

Surface Mount Type

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

High temperature

Lead-Free reflow (suffix : A*)



Features

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

Specifications

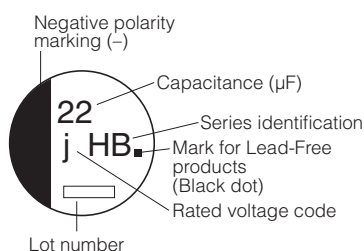
Category temperature range	-40 °C to +105 °C								
Rated voltage range	6.3 V.DC to 50 V.DC								
Capacitance range	1 μF to 1500 μF								
Capacitance tolerance	±20 % (120 Hz/ +20 °C)								
Leakage current	I ≤ 0.01 CV or 3 (μA) After 2 minutes (Whichever is greater)								
Dissipation factor (tan δ)	Please see the attached characteristics list								
Characteristics at low temperature	Standard	V.DC	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	Within ±20 % of the initial value (16 V.DC or less : Within ±25 %, Miniaturization product : Within ±35 %)							
	tan δ	≤200 % of the initial limit							
	DC leakage current	Within the initial limit							
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	Within ±10 % of the initial value							
	tan δ	Within the initial limit							
AEC-Q200	DC leakage current							Within the initial limit	
	AEC-Q200 compliant								

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

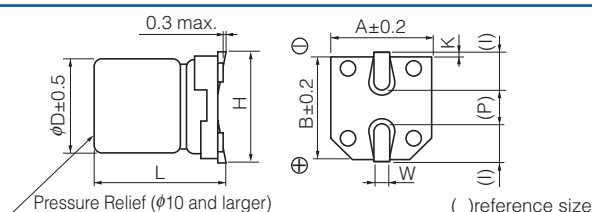
Marking

Example : 6.3 V.DC 22 μF
Marking color : BLACK



R. Voltage (V.DC)	6.3	10	16	25	35	50
Code	j	A	C	E	V	H

Dimensions



Size code	φD	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

Characteristics list

Endurance : 105 °C 2000 h

Rated voltage (V.DC)	Cap. (±20 %) (μF)	Case size (mm)		Size* code	Specification		Part No.	Reflow	Min. Packaging Q'ty
		φD	L		Ripple current (120 Hz) (+105 °C) (mA r.m.s.)	tan δ (120 Hz) (+20 °C)			Taping (pcs)
6.3	22	4	5.8	B	26	0.30	EEEHBJ220AR	(5)	2000
	33	4	5.8	B	29	0.30	EEEHBJ330AR	(5)	2000
	47	4	5.8	(B)	26	0.50	EEEHBJ470UAR	(5)	2000
		5	5.8	C	46	0.30	EEEHBJ470AR	(5)	1000
	100	5	5.8	(C)	42	0.50	EEEHBJ101UAR	(5)	1000
		6.3	5.8	D	71	0.30	EEEHBJ101AP	(5)	1000
	220	6.3	5.8	(D)	80	0.50	EEEHBJ221UAR	(5)	1000
		8	10.2	F	150	0.35	EEEHBJ221AP	(7)	500
	330	8	6.2	(E)	180	0.50	EEEHBJ331UAR	(7)	1000
		8	10.2	F	230	0.35	EEEHBJ331AP	(7)	500
10	470	8	10.2	(F)	230	0.50	EEEHBJ471UAR	(7)	500
	1500	10	10.2	(G)	290	0.50	EEEHBJ152UAR	(7)	500
	33	4	5.8	(B)	23	0.30	EEEHBA330UAR	(5)	2000
		5	5.8	C	43	0.26	EEEHBA1A330AR	(5)	1000
	68	6.3	5.8	D	70	0.22	EEEHBA1A680AP	(5)	1000
	100	6.3	5.8	(D)	71	0.30	EEEHBA101UAR	(5)	1000
		8	6.2	E	110	0.26	EEEHBA1A101AP	(7)	1000
	150	6.3	5.8	(D)	64	0.50	EEEHBA151UAR	(5)	1000
	220	8	6.2	(E)	110	0.30	EEEHBA221UAR	(7)	1000
		8	10.2	F	160	0.26	EEEHBA1A221AP	(7)	500
16	470	8	10.2	(F)	220	0.35	EEEHBA471UAR	(7)	500
		10	10.2	G	270	0.26	EEEHBA1A471AP	(7)	500
	10	4	5.8	B	28	0.16	EEEHBC100AR	(5)	2000
	22	4	5.8	(B)	29.5	0.26	EEEHBC220UAR	(5)	2000
		5	5.8	C	39	0.16	EEEHBC1C220AR	(5)	1000
	33	6.3	5.8	D	65	0.16	EEEHBC1C330AP	(5)	1000
	47	5	5.8	(C)	39	0.26	EEEHBC470UAR	(5)	1000
		6.3	5.8	D	70	0.16	EEEHBC1C470AP	(5)	1000
	100	6.3	7.7	D8	84	0.16	EEEHBC470XAP	(5)	900
		6.3	5.8	(D)	70	0.26	EEEHBC101UAR	(5)	1000
25	220	8	10.2	F	120	0.20	EEEHBC1C101AP	(7)	500
		10	10.2	G	210	0.20	EEEHBC221UAR	(7)	500
	330	10	10.2	G	230	0.20	EEEHBC1C331AP	(7)	500
	470	8	10.2	(F)	240	0.40	EEEHBC471UAR	(7)	500
		10	10.2	G	340	0.20	EEEHBC1C471AP	(7)	500
	4.7	4	5.8	B	22	0.14	EEEHBE1E4R7AR	(5)	2000
	6.8	4	5.8	B	25	0.14	EEEHBE1E6R8AR	(5)	2000
	10	4	5.8	(B)	28	0.16	EEEHBE100UAR	(5)	2000
		5	5.8	C	28	0.14	EEEHBE1E100AR	(5)	1000
	22	6.3	5.8	D	55	0.14	EEEHBE1E220AP	(5)	1000
25	33	5	5.8	(C)	50	0.20	EEEHBE330UAR	(5)	1000
		6.3	5.8	D	65	0.14	EEEHBE1E330AP	(5)	1000
	47	6.3	5.8	(D)	65	0.20	EEEHBE470UAR	(5)	1000
		8	6.2	E	91	0.16	EEEHBE1E470AP	(7)	1000
	100	8	6.2	(E)	100	0.16	EEEHBE101UAR	(7)	1000
		8	10.2	F	130	0.16	EEEHBE1E101AP	(7)	500
	220	8	10.2	(F)	130	0.30	EEEHBE221UAR	(7)	500
		10	10.2	G	190	0.16	EEEHBE1E221AP	(7)	500
	330	8	10.2	(F)	130	0.30	EEEHBE331UAR	(7)	500
		10	10.2	G	220	0.16	EEEHBE1E331AP	(7)	500
25	470	10	10.2	(G)	230	0.30	EEEHBE471UAR	(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"

Characteristics list

Endurance : 105 °C 2000 h

Rated voltage (V.DC)	Cap. (±20 %) (μF)	Case size (mm)		Size* code	Specification		Part No.	Reflow	Min. Packaging Q'ty
		φD	L		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

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· 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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