Surface Mount Type

Series: **HB** Type: **V**

HB High temperature Lead-Free reflow (suffix:A✻)



■ Features

- Endurance: 105 °C 2000 h
- Vibration-proof product is available upon request. (ϕ8 mm and larger)
- AEC-Q200 qualified*
- RoHS directive compliant

■ Specifications

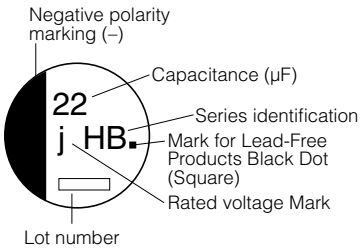
Category Temp. Range	–40 °C to +105 °C								
Rated W.V. Range	6.3 V.DC to 50 V.DC								
Nominal Cap. Range	1 µF to 1500 µF								
Capacitance Tolerance	±20 % (120 Hz/ +20 °C)								
DC Leakage Current	I≦0.01 CV or 3 (µA) After 2 minutes (Whichever is greater)								
tan δ	Please see the attached High temperature lead-free reflow products list.								
Characteristics at Low Temperature	Standard	W.V.(V)	6.3	10	16	25	35	50	(Impedance ratio at 120 Hz)
		Z(–25 °C)/Z(+20 °C)	4	3	2	2	2	2	
		Z(–40 °C)/Z(+20 °C)	8	6	4	4	3	3	
	Miniaturization product	Z(–25 °C)/Z(+20 °C)	4	3	2	2	2	2	
		Z(–40 °C)/Z(+20 °C)	10	8	6	6	4	4	
Endurance	After applying rated working voltage for 2000 hours at +105 °C±2 °C and then being stabilized at +20 °C, capacitors shall meet the following limits.								
	Capacitance change	±20 % of initial measured value (16 V.DC or less : Within ±25 %, Miniaturization product : Within ±35 %)							
	tan δ	≦ 200 % of initial specified value							
	DC leakage current	≦ initial specified value							
Shelf Life	After storage for 1000 hours at +105 °C±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	After reflow soldering and then being stabilized at +20 °C, capacitors shall meet the following limits.								
	Capacitance change	±10 % of initial measured value							
	tan δ	≦ initial specified value							
	DC leakage current	≦ initial specified value							

■ Frequency correction factor for ripple current

	Frequency (Hz)			
	50, 60	120	1 k	10 k to
Correction factor	0.70	1.00	1.30	1.70

■ Marking

Example : 6.3 V 22 µF (Polarized)
Marking color : BLACK

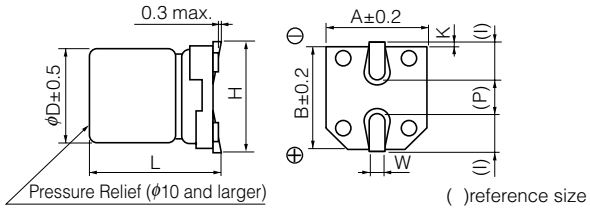


Rated Voltage Mark

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

■ Dimensions in mm (not to scale)

(Unit : mm)



Size code	D	L	A, B	H	I	W	P	K
B	4.0	5.8±0.3	4.3	5.5 max.	1.8	0.65±0.1	1.0	$0.35^{+0.15}_{-0.20}$
C	5.0	5.8±0.3	5.3	6.5 max.	2.2	0.65±0.1	1.5	$0.35^{+0.15}_{-0.20}$
D	6.3	5.8±0.3	6.6	7.8 max.	2.6	0.65±0.1	1.8	$0.35^{+0.15}_{-0.20}$
D8	6.3	7.7±0.3	6.6	7.8 max.	2.6	0.65±0.1	1.8	$0.35^{+0.15}_{-0.20}$
E	8.0	6.2±0.3	8.3	9.5 max.	3.4	0.65±0.1	2.2	$0.35^{+0.15}_{-0.20}$
F	8.0	10.2±0.3	8.3	10.0 max.	3.4	0.90±0.2	3.1	0.70±0.20
G	10.0	10.2±0.3	10.3	12.0 max.	3.5	0.90±0.2	4.6	0.70±0.20

✻ This product qualify for AEC-Q200, but it has some deviations.

