 100Ø | 220 | 2.00 | 2.00 | 1.50 | 1.00 | 0.75 | 0.60 | 0.40 | 0.30 | 0.25 | 0.20 | | |
| Low Temperature Stability 低溫特性 | Measurement Frequency: 120Hz. | | | | | | | | | | | | |
| Impedance Ratio(Max) 阻抗比率(最大值) | Rated Voltage(V) | 10~100 | | | | | | 160~450 | | | | | |
| | Z(-25°C)/Z(20°C) | - | | | | | | 8 | | | | | |
| | Z(-40°C)/Z(20°C) | 12 | | | | | | - | | | | | |
| Load Life 負荷壽命 | The following specifications shall be satisfied when the capacitors are restored to 20°C after subjected to DC voltage with the rated ripple current is applied for 5,000 hours (10~250V,2000 hours) at 105°C. | | | | | | | | | | | | |
| | Capacitance Change | Within ± 20% of Initial Value | | | | | | | | | | | |
| | tan δ | 300% or less of Initial Specified Value | | | | | | | | | | | |
| | Leakage Current | Initial Specified Value or less | | | | | | | | | | | |
| Shelf Life 放置壽命 | The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1,000 hours 105°C without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to them 4.1 of JIS C5101-4. | | | | | | | | | | | | |
| | Capacitance Change | Within ± 20% of Initial Value | | | | | | | | | | | |
| | tan δ | 300% or less of Initial Specified Value | | | | | | | | | | | |
| | Leakage Current | Initial Specified Value or less | | | | | | | | | | | |
| Standards 參照標準 | JIS C 5101-4 (IEC 60384) | | | | | | | | | | | | |

Frequency Coefficient of Permissible Ripple Current

| Rated Voltage (V) | Frequency (Hz) | | | | |
|-------------------|----------------|------|------|------|------|
| | 60 | 120 | 360 | 1K | ≥10K |
| 10 ~ 100 | 0.90 | 1.00 | 1.08 | 1.15 | 1.15 |
| 160 ~ 250 | 0.88 | 1.00 | 1.08 | 1.15 | 1.20 |
| 350 ~ 450 | 0.82 | 1.00 | 1.20 | 1.35 | 1.40 |

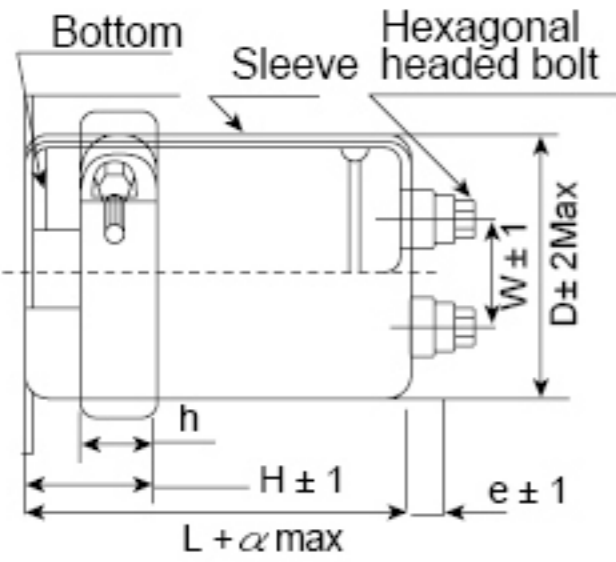
The endurance of capacitors is reduced with internal heating produced by ripple current at the rate of halving the lifetime with every 5°C rise. When long life performance is required in actual use , the rms ripple current has to be reduced.

