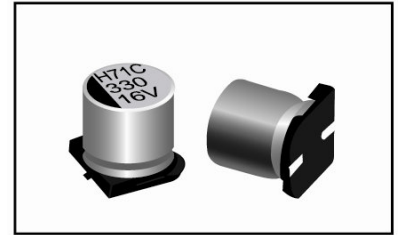
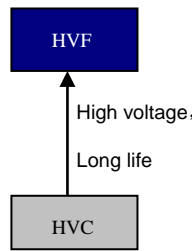


- High Voltage ,Long Life, Low ESR, Large Capacitance 105°C,3000 hours.
- Ultra Low ESR ,high ripple current capability
- Applications: DC/DC Converter, Switching Power Supply, LED power etc.
- RoHS Compliant

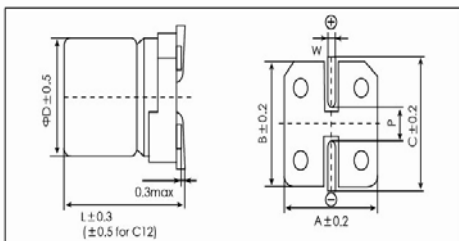
NEW



| Items | Characteristics |
|--|--|
| Operating Temperature Range(°C) | -55~+105 |
| Voltage Range (V) | 16~200 |
| Capacitance Range(μF)(20°C,120Hz) | 4.7~1200 |
| Capacitance Tolerance (20°C,120Hz) | ±20% |
| Surge Voltage | $U_R \times 1.15$ |
| Leakage Current (μA)※1 | Please see the attached ratings list (20°C,2min) |
| Dissipation Factor (20°C,120Hz) | Please see the attached ratings list |
| Equivalent Series Resistance(20°C,100kHz) | Please see the attached ratings list |
| Temperature Characteristics(Max Impedance Ratio at 100kHz) | $Z(+105^\circ\text{C})/Z(+20^\circ\text{C}): \leq 1.25$ $Z(-55^\circ\text{C})/Z(+20^\circ\text{C}): \leq 1.25$ |
| Endurance | 3000h, Rated voltage applied at 105°C Capacitance change: within ±20% of the initial Measured value Dissipation Factor (Tan δ): ≤150% of initial specified value ESR: ≤150% of initial specified value DC Leakage Current: ≤the initial specified value |
| Damp heat(Steady state) | 1000h, No-applied voltage 60°C, 90~95% RH Capacitance change: within ±20% of the initial Measured value Dissipation Factor (Tan δ): ≤150% of initial specified value ESR: ≤150% of initial specified value DC Leakage Current: ≤the initial specified value(after voltage processing) |
| Resistance to soldering heat | Flow Method (260±5°C × 10s) Capacitance change: within ±5% of the initial Measured value Dissipation Factor (Tan δ): ≤the initial specified value ESR: ≤the initial specified value DC Leakage Current: ≤the initial specified value(after voltage processing) |

※ 1 In case of some problems for Measured values, Measure after applying rated voltage for 120 Minutes at 105°C.

Dimensions mm



(unit: Mm)

| Size Code | $\phi D \pm 0.5$ | L | $A \pm 0.2$ | $B \pm 0.2$ | $C \pm 0.2$ | W | $P \pm 0.2$ |
|-----------|------------------|------|-------------|-------------|-------------|-----------|-------------|
| F60 | 6.3 | 5.7 | 6.6 | 6.6 | 7.3 | 0.5 ~ 0.8 | 2.0 |
| B70 | 8 | 6.7 | 8.3 | 8.3 | 9.0 | 0.5 ~ 0.8 | 3.1 |
| B12 | 8 | 12.2 | 8.3 | 8.3 | 9.0 | 0.7 ~ 1.1 | 3.1 |
| C12 | 10 | 12.2 | 10.3 | 10.3 | 11.0 | 0.7 ~ 1.1 | 4.6 |

