

## Ceramic Singlelayer DC Disc Capacitors, 500 V<sub>DC</sub> General Purpose



### FEATURES

- High capacitance in small sizes
- Low losses
- Wide range of different lead styles
- Material categorization:  
for definitions of compliance please see  
[www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)


**RoHS**  
COMPLIANT

### APPLICATIONS

- Bypassing
- Resonant circuits
- Coupling

### 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.

The capacitors may be supplied with straight or kinked leads having a lead spacing of 5.0 mm or 7.5 mm.

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

### CAPACITANCE RANGE

10 pF to 10 nF

### RATED VOLTAGE

500 V<sub>DC</sub>

### DIELECTRIC STRENGTH

1250 V<sub>DC</sub>, 2 s      Component test

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

≥ 5000 MΩ (60 s)

### TOLERANCE ON CAPACITANCE

± 10 %, ± 20 %, - 20 % / + 50 %

### DISSIPATION FACTOR

C < 100 pF: max. 3.0 % (1 MHz)

C ≥ 100 pF: max. 3.0 % (1 kHz)

### QUICK REFERENCE DATA

| DESCRIPTION                | VALUE    |
|----------------------------|----------|
| Ceramic Class              | 2        |
| Ceramic Dielectric         | Y5T, Y5U |
| Voltage (V <sub>DC</sub> ) | 500      |
| Min. Capacitance (pF)      | 10       |
| Max. Capacitance (pF)      | 10 000   |
| Mounting                   | Radial   |

