

Part Numbering System



① Category code

| Type | Code |
|------------------------|------|
| | 1 |
| Electrolytic Capacitor | E |
| Conductive Polymer | S |

② Series code

| Series name | Code | |
|-------------|------|---|
| | 2 | 3 |
| WH | W | H |
| CD11GE | G | E |
| CD11GES | G | X |
| CD11GAS | G | W |
| CD11GHS | G | S |
| NR | N | R |
| PZ | P | Z |

③ Voltage code

| WV (V _{dc}) | Code | |
|-----------------------|------|---|
| | 4 | 5 |
| 2.5 | 0 | E |
| 3 | 0 | D |
| 4 | 0 | G |
| 6.3 | 0 | J |
| 6.8 | 0 | C |
| 7 | 0 | Q |
| 7.5 | 0 | A |
| 10 | 1 | A |
| 12 | 1 | T |
| 16 | 1 | C |
| 25 | 1 | E |
| 35 | 1 | V |
| 40 | 1 | G |
| 50 | 1 | H |
| 63 | 1 | J |
| 80 | 1 | B |
| 100 | 1 | K |
| 120 | 2 | B |
| 160 | 2 | C |
| 180 | 2 | L |
| 200 | 2 | D |
| 220 | 2 | N |
| 250 | 2 | E |
| 315 | 2 | F |
| 350 | 2 | V |
| 380 | 2 | P |
| 400 | 2 | G |
| 420 | 2 | T |
| 450 | 2 | W |
| 500 | 2 | H |
| 550 | 2 | J |
| 600 | 2 | K |

④ Capacitance tolerance code

| Tol. (%) | Code |
|----------|------|
| | 6 |
| -10~+10 | K |
| -20~+20 | M |
| -10~+30 | Q |
| -10~+20 | V |
| 0~+20 | A |
| -5~+20 | C |
| -10~-20 | B |
| -5~+5 | D |
| 0~+10 | E |
| -5~-20 | F |
| -15~+5 | N |

⑤ Capacitance code

| Cap (μF) | Code | | |
|----------|------|---|---|
| | 7 | 8 | 9 |
| 0.10 | R | 1 | 0 |
| 0.22 | R | 2 | 2 |
| 0.33 | R | 3 | 3 |
| 0.47 | R | 4 | 7 |
| 0.68 | R | 6 | 8 |
| 1 | 0 | 1 | 0 |
| 2.2 | 2 | R | 2 |
| 3.3 | 3 | R | 3 |
| 4.7 | 4 | R | 7 |
| 6.8 | 6 | R | 8 |
| 10 | 1 | 0 | 0 |
| 22 | 2 | 2 | 0 |
| 33 | 3 | 3 | 0 |
| 47 | 4 | 7 | 0 |
| 68 | 6 | 8 | 0 |
| 100 | 1 | 0 | 1 |
| 220 | 2 | 2 | 1 |
| 330 | 3 | 3 | 1 |
| 470 | 4 | 7 | 1 |
| 680 | 6 | 8 | 1 |
| 1000 | 1 | 0 | 2 |
| 2200 | 2 | 2 | 2 |
| 3300 | 3 | 3 | 2 |
| 4700 | 4 | 7 | 2 |
| 6800 | 6 | 8 | 2 |
| 10000 | 1 | 0 | 3 |
| 22000 | 2 | 2 | 3 |
| 33000 | 3 | 3 | 3 |
| 68000 | 6 | 8 | 3 |

