

HBZ Series

Features

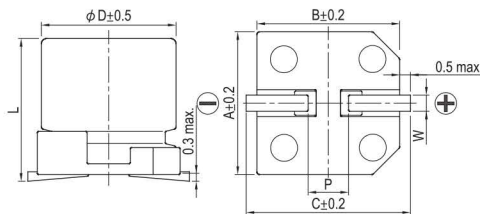
- 125°C, 4,000 hours assured
- Low ESR and High ripple current
- RoHS compliance

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										
Endurance	<table border="1"> <tr> <td>Test Time</td> <td>4,000 Hrs</td> </tr> <tr> <td>Capacitance Change</td> <td>Within ±30% of initial value</td> </tr> <tr> <td>Tanδ</td> <td>Less than 200% of specified value</td> </tr> <tr> <td>ESR</td> <td>Less than 200% of specified value</td> </tr> <tr> <td>Leakage Current</td> <td>Within specified value</td> </tr> </table>	Test Time	4,000 Hrs	Capacitance Change	Within ±30% of initial value	Tanδ	Less than 200% of specified value	ESR	Less than 200% of specified value	Leakage Current	Within specified value
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	Tanδ	Less than 200% of specified value									
	ESR	Less than 200% of specified value									
Leakage Current	Within specified value										
* 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.											
Shelf Life Test	* 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 26 for reflowsoldering conditions)	<table border="1"> <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> </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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Ripple Current and Frequency Multipliers	<table border="1"> <tr> <td>Frequency (Hz)</td> <td>120 ≤ f < 1k</td> <td>1k ≤ f < 10k</td> <td>10k ≤ f < 100k</td> <td>100k ≤ f < 500k</td> </tr> <tr> <td>Multiplier</td> <td>0.10</td> <td>0.3</td> <td>0.6</td> <td>1.0</td> </tr> </table>	Frequency (Hz)	120 ≤ f < 1k	1k ≤ f < 10k	10k ≤ f < 100k	100k ≤ f < 500k	Multiplier	0.10	0.3	0.6	1.0
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Diagram of Dimensions

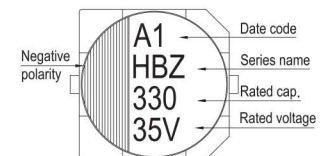


Lead Spacing and Diameter

Unit: mm

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	0.7 ~ 1.3	4.7

Marking



Standard Ratings

Dimension: φD×L(mm)

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

Rated Volt. (V)	Surge Voltage (V)	Capacitance (μF)	Size φD×L(mm)	Tanδ (120 Hz, 20°C)	L C (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	17	3,200
		220	10 × 16.5	0.10	110	13	3,700
63V (1J)	72.5	100	10 × 12.5	0.08	63	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	Pb-free and PET coating case
HBZ	471	M	1E	TR	-	S
Series Name	Capacitance	Capacitance Tolerance	Rated Voltage	Package Type	Terminal Type	Case size
						Lead Wire and Coating Type

Note: For more details, please refer to "Part Numbering System (SMD Type)" on page 15.