

Features

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

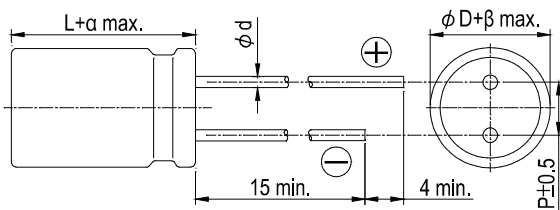


Marking color: Dare Green

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																				
Low Temperature Characteristics (at 100k Hz)	Impedance ratio shall not exceed the values given in the table below																				
	<table border="1"> <thead> <tr> <th>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 ratio 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>Impedance ratio 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 ratio Z (-25°C) / Z (+20°C)	1.5	1.5	1.5	1.5	1.5	1.5	Impedance 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 ratio Z (-25°C) / Z (+20°C)	1.5	1.5	1.5	1.5	1.5	1.5															
Impedance ratio Z (-55°C) / Z (+20°C)	2.0	2.0	2.0	2.0	2.0	2.0															
Endurance	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																			
Shelf Life Test	* 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. * 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	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	<table border="1"> <thead> <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> </thead> <tbody> <tr> <td>Multiplier</td> <td>0.1</td> <td>0.3</td> <td>0.6</td> <td>1.0</td> </tr> </tbody> </table>	Frequency (Hz)	120 ≤ f < 1k	1k ≤ f < 10k	10k ≤ f < 100k	100k ≤ f < 500k	Multiplier	0.1	0.3	0.6	1.0										
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Diagram of Dimensions



Lead Spacing and Diameter

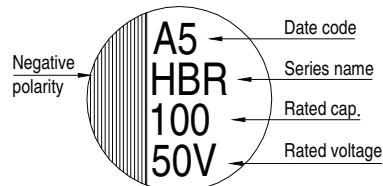
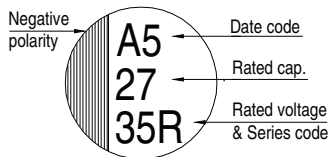
Unit: mm

	6.3	6.3	8	10	10
φD	6.3	6.3	8	10	10
L	6	8	10	10	12
P	2.5	2.5	3.5	5.0	5.0
φd	0.45		0.6		
α	1.0				
β	0.5				

Marking

φD = 6.3

φD = 8 ~ 10



Dimension: $\phi D \times L$ (mm)
Ripple Current: mA/rms at 100k Hz, 105°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, 105°C)
16V (1C)	18.4	82	6.3 \times 6	0.16	13.1	50	1,300
		150	6.3 \times 8		24.0	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 6	0.14	11.8	50	1,300
		56	6.3 \times 6		14.0	50	1,300
		68	6.3 \times 8		17.0	30	2,000
		100	6.3 \times 8		25.0	30	2,000
		150	8 \times 10		37.5	27	2,300
		220	8 \times 10		55.0	27	2,300
		330	10 \times 10		82.5	20	2,500
			10 \times 12		82.5	16	2,900
35V (1V)	40.3	27	6.3 \times 6	0.12	9.5	60	1,300
		33			11.6		
		47			16.5		
		68	6.3 \times 8		23.8	35	2,000
		100	8 \times 10		35.0	27	2,300
		150	8 \times 10		52.5	27	2,300
		220	10 \times 10		77.0	20	2,500
		270	10 \times 10		94.5	20	2,500
50V(1H)	57.5	22	6.3 \times 6	0.10	11.0	80	1,100
		33	6.3 \times 8		16.5	40	1,600
		47	8 \times 10		23.5	30	1,800
		68	8 \times 10		34.0	30	1,800
		100	10 \times 10		50.0	28	2,000
63V(1J)	72.5	10	6.3 \times 6	0.08	6.3	120	1,000
		22	6.3 \times 8		13.9	80	1,500
		27	8 \times 10		17.0	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

Part Numbering System

HBR Series 220 μ F \pm 20% 25V Bulk Package Gas Type 8 ϕ \times 10L

HBR **221** **M** **1E** **BK** - **0810** **XX**

Series Name Capacitance Capacitance Tolerance Rated Voltage Lead Configuration and Package Rubber Type Case Size S = Standard
KS = AEC-Q200 Qualified