⑥ Size code

| ΦD (mm) | Code |
|---------|------|
| 4 | C |
| 5 | D |
| 6.3 | E |
| 8 | F |
| 10 | G |
| 11 | H |
| 12 | J |
| 12.5 | W |
| 13 | K |
| 14 | X |
| 16 | L |
| 18 | M |
| 19 | Z |
| 20 | N |
| 22 | O |
| 25 | P |
| 30 | Q |
| 35 | R |
| 40 | Y |
| 51.6 | S |
| 64.3 | T |
| 76.9 | U |
| 91 | V |
| 100 | A |

| L (mm) | Code | |
|--------|------|----|
| | 11 | 12 |
| 5 | 0 | 5 |
| 7 | 0 | 7 |
| 11 | 1 | 1 |
| 12 | 1 | 2 |
| 16 | 1 | 6 |
| 20 | 2 | 0 |
| 25 | 2 | 5 |
| 30 | 3 | 0 |
| 35 | 3 | 5 |
| 40 | 4 | 0 |
| 46 | 4 | 6 |
| 50 | 5 | 0 |
| 60 | 6 | 0 |
| 80 | 8 | 0 |
| 100 | A | 0 |
| 115 | B | 5 |
| 120 | C | 0 |
| 130 | D | 0 |
| 140 | E | 0 |
| 160 | G | 0 |
| 200 | K | 0 |
| 220 | M | 0 |
| 236 | N | 6 |
| 250 | P | 0 |

⑦ Terminal code

| Specification | Code | Size | |
|---------------------------------------|------|------|----|
| | 13 | 14 | 15 |
| Bulk packing | O | - | - |
| Taping (SMD Type) | D | 0 | 0 |
| Φ4~8 Taping F=5.0mm | P | 5 | 0 |
| Φ10~12.5 Taping F=5.0mm | B | 5 | 0 |
| Lead Cut L=3.5mm | C | 3 | 5 |
| Lead Cut L=11.0mm | C | B | 0 |
| Lead Forming & Cut L=4.5mm | F | - | - |
| Kink & Cut L=4.5mm | J | - | - |
| Snap-in type Terminal 4.0mm in length | K | - | - |
| Three Terminals | T | - | - |
| Ring clip mounting standard design | A | 0 | 0 |
| Ring clip mounting special design | S | - | - |

⑧ Sleeve/Marking code

| Sleeve/Marking | Code |
|----------------|------|
| | 16 |
| PVC | C |
| PET | T |
| Dark blue | B |
| Bright red | R |
| Sky-blue | S |
| Light blue | T |
| Pink | Z |
| Black | H |
| Purple-blue | V |
| Red | O |

Lead Forming
Taping Specifications

Fig.1 code: X



Fig.2 code: B



Fig.3 code: B



Fig.4 code: P



Lead Forming

Specification Fig.1 & Fig.2 & Fig.3

| Items | Symbol | Case size | | | | | | | | | | Tolerance | | |
|---|--------|------------|-----|------------|------|------|------|-------|----------------|------------------|-----------------------------------|-----------|--------------|--|
| | | 4*5 4*7 | | 5*5 5*7 | | 5*11 | | 6.3*5 | 6.3*7 6.3*9 | 6.3*11 6.3*12 | 8*5/7 8*9/11 8*11.5 8*12 | | 8*16 8*20 | 10*9/12 10*12.5 10*13/16 10*20/25 |
| Pin Code | | X | B | X | B | X | B | B | B | B | B | B | B | |
| Lead wire diameter | Φd | 0.45 | | 0.45 | | 0.5 | | 0.45 | 0.5 | 0.5 | 0.45/0.5 | 0.6 | 0.6 | ±0.05 |
| Pitch of body | P | 12.7 | | 12.7 | | 12.7 | | 12.7 | 12.7 | 12.7 | 12.7 | 12.7 | 12.7 | ±1.0 |
| Feed hole pitch | P0 | 12.7 | | 12.7 | | 12.7 | | 12.7 | 12.7 | 12.7 | 12.7 | 12.7 | 12.7 | ±0.2 |
| Distance from hole center to lead | P1 | 5.1 | 5.6 | 5.1 | 5.35 | 5.1 | 5.35 | 5.1 | 5.1 | 5.1 | 4.6 | 4.6 | 3.85 | ±0.7 |
| Distance from feed hole center to body center | P2 | 6.35 | | 6.35 | | 6.35 | | 6.35 | 6.35 | 6.35 | 6.35 | 6.35 | 6.35 | ±1.0 |
| Lead-to-lead distance | F | 2.5 | 1.5 | 2.5 | 2.0 | 2.5 | 2.0 | 2.5 | 2.5 | 2.5 | 3.5 | 3.5 | 5.0 | ±0.5 |
| Height of body from tape center | H | 18.5 | | 18.5 | | 18.5 | | 18.5 | 18.5 | 18.5 | 18.5 | 18.5 | 18.5 | ±0.75 |
| Base tape width | W | 18.0 | | 18.0 | | 18.0 | | 18.0 | 18.0 | 18.0 | 18.0 | 18.0 | 18.0 | ±0.5 |
| Adhesive tape width | W0 | 6.0 | | 6.0 | | 6.0 | | 6.0 | 6.0 | 8.0 | 8.0 | 8.0 | 11.0 | min |
| Hole position | W1 | 9.0 | | 9.0 | | 9.0 | | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 | +0.75 -0.5 |
| Hole down tape position | W2 | 3.0 | | 3.0 | | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | max |

