



HBZ Series

Features

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

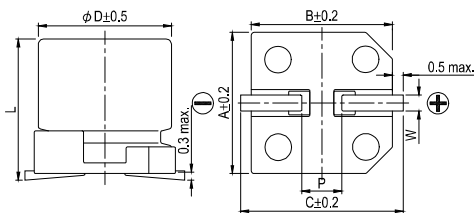


Marking color: Dark Green

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					
Low Temperature Characteristics (at 100k Hz)	Impedance ratio shall not exceed the values given in the table below					
	Rated Voltage		25	35	50	63
	Imedance ratio	Z (-25°C) / Z (+20°C)	1.5	1.5	1.5	1.5
Z (-55°C) / Z (+20°C)		2.0	2.0	2.0	2.0	
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°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)	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

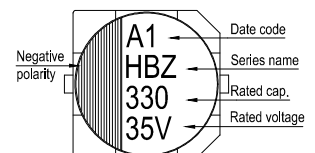


Lead Spacing and Diameter

Unit: mm

φ D	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: φ D×L(mm)

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

Standard Ratings

Rated Volt. (V)	Surge Voltage (V)	Capacitance (μF)	Size φ D×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	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 Coated Case
HBZ	471	M	1E	TR	-	1013
Series Name	Capacitance	Capacitance Tolerance	Rated Voltage	Package Type	Terminal Type	Case Size
						Lead Wire and Case Type

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