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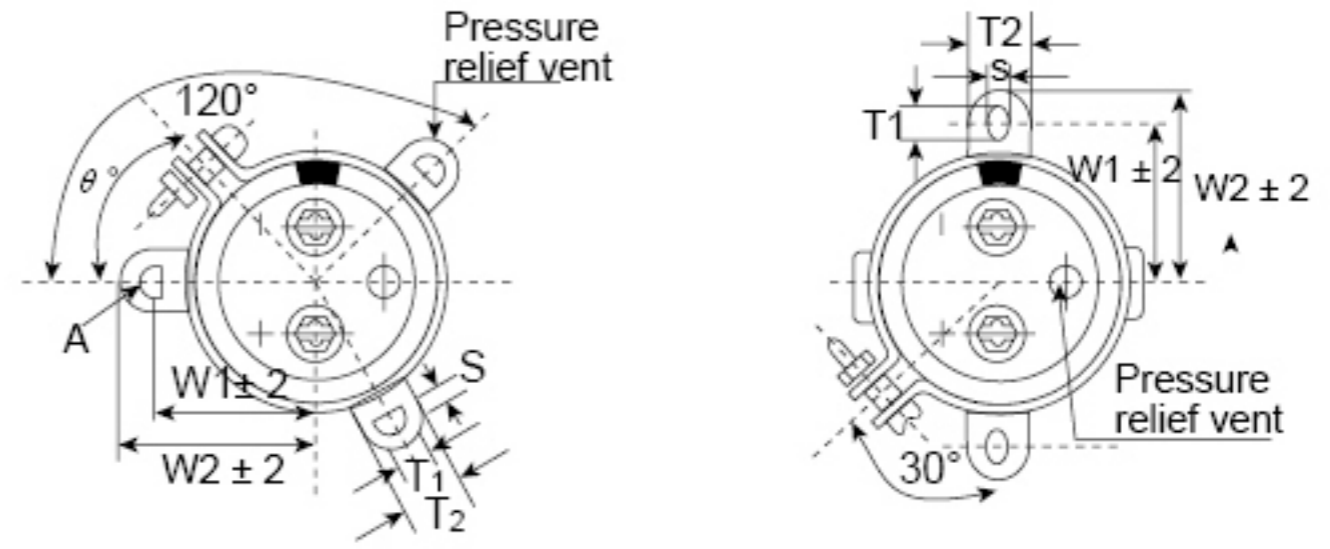
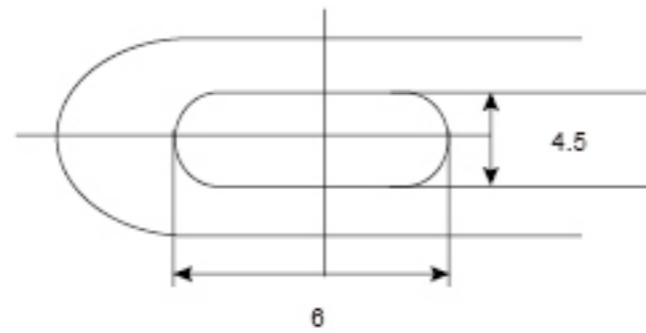
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DIMENSIONS(mm)