Specification Fig.4

| Items | Symbol | Case size | | | | | | | | | Tolerance |
|---|--------|------------|------|------|------|-------|----------------|------------------|------------------------------|--------------|---------------|
| | | 4*5 4*7 | 5*5 | 5*7 | 5*11 | 6.3*5 | 6.3*7 6.3*9 | 6.3*11 6.3*12 | 8*5/7 8*9/11 8*11.5/12 | 8*16 8*20 | |
| Pin Code | | P | P | P | P | P | P | P | P | P | |
| Lead wire diameter | Φd | 0.45 | 0.45 | 0.45 | 0.5 | 0.45 | 0.5 | 0.5 | 0.45/0.5 | 0.6 | ±0.05 |
| Pitch of body | P | 12.7 | 12.7 | 12.7 | 12.7 | 12.7 | 12.7 | 12.7 | 12.7 | 12.7 | ±1.0 |
| Feed hole pitch | P0 | 12.7 | 12.7 | 12.7 | 12.7 | 12.7 | 12.7 | 12.7 | 12.7 | 12.7 | ±0.2 |
| Distance from hole center to lead | P1 | 3.85 | 3.85 | 3.85 | 3.85 | 3.85 | 3.85 | 3.85 | 3.85 | 3.85 | ±0.7 |
| Distance from feed hole center to body center | P2 | 6.35 | 6.35 | 6.35 | 6.35 | 6.35 | 6.35 | 6.35 | 6.35 | 6.35 | ±1.0 |
| Lead-to-lead distance | F | 1.5 | 2.0 | 2.0 | 2.0 | 2.5 | 2.5 | 2.5 | 3.5 | 3.5 | ±0.5 |
| Lead to lead distance | F1 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | +0.8 -0.2 |
| Height of body from tape center | H | 18.5 | 18.5 | 18.5 | 18.5 | 18.5 | 18.5 | 18.5 | 18.5 | 18.5 | ±0.75 |
| Lead wire clinch height | H0 | 16.0 | 16.0 | 16.0 | 16.0 | 16.0 | 16.0 | 16.0 | 16.0 | 16.0 | ±0.5 |
| Base tape width | W | 18.0 | 18.0 | 18.0 | 18.0 | 18.0 | 18.0 | 18.0 | 18.0 | 18.0 | ±0.5 |
| Adhesive tape width | W0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 8.0 | 8.0 | 8.0 | min |
| Hole position | W1 | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 | +0.75 -0.5 |
| Hole down tape position | W2 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | max |

