

## HBZ Series

### Features

- 125°C, 4,000 hours assured
- Low ESR and High ripple current
- RoHS compliant
- AEC-Q200 compliant

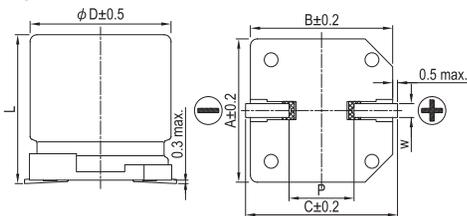


Marking color: Dark Green

### Specifications

Items	Performance																	
Category Temperature Range	-55°C ~ +125°C																	
Capacitance Tolerance	±20% (at 120 Hz, 20°C)																	
Leakage Current (at 20°C)	I = 0.01CV or 3 (μA) whichever is greater (after 2 minutes) Where, C = rated capacitance in μF, V = rated DC working voltage in V																	
Tanδ (at 120 Hz, 20°C)	See Standard Ratings																	
Low Temperature Characteristics (at 100k Hz)	Impedance ratio shall not exceed the values given in the table below																	
	<table border="1"> <thead> <tr> <th colspan="2">Rated Voltage</th> <th>25</th> <th>35</th> <th>50</th> <th>63</th> </tr> </thead> <tbody> <tr> <td>Impedance</td> <td>Z (-25°C) / Z (+20°C)</td> <td>1.5</td> <td>1.5</td> <td>1.5</td> <td>1.5</td> </tr> <tr> <td>ratio</td> <td>Z (-55°C) / Z (+20°C)</td> <td>2.0</td> <td>2.0</td> <td>2.0</td> <td>2.0</td> </tr> </tbody> </table>	Rated Voltage		25	35	50	63	Impedance	Z (-25°C) / Z (+20°C)	1.5	1.5	1.5	1.5	ratio	Z (-55°C) / Z (+20°C)	2.0	2.0	2.0
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Shelf Life Test	* The above specifications shall be satisfied when the capacitors are restored to 20°C after the rated voltage applied with rated ripple current for 4,000 hours at 125°C. * After storage for 1,000 hours at 125 ± 2°C with no voltage applied and then being stabilized at 20°C, capacitors shall meet the limits specified in Endurance. (With voltage treatment)																	
Resistance to Soldering Heat (Please refer to page 15 for reflowsoldering conditions)	<table border="1"> <tbody> <tr> <td>Capacitance Change</td> <td>Within ±10% of initial value</td> </tr> <tr> <td>Tanδ</td> <td>Within specified value</td> </tr> <tr> <td>ESR</td> <td>Within specified value</td> </tr> <tr> <td>Leakage Current</td> <td>Within specified value</td> </tr> </tbody> </table>	Capacitance Change	Within ±10% of initial value	Tanδ	Within specified value	ESR	Within specified value	Leakage Current	Within specified value									
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### Diagram of Dimensions

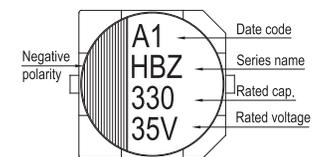


### Lead Spacing and Diameter

φD	L	A	B	C	W	P ± 0.2
10	12.5 ± 0.5	10.3	10.3	11.0	0.7 ~ 1.3	4.7
10	16.5 ± 0.5	10.3	10.3	11.0	1.0 ~ 1.4	4.7

Unit: mm

### Marking



Dimension: φD×L(mm)

Ripple Current: mA/rms at 100k Hz, 125°C

### Standard Ratings

Rated Voltage (V)	Surge Voltage (V)	Capacitance (μF)	Size φD×L(mm)	Tanδ (120 Hz, 20°C)	LC (μA)	ESR (mΩ/at 100kHz, 20°C max.)	Rated R. C. (mA/rms at 100k Hz, 125°C)
25V (1E)	28.8	470	10 × 12.5	0.14	117	14	3,500
		560	10 × 16.5	0.14	140	11	4,000
35V (1V)	40.3	330	10 × 12.5	0.12	115	14	3,500
		470	10 × 16.5	0.12	164	11	4,000
50V (1H)	57.5	150	10 × 12.5	0.10	75.0	17	3,200
		220	10 × 16.5	0.10	110	13	3,700
63V (1J)	72.5	100	10 × 12.5	0.08	63.0	19	3,000
		150	10 × 16.5	0.08	94.5	15	3,500

### Part Numbering System

HBZ Series	470μF	±20%	25V	Carrier Tape	10 φ × 12.5L	General Purpose
<b>HBZ</b>	<b>471</b>	<b>M</b>	<b>1E</b>	<b>TR</b>	<b>-</b>	<b>1013</b>
Series Name	Capacitance	Capacitance Tolerance	Rated Voltage	Package Type	Terminal Type	Case Size

Note: For more details, please refer to "Part Numbering System" on page 87.