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With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



## Contact us

Tel: +86-755-8981 8866 Fax: +86-755-8427 6832

Email & Skype: info@chipsmall.com Web: www.chipsmall.com

Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China



### Surface Mount Type

Series: HD Type : V

- Features Endurance: 5000h at 105°C  
Vibration-proof product is available upon request.(φ8 ≤ )  
RoHS directive not compliant



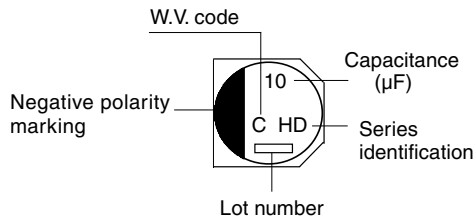
#### ■ Specifications

Category temp. range	-40 to +105°C								
Rated W.V. Range	10 to 100V .DC								
Nominal Cap. Range	0.47 to 330 μF								
Capacitance Tolerance	±20 % (120Hz/+20°C)								
DC Leakage Current	I ≤ 0.01CV or 3(μA) After 2 minutes application of rated working voltage at +20°C. (Whichever is greater)								
tan δ	Please see the attached standard products list								
Characteristics at Low Temperature	W.V. (V)	10	16	25	35	50	63	100	(Impedance ratio at 120 Hz)
	Z(-25°C) / Z(+20°C)	8	5	4	3	3	3	3	
	Z(-40°C) / Z(+20°C)	14	12	10	8	8	8	8	
Endurance	After applying rated working voltage for 5000 hours at +105±2°C and then being stabilized at +20°C, capacitors shall meet the following limits.								
	Capacitance change	±30% of initial measured value							
	tan δ	≤ 300 % of initial specified value							
Shelf Life	After storage for 1000 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)								
	Capacitance change	±20% of initial measured value							
	tan δ	≤ 200 % of initial specified value							
Resistance to Soldering Heat	After reflow soldering (Refer to page 86 for recommended temperature profile.) 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.16V10μF

Marking color : BLACK

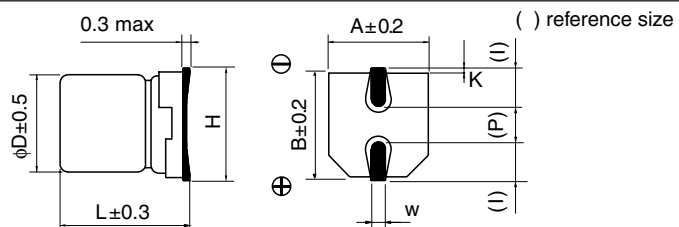


W.V. code

V	10	16	25	35
Code	A	C	E	V

V	50	63	100
Code	H	J	2A

#### ■ Dimensions in mm (not to scale)



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

#### ■ Case Size

Cap.(μF) \ W.V.	10(1A)	16(1C)	25(1E)	35(1V)	50(1H)	63(1J)	100(2A)
0.47					B		
1.0					B		
2.2					B		
3.3					B		E
4.7			B	B	C		F
10		B	C	C	D	E	F
22		C	D	D	E	F	G
33			D	E	F	G	
47		D	E	F	G		
100	E	F	F	G			
220	F	G		G			
330	G		G				