Lead Forming

Lead Forming & Cut

Code:C
RANGE: $\Phi 4\sim\Phi 18$



Code:F
RANGE: $\Phi 4\sim\Phi 8$



| ΦD | F | L | ΦD | F | L |
|----------|-----|----------|----------|-----|--------------------|
| 4 | 1.5 | 3.0~12.0 | 4 | 5.0 | 3.5, 4.5, 5.0, 7.0 |
| 5 | 2.0 | 3.0~12.0 | 5 | 5.0 | 3.5, 4.5, 5.0, 7.0 |
| 6.3 | 2.5 | 3.0~12.0 | 6.3 | 5.0 | 3.5, 4.5, 5.0, 7.0 |
| 8 | 3.5 | 3.0~12.0 | 8 | 5.0 | 3.5, 4.5, 5.0, 7.0 |
| 10 | 5.0 | 3.0~12.0 | - | - | - |
| 12.5 | 5.0 | 3.0~12.0 | - | - | - |
| 16 | 7.5 | 3.0~12.0 | - | - | - |
| 18 | 7.5 | 3.0~12.0 | - | - | - |

Code:J
RANGE: $\Phi 10\sim\Phi 18$



| ΦD | F | L |
|----------|-----|---------------|
| 10 | 5.0 | 4.0, 4.5, 5.0 |
| 12.5 | 5.0 | 4.0, 4.5, 5.0 |
| 16 | 7.5 | 4.0, 4.5, 5.0 |
| 18 | 7.5 | 4.0, 4.5, 5.0 |

Solering Recommendation

■ Flow Soldering(Radial Lead Type)



■ Reflow Soldering

- (For Polymer SMD Type)

Recommended Reflow Profile



| Item | Preheating | T1(°C) | T2(°C) | T3(°C) | t1(sec.) | t2(sec.) | t3(sec.) | Reflow cycle |
|-------------|---------------------------------|--------|--------|--------|----------|----------|----------|--------------|
| Condition 1 | 150°C to 180°C Within 90sec. | ≤260 | 230 | 200 | ≤10 | ≤40 | ≤60 | 1 |
| Condition 2 | | ≤250 | 230 | 200 | ≤10 | ≤40 | ≤60 | 2 |

● (For Liquid SMD Type)

Case size: $\Phi 6.3$ – $\Phi 10$ mm:

- Temperature at surface of capacitor shall not exceed $T^{\circ}\text{C}$.
- The duration for over 200°C temperature and $T_1^{\circ}\text{C}$ at surface of capacitor shall not exceed t and t_1 seconds, respectively.
- Preheat shall be done at 100°C to 200°C and for Maximum 180 seconds.



| Case size (mm) | $T(^{\circ}\text{C})$ ① | $T_1(^{\circ}\text{C})$ | $t(\text{sec.})$ ② | $t_1(\text{sec.})$ ③ | Reflow cycle |
|----------------|-------------------------|-------------------------|--------------------|----------------------|--------------|
| $\Phi 6.3$ | 250 | 230 | 90 | 40 | 1 |
| $\Phi 8$ | 240 | 230 | 90 | 30 | 1 |
| $\Phi 10$ | 235 | 230 | 60 | 30 | 1 |

- ① Peak temperature
- ② The duration over 200°C (max.)
- ③ The duration over $T_1^{\circ}\text{C}$
- Please contact us if capacitors are subject to the conditions other than the allowable range of reflow.

Case size: $\Phi 12.5$ – $\Phi 18$ mm:

- Temperature at surface of capacitor shall not exceed $T^{\circ}\text{C}$.
- The duration for over 200°C temperature and $T_1^{\circ}\text{C}$ at surface of capacitor shall not exceed t and t_1 seconds, respectively.
- Preheat shall be done at 100°C to 180°C and for Maximum 150 seconds.



| Case size (mm) | $T(^{\circ}\text{C})$ ① | $T_1(^{\circ}\text{C})$ | $t(\text{sec.})$ ② | $t_1(\text{sec.})$ ③ | Reflow cycle |
|-------------------------|-------------------------|-------------------------|--------------------|----------------------|--------------|
| $\Phi 12.5$ – $\Phi 18$ | 240 | 230 | 60 | 30 | 1 |

- ① Peak temperature
- ② The duration over 200°C (max.)
- ③ The duration over $T_1^{\circ}\text{C}$
- Please contact us if capacitors are subject to the conditions other than the allowable range of reflow.

