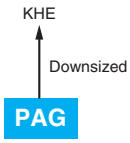
# PAG Series

- Downsize, high ripple design (φ10 to 18)
- Rated voltage range : 200 to 450Vdc, Capacitance range : 18 to 560μF
- Endurance with ripple current : 2,000 hours at 105℃
- Ideal for low profile power supply applications
- Non solvent resistant type
- RoHS2 Compliant



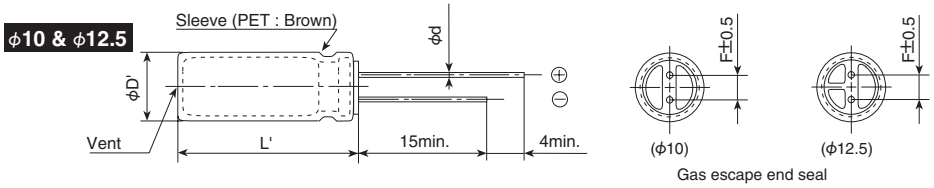
## ◆SPECIFICATIONS

| Items | Characteristics | | | | | |
|---|---|---|---|---|---|---|
| Category Temperature Range | -40 to +105℃ (200, 400Vdc) -25 to+105℃ (420, 450Vdc) | | | | | |
| Rated Voltage Range | 200 to 450Vdc | | | | | |
| Capacitance Tolerance | ±20% (M) | | | | | (at 20℃, 120Hz)℃ |
| Leakage Current | | After 1 minute | | After 5 minutes | | |
| | CV≦1,000 | I=0.1CV+40 | | I=0.03CV+15 | | |
| | CV>1,000 | I=0.04CV+100 | | I=0.02CV+25 | | |
| | Where, I : Max. leakage current(μA), C : Nominal capacitance (μF), V : Rated voltage (V) | | | | | (at 20℃)℃ |
| Dissipation Factor (tan δ) | Rated voltage (Vdc) | 200V | 400V | 420V | 450V | |
| | tan δ (Max.) | 0.12 | 0.15 | 0.20 | 0.20 | (at 20℃, 120Hz)℃ |
| Low Temperature Characteristics (Max. Impedance Ratio) | Rated voltage (Vdc) | 200V | 400V | 420V | 450V | |
| | Z(-25℃)/Z(+20℃) | 3 | 5 | 6 | 6 | |
| | Z(-40℃)/Z(+20℃) | 6 | 6 | — | — | (at 120Hz) |
| Endurance | 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 (the peak voltage shall not exceed the rated voltage) for 2,000 hours at 105℃. | | | | | |
| | Capacitance change | ≦±20% of the initial value | | | | |
| | D.F. (tan δ) | ≦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℃ after exposing them for 1,000 hours at 105℃ without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to Item 4.1 of JIS C 5101-4. | | | | | |
| | Capacitance change | ≦±20% of the initial value | | | | |
| | D.F. (tan δ) | ≦200% of the initial specified value | | | | |
| | Leakage current | ≦500% of the initial specified value | | | | |

## ◆DIMENSIONS [mm]

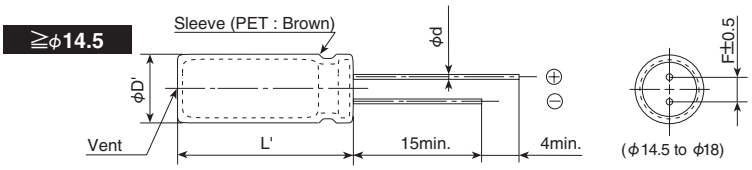
●Terminal Code : E

φ10 & φ12.5

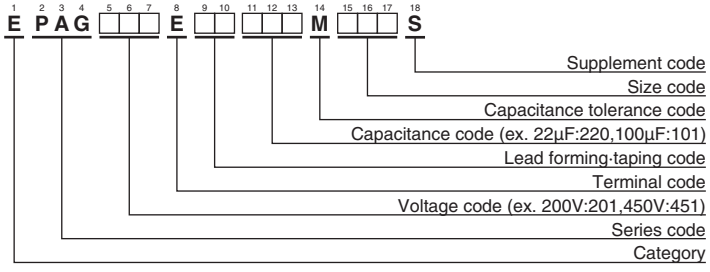



| φD | 10 | 12.5 | 14.5 | 16 | 18 |
|---|---|---|---|---|---|
| φd | 0.6 | 0.6 | 0.8 | 0.8 | 0.8 |
| F | 5.0 | 5.0 | 7.5 | 7.5 | 7.5 |
| φD' | φD+0.5 max. | | | | |
| L' | L+2.0 max. | | | | |