### MARKING

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

### OPERATING TEMPERATURE RANGE

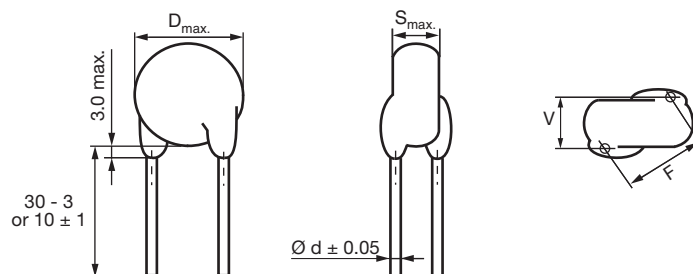
-40 °C to +85 °C

### TEMPERATURE CHARACTERISTICS

Y5T, Y5U

### SECTIONAL SPECIFICATIONS

Climatic category (according to EN 60068-1):  
40/085/21


**DIMENSIONS** in millimeters

**ORDERING INFORMATION**

| CAPACITANCE<br>(pF) | TOLERANCE<br>(%) | BODY<br>DIAMETER<br>D <sub>max.</sub> (mm) | BODY<br>THICKNESS<br>S <sub>max.</sub> (mm) | LEAD<br>SPACING <sup>(1)</sup><br>F (mm)<br>± 1 mm | LEAD<br>DIAMETER <sup>(1)</sup><br>d (mm)<br>± 0.05 mm | WIDTH <sup>(1)</sup><br>V (mm)<br>± 0.5 mm | ORDERING CODE                                |  |  |  |  |
|---------------------|------------------|--------------------------------------------|---------------------------------------------|----------------------------------------------------|--------------------------------------------------------|--------------------------------------------|----------------------------------------------|--|--|--|--|
|                     |                  |                                            |                                             |                                                    |                                                        |                                            | MISSING DIGITS<br>SEE ORDERING<br>CODE BELOW |  |  |  |  |
| Y5T (2D3)           |                  |                                            |                                             |                                                    |                                                        |                                            |                                              |  |  |  |  |
| 10                  | ± 10, ± 20       | 6.0                                        | 3.0                                         | 5.0                                                | 0.6                                                    | 1.6                                        | HSZ100#AQ####KR                              |  |  |  |  |
| 12                  |                  |                                            |                                             |                                                    |                                                        |                                            | HSZ120#AQ####KR                              |  |  |  |  |
| 15                  |                  |                                            |                                             |                                                    |                                                        | 1.5                                        | HSZ150#AQ####KR                              |  |  |  |  |
| 18                  |                  |                                            |                                             |                                                    |                                                        | 1.3                                        | HSZ180#AQ####KR                              |  |  |  |  |
| 22                  |                  |                                            |                                             |                                                    |                                                        | 1.1                                        | HSZ220#AQ####KR                              |  |  |  |  |
| 27                  |                  |                                            |                                             |                                                    |                                                        | 1.3                                        | HSZ270#AQ####KR                              |  |  |  |  |
| 33                  |                  |                                            |                                             |                                                    |                                                        | 1.4                                        | HSZ330#AQ####KR                              |  |  |  |  |
| 39                  |                  |                                            |                                             |                                                    |                                                        |                                            | HSZ390#AQ####KR                              |  |  |  |  |
| 47                  |                  |                                            |                                             |                                                    |                                                        | 1.2                                        | HSZ470#AQ####KR                              |  |  |  |  |
| 56                  |                  |                                            |                                             |                                                    |                                                        |                                            | HSZ560#AQ####KR                              |  |  |  |  |
| 68                  |                  |                                            |                                             |                                                    |                                                        | 1.4                                        | HSZ680#AQ####KR                              |  |  |  |  |
| 82                  |                  |                                            |                                             |                                                    |                                                        |                                            | HSZ820#AQ####KR                              |  |  |  |  |
| 100                 |                  |                                            |                                             |                                                    |                                                        | 1.1                                        | HSZ101#AQ####KR                              |  |  |  |  |
| 120                 |                  |                                            |                                             |                                                    |                                                        |                                            | HSZ121#AQ####KR                              |  |  |  |  |
| 150                 |                  |                                            |                                             |                                                    |                                                        | 1.6                                        | HSZ151#AQ####KR                              |  |  |  |  |
| 180                 |                  |                                            |                                             |                                                    |                                                        |                                            | HSZ181#AQ####KR                              |  |  |  |  |
| 220                 |                  |                                            |                                             |                                                    |                                                        | 1.3                                        | HSZ221#AQ####KR                              |  |  |  |  |
| 270                 |                  |                                            |                                             |                                                    |                                                        |                                            | HSZ271#AQ####KR                              |  |  |  |  |
| 330                 |                  |                                            |                                             |                                                    |                                                        | 1.2                                        | HSZ331#AQ####KR                              |  |  |  |  |
| 390                 |                  |                                            |                                             |                                                    |                                                        |                                            | HSZ391#AQ####KR                              |  |  |  |  |
| 470                 |                  |                                            |                                             |                                                    |                                                        | 1.1                                        | HSZ471#AQ####KR                              |  |  |  |  |
| 560                 |                  | 7.0                                        |                                             |                                                    |                                                        |                                            | HSZ561#AQ####KR                              |  |  |  |  |
| 680                 |                  | 1.2                                        |                                             |                                                    |                                                        | HSZ681#AQ####KR                            |                                              |  |  |  |  |
| 820                 |                  |                                            |                                             |                                                    |                                                        | HSZ821#AQ####KR                            |                                              |  |  |  |  |
| 1000                |                  | 8.0                                        |                                             |                                                    |                                                        | 1.1                                        | HSZ102#AQ####KR                              |  |  |  |  |
| 1200                |                  |                                            |                                             |                                                    |                                                        |                                            | HSZ122#AQ####KR                              |  |  |  |  |
| 1500                |                  | 9.0                                        |                                             |                                                    |                                                        | 1.1                                        | HSZ152#AQ####KR                              |  |  |  |  |
| 1800                |                  |                                            |                                             |                                                    |                                                        |                                            | HSZ182#AQ####KR                              |  |  |  |  |
| 2200                |                  | 11.0                                       |                                             | 7.5                                                |                                                        | 1.2                                        | HSZ222#AQ####KR                              |  |  |  |  |
| 2700                |                  |                                            |                                             |                                                    |                                                        |                                            | HSZ272#AQ####KR                              |  |  |  |  |
| 3300                |                  | 15.0                                       |                                             |                                                    |                                                        | 1.1                                        | HSZ332#AQ####KR                              |  |  |  |  |
| 3900                |                  |                                            |                                             |                                                    |                                                        |                                            | HSZ392#AQ####KR                              |  |  |  |  |
| 4700                |                  |                                            |                                             |                                                    |                                                        | 1.1                                        | HSZ472#AQ####KR                              |  |  |  |  |