HPA SERIES



Size List

| UR[S.V](V) Cap.(μF) | 16 [18] | 20 [23] | 2.5[2.9] | 28 [32] | 32 [37] | 35 [40] | 40 [46] | 50 [58] | 63 [72] | 80[92] | 100 [115] | 125 [144] | 160 [184] | 200 [230] |
|------------------------|------------|----------|-----------|-------------|-------------|-------------|------------|---------|---------|---------|--------------|--------------|--------------|--------------|
| 4.7 | | | | | | | | | | | | | | B12 |
| 8.2 | | | | | | | | | | | | | B12 | C12 |
| 10 | | | | | | | | | F60 | | | B12 | C12 | C12 |
| 12 | | | | | | | | | F60 | | B12 | B12 | C12 | |
| 15 | | | | | | | | | | | B12 | | | |
| 18 | | | | | | | | | | | | C12 | | |
| 22 | | | | | | | | F60 | B70 | | C12 | C12 | | |
| 27 | | | | | | | | | B70 | | C12 | | | |
| 33 | | | | | | | | B70 | | B12 | | | | |
| 39 | | | | | | | | B70 | | B12 | | | | |
| 47 | | | | | | | F60 | | | B12 | C12 | | | |
| 56 | | | | | | F60 | | | | B12,C12 | C12 | | | |
| 68 | | | | F60 | F60 | | | | | C12 | | | | |
| 82 | | | | F60 | | | B70 | B12 | C12 | | | | | |
| 100 | | | F60 | | | B70 | B70 | B12,C12 | C12 | | | | | |
| 120 | | F60 | F60 | | B70 | B70 | | C12 | | | | | | |
| 150 | F60 | B70 | | B70 | | | | C12 | | | | | | |
| 180 | F60 | | B70 | | | | B12 | | | | | | | |
| 220 | | B70 | B70 | | B12 | B12 | C12 | | | | | | | |
| 270 | B70 | B70 | | B12 | B12 | C12 | C12 | | | | | | | |
| 330 | B70 | | B12 | B12 | | C12 | C12 | | | | | | | |
| 390 | | B12 | B12 | | C12 | C12 | | | | | | | | |
| 470 | B12 | B12 | B12,C12 | C12 | C12 | | | | | | | | | |
| 560 | B12 | B12,C12 | | C12 | | | | | | | | | | |
| 680 | B12 | C12 | C12 | | | | | | | | | | | |
| 820 | | C12 | | | | | | | | | | | | |
| 1,000 | C12 | | | | | | | | | | | | | |
| 1,200 | C12 | | | | | | | | | | | | | |

Ratings for HVF Series

| UR Code | Rated Capacitance 20°C, 120Hz | Max ESR 20°C, 100kHz | Rated Ripple Current 105°C, 100kHz | Dissipation Factor 20°C, 120Hz | Leakage Current 20°C,2min | Size φD×L | P/N |
|------------|--|----------------------------|---------------------------------------|--------------------------------------|---------------------------------|------------------|------------------|
| (v) | (μF) | (mΩ) | (mArms) | (%) | (μA) | (mm) | - |
| 16 1C | 150 | 25 | 2,800 | 12 | 480 | 6.3X5.7 | PCV1CVF151MF60□□ |
| | 180 | 25 | 2,800 | 12 | 576 | 6.3X5.7 | PCV1CVF181MF60□□ |
| | 270 | 22 | 3,300 | 12 | 864 | 8x6.7 | PCV1CVF271MB70□□ |
| | 330 | 22 | 3,300 | 12 | 1,056 | 8x6.7 | PCV1CVF331MB70□□ |
| | 470 | 14 | 4,950 | 12 | 1,504 | 8x12.2 | PCV1CVF471MB12□□ |
| | 560 | 14 | 4,950 | 12 | 1,792 | 8x12.2 | PCV1CVF561MB12□□ |
| | 680 | 14 | 4,950 | 12 | 2,176 | 8x12.2 | PCV1CVF681MB12□□ |
| | 1000 | 12 | 5,400 | 12 | 3,200 | 10x12.2 | PCV1CVF102MC12□□ |
| 1200 | 12 | 5,400 | 12 | 3,840 | 10x12.2 | PCV1CVF122MC12□□ | |
| 20 1D | 120 | 28 | 2,650 | 12 | 480 | 6.3X5.7 | PCV1DVF121MF60□□ |
| | 150 | 28 | 2,650 | 12 | 600 | 6.3X5.7 | PCV1DVF151MF60□□ |
| | 220 | 24 | 3,200 | 12 | 880 | 8x6.7 | PCV1DVF221MB70□□ |
| | 270 | 24 | 3,200 | 12 | 1,080 | 8x6.7 | PCV1DVF271MB70□□ |
| | 390 | 14 | 4,950 | 12 | 1,560 | 8X12.2 | PCV1DVF391MB12□□ |
| | 470 | 14 | 4,950 | 12 | 1,880 | 8x12.2 | PCV1DVF471MB12□□ |
| | 560 | 14 | 4,950 | 12 | 2,240 | 8x12.2 | PCV1DVF561MB12□□ |
| | 560 | 12 | 5,400 | 12 | 2,240 | 10x12.2 | PCV1DVF561MC12□□ |
| 680 | 12 | 5,400 | 12 | 2,720 | 10x12.2 | PCV1DVF681MC12□□ | |
| 820 | 12 | 5,400 | 12 | 3,280 | 10x12.2 | PCV1DVF821MC12□□ | |
| 25 1E | 100 | 30 | 2,550 | 12 | 500 | 6.3X5.7 | PCV1EVF101MF60□□ |
| | 120 | 30 | 2,550 | 12 | 600 | 6.3X5.7 | PCV1EVF121MF60□□ |
| | 180 | 24 | 3,200 | 12 | 900 | 8x6.7 | PCV1EVF181MB70□□ |
| | 220 | 24 | 3,200 | 12 | 1,100 | 8X6.7 | PCV1EVF221MB70□□ |
| | 330 | 16 | 4,650 | 12 | 1,650 | 8x12.2 | PCV1EVF331MB12□□ |
| | 390 | 16 | 4,650 | 12 | 1,950 | 8x12.2 | PCV1EVF391MB12□□ |
| | 470 | 16 | 4,650 | 12 | 2,350 | 8X12.2 | PCV1EVF471MB12□□ |
| | 470 | 14 | 5,000 | 12 | 2,350 | 10x12.2 | PCV1EVF471MC12□□ |
| 560 | 14 | 5,000 | 12 | 2,800 | 10x12.2 | PCV1EVF561MC12□□ | |
| 680 | 14 | 5,000 | 12 | 3,400 | 10x12.2 | PCV1EVF681MC12□□ | |
| 28 1L | 82 | 33 | 2,450 | 12 | 459 | 6.3X5.7 | PCV1LVF820MF60□□ |
| | 150 | 28 | 2,950 | 12 | 840 | 8x6.7 | PCV1LVF151MB70□□ |
| | 270 | 18 | 4,350 | 12 | 1,512 | 8X12.2 | PCV1LVF271MB12□□ |
| 330 | 18 | 4,350 | 12 | 1,848 | 8X12.2 | PCV1LVF331MB12□□ | |

