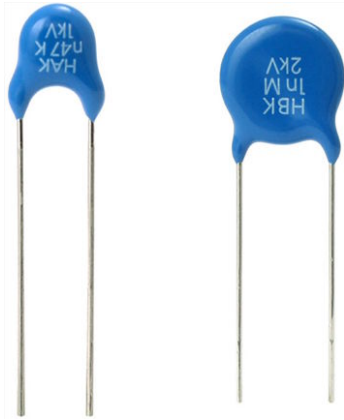


## Ceramic Singlelayer DC Disc Capacitors, Class 2, Low Loss (0.5 %), 1 kV<sub>DC</sub>, 2 kV<sub>DC</sub>, 3 kV<sub>DC</sub>


**FEATURES**

- Low losses
- High stability
- Low DF minimizes self heating at HF
- Ideal for switching to 100 kHz
- Material categorization:  
for definitions of compliance please see  
[www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)


**RoHS**  
COMPLIANT

**APPLICATIONS**

In electronic circuits where low losses and high capacitance per volume are essential, for example:

- HF ballast
- SMPS
- Snubber and HV circuits

**DESIGN**

The capacitors consist of a ceramic disc which is silver plated on both sides. Connection leads are made of tinned copper having diameters of 0.6 mm or 0.8 mm.

The capacitors may be supplied with straight or kinked leads having a lead spacing of 7.5 mm or 10.0 mm.

Coating is made of blue colored flame retardant epoxy resin in accordance with UL 94 V-0.

| QUICK REFERENCE DATA       |        |      |      |
|----------------------------|--------|------|------|
| DESCRIPTION                | VALUE  |      |      |
| Ceramic Class              | 2      |      |      |
| Ceramic Dielectric         | Y5S    |      |      |
| Voltage (V <sub>DC</sub> ) | 1000   | 2000 | 3000 |
| Min. Capacitance (pF)      | 100    | 100  | 100  |
| Max. Capacitance (pF)      | 4700   | 4700 | 3300 |
| Mounting                   | Radial |      |      |

**MARKING**

Marking indicates series, capacitance, tolerance code, and rated voltage.

**OPERATING TEMPERATURE RANGE**

-40 °C to +125 °C

**TEMPERATURE CHARACTERISTICS**

Y5S (2C3)

**SECTIONAL SPECIFICATIONS**

Climatic category (according to EN 60068-1):  
40/125/21

**APPROVALS**

IEC 60384-9, EIA 198

**CAPACITANCE RANGE**

100 pF to 4700 pF

**RATED DC VOLTAGE**

- 1 kV<sub>DC</sub>
- 2 kV<sub>DC</sub>
- 3 kV<sub>DC</sub>

**DIELECTRIC STRENGTH**

- 2000 V<sub>AC</sub>, 50 Hz, 2 s Component test
- 3000 V<sub>AC</sub>, 50 Hz, 2 s
- 4000 V<sub>AC</sub>, 50 Hz, 2 s

**INSULATION RESISTANCE AT 500 V<sub>DC</sub>**

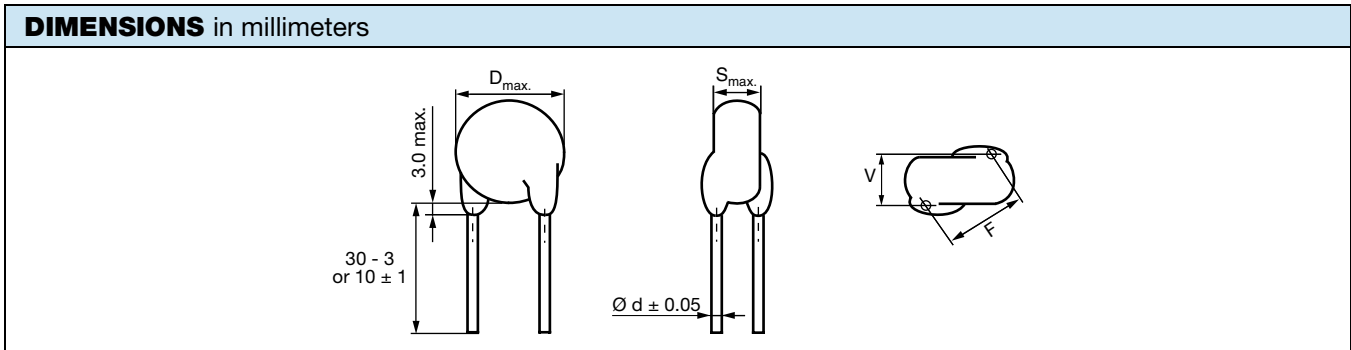
≥ 10 000 MΩ (60 s)

