

## CCBV Series

### Features

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

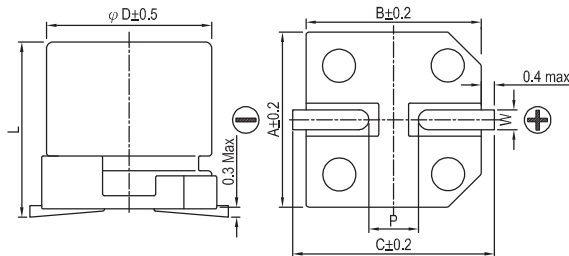


Marking color: Dark Green

### Specifications

Items	Performance										
Category Temperature Range	-55°C ~ +105°C										
Capacitance Tolerance	±20% (at 120Hz, 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 120Hz, 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 25 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		
	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"> <tr> <th>Frequency (Hz)</th> <th>120 ≤ f &lt; 1k</th> <th>1k ≤ f &lt; 10k</th> <th>10k ≤ f &lt; 100k</th> <th>100k ≤ f &lt; 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 ≤ 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



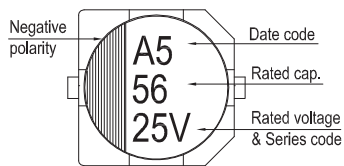
### Lead Spacing and Diameter

Unit: mm

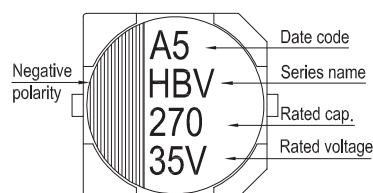
φ D	L	A	B	C	W	P ± 0.2
6.3	5.8 ± 0.3	6.6	6.6	7.2	0.5 ~ 0.8	2.0
6.3	7.7 ± 0.3	6.6	6.6	7.2	0.5 ~ 0.8	2.0
8	10.0 ± 0.5	8.4	8.4	9.0	0.7 ~ 1.1	3.1
8	12.0 ± 0.5	8.4	8.4	9.0	0.7 ~ 1.1	3.1
10	10.0 ± 0.5	10.4	10.4	11.0	0.7 ~ 1.3	4.7
10	12.5 ± 0.5	10.4	10.4	11.0	0.7 ~ 1.3	4.7

### Marking

φ D = 6.3 mm



φ D = 8 ~ 10 mm



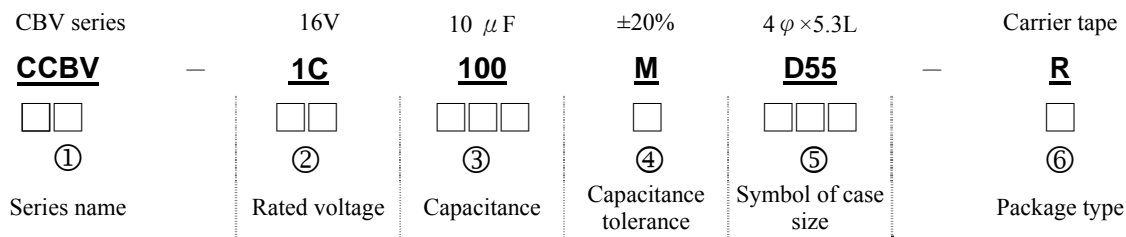
Dimension:  $\phi D \times L$ (mm)  
 Ripple Current: mA/rms at 100k Hz, 105°C

Standard Ratings

W. V. (V)	Surge Voltage (V)	Capacitance ( $\mu$ F)	Size $\phi D \times L$ (mm)	Tan $\delta$ (120Hz, 20°C)	L C ( $\mu$ A)	E S R (m $\Omega$ /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	0.16	24	30	2,000
		270	8 $\times$ 10	0.16	43.2	27	2,300
		470	10 $\times$ 10	0.16	75.2	20	2,500
25V (1E)	28.8	56	6.3 $\times$ 5.8	0.14	14	50	1,300
		100	6.3 $\times$ 7.7	0.14	25	30	2,000
		220	8 $\times$ 10	0.14	55	27	2,300
		330	10 $\times$ 10	0.14	82.5	20	2,500
		330	10 $\times$ 12.5	0.14	82.5	16	2,900
35V (1V)	40.3	27	6.3 $\times$ 5.8	0.12	9.5	60	1,300
		68	6.3 $\times$ 7.7	0.12	23.8	35	2,000
		150	8 $\times$ 10	0.12	52.5	27	2,300
		270	10 $\times$ 10	0.12	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	0.10	16.5	40	1,600
		68	8 $\times$ 10	0.10	34	30	1,800
		100	10 $\times$ 10	0.10	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	0.08	13.9	80	1,500
		27	8 $\times$ 12	0.08	17	40	1,700
		33	8 $\times$ 10	0.08	20.8	40	1,700
		56	10 $\times$ 10	0.08	35.3	30	1,800
80V(1K)	92.0	22	8 $\times$ 10	0.08	17.6	45	1,550
		33	10 $\times$ 10	0.08	26.4	36	1,700

## Part Numbering System for the SMD Type

When you place an order for Cal-chip electrolytic capacitors, please refer to our part number as shown below.



① Series:

Series is represented by a three digit code.



② Rated Voltage: Voltage on volts (V) is represented by two digit code showing the real working voltage: OG=4V, OJ=6.3V, 1A=10V, 1C=16V, 1E=25V, 1V=35V, 1H=50V, 1J=63V, 1K=80V, 2A=100V, 2C=160V, 2D=200V, 2E=250V, 2G=400V and 2W=450V

③ Capacitance:

Rated capacitance in  $\mu$ F is represented by a three digit number. The first two digits are the significant figures of the nominal capacitance and the third digit indicates the number of zeros following these figures. The decimal point is represent by the capital letter R. Please refer to the following example:

$\mu$ F	0.1	0.47		4.7		47	100	470	1000
Part number	0R1	R47	010	4R7	100	470	101	471	102

④ Tolerance:

Symbol of W, T, Q, V, M, K and J show special capacitance tolerance which are listed as follows:

W = -10% ~ +100%	M = -20% ~ +20%
T = -10% ~ +50%	K = -10% ~ +10%
Q = -10% ~ +30%	J = -5% ~ +5%
V = -10% ~ +20%	

⑤ Case Size: Symbol of case size are listed as follows:

$\phi$ D $\times$ L (mm)	Symbol	$\phi$ D $\times$ L (mm)	Symbol	$\phi$ D $\times$ L (mm)	Symbol	$\phi$ D $\times$ L (mm)	Symbol
3 $\times$ 5.3	B55	6.3 $\times$ 5.3	F55	8 $\times$ 6.5	G68	10 $\times$ 10.0	H10
4 $\times$ 5.3	D55	6.3 $\times$ 5.8	F60	8 $\times$ 7.0	G72	10 $\times$ 13.0	H13
4 $\times$ 5.7	D60	6.3 $\times$ 6.0	F62	8 $\times$ 10.0	G10	12.5 $\times$ 13.5	K14
5 $\times$ 5.3	E55	6.3 $\times$ 7.0	F72	8 $\times$ 12.0	G12	12.5 $\times$ 16.0	K16
5 $\times$ 5.7	E60	6.3 $\times$ 7.7	F80	10 $\times$ 8.0	H82	16 $\times$ 16.5	L17

⑥ Package type:

R = Taping polarity symbol with reel package in 380 mm