HPA SERIES



| | | | | | | | |
|-----------|-----|-----|-------|----|-------|---------|------------------|
| | 470 | 16 | 4,650 | 12 | 2,632 | 10x12.2 | PCV1LVF471MC12□□ |
| | 560 | 16 | 4,650 | 12 | 3,136 | 10x12.2 | PCV1LVF561MC12□□ |
| 32 1F | 68 | 35 | 2,350 | 12 | 435 | 6.3X5.7 | PCV1FVF680MF60□□ |
| | 120 | 30 | 2,800 | 12 | 768 | 8x6.7 | PCV1FVF121MB70□□ |
| | 220 | 20 | 4,000 | 12 | 1,408 | 8x12.2 | PCV1FVF221MB12□□ |
| | 270 | 20 | 4,000 | 12 | 1,728 | 8X12.2 | PCV1FVF271MB12□□ |
| | 390 | 18 | 4,400 | 12 | 2,496 | 10x12.2 | PCV1FVF391MC12□□ |
| | 470 | 18 | 4,400 | 12 | 3,008 | 10x12.2 | PCV1FVF471MC12□□ |
| 35 1V | 56 | 35 | 2,350 | 12 | 392 | 6.3X5.7 | PCV1VVF560MF60□□ |
| | 68 | 35 | 2,350 | 12 | 476 | 6.3X5.7 | PCV1VVF680MF60□□ |
| | 100 | 30 | 2,800 | 12 | 700 | 8x6.7 | PCV1VVF101MB70□□ |
| | 120 | 30 | 2,800 | 12 | 849 | 8x6.7 | PCV1VVF121MB70□□ |
| | 220 | 20 | 4,000 | 12 | 1,540 | 8x12.2 | PCV1VVF221MB12□□ |
| | 270 | 20 | 4,000 | 12 | 1,890 | 8x12.2 | PCV1VVF271MB12□□ |
| | 330 | 18 | 4,400 | 12 | 2,310 | 10x12.2 | PCV1VVF331MC12□□ |
| | 390 | 18 | 4,400 | 12 | 2,730 | 10x12.2 | PCV1VVF391MC12□□ |
| 40 1G | 47 | 37 | 2,300 | 12 | 376 | 6.3X5.7 | PCV1GVF470MF60□□ |
| | 82 | 32 | 2,700 | 12 | 656 | 8x6.7 | PCV1GVF820MB70□□ |
| | 100 | 32 | 2,700 | 12 | 800 | 8x6.7 | PCV1GVF101MB70□□ |
| | 180 | 21 | 3,900 | 12 | 1,400 | 8x12.2 | PCV1GVF181MB12□□ |
| | 220 | 18 | 4,400 | 12 | 1,760 | 10x12.2 | PCV1GVF221MC12□□ |
| | 270 | 18 | 4,400 | 12 | 2,160 | 10x12.2 | PCV1GVF271MC12□□ |
| | 330 | 18 | 4,400 | 12 | 2,640 | 10x12.2 | PCV1GVF331MC12□□ |
| 50 1H | 22 | 40 | 2,200 | 12 | 220 | 6.3X5.7 | PCV1HVF220MF60□□ |
| | 33 | 35 | 2,600 | 12 | 330 | 8x6.7 | PCV1HVF330MB70□□ |
| | 39 | 35 | 2,600 | 12 | 390 | 8x6.7 | PCV1HVF390MB70□□ |
| | 82 | 25 | 3,800 | 12 | 820 | 8x12.2 | PCV1HVF820MB12□□ |
| | 100 | 25 | 3,800 | 12 | 1,000 | 8x12.2 | PCV1HVF101MB12□□ |
| | 100 | 20 | 4,300 | 12 | 1,000 | 10x12.2 | PCV1HVF101MC12□□ |
| | 120 | 20 | 4,300 | 12 | 1,200 | 10x12.2 | PCV1HVF121MC12□□ |
| | 150 | 20 | 4,300 | 12 | 1,500 | 10x12.2 | PCV1HVF151MC12□□ |
| 63 1J | 10 | 50 | 1,950 | 12 | 126 | 6.3X5.7 | PCV1JVF100MF60□□ |
