

Surface Mount Type

Series: **HC** Type : **V**

- Features Life time: 3000 hours at 105°C
(φ8,φ10: 5000 hours)
RoHS directive compliant

Long life



■ Specification

Category Temp.Range	-40 ~ +105°C						
Rated W.V.Range	6.3 ~ 50 V .DC						
Nominal Cap.Range	0.1 ~ 1000 μF						
Capacitance Tolerance	±20 % (120Hz/+20°C)						
Leakage Current	I ≤ 0.01 CV or 3(μA) After 2 minutes application of rated working voltage at +20°C (Whichever is greater)						
tan δ	6.3V	10V	16V	25V	35V	50V	(120Hz / 20°C)
	0.3(※)	0.26	0.20	0.16	0.14	0.12	(※1000μF:0.5)
Characteristics at Low Temperature	R.V.(V.DC)	6.3	10	16	25	35	50
	Z(-25°C)/Z(20°C)	3	3	2	2	2	2
	Z(-40°C)/Z(20°C)	8	5	4	3	3	3
Endurance	φ4 to φ6 (105°C 3000h After applying rated working voltage) φ8,φ10 (105°C 5000h After applying rated working voltage)						
	Capacitance change	±30% of initially measured values					
	tan δ	≤300% of initially specified values					
	DC leakage current	≤ initially specified values					
Resistance to Soldering Heat	Capacitance change	±10% of initially measured values					
	tan δ	≤ initially specified values					
	DC leakage current	≤ initially specified values					

■ Marking

Example: 50V1μF (polarized)
Marking color: BLACK

W.V.code

Negative polarity marking(-)

Capacitance (μF)

Series identification

Lot number

W.V.code	V	6.3	10	16	25	35	50
Code		j	A	C	E	V	H

■ Dimensions in mm (not to scale)

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

■ Case size

W.V.(V) Cap.(μF)	6.3	10	16	25	35	50
0.1						B
0.22						B
0.33						B
0.47						B
1						B
2.2						B
3.3						B
4.7					B	C
10			B		C	D
22	B		C		D	D8
33		C		D	D8	F
47	C		D	D8		F
100	D		D8	F		G
220	D8	F			G	
330	F			G		
470			G			
1000	G					

■ Standard Products

W.V. (V)	Cap. (±20%) (μF)	Case Size			Specification		Part No. (RoHS: compliant)	Reflow	Min. Packaging Qty
		Dia. (mm)	Length (mm)	Size code	Ripple current (120Hz) (+105°C) (mA)	tan δ (120Hz) (+20°C)			Taping (pcs)
6.3	22	4	5.8	B	26	0.30	EEEHC0J220R	(4)	2000
	47	5	5.8	C	46	0.30	EEEHC0J470R	(4)	1000
	100	6.3	5.8	D	71	0.30	EEEHC0J101P	(4)	1000
	220	6.3	7.7	D8	101	0.30	EEEHC0J221XP	(4)	900
	330	8	10.2	F	230	0.30	EEEHC0J331P	(5)	500
	1000	10	10.2	G	313	0.50	EEEHC0J102P	(5)	500
10	33	5	5.8	C	43	0.26	EEEHC1A330R	(4)	1000
	220	8	10.2	F	160	0.26	EEEHC1A221P	(5)	500
16	10	4	5.8	B	28	0.2	EEEHC1C100R	(4)	2000
	22	5	5.8	C	39	0.2	EEEHC1C220R	(4)	1000
	47	6.3	5.8	D	70	0.2	EEEHC1C470P	(4)	1000
	100	6.3	7.7	D8	81	0.2	EEEHC1C101XP	(4)	900
	470	10	10.2	G	340	0.2	EEEHC1C471P	(5)	500
25	33	6.3	5.8	D	65	0.16	EEEHC1E330P	(4)	1000
	47	6.3	7.7	D8	65	0.16	EEEHC1E470XP	(4)	900
	100	8	10.2	F	130	0.16	EEEHC1E101P	(5)	500
	330	10	10.2	G	238	0.16	EEEHC1E331P	(5)	500
35	4.7	4.0	5.8	B	15	0.14	EEEHC1V4R7R	(4)	2000
	10	5.0	5.8	C	28	0.14	EEEHC1V100R	(4)	1000
	22	6.3	5.8	D	55	0.14	EEEHC1V220P	(4)	1000
	33	6.3	7.7	D8	57	0.14	EEEHC1V330XP	(4)	900
	220	10	10.2	G	220	0.14	EEEHC1V221P	(5)	500
50	0.1	4	5.8	B	1	0.12	EEEHC1HR10R	(4)	2000
	0.22	4	5.8	B	2.6	0.12	EEEHC1HR22R	(4)	2000
	0.33	4	5.8	B	3.2	0.12	EEEHC1HR33R	(4)	2000
	0.47	4	5.8	B	5	0.12	EEEHC1HR47R	(4)	2000
	1	4	5.8	B	10	0.12	EEEHC1H1R0R	(4)	2000
	2.2	4	5.8	B	16	0.12	EEEHC1H2R2R	(4)	2000
	3.3	4	5.8	B	16	0.12	EEEHC1H3R3R	(4)	2000
	4.7	5	5.8	C	23	0.12	EEEHC1H4R7R	(4)	1000
	10	6.3	5.8	D	35	0.12	EEEHC1H100P	(4)	1000
	22	6.3	7.7	D8	49	0.12	EEEHC1H220XP	(4)	900
	33	8	10.2	F	91	0.12	EEEHC1H330P	(5)	500
	47	8	10.2	F	100	0.12	EEEHC1H470P	(5)	500
	100	10	10.2	G	160	0.12	EEEHC1H101P	(5)	500