Screw terminal type for $\phi 51$ and larger

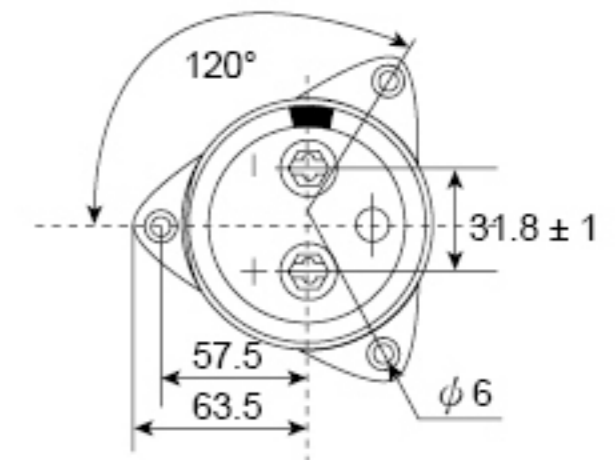
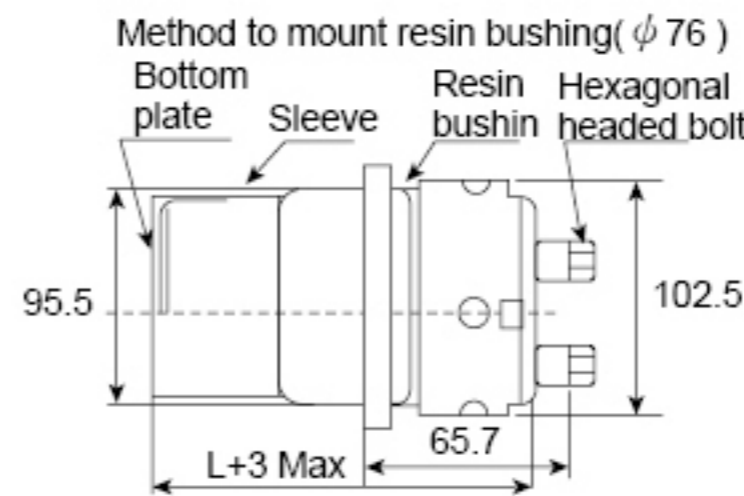
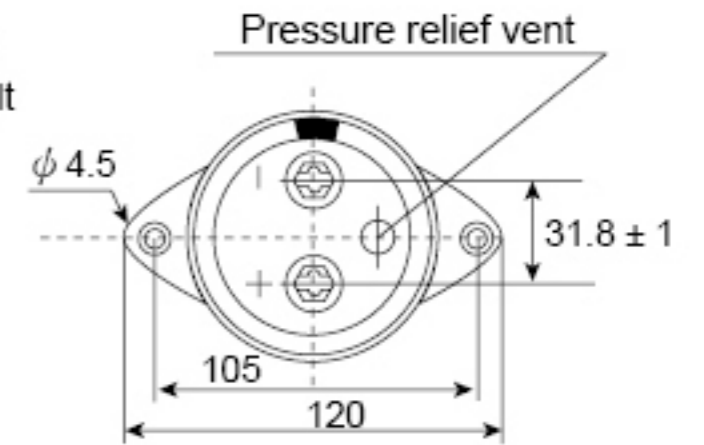
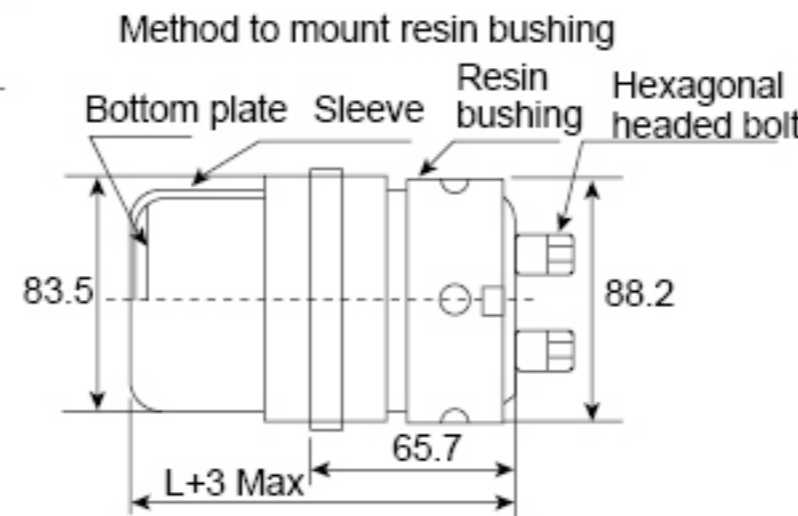


3-leg brackets for $\phi 90$ capacitors have different hole shapes from the ordinary ones as illustrated below.



TERMINAL PITCH(W) & LENGTH (e) TABLE

| ϕD | W | e | α |
|----------|------|----|----------|
| 35 | 12.7 | / | 3 |
| 51 | 22.0 | 6 | 3 |
| 64 | 28.6 | 6 | 3 |
| 76 | 31.8 | 6 | 3 |
| 90 | 31.8 | 6 | 3 |
| 100 | 41.5 | 10 | 4 |