**TOLERANCE ON CAPACITANCE**

± 20 % (± 10 % available on request)

**DISSIPATION FACTOR**

Max. 0.5 % (1 kHz)



| ORDERING INFORMATION     |                     |                                      |                                       |   |   |                                      |   |
|--------------------------|---------------------|--------------------------------------|---------------------------------------|---|---|--------------------------------------|---|
| CAPACITANCE (pF)         | TOLERANCE (%)       | BODY DIAMETER D <sub>max.</sub> (mm) | BODY THICKNESS S <sub>max.</sub> (mm) | LEAD SPACING <sup>(1)</sup> F (mm) ± 1 mm | LEAD DIAMETER <sup>(1)</sup> d (mm) ± 0.05 mm | WIDTH <sup>(1)</sup> V (mm) ± 0.5 mm | ORDERING CODE<br>MISSING DIGITS<br>SEE ORDERING<br>CODE BELOW |
| <b>1 kV<sub>DC</sub></b> |                     |                                      |                                       |   |   |                                      |   |
| 100                      | ± 20 <sup>(2)</sup> | 7.0                                  | 5.0                                   | 7.5                                       | 0.6   | 1.1                                  | HAK101#BA###KR  |
| 150                      |                     |                                      |                                       |   |   |                                      | HAK151#BA###KR  |
| 220                      |                     |                                      |                                       |   |   |                                      | HAK221#BA###KR  |
| 270                      |                     |                                      |                                       |   |   |                                      | HAK271#BA###KR  |
| 330                      |                     |                                      |                                       |   |   |                                      | HAK331#BA###KR  |
| 390                      |                     |                                      |                                       |   |   |                                      | HAK391#BA###KR  |
| 470                      |                     |                                      |                                       |   |   |                                      | HAK471#BA###KR  |
| 560                      |                     | HAK561#BA###KR                       |                                       |   |   |                                      |   |
| 680                      |                     | HAK681#BA###KR                       |                                       |   |   |                                      |   |
| 820                      |                     | HAK821#BA###KR                       |                                       |   |   |                                      |   |
| 1000                     |                     | HAK102#BA###KR                       |                                       |   |   |                                      |   |
| 1200                     |                     | HAK122#BA###KR                       |                                       |   |   |                                      |   |
| 1500                     |                     | HAK152#BA###KR                       |                                       |   |   |                                      |   |
| 1800                     |                     | HAK182#BA###KR                       |                                       |   |   |                                      |   |
| 2200                     |                     | HAK222#BA###KR                       |                                       |   |   |                                      |   |
| 2700                     |                     | HAK272#BA###KR                       |                                       |   |   |                                      |   |
| 3300                     |                     | HAK332#BA###KR                       |                                       |   |   |                                      |   |
| 3900                     |                     | HAK392#BA###KR                       |                                       |   |   |                                      |   |
| 4700                     | HAK472#BA###KR      |                                      |                                       |   |   |                                      |   |
| <b>2 kV<sub>DC</sub></b> |                     |                                      |                                       |   |   |                                      |   |
| 100                      | ± 20 <sup>(2)</sup> | 7.0                                  | 5.0                                   | 7.5                                       | 0.6   | 1.6                                  | HBK101#BB###KR  |
| 150                      |                     |                                      |                                       |   |   |                                      | HBK151#BB###KR  |
| 220                      |                     |                                      |                                       |   |   |                                      | HBK221#BB###KR  |
| 270                      |                     |                                      |                                       |   |   |                                      | HBK271#BB###KR  |
| 330                      |                     |                                      |                                       |   |   |                                      | HBK331#BB###KR  |
| 390                      |                     |                                      |                                       |   |   |                                      | HBK391#BB###KR  |
| 470                      |                     |                                      |                                       |   |   |                                      | HBK471#BB###KR  |
| 560                      |                     | HBK561#BB###KR                       |                                       |   |   |                                      |   |
| 680                      |                     | HBK681#BB###KR                       |                                       |   |   |                                      |   |
| 820                      |                     | HBK821#BB###KR                       |                                       |   |   |                                      |   |
| 1000                     |                     | HBK102#BB###KR                       |                                       |   |   |                                      |   |
| 1200                     |                     | HBK122#BB###KR                       |                                       |   |   |                                      |   |
| 1500                     |                     | HBK152#BB###KR                       |                                       |   |   |                                      |   |
| 1800                     |                     | HBK182#BB###KR                       |                                       |   |   |                                      |   |
| 2200                     |                     | HBK222#BB###KR                       |                                       |   |   |                                      |   |
| 2700                     |                     | HBK272#BB###KR                       |                                       |   |   |                                      |   |
| 3300                     |                     | HBK332#BB###KR                       |                                       |   |   |                                      |   |
| 3900                     |                     | HBK392#BB###KR                       |                                       |   |   |                                      |   |
| 4700                     | HBK472#BB###KR      |                                      |                                       |   |   |                                      |   |