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03 Mar. 2015

■ High temperate Lead-Free reflow Products

Endurance : 105 °C 2000 h

W.V. (V)	Cap. (±20 %) (μF)	Case size Dia. (mm)	Length (mm)	✻Size Code	Specification Ripple Current (120 Hz) (+105°C) (mA r.m.s.)	tan δ (120 Hz) (+20 °C)	Part No. (RoHS:compliant)	Reflow	Min. Packaging Q'ty Taping (pcs)
6.3	22	4	5.8	B	26	0.30	EEEHB0J220AR	(5)	2000
	33	4	5.8	B	29	0.30	EEEHB0J330AR	(5)	2000
	47	4	5.8	(B)	26	0.50	EEEHBJ470UAR	(5)	2000
		5	5.8	C	46	0.30	EEEHB0J470AR	(5)	1000
	100	5	5.8	(C)	42	0.50	EEEHBJ101UAR	(5)	1000
		6.3	5.8	D	71	0.30	EEEHB0J101AP	(5)	1000
	220	6.3	5.8	(D)	80	0.50	EEEHBJ221UAP	(5)	1000
		8	10.2	F	150	0.35	EEEHB0J221AP	(7)	500
	330	8	6.2	(E)	180	0.50	EEEHBJ331UAP	(7)	1000
		8	10.2	F	230	0.35	EEEHB0J331AP	(7)	500
	470	8	10.2	(F)	230	0.50	EEEHBJ471UAP	(7)	500
	1500	10	10.2	(G)	290	0.50	EEEHBJ152UAP	(7)	500
10	33	4	5.8	(B)	23	0.30	EEEHBA330UAR	(5)	2000
		5	5.8	C	43	0.26	EEEHB1A330AR	(5)	1000
	68	6.3	5.8	D	70	0.22	EEEHB1A680AP	(5)	1000
	100	6.3	5.8	(D)	71	0.30	EEEHBA101UAP	(5)	1000
		8	6.2	E	110	0.26	EEEHB1A101AP	(7)	1000
	150	6.3	5.8	(D)	64	0.50	EEEHBA151UAP	(5)	1000
	220	8	6.2	(E)	110	0.30	EEEHBA221UAP	(7)	1000
		8	10.2	F	160	0.26	EEEHB1A221AP	(7)	500
	470	8	10.2	(F)	220	0.35	EEEHBA471UAP	(7)	500
		10	10.2	G	270	0.26	EEEHB1A471AP	(7)	500
16	10	4	5.8	B	28	0.16	EEEHB1C100AR	(5)	2000
	22	4	5.8	(B)	29.5	0.26	EEEHBC220UAR	(5)	2000
		5	5.8	C	39	0.16	EEEHB1C220AR	(5)	1000
	33	6.3	5.8	D	65	0.16	EEEHB1C330AP	(5)	1000
	47	5	5.8	(C)	39	0.26	EEEHBC470UAR	(5)	1000
		6.3	5.8	D	70	0.16	EEEHB1C470AP	(5)	1000
		6.3	7.7	D8	84	0.16	EEEHBC470XAP	(5)	900
	100	6.3	5.8	(D)	70	0.26	EEEHBC101UAP	(5)	1000
		8	10.2	F	120	0.20	EEEHB1C101AP	(7)	500
	220	8	10.2	(F)	150	0.20	EEEHBC221UAP	(7)	500
		10	10.2	G	210	0.20	EEEHB1C221AP	(7)	500
	330	10	10.2	G	230	0.20	EEEHB1C331AP	(7)	500
	470	8	10.2	(F)	240	0.40	EEEHBC471UAP	(7)	500
		10	10.2	G	340	0.20	EEEHB1C471AP	(7)	500
25	4.7	4	5.8	B	22	0.14	EEEHB1E4R7AR	(5)	2000
	6.8	4	5.8	B	25	0.14	EEEHB1E6R8AR	(5)	2000
	10	4	5.8	(B)	28	0.16	EEEHBE100UAR	(5)	2000
		5	5.8	C	28	0.14	EEEHB1E100AR	(5)	1000
	22	6.3	5.8	D	55	0.14	EEEHB1E220AP	(5)	1000
	33	5	5.8	(C)	50	0.20	EEEHBE330UAR	(5)	1000
		6.3	5.8	D	65	0.14	EEEHB1E330AP	(5)	1000
	47	6.3	5.8	(D)	65	0.20	EEEHBE470UAP	(5)	1000
		8	6.2	E	91	0.16	EEEHB1E470AP	(7)	1000
	100	8	6.2	(E)	100	0.16	EEEHBE101UAP	(7)	1000
		8	10.2	F	130	0.16	EEEHB1E101AP	(7)	500
	220	8	10.2	(F)	130	0.30	EEEHBE221UAP	(7)	500
		10	10.2	G	190	0.16	EEEHB1E221AP	(7)	500
	330	8	10.2	(F)	130	0.30	EEEHBE331UAP	(7)	500
		10	10.2	G	220	0.16	EEEHB1E331AP	(7)	500
	470	10	10.2	(G)	230	0.30	EEEHBE471UAP	(7)	500

