

HBO Series

Features

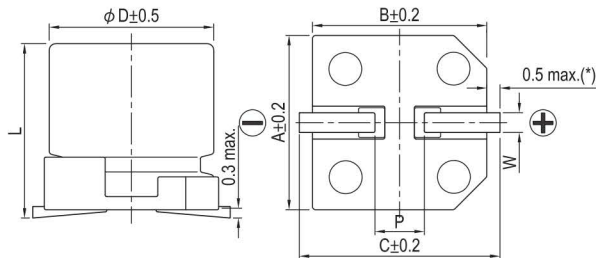
- 125°C, 4,000 hours assured
- Low ESR and High ripple current
- RoHS compliance

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 $3 (\mu A)$ 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										
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 $125 \pm 2^\circ C$ 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 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	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										
Ripple Current and Frequency Multipliers											
	<table border="1"> <thead> <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> </thead> <tbody> <tr> <td>Multiplier</td> <td>0.10</td> <td>0.3</td> <td>0.6</td> <td>1.0</td> </tr> </tbody> </table>	Frequency (Hz)	$120 \leq f < 1k$	$1k \leq f < 10k$	$10k \leq f < 100k$	$100k \leq f < 500k$	Multiplier	0.10	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	0.10	0.3	0.6	1.0							

Diagram of Dimensions



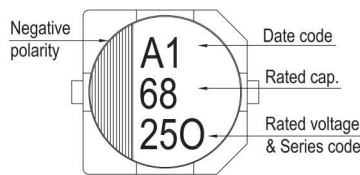
Lead Spacing and Diameter

ϕD	L	A	B	C	W	P ± 0.2	Unit: mm
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	

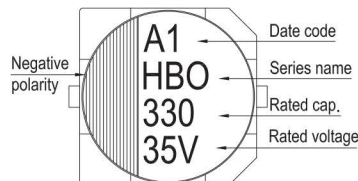
(*): For 6.3 ϕ is 0.4 max.

Marking

$\phi D = 6.3$



$\phi D = 8 \sim 10$



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)	L C (μA)	E S R (mΩ/at 100kHz, 20°C max.)	Rated R. C. (mA/rms at 100k Hz, 125°C)
25V (1E)	28.8	68	6.3 × 5.8	0.14	17	50	1,300
		82	6.3 × 5.8		20.5	50	1,300
		150	6.3 × 7.7		37.5	30	1,800
		270	8 × 10		67.5	27	2,000
		470	10 × 10		117	20	2,800
35V (1V)	40.3	56	6.3 × 5.8	0.12	19.6	60	1,200
		100	6.3 × 7.7		35	35	1,700
		180	8 × 10		63	27	2,000
		330	10 × 10		115	20	2,800

Part Numbering System

HBO Series	270μF	±20%	25V	Carrier Tape		8 ϕ × 10L	Pb-free and PET coating case
HBO	271	M	1E	TR	-	0810	S
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.

Hybrid