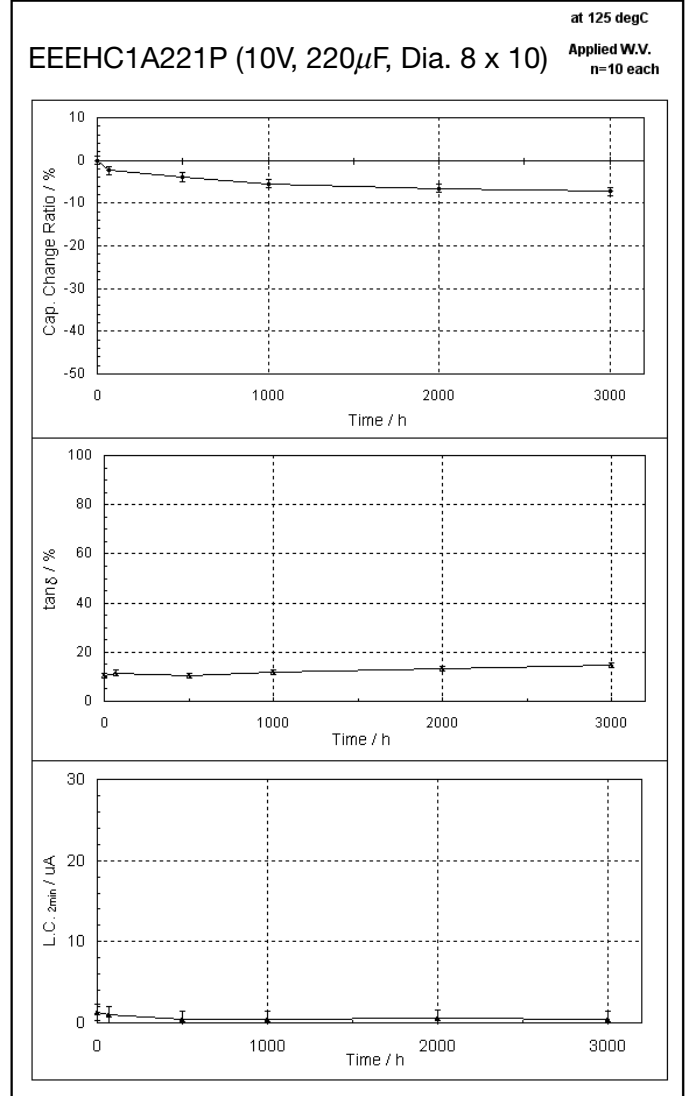
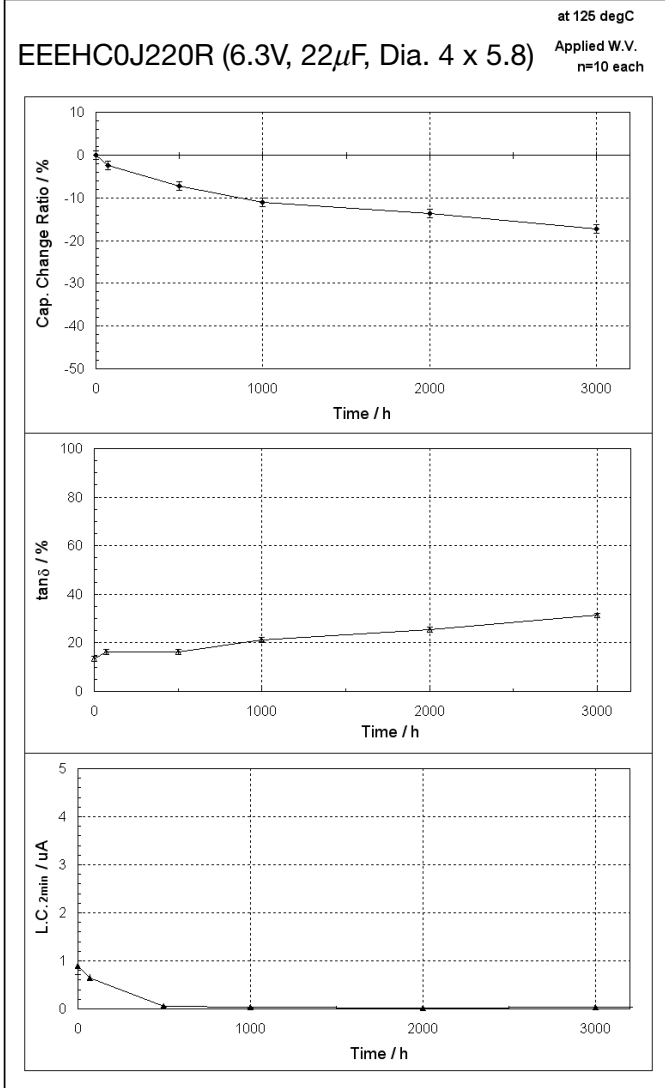
An explanation of the taping dimensions can be found on page 84.