HL series

- Long life, downsized, high ripple current; For power supply applications
- Endurance: +105°C 8,000~12,000 hours
- RoHS Compliant

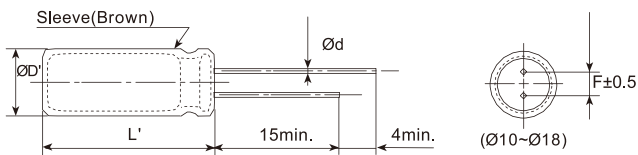
Upgrade



SPECIFICATIONS

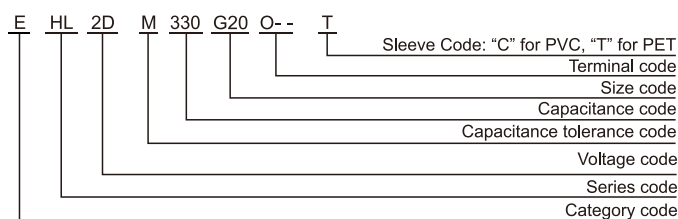
| Items | Characteristics | | | | | | | | |
|--|---|---------------------------------------|------|-------------------|------|------|----------------------|--|---|
| Category Temperature Range | -25~+105°C | | | | | | | | |
| Rated Voltage Range | 160~500 V _{dc} | | | | | | | | |
| Capacitance Tolerance | ±20%(M) (at 20°C, 120Hz) | | | | | | | | |
| Leakage Current | | After 1 minute | | After 5 minutes | | | | Where, I: Max.leakage current (μA), C: Nominal capacitance (μF), V: Rated voltage (V) (at 20°C) | |
| | CV ≤ 1000 | I ≤ 0.1CV + 40μA | | I ≤ 0.03CV + 15μA | | | | | |
| | CV > 1000 | I ≤ 0.04CV + 100μA | | I ≤ 0.02CV + 25μA | | | | | |
| Dissipation Factor (tanδ) | Rated Voltage(V _{dc}) | 160 | 200 | 250 | 350 | 400 | 450 | 500 | (at 20°C, 120Hz) |
| | tanδ (max.) | 0.18 | 0.18 | 0.18 | 0.24 | 0.24 | 0.24 | 0.24 | |
| Low Temperature Characteristics (Max. Impedance Ratio) | Rated Voltage(V _{dc}) | 160 | 200 | 250 | 350 | 400 | 450 | 500 | (at 120Hz) |
| | Z(-25°C)/Z(+20°C) | 3 | 3 | 3 | 6 | 6 | 6 | 6 | |
| 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 | ≤ ±20% of the initial value | | | | | Rated Voltage | 160 to 400V _{dc} | 500V _{dc} |
| | D.F. (tanδ) | ≤ 200% of the initial specified value | | | | | | Life time | L ≤ 20: 10,000 hours |
| | Leakage Current | ≤ The initial specified value | | | | | L > 20: 12,000 hours | | Φ ≥ 12.5: 10,000 hours |
| 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 | ≤ ±20% of the initial value | | | | | | | |
| | D.F. (tanδ) | ≤ 200% of the initial specified value | | | | | | | |
| | Leakage Current | ≤ 200% of the initial specified value | | | | | | | |

DIMENSIONS [mm]



| | | | | |
|-----|--------------|------|-----|-----|
| ØD | 10 | 12.5 | 16 | 18 |
| Ød | 0.6 | 0.6 | 0.8 | 0.8 |
| F | 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) | 120 | 1k | 10k | 100k |
|-----------|-----|------|------|------|
| Cap.(μF) | | | | |
| <100 | 1.0 | 1.75 | 2.25 | 2.50 |
| ≥100 | 1.0 | 1.67 | 2.05 | 2.25 |

The endurance of capacitors is shortened 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.

