

Surface Mount Type Aluminum Electrolytic Capacitors

Series: HB

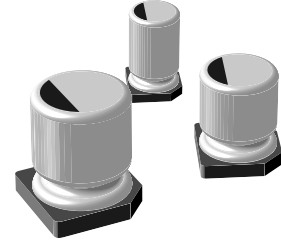
Type: V

SURFACE MOUNT TYPE

LONG LIFE

HIGH RELIABILITY

(HA Series **EE040**)



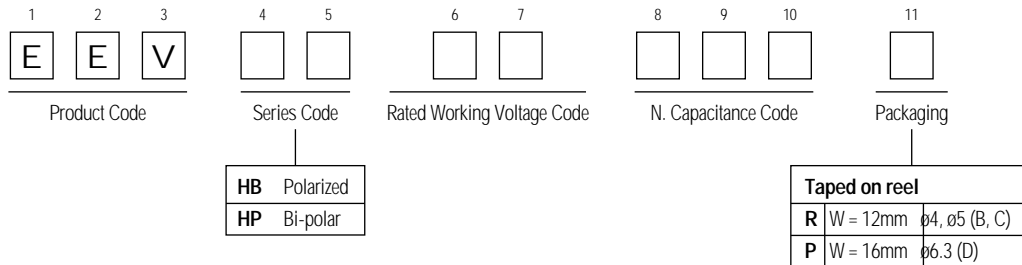
■ Features

- Lifetime: 105°C 2,000 h
- 6.1mm height

■ Recommended Applications

- Audio visual (televisions, video and audio equipment), office equipment, home appliances, CCTVs

■ Explanation of Part Numbers



■ Specifications

Operating temperature range	-40 to +105°C							
Rated working voltage	4 to 50 V DC							
Nominal capacitance range	0.1 to 220 µF							
Capacitance tolerance	±20% (120 Hz / +20°C)							
DC leakage current	I ≤ 0.01 CV or 3 (µA) after 2 minutes (Bi-polar I = 0.02 CV or 6 (µA) after 2 minutes) (Whichever is greater)							
tan δ	(120 Hz/+20°C)							
	Working voltage (V)	4	6.3	10	16	25	35	50
	tan δ	0.50	0.30	0.22	0.16	0.14	0.12	0.12
Characteristics at low temperature	Bi-polar tan δ							
		—	0.60	0.44	0.32	0.28	0.24	0.24
	Impedance ratio at 120 Hz							
Endurance	Working voltage (V)	4	6.3	10	16	25	35	50
	-20 / +20°C	7	4	3	2	2	2	2
	-40 / +20°C	15	8	6	4	4	3	3
Endurance	After applying rated working voltage for 1,000 hours at +105°C and then being stabilized at +20°C, capacitors shall meet the following limits:							
	Capacitance change	±20% of initial measured value (4 W.V.: ±35%, 6.3 W.V.: ±25%)						
	tan δ	≤ 200% of initial specified value						
	DC leakage current	≤ initial specified value						
Shelf life	After storage for 1,000 hours at +105°C with no voltage applied then being stabilized at +20°C, capacitor shall meet the limits specified in "Endurance."							
	Resistance to soldering heat							
Resistance to soldering heat	After reflow soldering and then being stabilized at +20°C, capacitor shall meet the following limits.							
	Capacitance change	±10% of initial measured value						
	tan δ	≤ initial specified value						
	DC leakage current	≤ initial specified value						

■ Marking

Example: 50 V 1 μ F

Working voltage code

Capacitance (μ F)

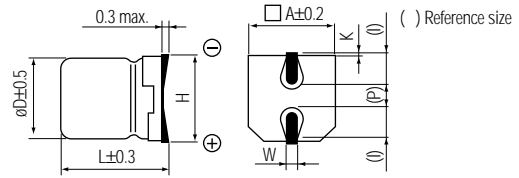
Series Identification
(HP: Bi-polar)

(-) Negative polarity marking

Lot number

V	4	6.3	10	16	25	35	50
Code	g	j	A	C	E	V	H

■ Dimensions in mm (not to scale)



mm

	D	L	A	H	I	W	P	K
B	4.0	5.8	4.3	5.5 max.	1.8	0.65±0.1	1.0	0.35 ^{+0.15} _{-0.20}
C	5.0	5.8	5.3	6.5 max.	2.2	0.65±0.1	1.5	0.35 ^{+0.15} _{-0.20}
D	6.3	5.8	6.6	7.8 max.	2.6	0.65±0.1	1.8	0.35 ^{+0.15} _{-0.20}

■ Case Size/Ripple Current Polarized

(mA) rms (120 Hz/+105°C)

Cap. (μ F)	Working Voltage										Size code	Ripple current		
	4 (OG)		6.3 (OJ)		10 (1A)		16 (1C)		25 (1E)				35 (1V)	
0.1 (OR1)													B	1
0.22 (R22)													B	2
0.33 (R33)													B	3
0.47 (R47)													B	5
1.0 (O10)													B	10
2.2 (2R2)													B	16
3.3 (3R3)													B	16
4.7 (4R7)								B	22				C	23
6.8 (6R8)								B	25				C	23
10 (100)							B	28			C	28	D	35
22 (220)			B	26			C	39			D	55		
33 (330)			B	29	C	43			D	65				
47 (470)	B	34	C	46			D	70						
100 (101)	C	61	D	71										
220 (221)	D	82												

Bi-Polar

Cap. (μ F)	Working Voltage										Size code	Ripple current	
	6.3 (OJ)		10 (1A)		16 (1C)		25 (1E)		35 (1V)				50 (1H)
0.22 (R22)												B	2
0.33 (R33)												B	3
0.47 (R47)												B	5
1.0 (O10)												B	10
2.2 (2R2)									B	10			
3.3 (3R3)							B	12				D	16
4.7 (4R7)							B	12				D	23
10 (100)			B	20	C	25	D	28					
22 (220)							D	55					
33 (330)			D	26									
47 (470)	D	35											