Reflow profiles can be found on page 86.

■ Frequency Correction Factor of Rated Ripple Current

	Frequency (Hz)			
	50,60	120	1k	10k ~
coefficient	0.70	1.0	1.3	1.7

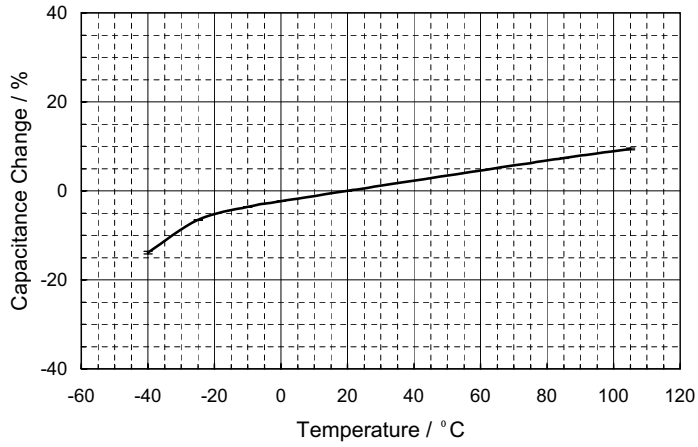
■ Endurance



Temperature Characteristics

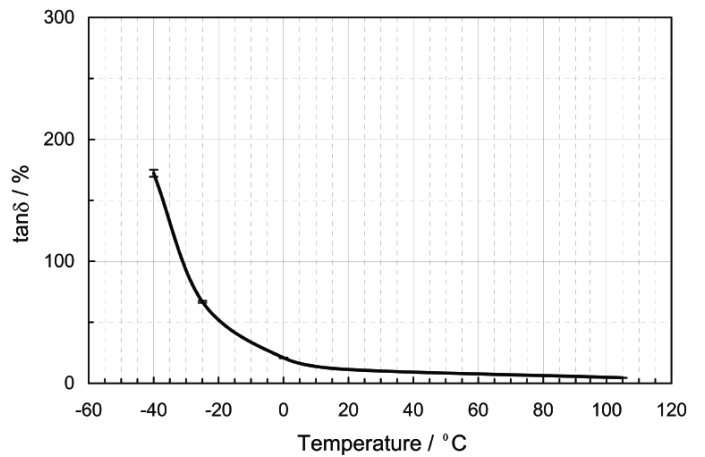
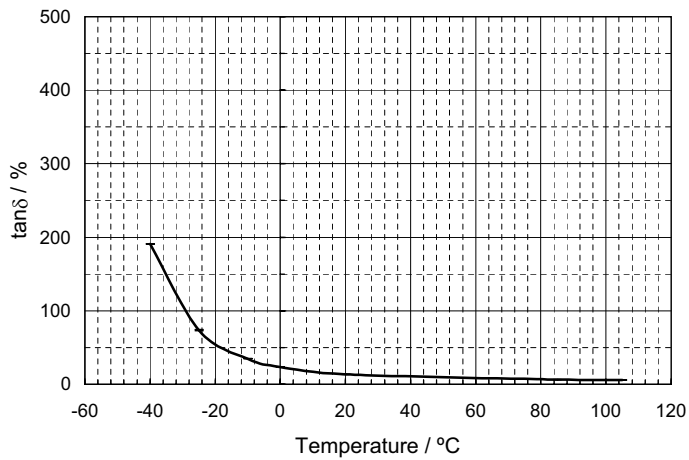
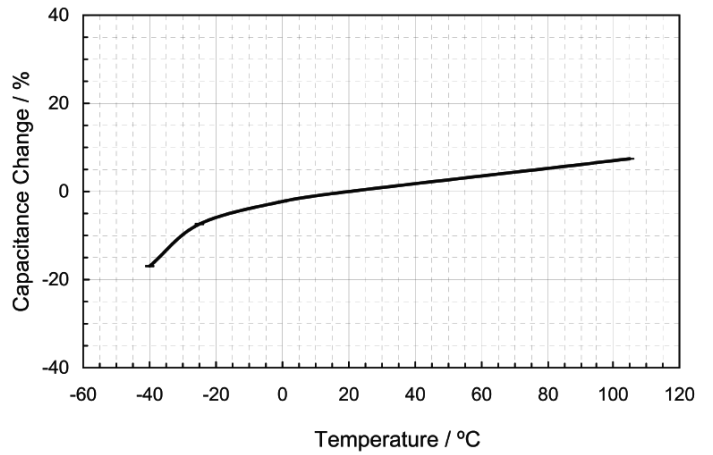
EEEHC0J220R (6.3V, 22 μ F, Dia. 4 x 5.8)

at 120Hz
n = 3



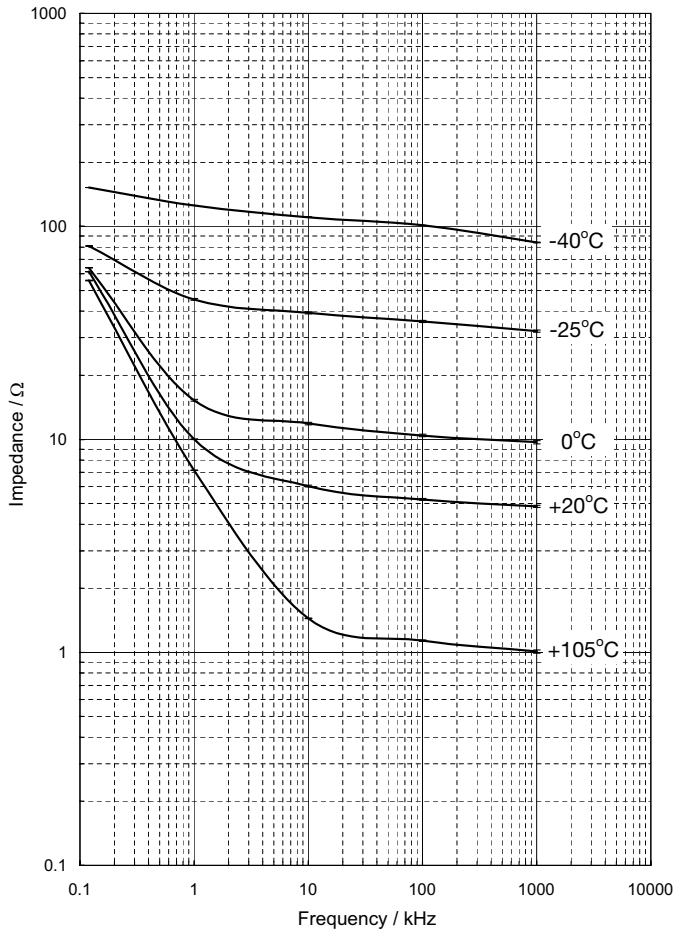
EEEHC1A221P (10V, 220 μ F, Dia. 8 x 10)