| | 12 | 50 | 1,950 | 12 | 151 | 6.3X5.7 | PCV1JVF120MF60□□ |
| | 22 | 45 | 2,350 | 12 | 277 | 8x6.7 | PCV1JVF220MB70□□ |
| | 27 | 45 | 2,350 | 12 | 340 | 8x6.7 | PCV1JVF270MB70□□ |
| | 47 | 26 | 3,600 | 12 | 592 | 8x12.2 | PCV1JVF470MB12□□ |
| | 56 | 26 | 3,600 | 12 | 706 | 8X12.2 | PCV1JVF560MB12□□ |
| | 56 | 22 | 4,100 | 12 | 706 | 10x12.2 | PCV1JVF560MC12□□ |
| | 68 | 22 | 4,100 | 12 | 857 | 10x12.2 | PCV1JVF680MC12□□ |
| | 82 | 22 | 4,100 | 12 | 1,033 | 10x12.2 | PCV1JVF820MC12□□ |
| | 100 | 22 | 4,100 | 12 | 1,260 | 10x12.2 | PCV1JVF101MC12□□ |
| 80 1K | 33 | 32 | 3,200 | 12 | 528 | 8X12.2 | PCV1KVF330MB12□□ |
| | 39 | 32 | 3,200 | 12 | 624 | 8X12.2 | PCV1KVF390MB12□□ |
| | 47 | 28 | 3,600 | 12 | 752 | 10x12.2 | PCV1KVF470MC12□□ |
| | 56 | 28 | 3,600 | 12 | 896 | 10x12.2 | PCV1KVF560MC12□□ |
| 2A 100 | 12 | 36 | 3,000 | 12 | 240 | 8x12.2 | PCV2AVF120MB12□□ |
| | 15 | 36 | 3,000 | 12 | 300 | 8x12.2 | PCV2AVF150MB12□□ |
| | 22 | 32 | 3,300 | 12 | 440 | 10x12.2 | PCV2AVF220MC12□□ |
| | 27 | 32 | 3,300 | 12 | 540 | 10x12.2 | PCV2AVF270MC12□□ |
| 2B 125 | 10 | 45 | 2,700 | 12 | 250 | 8X12.2 | PCV2BVF100MB12□□ |
| | 12 | 45 | 2,700 | m | 300 | 8x12.2 | PCV2BVF120MB12□□ |
| | 18 | 40 | 3,000 | 12 | 450 | 10x12.2 | PCV2BVF180MC12□□ |
| | 22 | 40 | 3,000 | 12 | 550 | 10x12.2 | PCV2BVF220MC12□□ |
| 2C 160 | 8.2 | 70 | 2,100 | 12 | 262 | 8X12.2 | PCV2CVF8R2MB12□□ |
| | 10 | 60 | 2,400 | 12 | 320 | 10x12.2 | PCV2CVF100MC12□□ |
| | 12 | 60 | 2,400 | 12 | 384 | 10x12.2 | PCV2CVF120MC12□□ |
| 2D 200 | 4.7 | 120 | 1,600 | 12 | 188 | 8x12.2 | PCV2DVF4R7MB12□□ |
| | 8.2 | 100 | 1,850 | 12 | 328 | 10x12.2 | PCV2DVF8R2MC12□□ |
| | 10 | 100 | 1,850 | 12 | 400 | 10x12.2 | PCV2DVF100MC12□□ |

Customer products are available on request.

Frequency coefficient for ripple current

| Frequency | $120\text{Hz} \leq f < 1\text{kHz}$ | $1 \text{ kHz} \leq f < 10\text{kHz}$ | $10\text{kHz} \leq f < 100\text{kHz}$ | $100\text{kHz} \leq f < 500\text{kHz}$ |
|-------------|-------------------------------------|---------------------------------------|---------------------------------------|--|
| Coefficient | 0.05 | 0.3 | 0.7 | 1 |