HL series

■ STANDARD RATINGS

| WV (V _{dc}) | Cap (μF) | Size ΦDxL(mm) | tanδ | Rated ripple current (mA _{rms} /105°C, 120Hz) |
|-----------------------|----------|---------------|------|--|
| 160(2C) | 33 | 10*16 | 0.18 | 210 |
| | 47 | 10*20 | 0.18 | 300 |
| | 56 | 10*20 | 0.18 | 318 |
| | 68 | 10*25 | 0.18 | 345 |
| | 82 | 10*25 | 0.18 | 416 |
| | | 10*30 | 0.18 | 448 |
| | 100 | 12.5*20 | 0.18 | 575 |
| | 120 | 10*35 | 0.18 | 572 |
| | 150 | 10*40 | 0.18 | 668 |
| | | 10*45 | 0.18 | 696 |
| | | 12.5*25 | 0.18 | 767 |
| | 180 | 10*50 | 0.18 | 788 |
| | | 12.5*30 | 0.18 | 885 |
| | | 16*20 | 0.18 | 858 |
| | 220 | 12.5*35 | 0.18 | 1044 |
| | | 16*25 | 0.18 | 1022 |
| | | 18*20 | 0.18 | 992 |
| | 270 | 12.5*40 | 0.18 | 1196 |
| | | 12.5*45 | 0.18 | 1230 |
| | 330 | 12.5*50 | 0.18 | 1404 |
| | | 16*30 | 0.18 | 1355 |
| | | 18*25 | 0.18 | 1292 |
| | 390 | 16*35 | 0.18 | 1505 |
| | | 16*40 | 0.18 | 1708 |
| 16*45 | | 0.18 | 1730 | |
| 470 | 18*30 | 0.18 | 1665 | |
| | 18*35 | 0.18 | 1722 | |
| | 16*50 | 0.18 | 1924 | |
| 560 | 18*40 | 0.18 | 1910 | |
| | 18*45 | 0.18 | 2135 | |
| 680 | 18*50 | 0.18 | 2148 | |
| 200(2D) | 33 | 10*20 | 0.18 | 255 |
| | 39 | 10*20 | 0.18 | 268 |
| | 47 | 10*20 | 0.18 | 302 |
| | 56 | 10*25 | 0.18 | 346 |
| | 68 | 10*30 | 0.18 | 406 |
| | 82 | 12.5*20 | 0.18 | 522 |
| | 100 | 10*35 | 0.18 | 520 |
| | | 12.5*25 | 0.18 | 628 |
| | | 10*40 | 0.18 | 595 |
| | 120 | 10*45 | 0.18 | 624 |
| | | 12.5*30 | 0.18 | 728 |
| | | 16*20 | 0.18 | 698 |
| | 150 | 10*50 | 0.18 | 720 |
| | | 12.5*35 | 0.18 | 862 |
| | | 16*25 | 0.18 | 928 |
| | 180 | 18*20 | 0.18 | 895 |
| | | 12.5*40 | 0.18 | 1078 |
| | | 12.5*45 | 0.18 | 1116 |
| | 220 | 18*25 | 0.18 | 1050 |
| | | 12.5*50 | 0.18 | 1268 |
| | | 16*30 | 0.18 | 1225 |
| | 270 | 16*35 | 0.18 | 1252 |
| | | 16*40 | 0.18 | 1428 |
| | | 18*30 | 0.18 | 1402 |
| 330 | 16*45 | 0.18 | 1575 | |
| | 18*35 | 0.18 | 1570 | |
| | 16*50 | 0.18 | 1762 | |
| 470 | 18*40 | 0.18 | 1748 | |
| | 18*45 | 0.18 | 1775 | |
| | 18*50 | 0.18 | 1952 | |