at 120Hz
n = 3

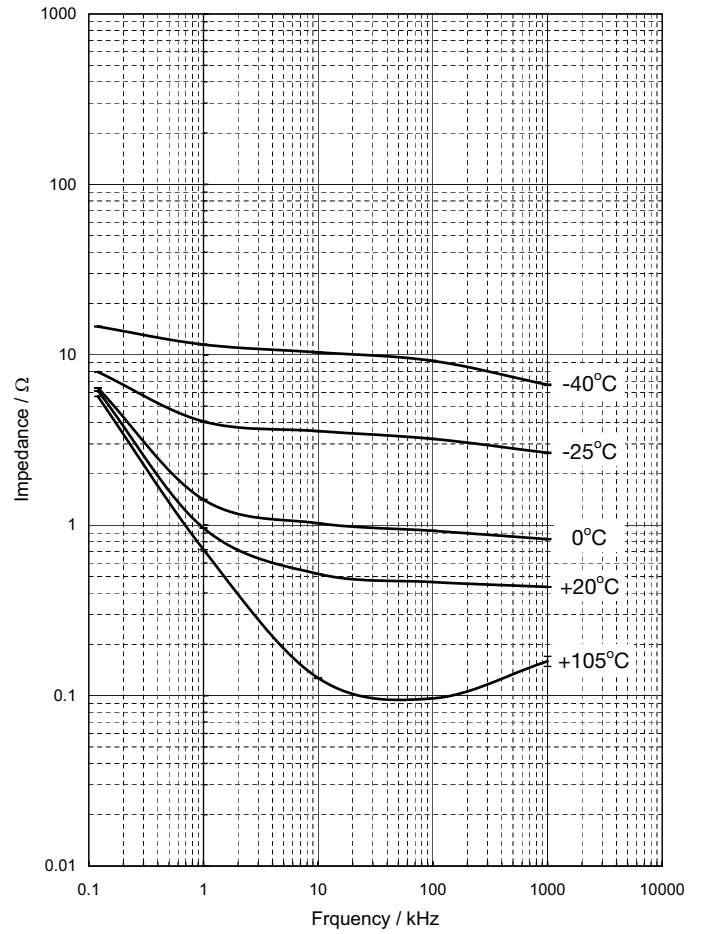


■ Frequency Characteristics

EEEHC0J220R (6.3V, 22 μ F, Dia. 4 x 5.8)



EEEHC1A221P (10V, 220 μ F, Dia. 8 x 10)



Pre-fix	Suffix	Case Diameter	RoHS Compliant	Terminal Finish	Reflow Condition		Reflow Chart
					Peak Temperature	Time above 200	
ECE-V	R	3mm to 5mm	No	Sn-Pb	240 for 5 seconds	20 seconds	(1) Fig.1
	P	6mm	No	Sn-Pb	240 for 5 seconds	20 seconds	(1) Fig.1
	P	8mm to 10mm	No	Sn-Pb	230 for 5 seconds	20 seconds	(2) Fig.2
EEV-	R	4mm to 5mm	No	Sn-Pb	240 for 5 seconds	20 seconds	(1) Fig.1
	P	6mm	No	Sn-Pb	240 for 5 seconds	20 seconds	(1) Fig.1
	P	8mm to 10mm	No	Sn-Pb	230 for 5 seconds	20 seconds	(2) Fig.2
	Q	12.5mm	Yes	Sn	230 for 5 seconds	20 seconds	(2) Fig.2 (Except for EB series) (3) Fig.3 (EB series only)
	M	16mm to 18mm	Yes	Sn	230 for 5 seconds	20 seconds	(2) Fig.2 (Except for EB series) (3) Fig.3 (EB series only)
EEE-	R	3mm to 5mm	Yes	Sn-Bi	250 for 5 seconds	60 seconds	(4) Fig.4
	P	6mm	Yes	Sn-Bi	250 for 5 seconds	60 seconds	(4) Fig.4
	P	8mm to 10mm	Yes	Sn-Bi	235 for 5 seconds	60 seconds	(5) Fig.5

