

HBW Series

Features

- 125°C, 4,000 hours assured
- Low ESR and High ripple current
- RoHS compliant
- AEC-Q200 compliant

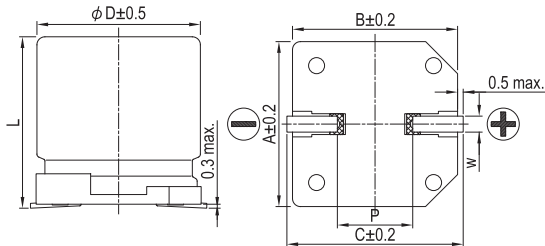


Marking color: Dark Green

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 $3 (\mu A)$ whichever is greater (after 2 minutes) Where, C = rated capacitance in μF , V = rated DC working voltage in V																							
Tan δ (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																							
	<table border="1"> <thead> <tr> <th colspan="2">Rated Voltage</th> <th>16</th> <th>25</th> <th>35</th> <th>50</th> <th>63</th> <th>80</th> </tr> </thead> <tbody> <tr> <td>Impedance</td> <td>Z (-25°C) / Z (+20°C)</td> <td>1.5</td> <td>1.5</td> <td>1.5</td> <td>1.5</td> <td>1.5</td> <td>1.5</td> </tr> <tr> <td>ratio</td> <td>Z (-55°C) / Z (+20°C)</td> <td>2.0</td> <td>2.0</td> <td>2.0</td> <td>2.0</td> <td>2.0</td> <td>2.0</td> </tr> </tbody> </table>	Rated Voltage		16	25	35	50	63	80	Impedance	Z (-25°C) / Z (+20°C)	1.5	1.5	1.5	1.5	1.5	1.5	ratio	Z (-55°C) / Z (+20°C)	2.0	2.0	2.0	2.0	2.0
Rated Voltage		16	25	35	50	63	80																	
Impedance	Z (-25°C) / Z (+20°C)	1.5	1.5	1.5	1.5	1.5	1.5																	
ratio	Z (-55°C) / Z (+20°C)	2.0	2.0	2.0	2.0	2.0	2.0																	
Endurance	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 $125 \pm 2^\circ C$ 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 15 for reflowsoldering conditions)	Capacitance Change	Within ±10% of initial value																						
	Tan δ	Within specified value																						
	ESR	Within specified value																						
	Leakage Current	Within specified value																						
Ripple Current and Frequency Multipliers	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



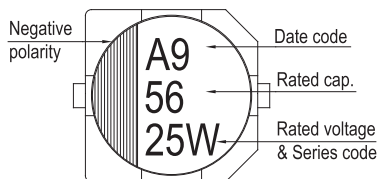
Lead Spacing and Diameter

Unit: mm

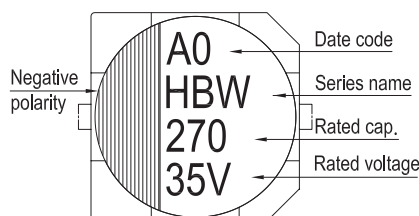
ϕD	L	A	B	C	W	P ± 0.2
6.3	5.8 ± 0.3	6.6	6.6	7.2	$0.5 \sim 0.8$	2.0
6.3	7.7 ± 0.3	6.6	6.6	7.2	$0.5 \sim 0.8$	2.0
8	10.0 ± 0.5	8.3	8.3	9.0	$0.7 \sim 1.1$	3.1
10	10.0 ± 0.5	10.3	10.3	11.0	$0.7 \sim 1.3$	4.7
10	12.5 ± 0.5	10.3	10.3	11.0	$0.7 \sim 1.3$	4.7

Marking

$\phi D = 6.3$



$\phi D = 8 \sim 10$





Dimension: $\phi D \times L$ (mm)
Ripple Current: mA/rms at 100k Hz, 125°C

Standard Ratings

Rated Voltage (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, 125°C)
16V (1C)	18.4	82	6.3 \times 5.8	0.16	13.1	50	900
		150	6.3 \times 7.7		24.0	30	1,400
		270	8 \times 10		43.2	27	1,600
		470	10 \times 10		75.2	20	2,000
25V (1E)	28.8	47	6.3 \times 5.8	0.14	11.8	50	900
		56	6.3 \times 5.8		14.0	50	900
		68	6.3 \times 7.7		17.0	30	1,400
		100	6.3 \times 7.7		25.0	30	1,400
		150	8 \times 10		37.5	27	1,600
		220	8 \times 10		55.0	27	1,600
		330	10 \times 10		82.5	20	2,000
35V (1V)	40.3	27	6.3 \times 5.8	0.12	9.5	60	900
		33			11.6		
		47			16.5		
		68	6.3 \times 7.7		23.8	35	1,400
		100	8 \times 10		35.0	27	1,600
		150	8 \times 10		52.5	27	1,600
		220	10 \times 10		77.0	20	2,000
		270	10 \times 10		94.5	20	2,000
50V (1H)	57.5	22	6.3 \times 5.8	0.10	11.0	80	750
		33	6.3 \times 7.7		16.5	40	1,100
		47	8 \times 10		23.5	30	1,250
		68	8 \times 10		34.0	30	1,250
		100	10 \times 10		50.0	28	1,600
		120	10 \times 10		60.0	28	1,600
63V (1J)	72.5	10	6.3 \times 5.8	0.08	6.3	120	700
		22	6.3 \times 7.7		13.9	80	900
		27	8 \times 10		17.0	40	1,100
		33			20.8		
		47			29.6		
		56	10 \times 10		35.3	30	1,400
			10 \times 12.5		35.3	26	1,500
		68	10 \times 10		42.8	30	1,400
		82	10 \times 10		51.7	30	1,400
80V (1K)	92.0	22	8 \times 10	0.08	17.6	45	1,050
		33	10 \times 10		26.4	36	1,360
		47	10 \times 10		37.6	36	1,360

Hybrid

Part Numbering System

HBW Series 220 μ F \pm 20% 25V Carrier Tape 8 ϕ \times 10L General Purpose

HBW **221** **M** **1E** **TR** - **0810**

Series Name Capacitance Capacitance Tolerance Rated Voltage Package Type Terminal Type Case Size Application

Note: For more details, please refer to "Part Numbering System" on page 87.