DIMENSIONS OF MOUNTING BRACKET

mm

| Cap (μF) | Leg shape | 3-Legs | | | | | 2-Legs | | | | |
|----------------|-----------|----------|-----------|-----------|-----------|-----------|------------|-----------|-----------|-----------|-----------|
| | | ϕD | $\phi 51$ | $\phi 64$ | $\phi 76$ | $\phi 90$ | $\phi 100$ | $\phi 35$ | $\phi 51$ | $\phi 64$ | $\phi 76$ |
| W_1 | | 32.5 | 38 | 44.5 | 50.8 | 56.3 | 24 | 33.2 | 40.5 | 46.5 | 53 |
| W_2 | | 38.5 | 43 | 49.2 | 57 | 62 | 30 | 40 | 46.5 | 53 | 59 |
| T_1 | | 7.5 | 8.0 | 7.0 | 7.0 | 8.0 | 6 | 6.0 | 6.0 | 6.0 | 6.0 |
| T_2 | | 12 | 14 | 14 | 16 | 16 | 10 | 14 | 14 | 14 | 14 |
| S | | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 3.5 | 4.5 | 4.5 | 4.5 | 4.5 |
| θ° | | 60 | 60 | 60 | 60 | 60 | 30 | 30 | 30 | 30 | 30 |
| H | | 20 | 25 | 30 | 35 | 36 | 16 | 25 | 35 | 35 | 35 |
| h | | 15 | 20 | 24 | 20 | 30 | 12 | 15 | 20 | 20 | 20 |

STANDARD RATINGS

D×L(mm) ; R.C.(A rms) at 105°C 120Hz

| Cap (μF) | V | 10 | | 16 | | 25 | | 35 | |
|----------|---|--------|-------|--------|-------|--------|-------|--------|-------|
| | | Item | D x L | R.C. | D x L | R.C. | D x L | R.C. | D x L |
| 10000 | | | | | | | | 35x100 | 4.3 |
| 15000 | | | | | | | | 35x100 | 5.0 |
| 22000 | | | | | | 35x100 | 4.4 | 35x120 | 5.2 |
| 33000 | | 35x80 | 4.7 | 35x80 | 4.8 | 35x120 | 6.0 | 35x140 | 7.0 |
| 47000 | | 35x100 | 6.0 | 35x100 | 6.0 | 51x100 | 8.0 | 51x120 | 8.0 |
| 68000 | | 51x80 | 6.5 | 51x80 | 6.5 | 51x140 | 10.0 | 51x140 | 12.0 |
| 100000 | | 51x100 | 8.2 | 51x100 | 9.0 | 64x120 | 11.0 | 64x140 | 13.2 |
| 150000 | | 51x120 | 10.2 | 51x120 | 11.4 | 64x140 | 13.5 | 76x150 | 15.0 |
| 220000 | | 64x120 | 13.0 | 64x120 | 14.5 | 76x150 | 16.5 | 90x150 | 17.1 |
| 330000 | | 76x120 | 15.2 | 76x120 | 17.0 | 90x150 | 20.2 | 90x190 | 21.0 |
| 470000 | | 90x140 | 16.0 | 90x140 | 20.2 | 90x190 | 22.0 | | |
| 680000 | | 90x170 | 18.0 | 90x170 | 22.0 | | | | |
| 1000000 | | 90x180 | 20.0 | 90x190 | 23.5 | | | | |

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STANDARD RATINGS

D×L(mm) ; R.C.(A rms) at 105°C 120Hz

| Cap (μF) | V Item | 50 | | 63 | | 80 | | 100 | |
|-------------|-----------|---------|------|---------|------|---------|------|---------|------|
| | | D x L | R.C. | D x L | R.C. | D x L | R.C. | D x L | R.C. |
| 2200 | | | | | | | | 35x100 | 2.0 |
| 3300 | | | | | | | | 35x100 | 3.0 |
| 4700 | | | | | | 35x100 | 3.1 | 35x120 | 3.4 |
| 6800 | | | | | | 35x120 | 3.4 | 51x100 | 5.0 |
| 10000 | | 35x100 | 4.5 | 35x120 | 4.5 | 51x100 | 5.0 | 51x120 | 6.2 |
| 15000 | | 35x120 | 5.2 | 51x100 | 5.5 | 51x120 | 6.0 | 64x120 | 7.4 |
| 22000 | | 51x100 | 6.0 | 51x120 | 6.5 | 64x120 | 8.0 | 76x120 | 9.5 |
| 33000 | | 51x140 | 7.5 | 64x120 | 9.0 | 76x120 | 9.5 | 76x150 | 12.3 |
| 47000 | | 64x120 | 9.5 | 64x140 | 11.0 | 76x150 | 13.0 | 90x150 | 16.5 |
| 68000 | | 64x140 | 12.5 | 76x150 | 13.2 | 90x150 | 16.5 | 90x190 | 18.0 |
| 100000 | | 76x150 | 16.5 | 90x150 | 17.3 | 90x190 | 18.2 | 100x220 | 20.2 |
| 150000 | | 90x150 | 19.5 | 90x190 | 20.5 | 100x220 | 21.2 | | |
| 220000 | | 90x190 | 21.5 | 100x220 | 23.2 | | | | |
| 330000 | | 100x220 | 24.0 | | | | | | |