| WV (V _{dc}) | Cap (μF) | Size ΦDxL(mm) | tanδ | Rated ripple current (mA _{rms} /105°C, 120Hz) |
|-----------------------|----------|---------------|------|--|
| 250(2E) | 27 | 10*20 | 0.18 | 205 |
| | 33 | 10*20 | 0.18 | 242 |
| | 47 | 10*25 | 0.18 | 316 |
| | | 10*30 | 0.18 | 342 |
| | 56 | 12.5*20 | 0.18 | 430 |
| | 68 | 10*35 | 0.18 | 432 |
| | 82 | 10*40 | 0.18 | 495 |
| | | 10*45 | 0.18 | 518 |
| | | 12.5*25 | 0.18 | 565 |
| | 100 | 12.5*30 | 0.18 | 575 |
| | | 10*50 | 0.18 | 586 |
| | | 12.5*30 | 0.18 | 662 |
| | 120 | 16*20 | 0.18 | 638 |
| | | 12.5*35 | 0.18 | 770 |
| | | 16*25 | 0.18 | 758 |
| | 150 | 18*20 | 0.18 | 732 |
| | | 12.5*40 | 0.18 | 892 |
| | | 12.5*45 | 0.18 | 922 |
| | 180 | 12.5*50 | 0.18 | 1040 |
| | | 16*30 | 0.18 | 995 |
| | | 18*25 | 0.18 | 955 |
| | 220 | 16*35 | 0.18 | 1130 |
| | | 18*30 | 0.18 | 1138 |
| | | 16*40 | 0.18 | 1290 |
| 270 | 16*45 | 0.18 | 1315 | |
| | 18*35 | 0.18 | 1300 | |
| | 16*50 | 0.18 | 1480 | |
| 330 | 18*40 | 0.18 | 1466 | |
| | 18*45 | 0.18 | 1488 | |
| | 18*50 | 0.18 | 1630 | |
| 390 | 18*50 | 0.18 | 1630 | |
| 350(2V) | 15 | 10*16 | 0.24 | 150 |
| | 18 | 10*20 | 0.24 | 165 |
| | 22 | 10*20 | 0.24 | 200 |
| | 27 | 10*25 | 0.24 | 242 |
| | | 10*30 | 0.24 | 256 |
| | 33 | 12.5*20 | 0.24 | 332 |
| | 39 | 10*35 | 0.24 | 326 |
| | 47 | 10*40 | 0.24 | 376 |
| | | 12.5*25 | 0.24 | 425 |
| | | 10*45 | 0.24 | 426 |
| | 56 | 12.5*30 | 0.24 | 498 |
| | | 16*20 | 0.24 | 476 |
| | | 10*50 | 0.24 | 486 |
| | 68 | 12.5*35 | 0.24 | 583 |
| | | 18*20 | 0.24 | 550 |
| | | 12.5*40 | 0.24 | 658 |
| | 82 | 16*25 | 0.24 | 628 |
| | | 12.5*45 | 0.24 | 752 |
| | | 12.5*50 | 0.24 | 772 |
| | 100 | 16*30 | 0.24 | 744 |
| | | 18*25 | 0.24 | 710 |
| | | 16*35 | 0.24 | 832 |
| | 120 | 16*40 | 0.24 | 964 |
| | | 16*45 | 0.24 | 978 |
| 18*30 | | 0.24 | 944 | |
| 150 | 16*50 | 0.24 | 1095 | |
| | 18*35 | 0.24 | 1065 | |
| | 18*40 | 0.24 | 1086 | |
| 180 | 18*45 | 0.24 | 1215 | |
| | 18*45 | 0.24 | 1215 | |
| | 18*50 | 0.24 | 1222 | |

