

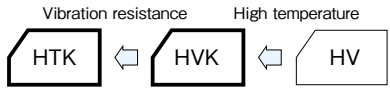
Conductive Polymer Hybrid Capacitors

GREEN CAP SMD Low ESR 125°C 6000hours

- Low ESR and high ripple current are realized.
- HTK is resist to vibration. (30G guaranteed)
- Equivalent to conductive polymer type Aluminum Electrolytic Capacitor. (There are little characteristics change by temperature and frequency)
- Guaranteed 125°C, 6000 hours. ($\phi 5$, 6.3V to 16V, 63V or more : 4000 hours)



Marking color : Blue print



Specifications

| Item | Performance | | | | | | | | | | | | | | | | | | | | |
|---|---|-------------------|--|-----------------|-------------------------------------|----------------------------------|------------------------------|---------------------------|---|------------|---|---------------------|------|------|------|------|------|------|------|------|------|
| Category temperature range (°C) | -55~+125 | | | | | | | | | | | | | | | | | | | | |
| Tolerance at rated capacitance (%) | ±20 (20°C, 120Hz) | | | | | | | | | | | | | | | | | | | | |
| Leakage current (μA) (max.) | 0.01 CV or 3 whichever is larger (after 2 minutes) C : Rated capacitance (μF) , V : Rated voltage (V) (20°C) | | | | | | | | | | | | | | | | | | | | |
| Tangent of loss angle (tan δ) | <table border="1"> <tr> <td>Rated voltage (V)</td> <td>6.3</td> <td>10</td> <td>16</td> <td>25</td> <td>35</td> <td>50</td> <td>63</td> <td>80</td> <td>100</td> </tr> <tr> <td>tanδ (max.)</td> <td>0.20</td> <td>0.18</td> <td>0.16</td> <td>0.14</td> <td>0.12</td> <td>0.10</td> <td>0.08</td> <td>0.08</td> <td>0.08</td> </tr> </table> (20°C, 120Hz) | Rated voltage (V) | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 80 | 100 | tan δ (max.) | 0.20 | 0.18 | 0.16 | 0.14 | 0.12 | 0.10 | 0.08 | 0.08 | 0.08 |
| Rated voltage (V) | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 80 | 100 | | | | | | | | | | | | |
| tan δ (max.) | 0.20 | 0.18 | 0.16 | 0.14 | 0.12 | 0.10 | 0.08 | 0.08 | 0.08 | | | | | | | | | | | | |
| Characteristics at high and low temperature | Impedance ratio (max.) <table border="1"> <tr> <td>Z-25°C/Z+20°C</td> <td>1.5</td> </tr> <tr> <td>Z-55°C/Z+20°C</td> <td>2.0</td> </tr> </table> (100kHz) | Z-25°C/Z+20°C | 1.5 | Z-55°C/Z+20°C | 2.0 | | | | | | | | | | | | | | | | |
| Z-25°C/Z+20°C | 1.5 | | | | | | | | | | | | | | | | | | | | |
| Z-55°C/Z+20°C | 2.0 | | | | | | | | | | | | | | | | | | | | |
| Endurance (125°C) (Applied ripple current) | <table border="1"> <tr> <td>Test time</td> <td>6000 hours ($\phi 5$, 6.3V to 16V, 63V or more : 4000 hours)</td> </tr> <tr> <td>Leakage current</td> <td>The initial specified value or less</td> </tr> <tr> <td>Percentage of capacitance change</td> <td>Within ±30% of initial value</td> </tr> <tr> <td>Tangent of the loss angle</td> <td>200% or less of the initial specified value</td> </tr> <tr> <td>ESR change</td> <td>200% or less of the initial specified value</td> </tr> </table> | Test time | 6000 hours ($\phi 5$, 6.3V to 16V, 63V or more : 4000 hours) | Leakage current | The initial specified value or less | Percentage of capacitance change | Within ±30% of initial value | Tangent of the loss angle | 200% or less of the initial specified value | ESR change | 200% or less of the initial specified value | | | | | | | | | | |
| Test time | 6000 hours ($\phi 5$, 6.3V to 16V, 63V or more : 4000 hours) | | | | | | | | | | | | | | | | | | | | |
| Leakage current | The initial specified value or less | | | | | | | | | | | | | | | | | | | | |
| Percentage of capacitance change | Within ±30% of initial value | | | | | | | | | | | | | | | | | | | | |
| Tangent of the loss angle | 200% or less of the initial specified value | | | | | | | | | | | | | | | | | | | | |
| ESR change | 200% or less of the initial specified value | | | | | | | | | | | | | | | | | | | | |
| Shelf life (125°C) | Test time : 1000hours ; other items are same as the endurance. Voltage application treatment : According to JIS C5101-4 4.1. | | | | | | | | | | | | | | | | | | | | |

