

HBW Series

Features

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



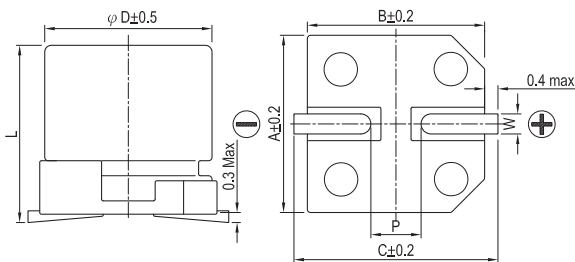
Marking color: Dark Green

Specifications

Items	Performance										
Category Temperature Range	-55°C ~ +125°C										
Capacitance Tolerance	±20% (at 120Hz, 20°C)										
Leakage Current (at 20°C)*	$I = 0.01CV$ or $3 (\mu A)$ whichever is greater (after 2 minutes) Where, C = rated capacitance in μF V = rated DC working voltage in V										
Tan δ (at 120Hz, 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	Tan δ	Less than 200% of specified value	ESR	Less than 200% of specified value	Leakage Current	Within specified value
	Test Time	4,000 Hrs									
	Capacitance Change	Within ±30% of initial value									
	Tan δ	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 23 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	Tan δ	Within specified value	ESR	Within specified value	Leakage Current	Within specified value		
	Capacitance Change	Within ±10% of initial value									
	Tan δ	Within specified value									
	ESR	Within specified value									
Leakage Current	Within specified value										
* 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)											
Ripple Current & Frequency Multipliers	<table border="1"> <tr> <th>Frequency (Hz)</th> <th>120 ≤ f < 1k</th> <th>1k ≤ f < 10k</th> <th>10k ≤ f < 100k</th> <th>100k ≤ f < 500k</th> </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
	Frequency (Hz)	120 ≤ f < 1k	1k ≤ f < 10k	10k ≤ f < 100k	100k ≤ f < 500k						
Multiplier	0.10	0.3	0.6	1.0							

* For any doubt about measured values, measure the leakage current again after the following voltage treatment.
Voltage treatment: Applying DC rated voltage to the capacitors for 2 hours at 105 °C.

Diagram of Dimensions



Lead Spacing and Diameter

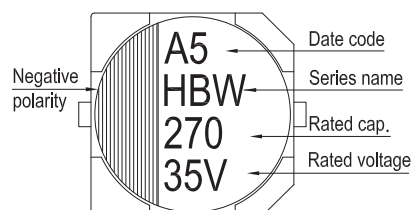
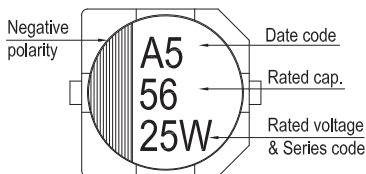
Unit: mm

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	8.4	8.4	9.0	0.7 ~ 1.1	3.1
8	12.0 ± 0.5	8.4	8.4	9.0	0.7 ~ 1.1	3.1
10	10.0 ± 0.5	10.4	10.4	11.0	0.7 ~ 1.3	4.7
10	12.5 ± 0.5	10.4	10.4	11.0	0.7 ~ 1.3	4.7

Marking

$\phi D = 6.3$ mm

$\phi D = 8 \sim 10$ mm



Dimension: ϕ D×L(mm)
Ripple Current: mA/rms at 100k Hz, 125°C

Standard Ratings

W. V. (V)	Surge Voltage (V)	Capacitance (μF)	Size ϕ D×L(mm)	Tanδ (120Hz, 20°C)	L C (μA)	E S R (mΩ/at 100kHz, 20°C Max)	Rated R. C. (mA/rms at 100k Hz, 125°C)
16V (1C)	18.4	82	6.3 × 5.8	0.16	13.1	50	900
		150	6.3 × 7.7	0.16	24	30	1,400
		270	8 × 10	0.16	43.2	27	1,600
		470	10 × 10	0.16	75.2	20	2,000
25V (1E)	28.8	56	6.3 × 5.8	0.14	14	50	900
		100	6.3 × 7.7	0.14	25	30	1,400
		220	8 × 10	0.14	55	27	1,600
		330	10 × 10	0.14	82.5	20	2,000
35V (1V)	40.3	27	6.3 × 5.8	0.12	9.5	60	900
		68	6.3 × 7.7	0.12	23.8	35	1,400
		150	8 × 10	0.12	52.5	27	1,600
		270	10 × 10	0.12	82.5	20	2,000
50V(1H)	57.5	22	6.3 × 5.8	0.10	11	80	750
		33	6.3 × 7.7	0.10	16.5	40	1,100
		68	8 × 10	0.10	34	30	1,250
		100	10 × 10	0.10	50	28	1,600
63V(1J)	72.5	10	6.3 × 5.8	0.08	6.3	120	700
		22	6.3 × 7.7	0.08	13.9	80	900
		27	8 × 10	0.08	17	40	1,100
		33	8 × 10	0.08	20.8	40	1,100
		56	10 × 10	0.08	35.3	30	1,400
		56	10 × 12.5	0.08	35.3	26	1,500

Hybrid

Part Numbering System

HBW series	220μF	±20%	25V	Carrier Tape	8 ϕ × 10L	Pb-free and PET coating case
HBW	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 13.