| Cap (μF) | V Item | 160 | | 200 | | 250 | |
|-------------|-----------|--------|------|--------|------|--------|------|
| | | D x L | R.C. | D x L | R.C. | D x L | R.C. |
| 680 | | | | | | 35x100 | 1.4 |
| 1000 | | 35x100 | 1.6 | 35x100 | 1.7 | 35x120 | 1.9 |
| 1500 | | 35x100 | 2.1 | 35x120 | 2.3 | 51x100 | 2.4 |
| 2200 | | 35x120 | 2.7 | 51x100 | 2.9 | 51x120 | 3.2 |
| 3300 | | 51x100 | 3.8 | 51x120 | 3.9 | 64x120 | 4.3 |
| 4700 | | 51x120 | 4.5 | 64x120 | 5.1 | 64x140 | 5.9 |
| 6800 | | 64x120 | 6.8 | 64x140 | 7.0 | 76x150 | 7.1 |
| 10000 | | 64x150 | 7.8 | 76x150 | 8.2 | 90x150 | 9.6 |
| 15000 | | 76x150 | 9.8 | 76x150 | 10.4 | 90x190 | 12.7 |
| 22000 | | 76x150 | 12.5 | 90x150 | 15.1 | | |
| 33000 | | 90x150 | 13.4 | | | | |

| Cap (μF) | V Item | 350 | | 400 | | 450 | |
|-------------|-----------|--------|------|--------|------|--------|------|
| | | D x L | R.C. | D x L | R.C. | D x L | R.C. |
| 220 | | | | 35x100 | 1.2 | 35x100 | 1.4 |
| 330 | | 35x100 | 2.0 | 35x100 | 2.0 | 35x120 | 2.0 |
| 470 | | 35x100 | 2.4 | 35x120 | 3.0 | 51x100 | 3.0 |
| 680 | | 51x100 | 4.0 | 51x100 | 4.0 | 51x120 | 4.0 |
| 1000 | | 51x100 | 6.2 | 51x100 | 6.2 | 51x120 | 6.5 |
| 1500 | | 51x120 | 8.2 | 51x140 | 9.0 | 51x140 | 9.0 |
| 2200 | | 51x140 | 10.6 | 64x120 | 11.2 | 64x120 | 11.4 |
| 2700 | | 64x120 | 12.2 | 64x120 | 13.0 | 64x140 | 13.4 |
| | | | | | | 76x120 | 14.1 |
| 3300 | | 64x120 | 14.0 | 64x140 | 15.0 | 64x170 | 16.2 |
| | | | | | | 76x150 | 17.0 |
| 3900 | | 64x140 | 16.4 | 64x170 | 17.5 | 64x190 | 18.0 |
| | | | | 76x120 | 18.0 | | |
| 4700 | | 64x140 | 19.4 | 64x190 | 20.3 | 76x170 | 21.3 |
| | | 76x150 | 19.3 | 76x150 | 20.0 | | |
| 5600 | | 76x150 | 22.0 | 76x170 | 23.3 | 76x190 | 26.0 |
| | | | | | | 90x170 | 24.0 |
| 6800 | | 76x170 | 26.0 | 76x190 | 27.2 | 90x190 | 28.0 |
| | | | | 90x170 | 26.5 | | |
| 8200 | | 76x170 | 30.0 | 90x190 | 29.5 | | |
| | | 90x150 | 29.0 | | | | |
| 10000 | | 90x170 | 32.0 | | | | |