Outline Drawing

Unit : mm

Series HVK

| ϕD | L | A | B | C | M | W | P | Casing symbol |
|----------|----------|------|------|-----|---------|------------|-----|---------------|
| 5 | 5.8±0.3 | 5.3 | 5.3 | 2.3 | 0.4±0.2 | 0.5 to 0.8 | 1.5 | E61 |
| 6.3 | 5.8±0.3 | 6.6 | 6.6 | 2.7 | 0.4±0.2 | 0.5 to 0.8 | 2.0 | F61 |
| 6.3 | 7.7±0.3 | 6.6 | 6.6 | 2.7 | 0.4±0.2 | 0.5 to 0.8 | 2.0 | F80 |
| 8 | 8.7±0.3 | 8.4 | 8.4 | 3.0 | 0.4±0.2 | 0.5 to 0.8 | 3.1 | G90 |
| 8 | 10±0.5 | 8.4 | 8.4 | 3.0 | 0.4±0.2 | 0.7 to 1.1 | 3.1 | G10 |
| 10 | 8.7±0.3 | 10.4 | 10.4 | 3.3 | 0.4±0.2 | 0.7 to 1.1 | 4.7 | H90 |
| 10 | 10±0.5 | 10.4 | 10.4 | 3.3 | 0.4±0.2 | 0.7 to 1.1 | 4.7 | H10 |
| 10 | 12.5±0.5 | 10.4 | 10.4 | 3.3 | 0.4±0.2 | 0.7 to 1.1 | 4.7 | HC5 |
| 12.5 | 13.5±0.5 | 13.0 | 13.0 | 4.9 | 0.7±0.3 | 1.0 to 1.4 | 4.6 | IE |

Series HTK

| ϕD | L | A | B | C | M | W | P | Casing symbol |
|----------|----------|------|------|-----|---------|------------|-----|---------------|
| 8 | 10±0.5 | 8.4 | 8.4 | 3.0 | 0.4±0.2 | 0.7 to 1.1 | 3.1 | G10 |
| 10 | 10±0.5 | 10.4 | 10.4 | 3.3 | 0.4±0.2 | 0.7 to 1.1 | 4.7 | H10 |
| 10 | 12.5±0.5 | 10.4 | 10.4 | 3.3 | 0.4±0.2 | 0.7 to 1.1 | 4.7 | HC5 |
| 12.5 | 13.5±0.5 | 13.0 | 13.0 | 4.9 | 0.7±0.3 | 1.0 to 1.4 | 4.6 | IE |

- Soldering conditions are described on page 15.
- Land pattern size are described on page 13.
- The taping specifications are described on page 16.

Coefficient of Frequency for Rated Ripple Current

| Frequency (Hz) | 120 | 1k | 10k | 100k or more |
|-------------------|------|------|------|--------------|
| Rated voltage (V) | | | | |
| 6.3 to 100 | 0.10 | 0.30 | 0.60 | 1 |

Part numbering system (6000 hours guaranteed)
 HVK (example : 35V270 μF)

| | | | | | | | |
|-------------|----------------------|---|--------------------------|------------------------------|---------------|---|---------------|
| HVK | 35 | V | 271 | M | H10 | B | □ |
| Series code | Rated voltage symbol | | Rated capacitance symbol | Capacitance tolerance symbol | Casing symbol | | Taping symbol |

HTK (example : 35V270 μF)

| | | | | | | | |
|-------------|----------------------|---|--------------------------|------------------------------|---------------|---|---------------|
| HTK | 35 | V | 271 | M | H10 | B | □ |
| Series code | Rated voltage symbol | | Rated capacitance symbol | Capacitance tolerance symbol | Casing symbol | | Taping symbol |

(4000 hours guaranteed)
 HVK (example : 16V470 μF)

| | | | | | | | |
|-------------|----------------------|---|--------------------------|------------------------------|---------------|---|---------------|
| HVK | 16 | V | 471 | M | H10 | E | □ |
| Series code | Rated voltage symbol | | Rated capacitance symbol | Capacitance tolerance symbol | Casing symbol | | Taping symbol |

HTK (example : 63V56 μF)

| | | | | | | | |
|-------------|----------------------|---|--------------------------|------------------------------|---------------|---|---------------|
| HTK | 63 | V | 560 | M | H10 | E | □ |
| Series code | Rated voltage symbol | | Rated capacitance symbol | Capacitance tolerance symbol | Casing symbol | | Taping symbol |

