

HBV Series

Features

- 105°C, 10,000 hours assured
- Low ESR and High ripple current
- RoHS compliance

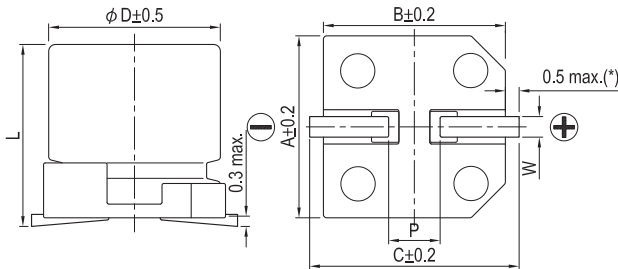


Marking color: Dark Green

Specifications

Items	Performance										
Category Temperature Range	-55°C ~ +105°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>10,000 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	10,000 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
	Test Time	10,000 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 10,000 hours at 105°C.											
Shelf Life Test	* After storage for 1,000 hours at 105 ± 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> <th>Frequency (Hz)</th> <th>$120 \leq f < 1k$</th> <th>$1k \leq f < 10k$</th> <th>$10k \leq f < 100k$</th> <th>$100k \leq f < 500k$</th> </tr> <tr> <td>Multiplier</td> <td>0.1</td> <td>0.3</td> <td>0.6</td> <td>1.0</td> </tr> </table>	Frequency (Hz)	$120 \leq f < 1k$	$1k \leq f < 10k$	$10k \leq f < 100k$	$100k \leq f < 500k$	Multiplier	0.1	0.3	0.6	1.0
	Frequency (Hz)	$120 \leq f < 1k$	$1k \leq f < 10k$	$10k \leq f < 100k$	$100k \leq f < 500k$						
Multiplier	0.1	0.3	0.6	1.0							

Diagram of Dimensions



Lead Spacing and Diameter

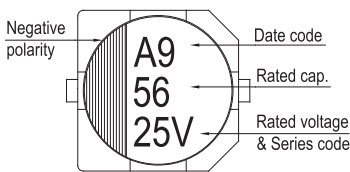
Unit: mm

φD	L	A	B	C	W	P ± 0.2
6.3	5.8 ± 0.3	6.6	6.6	7.2	0.5 ~ 0.8	2.0
6.3	7.7 ± 0.3	6.6	6.6	7.2	0.5 ~ 0.8	2.0
8	10.0 ± 0.5	8.3	8.3	9.0	0.7 ~ 1.1	3.1
10	10.0 ± 0.5	10.3	10.3	11.0	0.7 ~ 1.3	4.7
10	12.5 ± 0.5	10.3	10.3	11.0	0.7 ~ 1.3	4.7

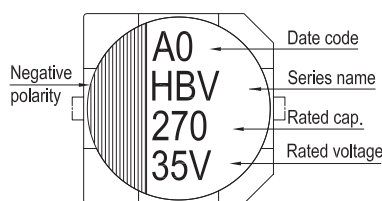
(*): For 6.3 φ is 0.4 max.

Marking

φD = 6.3 mm



φD = 8 ~ 10 mm



Dimension: $\phi D \times L$ (mm)
Ripple Current: mA/rms at 100k Hz, 105°C

Standard Ratings

Rated Volt. (V)	Surge Voltage (V)	Capacitance (μ F)	Size $\phi D \times L$ (mm)	Tan δ (120 Hz, 20°C)	L C (μ A)	E S R (m Ω /at 100kHz, 20°C max.)	Rated R. C. (mA/rms at 100k Hz, 105°C)
16V (1C)	18.4	82	6.3 \times 5.8	0.16	13.1	50	1,300
		150	6.3 \times 7.7		24	30	2,000
		270	8 \times 10		43.2	27	2,300
		470	10 \times 10		75.2	20	2,500
25V (1E)	28.8	47	6.3 \times 5.8	0.14	11.8	50	1,300
		56	6.3 \times 5.8		14	50	1,300
		68	6.3 \times 7.7		17	30	2,000
		100	6.3 \times 7.7		25	30	2,000
		150	8 \times 10		37.5	27	2,300
		220	8 \times 10		55	27	2,300
		330	10 \times 10		82.5	20	2,500
			10 \times 12.5		82.5	16	2,900
35V (1V)	40.3	27	6.3 \times 5.8	0.12	9.5	60	1,300
		33			11.6		
		47			16.5		
		68	6.3 \times 7.7		23.8	35	2,000
		100	8 \times 10		35	27	2,300
		150	8 \times 10		52.5	27	2,300
		220	10 \times 10		77	20	2,500
		270	10 \times 10		94.5	20	2,500
50V(1H)	57.5	22	6.3 \times 5.8	0.10	11	80	1,100
		33	6.3 \times 7.7		16.5	40	1,600
		47	8 \times 10		23.5	30	1,800
		68	8 \times 10		34	30	1,800
		100	10 \times 10		50	28	2,000
63V(1J)	72.5	10	6.3 \times 5.8	0.08	6.3	120	1,000
		22	6.3 \times 7.7		13.9	80	1,500
		27	8 \times 10		17	40	1,700
		33			20.8		
		47			29.6		
		56	10 \times 10		35.3	30	1,800
		68			42.8		
		82			51.7		
80V(1K)	92.0	22	8 \times 10	0.08	17.6	45	1,550
		33	10 \times 10		26.4	36	1,700
		47	10 \times 10		37.6	36	1,700

Hybrid

Part Numbering System

HBV Series	220 μ F	\pm 20%	25V	Carrier Tape		8 ϕ \times 10L	Pb-free and PET coating case
HBV	221	M	1E	TR	-	0810	
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.