### ■ Standard Products

W.V. (V)	Cap. (±20%) (μF)	Case size			Specification			Part No. (RoHS: not compliant)	Min. Packaging Qty	
		Dia. (mm)	Length (mm)	Size Code	Ripple Current (120Hz) (+105°C) (mA)	Impedance (100kHz) (+20°C) (Ω)	tan δ (120Hz) (+20°C)		Reflow	Taping (pcs)
10	100	8	6.2	E	62	2.0	0.30	EEVHD1A101P	(2)	1000
	220	8	10.2	F	93	1.5	0.30	EEVHD1A221P	(2)	500
	330	10	10.2	G	118	0.8	0.30	EEVHD1A331P	(2)	500
16	10	4	5.8	B	20	12.0	0.20	EEVHD1C100R	(1)	2000
	22	5	5.8	C	33	7.2	0.20	EEVHD1C220R	(1)	1000
	47	6.3	5.8	D	55	4.0	0.20	EEVHD1C470P	(1)	1000
	100	8	10.2	F	89	1.5	0.23	EEVHD1C101P	(2)	500
25	220	10	10.2	G	113	0.8	0.23	EEVHD1C221P	(2)	500
	4.7	4	5.8	B	15	12.0	0.16	EEVHD1E4R7R	(1)	2000
	10	5	5.8	C	26	7.2	0.16	EEVHD1E100R	(1)	1000
	22	6.3	5.8	D	42	4.0	0.16	EEVHD1E220P	(1)	1000
	33	6.3	5.8	D	52	4.0	0.16	EEVHD1E330P	(1)	1000
	47	8	6.2	E	56	2.0	0.18	EEVHD1E470P	(2)	1000
	100	8	10.2	F	84	1.5	0.18	EEVHD1E101P	(2)	500
35	330	10	10.2	G	112	0.8	0.18	EEVHD1E331P	(2)	500
	4.7	4	5.8	B	17	12.0	0.13	EEVHD1V4R7R	(1)	2000
	10	5	5.8	C	28	7.2	0.13	EEVHD1V100R	(1)	1000
	22	6.3	5.8	D	47	4.0	0.13	EEVHD1V220P	(1)	1000
	33	8	6.2	E	53	2.0	0.16	EEVHD1V330P	(2)	1000
	47	8	10.2	F	79	1.5	0.16	EEVHD1V470P	(2)	500
	100	10	10.2	G	101	0.8	0.16	EEVHD1V101P	(2)	500
50	220	10	10.2	G	106	0.8	0.16	EEVHD1V221P	(2)	500
	0.47	4	5.8	B	5	12.0	0.12	EEVHD1HR47R	(1)	2000
	1.0	4	5.8	B	7	12.0	0.12	EEVHD1H1R0R	(1)	2000
	2.2	4	5.8	B	12	12.0	0.12	EEVHD1H2R2R	(1)	2000
	3.3	4	5.8	B	16	12.0	0.12	EEVHD1H3R3R	(1)	2000
	4.7	5	5.8	C	21	7.2	0.12	EEVHD1H4R7R	(1)	1000
	10	6.3	5.8	D	33	4.0	0.12	EEVHD1H100P	(1)	1000
	22	8	6.2	E	50	2.0	0.14	EEVHD1H220P	(2)	1000
	33	8	10.2	F	74	1.5	0.14	EEVHD1H330P	(2)	500
63	47	10	10.2	G	94	0.8	0.14	EEVHD1H470P	(2)	500
	10	8	6.2	E	45	2.0	0.18	EEVHD1J100P	(2)	1000
	22	8	10.2	F	65	1.5	0.18	EEVHD1J220P	(2)	500
100	33	10	10.2	G	80	0.8	0.18	EEVHD1J330P	(2)	500
	3.3	8	6.2	E	30	2.0	0.18	EEVHD2A3R3P	(2)	1000
	4.7	8	10.2	F	50	1.5	0.18	EEVHD2A4R7P	(2)	500
	10	8	10.2	F	55	1.5	0.18	EEVHD2A100P	(2)	500
	22	10	10.2	G	70	0.8	0.18	EEVHD2A220P	(2)	500

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

Reflow profiles can be found on page 86.