≧φ14.5




## ◆PART NUMBERING SYSTEM




Please refer to "Product code guide (radial lead type)"

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# PAG Series

## ◆STANDARD RATINGS

| WV (Vdc) | Cap (μF) | Case size φD×L(mm) | tan δ | Rated ripple current (mArms/ 105℃, 120Hz) | Part No. |
|---|---|---|---|---|---|
| 200 | 82 | 10×30 | 0.12 | 440 | EPAG201E□□820MJ30S |
| | 100 | 10×35 | 0.12 | 510 | EPAG201E□□101MJ35S |
| | 120 | 10×40 | 0.12 | 590 | EPAG201E□□121MJ40S |
| | 150 | 12.5×30 | 0.12 | 650 | EPAG201E□□151MK30S |
| | 180 | 12.5×35 | 0.12 | 750 | EPAG201E□□181MK35S |
| | 220 | 12.5×40 | 0.12 | 830 | EPAG201E□□221MK40S |
| | 220 | 14.5×30 | 0.12 | 830 | EPAG201E□□221MU30S |
| | 270 | 14.5×35 | 0.12 | 960 | EPAG201E□□271MU35S |
| | 270 | 16×30 | 0.12 | 960 | EPAG201E□□271ML30S |
| | 330 | 16×35 | 0.12 | 1,100 | EPAG201E□□331ML35S |
| | 330 | 18×30 | 0.12 | 1,100 | EPAG201E□□331MM30S |
| | 390 | 16×40 | 0.12 | 1,240 | EPAG201E□□391ML40S |
| | 390 | 18×35 | 0.12 | 1,240 | EPAG201E□□391MM35S |
| | 470 | 18×40 | 0.12 | 1,390 | EPAG201E□□471MM40S |
| | 560 | 18×45 | 0.12 | 1,560 | EPAG201E□□561MM45S |
| 400 | 27 | 10×30 | 0.15 | 260 | EPAG401E□□270MJ30S |
| | 33 | 10×35 | 0.15 | 300 | EPAG401E□□330MJ35S |
| | 39 | 10×40 | 0.15 | 340 | EPAG401E□□390MJ40S |
| | 47 | 12.5×30 | 0.15 | 370 | EPAG401E□□470MK30S |
| | 56 | 12.5×35 | 0.15 | 420 | EPAG401E□□560MK35S |
| | 68 | 12.5×40 | 0.15 | 480 | EPAG401E□□680MK40S |
| | 68 | 14.5×30 | 0.15 | 480 | EPAG401E□□680MU30S |
| | 82 | 14.5×35 | 0.15 | 530 | EPAG401E□□820MU35S |
| | 100 | 14.5×40 | 0.15 | 580 | EPAG401E□□101MU40S |
| | 100 | 16×30 | 0.15 | 580 | EPAG401E□□101ML30S |
| | 120 | 16×35 | 0.15 | 670 | EPAG401E□□121ML35S |
| | 120 | 18×30 | 0.15 | 670 | EPAG401E□□121MM30S |
| | 150 | 16×40 | 0.15 | 770 | EPAG401E□□151ML40S |
| | 150 | 18×35 | 0.15 | 770 | EPAG401E□□151MM35S |
| | 180 | 18×40 | 0.15 | 880 | EPAG401E□□181MM40S |
| | 220 | 18×45 | 0.15 | 1,000 | EPAG401E□□221MM45S |