Standard Ratings

| Rated voltage (V) Rated capacitance (µF) | Item | 6.3 | | | 10 | | | 16 | | | 25 | | |
|---|---------|----------------------|------------------|--|----------------------|------------------|--|----------------------|------------------|--|----------------------|------------------|--|
| | | Case φ D × L (mm) | ESR (mΩ max.) | Rated ripple current (mA _{rms}) | Case φ D × L (mm) | ESR (mΩ max.) | Rated ripple current (mA _{rms}) | Case φ D × L (mm) | ESR (mΩ max.) | Rated ripple current (mA _{rms}) | Case φ D × L (mm) | ESR (mΩ max.) | Rated ripple current (mA _{rms}) |
| 33 | — | — | — | — | — | — | — | — | — | — | 5×5.8 | 80 | 550 |
| 47 | — | — | — | — | — | — | — | 5×5.8 | 70 | 600 | — | — | — |
| 56 | — | — | — | — | — | — | — | — | — | — | 6.3×5.8 | 50 | 900 |
| 82 | — | — | — | — | — | — | — | 6.3×5.8 | 45 | 950 | — | — | — |
| 100 | — | — | — | — | 6.3×5.8 | 45 | 950 | — | — | — | 6.3×7.7 | 30 | 1400 |
| 150 | — | — | — | — | — | — | — | 6.3×7.7 | 27 | 1450 | 8×8.7 | 27 | 1500 |
| 220 | 6.3×5.8 | 45 | 950 | 6.3×7.7 | 24 | 1450 | — | — | — | — | 8×10 | 27 | 1600 |
| 270 | — | — | — | — | — | — | — | 8×10 | 22 | 1700 | 10×8.7 | 25 | 1700 |
| 330 | 6.3×7.7 | 24 | 1450 | 8×10 | 22 | 1700 | — | — | — | — | 10×10 | 20 | 2000 |
| 470 | — | — | — | 10×10 | 18 | 2100 | 10×10 | 18 | 2100 | — | — | — | — |
| 560 | 8×10 | 22 | 1700 | — | — | — | — | — | — | — | 10×12.5 | 18 | 3000 |
| 820 | 10×10 | 18 | 2100 | — | — | — | — | — | — | — | 12.5×13.5 | 15 | 3500 |

| Rated voltage (V) Rated capacitance (µF) | Item | 35 | | | 50 | | | 63 | | |
|---|-----------|----------------------|------------------|--|----------------------|------------------|--|----------------------|------------------|--|
| | | Case φ D × L (mm) | ESR (mΩ max.) | Rated ripple current (mA _{rms}) | Case φ D × L (mm) | ESR (mΩ max.) | Rated ripple current (mA _{rms}) | Case φ D × L (mm) | ESR (mΩ max.) | Rated ripple current (mA _{rms}) |
| 10 | — | — | — | — | 5×5.8 | 120 | 500 | 6.3×5.8 | 120 | 700 |
| 22 | 5×5.8 | 100 | 550 | 6.3×5.8 | 80 | 750 | 6.3×7.7 | 80 | 900 | |
| 27 | — | — | — | — | — | — | 8×8.7 | 50 | 1000 | |
| 33 | — | — | — | 6.3×7.7 | 40 | 1100 | 8×10 | 40 | 1100 | |
| 47 | 6.3×5.8 | 60 | 900 | 8×8.7 | 35 | 1200 | 10×8.7 | 35 | 1200 | |
| 56 | — | — | — | — | — | — | 10×10 | 30 | 1400 | |
| 68 | 6.3×7.7 | 35 | 1400 | 8×10 | 30 | 1250 | — | — | — | |
| 82 | — | — | — | 10×8.7 | 28 | 1400 | — | — | — | |
| 100 | 8×8.7 | 30 | 1500 | 10×10 | 28 | 1600 | 10×12.5 | 26 | 2000 | |
| 120 | — | — | — | — | — | — | 12.5×13.5 | 22 | 2500 | |
| 150 | 8×10 | 27 | 1600 | 10×12.5 | 24 | 2500 | — | — | — | |
| 220 | 10×8.7 | 25 | 1700 | — | — | — | — | — | — | |
| 270 | 10×10 | 20 | 2000 | — | — | — | — | — | — | |
| 330 | — | — | — | 12.5×13.5 | 20 | 3000 | — | — | — | |
| 390 | 10×12.5 | 18 | 3000 | — | — | — | — | — | — | |
| 560 | 12.5×13.5 | 15 | 3500 | — | — | — | — | — | — | |

| Rated voltage (V) Rated capacitance (µF) | Item | 80 | | | 100 | | |
|---|-------|----------------------|------------------|--|----------------------|------------------|--|
| | | Case φ D × L (mm) | ESR (mΩ max.) | Rated ripple current (mA _{rms}) | Case φ D × L (mm) | ESR (mΩ max.) | Rated ripple current (mA _{rms}) |
| 15 | — | — | — | — | 10×10 | 45 | 1000 |
| 22 | 8×10 | 45 | 1100 | — | — | — | — |
| 33 | 10×10 | 36 | 1200 | — | — | — | — |

(Note) Rated ripple current : 125°C , 100kHz ; ESR : 20°C , 100kHz