| ORDERING INFORMATION     |                     |                                      |                                       |   |   |                                      |   |
|--------------------------|---------------------|--------------------------------------|---------------------------------------|---|---|--------------------------------------|---|
| CAPACITANCE (pF)         | TOLERANCE (%)       | BODY DIAMETER D <sub>max.</sub> (mm) | BODY THICKNESS S <sub>max.</sub> (mm) | LEAD SPACING <sup>(1)</sup> F (mm) ± 1 mm | LEAD DIAMETER <sup>(1)</sup> d (mm) ± 0.05 mm | WIDTH <sup>(1)</sup> V (mm) ± 0.5 mm | ORDERING CODE<br>MISSING DIGITS<br>SEE ORDERING<br>CODE BELOW |
| <b>3 kV<sub>DC</sub></b> |                     |                                      |                                       |   |   |                                      |   |
| 100                      | ± 20 <sup>(2)</sup> | 7.0                                  | 5.0                                   | 10.0                                      | 0.6   | 1.6                                  | HCK101#BC###KR  |
| 150                      |                     |                                      |                                       |   |   |                                      | HCK151#BC###KR  |
| 220                      |                     |                                      |                                       |   |   |                                      | HCK221#BC###KR  |
| 270                      |                     | HCK271#BC###KR                       |                                       |   |   |                                      |   |
| 330                      |                     | 8.0                                  |                                       |   |   |                                      | HCK331#BC###KR  |
| 390                      |                     | 9.0                                  |                                       |   |   |                                      | HCK391#BC###KR  |
| 470                      |                     | 10.0                                 |                                       |   |   |                                      | HCK471#BC###KR  |
| 560                      |                     |                                      |                                       |   |   |                                      | HCK561#BC###KR  |
| 680                      |                     |                                      |                                       |   |   |                                      | HCK681#BC###KR  |
| 820                      |                     | 11.0                                 |                                       |   |   |                                      | HCK821#BC###KR  |
| 1000                     |                     | 12.0                                 |                                       |   |   |                                      | HCK102#BC###KR  |
| 1200                     |                     | 13.0                                 |                                       |   |   |                                      | HCK122#BC###KR  |
| 1500                     |                     | 15.0                                 |                                       |   |   |                                      | HCK152#BC###KR  |
| 1800                     |                     | 16.0                                 |                                       |   |   |                                      | HCK182#BC###KR  |
| 2200                     |                     | 17.0                                 |                                       |   |   |                                      | HCK222#BC###KR  |
| 2700                     |                     | 18.0                                 |                                       |   |   |                                      | HCK272#BC###KR  |
| 3300                     |                     | 20.0                                 |                                       |   |   |                                      | HCK332#BC###KR  |