Endurance: 105°C 5000h

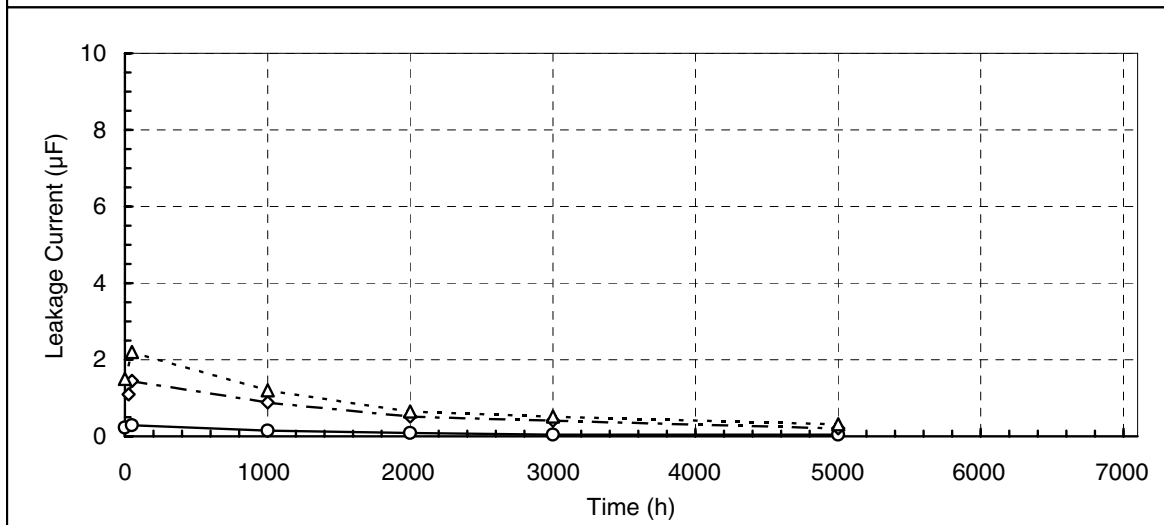
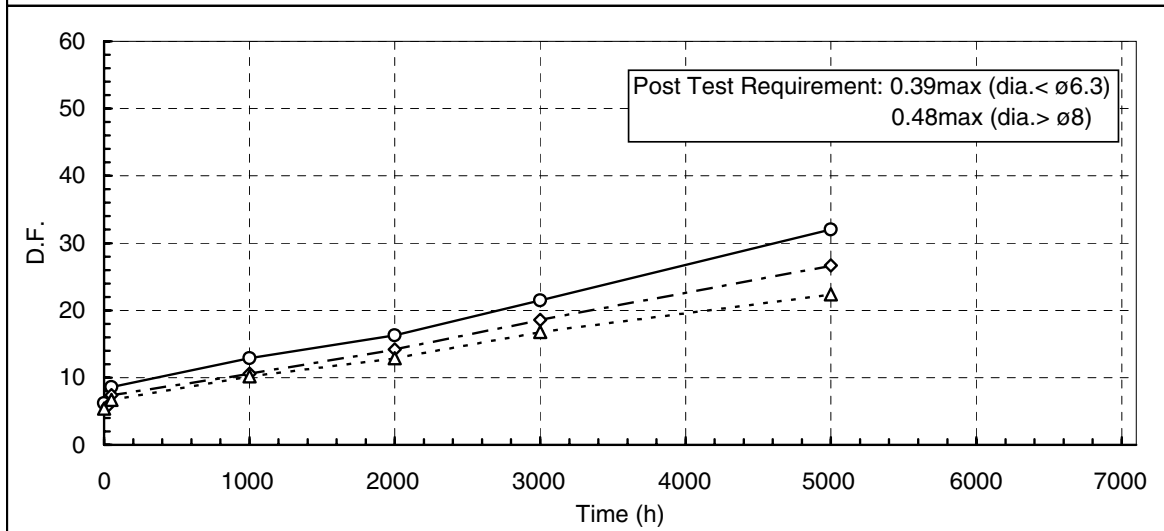
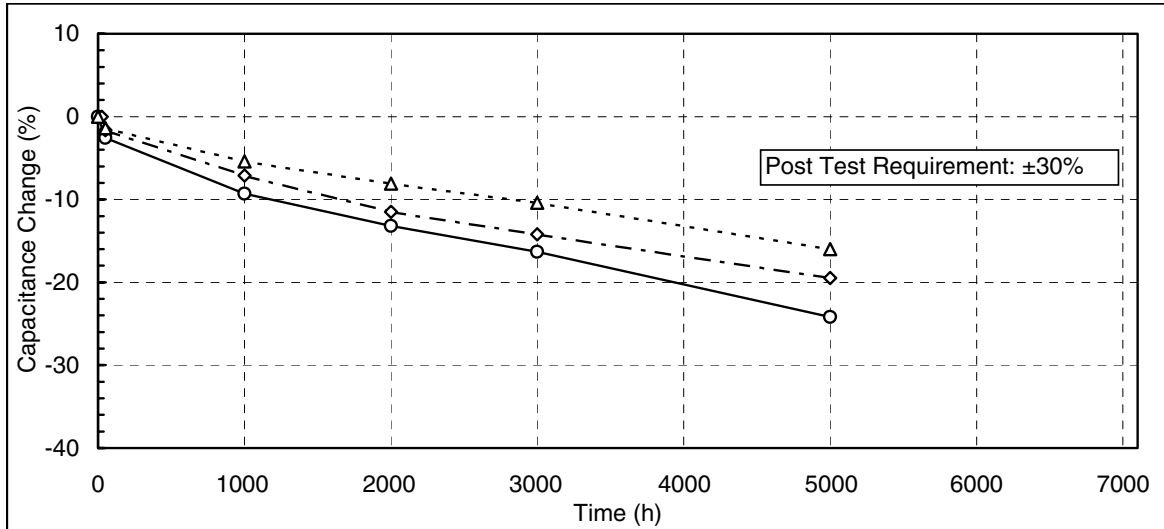
### ■ Frequency Correction Factor of Rated Ripple Current