| WV (Vdc) | Cap (μF) | Case size φD×L(mm) | tan δ | Rated ripple current (mArms/ 105℃, 120Hz) | Part No. |
|---|---|---|---|---|---|
| 420 | 22 | 10×30 | 0.20 | 230 | EPAG421E□□220MJ30S |
| | 27 | 10×35 | 0.20 | 270 | EPAG421E□□270MJ35S |
| | 33 | 10×40 | 0.20 | 310 | EPAG421E□□330MJ40S |
| | 39 | 12.5×30 | 0.20 | 330 | EPAG421E□□390MK30S |
| | 47 | 12.5×35 | 0.20 | 390 | EPAG421E□□470MK35S |
| | 56 | 12.5×40 | 0.20 | 430 | EPAG421E□□560MK40S |
| | 56 | 14.5×30 | 0.20 | 430 | EPAG421E□□560MU30S |
| | 68 | 14.5×35 | 0.20 | 510 | EPAG421E□□680MU35S |
| | 68 | 16×30 | 0.20 | 510 | EPAG421E□□680ML30S |
| | 82 | 14.5×40 | 0.20 | 570 | EPAG421E□□820MU40S |
| | 82 | 16×35 | 0.20 | 570 | EPAG421E□□820ML35S |
| | 100 | 16×40 | 0.20 | 610 | EPAG421E□□101ML40S |
| | 100 | 18×30 | 0.20 | 610 | EPAG421E□□101MM30S |
| | 120 | 18×35 | 0.20 | 690 | EPAG421E□□121MM35S |
| | 150 | 18×40 | 0.20 | 790 | EPAG421E□□151MM40S |
| 450 | 18 | 10×30 | 0.20 | 210 | EPAG451E□□180MJ30S |
| | 22 | 10×35 | 0.20 | 240 | EPAG451E□□220MJ35S |
| | 27 | 10×40 | 0.20 | 280 | EPAG451E□□270MJ40S |
| | 33 | 12.5×30 | 0.20 | 310 | EPAG451E□□330MK30S |
| | 39 | 12.5×35 | 0.20 | 350 | EPAG451E□□390MK35S |
| | 47 | 12.5×40 | 0.20 | 390 | EPAG451E□□470MK40S |
| | 47 | 14.5×30 | 0.20 | 390 | EPAG451E□□470MU30S |
| | 56 | 14.5×35 | 0.20 | 440 | EPAG451E□□560MU35S |
| | 56 | 16×30 | 0.20 | 440 | EPAG451E□□560ML30S |
| | 68 | 14.5×40 | 0.20 | 500 | EPAG451E□□680MU40S |
| | 68 | 16×35 | 0.20 | 500 | EPAG451E□□680ML35S |
| | 82 | 16×40 | 0.20 | 550 | EPAG451E□□820ML40S |
| | 82 | 18×30 | 0.20 | 550 | EPAG451E□□820MM30S |
| | 100 | 18×35 | 0.20 | 650 | EPAG451E□□101MM35S |
| | 120 | 18×40 | 0.20 | 740 | EPAG451E□□121MM40S |
| | 150 | 18×45 | 0.20 | 810 | EPAG451E□□151MM45S |

□□ : Enter the appropriate lead forming or taping code.

## ◆RATED RIPPLE CURRENT MULTIPLIERS

❶Frequency Multipliers

| Capacitance(μF) \ Frequency(Hz) | 120 | 1k | 10k | 100k |
|---|---|---|---|---|
| 18 to 82 | 1.00 | 1.50 | 1.75 | 1.80 |
| 100 to 560 | 1.00 | 1.30 | 1.40 | 1.50 |

The deterioration of aluminum electrolytic capacitors accelerates their life due to the internal heating produced by ripple current. For details, refer to Section "5-3 Ripple Current Effect on Lifetime" in the catalog, Technical Note.

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Part Numbering System
Part Numbering System (Appendix)
Standardization
Available Items by Manufacturing Locations
Environmental Measures
Technical Note
Precautions and Guidelines
Recommended Soldering Conditions
Taping, Lead-preforming and Packaging
Available Terminals for Snap-in and Screw Mount Type

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