HL series

■ STANDARD RATINGS

| WV (V _{dc}) | Cap (μF) | Size ΦDxL(mm) | tanδ | Rated ripple current (mA _{RMS} /105°C,120Hz) |
|-----------------------|----------|---------------|------|---|
| 400(2G) | 12 | 10*16 | 0.24 | 135 |
| | 15 | 10*20 | 0.24 | 155 |
| | 18 | 10*20 | 0.24 | 180 |
| | 22 | 10*25 | 0.24 | 216 |
| | 27 | 10*30 | 0.24 | 256 |
| | | 12.5*20 | 0.24 | 300 |
| | 33 | 10*35 | 0.24 | 300 |
| | | 10*40 | 0.24 | 342 |
| | 39 | 10*45 | 0.24 | 358 |
| | | 12.5*25 | 0.24 | 390 |
| | 47 | 12.5*30 | 0.24 | 456 |
| | | 16*20 | 0.24 | 438 |
| | 56 | 10*50 | 0.24 | 440 |
| | | 12.5*35 | 0.24 | 528 |
| | | 18*20 | 0.24 | 502 |
| | 68 | 12.5*40 | 0.24 | 600 |
| | | 16*25 | 0.24 | 572 |
| | 82 | 12.5*45 | 0.24 | 684 |
| | | 12.5*50 | 0.24 | 700 |
| | | 16*30 | 0.24 | 672 |
| | | 18*25 | 0.24 | 644 |
| | 100 | 16*35 | 0.24 | 760 |
| | | 16*40 | 0.24 | 864 |
| | 120 | 16*45 | 0.24 | 880 |
| | | 18*30 | 0.24 | 842 |
| | | 18*35 | 0.24 | 875 |
| | 150 | 16*50 | 0.24 | 1000 |
| | | 18*40 | 0.24 | 985 |
| 180 | 18*45 | 0.24 | 1098 | |
| 220 | 18*50 | 0.24 | 1225 | |

| WV (V _{dc}) | Cap (μF) | Size ΦDxL(mm) | tanδ | Rated ripple current (mA _{RMS} /105°C,120Hz) |
|-----------------------|----------|---------------|------|---|
| 450(2W) | 10 | 10*16 | 0.24 | 120 |
| | 12 | 10*20 | 0.24 | 150 |
| | 15 | 10*25 | 0.24 | 186 |
| | 18 | 10*30 | 0.24 | 216 |
| | | 12.5*20 | 0.24 | 256 |
| | 22 | 10*35 | 0.24 | 252 |
| | | 10*40 | 0.24 | 292 |
| | 27 | 10*45 | 0.24 | 306 |
| | | 12.5*25 | 0.24 | 342 |
| | 33 | 12.5*30 | 0.24 | 400 |
| | | 16*20 | 0.24 | 386 |
| | 39 | 10*50 | 0.24 | 378 |
| | | 12.5*35 | 0.24 | 462 |
| | | 18*20 | 0.24 | 440 |
| | 47 | 12.5*40 | 0.24 | 528 |
| | | 16*25 | 0.24 | 500 |
| | 56 | 12.5*45 | 0.24 | 592 |
| | | 16*30 | 0.24 | 588 |
| | | 18*25 | 0.24 | 562 |
| | | 12.5*50 | 0.24 | 672 |
| | 68 | 16*35 | 0.24 | 664 |
| | | 16*40 | 0.24 | 750 |
| | 82 | 16*45 | 0.24 | 762 |
| | | 18*30 | 0.24 | 734 |
| | 100 | 16*50 | 0.24 | 858 |
| | | 18*35 | 0.24 | 836 |
| | 120 | 18*40 | 0.24 | 935 |
| | | 18*45 | 0.24 | 948 |
| 150 | 18*50 | 0.24 | 1065 | |
| 500(2H) | 6.8 | 10*20 | 0.24 | 90 |
| | 10 | 10*30 | 0.24 | 130 |
| | | 12.5*20 | 0.24 | 125 |
| | 12 | 12.5*20 | 0.24 | 135 |
| | | 10*35 | 0.24 | 170 |
| | 15 | 12.5*25 | 0.24 | 170 |
| | | 16*20 | 0.24 | 165 |
| | 18 | 10*45 | 0.24 | 190 |
| | | 12.5*30 | 0.24 | 190 |
| | 22 | 10*50 | 0.24 | 230 |
| | | 12.5*35 | 0.24 | 225 |
| | 33 | 16*20 | 0.24 | 220 |
| 18*25 | | 0.24 | 285 | |
| 47 | 18*30 | 0.24 | 400 | |

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