coefficient	Frequency (Hz)			
	50 ≤ f < 100	100 ≤ f < 1k	1k ≤ f < 10k	10k ≤ f
	0.70	1.0	1.3	1.7

### ■ Endurance

- EEVHD1V4R7R (35V4.7 $\mu$ F,  $\phi$ 4x5.8)
- ◇ EEVHD1V220P (35V22 $\mu$ F,  $\phi$ 6.3x5.8)
- △ EEVHD1V101P (35V100 $\mu$ F,  $\phi$ 10x10.2)

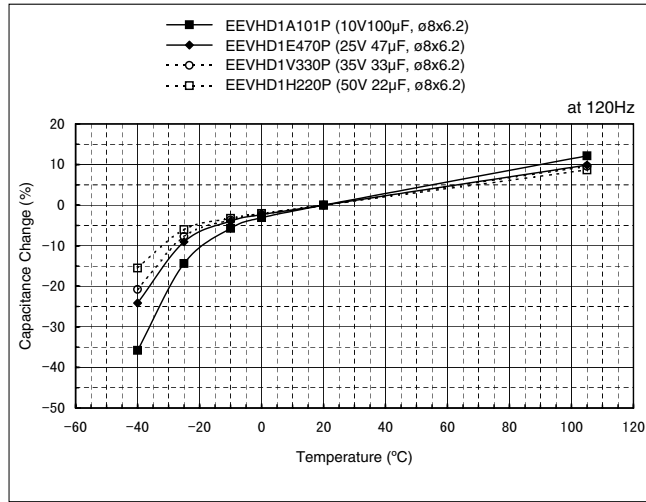
at 105°C



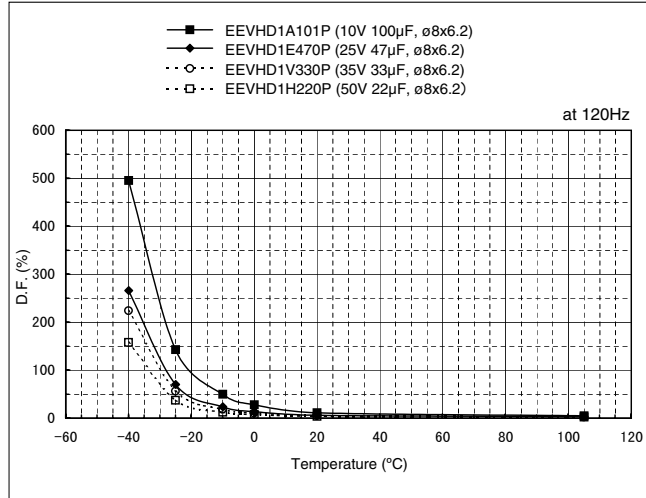
### Temperature Characteristics

● Diameter  $\phi 8 \times 6.2$

○ Capacitance

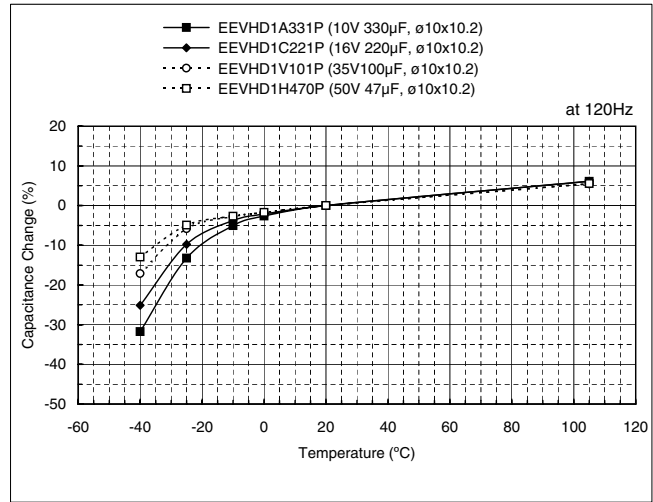


○ D.F.