## ORDERING INFORMATION

| CAPACITANCE<br>(pF) | TOLERANCE<br>(%)           | BODY<br>DIAMETER<br>D <sub>max.</sub> (mm) | BODY<br>THICKNESS<br>S <sub>max.</sub> (mm) | LEAD<br>SPACING <sup>(1)</sup><br>F (mm)<br>± 1 mm | LEAD<br>DIAMETER <sup>(1)</sup><br>d (mm)<br>± 0.05 mm | WIDTH <sup>(1)</sup><br>V (mm)<br>± 0.5 mm | ORDERING CODE<br>MISSING DIGITS<br>SEE ORDERING<br>CODE BELOW |  |  |  |  |
|---------------------|----------------------------|--------------------------------------------|---------------------------------------------|----------------------------------------------------|--------------------------------------------------------|--------------------------------------------|---------------------------------------------------------------|--|--|--|--|
| Y5U (2E3)           |                            |                                            |                                             |                                                    |                                                        |                                            |                                                               |  |  |  |  |
| 470                 | - 20 / + 50 <sup>(2)</sup> | 6.0                                        | 4.0                                         | 5.0                                                | 0.6                                                    | 1.1                                        | HSE471#AQ###KR                                                |  |  |  |  |
| 680                 |                            |                                            |                                             |                                                    |                                                        | 1.2                                        | HSE681#AQ###KR                                                |  |  |  |  |
| 1000                |                            |                                            |                                             |                                                    |                                                        | 1.4                                        | HSE102#AQ###KR                                                |  |  |  |  |
| 1500                |                            | 7.0                                        |                                             | 7.5                                                |                                                        | 1.2                                        | HSE152#AQ###KR                                                |  |  |  |  |
| 2200                |                            |                                            |                                             |                                                    |                                                        |                                            | HSE222#AQ###KR                                                |  |  |  |  |
| 3300                |                            | 11.0                                       |                                             |                                                    |                                                        | 1.1                                        | HSE332#AQ###KR                                                |  |  |  |  |
| 4700                |                            |                                            |                                             |                                                    |                                                        |                                            | HSE472#AQ###KR                                                |  |  |  |  |
| 6800                |                            | 13.0                                       |                                             |                                                    |                                                        |                                            | HSE682#AQ###KR                                                |  |  |  |  |
| 8200                |                            | 15.0                                       |                                             |                                                    |                                                        | 1.4                                        | HSE822#AQ###KR                                                |  |  |  |  |
| 10 000              |                            |                                            |                                             |                                                    |                                                        | 1.2                                        | HSE103#AQ###KR                                                |  |  |  |  |

## Notes

<sup>(1)</sup> Standard lead configuration, other lead spacing and diameter available on request<sup>(2)</sup> ± 20 % available on request

## ORDERING CODE

|         |                                            |                       |                                             |              |                    |               |                |
|---------|--------------------------------------------|-----------------------|---------------------------------------------|--------------|--------------------|---------------|----------------|
| #       | 7 <sup>th</sup> digit                      | Capacitance tolerance | ± 10 % = K, ± 20 % = M, - 20 % / + 50 % = S |              |                    |               |                |
| ###     | 10 <sup>th</sup> to 12 <sup>th</sup> digit | Lead configuration    | see "General Information"                   |              |                    |               |                |
| Example | HSE                                        | 103                   | S                                           | AQ           | CRY                | K             | R              |
|         | Series                                     | Capacitance value     | Tolerance code                              | Voltage code | Lead configuration | Internal code | RoHS compliant |

## MARKING

|                      |                     |                     |            |
|----------------------|---------------------|---------------------|------------|
|                      |                     |                     |            |
| HSE 470 pF to 4.7 nF | HSE 6.8 nF to 10 nF | HSZ 10 pF to 3.9 nF | HSZ 4.7 nF |

## RELATED DOCUMENTS

|                     |                                                                        |
|---------------------|------------------------------------------------------------------------|
| General Information | <a href="http://www.vishay.com/doc?22001">www.vishay.com/doc?22001</a> |
|---------------------|------------------------------------------------------------------------|



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