HBZ Series

Features

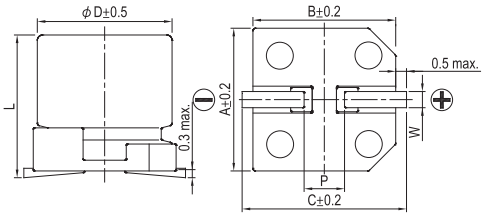
- 125℃, 4,000 hours assured
- Low ESR and High ripple current
- RoHS compliance

Marking color: Dark Green

Specifications

Items	Performance
Category Temperature Range	-55℃ ~ +125℃
Capacitance Tolerance	±20% (at 120 Hz, 20℃)
Leakage Current (at 20℃)	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℃)	See Standard Ratings
Endurance	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 * The above specifications shall be satisfied when the capacitors are restored to 20℃ after the rated voltage applied with rated ripple current for 4,000 hours at 125℃.
Shelf Life Test	* After storage for 1,000 hours at 125 ± 2℃ with no voltage applied and then being stabilized at 20℃,capacitors shall meet the limits specified in Endurance. (With voltage treatment)
Resistance to Soldering Heat (Please refer to page 26 for reflowsoldering conditions)	Capacitance Change: Within ±10% of initial value Tanδ: Within specified value ESR: Within specified value Leakage Current: Within specified value
Ripple Current and Frequency Multipliers	Frequency (Hz): 120 ≦ f < 1k | 1k ≦ f < 10k | 10k ≦ f < 100k | 100k ≦ f < 500k Multiplier: 0.10 | 0.3 | 0.6 | 1.0

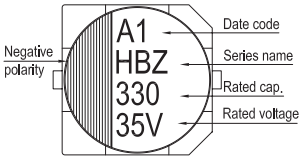
Diagram of Dimensions



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



Dimension: ϕD×L(mm)

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

Standard Ratings

Rated Volt. (V)	Surge Voltage (V)	Capacitance (μF)	Size ϕD×L(mm)	Tanδ (120 Hz, 20℃)	L C (μA)	E S R (mΩ/at 100kHz, 20℃ max.)	Rated R. C. (mA/rms at 100k Hz, 125℃)
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		10ϕ×12.5L	Pb-free and PET coating case
HBZ	**471**	**M**	**1E**	**TR**	**-**	**1013**	
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.