✻Size code( ):Miniaturization product

If Part number exceeds 12 digits, voltage code is abbreviated as follows; 0J→J, 1A→A, 1C→C, 1E→E, 1V→V

· Please refer to the page of “Reflow Profile” and “The Taping Dimensions”.

· When requesting vibration-proof product, please put the last “V” instead to “P”

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■ High temperate Lead-Free reflow Products

Endurance : 105 °C 2000 h

W.V. (V)	Cap. (±20 %) (μF)	Case size			Specification		Part No. (RoHS:compliant)	Reflow	Min. Packaging Q'ty
		Dia. (mm)	Length (mm)	✻Size Code	Ripple Current (120 Hz) (+105°C) (mA r.m.s.)	tan δ (120 Hz) (+20 °C)			Taping (pcs)
35	4.7	4	5.8	B	21	0.12	EEEHB1V4R7AR	(5)	2000
	6.8	4	5.8	(B)	25	0.12	EEEHBV6R8UAR	(5)	2000
	10	5	5.8	C	28	0.12	EEEHB1V100AR	(5)	1000
	22	6.3	5.8	D	55	0.12	EEEHB1V220AP	(5)	1000
	33	8	6.2	E	84	0.14	EEEHB1V330AP	(7)	1000
	47	6.3	7.7	D8	98	0.20	EEEHBV470YAP	(5)	900
		8	6.2	(E)	91	0.18	EEEHBV470UAP	(7)	1000
		8	10.2	F	98	0.14	EEEHB1V470AP	(7)	500
	100	8	10.2	(F)	98	0.20	EEEHBV101UAP	(7)	500
		10	10.2	G	160	0.14	EEEHB1V101AP	(7)	500
	220	10	10.2	(G)	180	0.14	EEEHBV221UAP	(7)	500
50	1	4	5.8	B	10	0.12	EEEHB1H1R0AR	(5)	2000
	2.2	4	5.8	B	16	0.12	EEEHB1H2R2AR	(5)	2000
	3.3	4	5.8	B	16	0.12	EEEHB1H3R3AR	(5)	2000
	4.7	5	5.8	C	23	0.12	EEEHB1H4R7AR	(5)	1000
	6.8	5	5.8	C	23	0.12	EEEHB1H6R8AR	(5)	1000
	10	6.3	5.8	D	35	0.12	EEEHB1H100AP	(5)	1000
	22	6.3	5.8	(D)	35	0.14	EEEHBH220UAP	(5)	1000
		8	6.2	E	70	0.12	EEEHB1H220AP	(7)	1000
	33	8	10.2	F	91	0.12	EEEHB1H330AP	(7)	500
	47	6.3	7.7	D8	63	0.12	EEEHBH470YAP	(5)	900
		8	10.2	(F)	95	0.12	EEEHBH470UAP	(7)	500
		10	10.2	G	100	0.12	EEEHB1H470AP	(7)	500
	100	10	10.2	(G)	250	0.12	EEEHBH101UAP	(7)	500
	220	10	10.2	(G)	270	0.18	EEEHBH221UAP	(7)	500

✻Size code( ):Miniaturization product

If Part number exceeds 12 digits, voltage code is abbreviated as follows; 0J→J, 1A→A, 1C→C, 1E→E, 1V→V

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