**Notes**

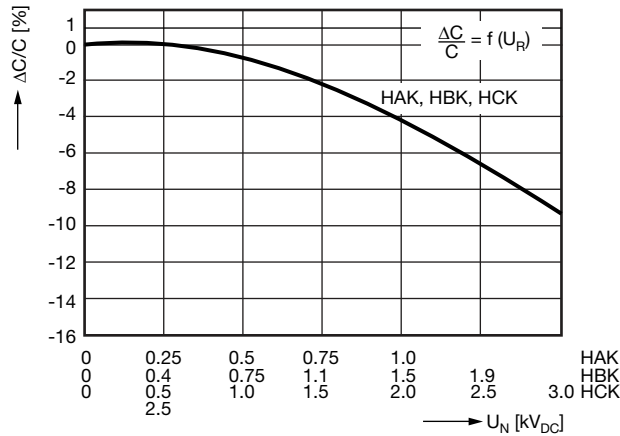
<sup>(1)</sup> Standard lead configuration, other lead spacing and diameter available on request

<sup>(2)</sup> ± 10 % available on request

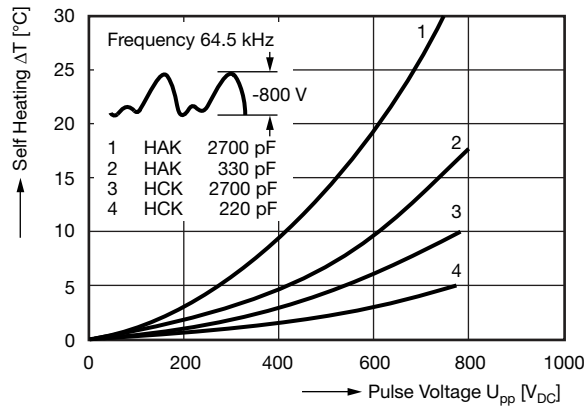
| ORDERING CODE  |  |                       |                           |              |                    |               |                |
|----------------|--|-----------------------|---------------------------|--------------|--------------------|---------------|----------------|
| #              | 7 <sup>th</sup> digit                      | Capacitance tolerance | ± 10 % = K, ± 20 % = M    |              |                    |               |                |
| ###            | 10 <sup>th</sup> to 12 <sup>th</sup> digit | Lead configuration    | see "General Information" |              |                    |               |                |
| <b>Example</b> | <b>HCK</b>                                 | <b>02</b>             | <b>M</b>                  | <b>BC</b>    | <b>DF0</b>         | <b>K</b>      | <b>R</b>       |
|                | Series                                     | Capacitance value     | Tolerance code            | Voltage code | Lead configuration | Internal code | RoHS compliant |

| MARKING                         |                                 |
|---------------------------------|---------------------------------|
| <p>D<sub>max.</sub> ≤ 10 mm</p> | <p>D<sub>max.</sub> ≥ 11 mm</p> |

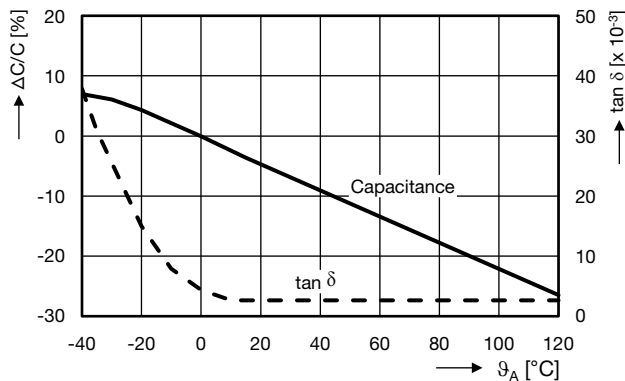
## CAPACITANCE CHANGE VS. VOLTAGE (Typical)



## SELF HEATING (Typical)



## CAPACITANCE CHANGE AND DISSIPATION FACTOR VS. TEMPERATURE (Typical)



### RELATED DOCUMENTS

General Information

[www.vishay.com/doc?22001](http://www.vishay.com/doc?22001)



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