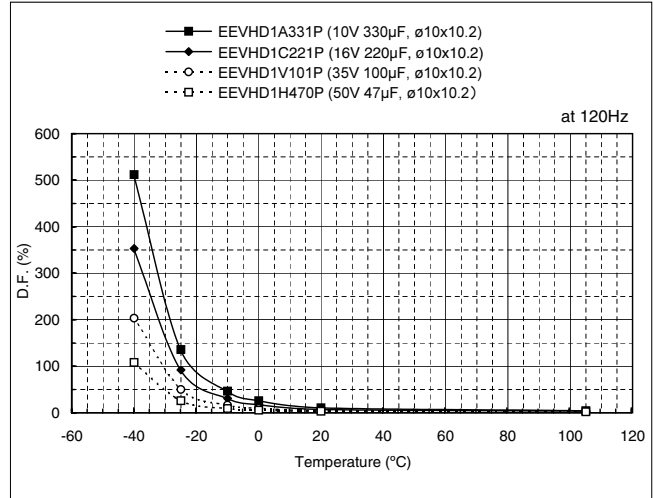


● Diameter  $\phi 10 \times 10.2$

○ Capacitance

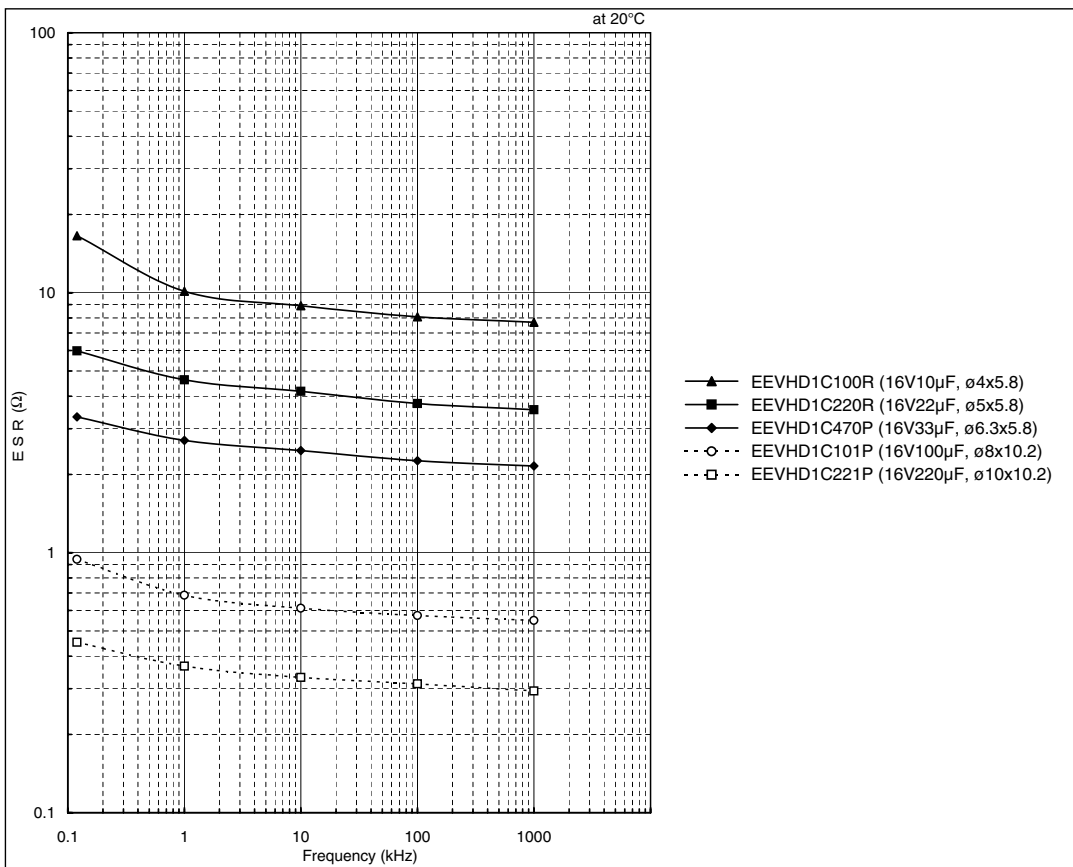


○ D.F.

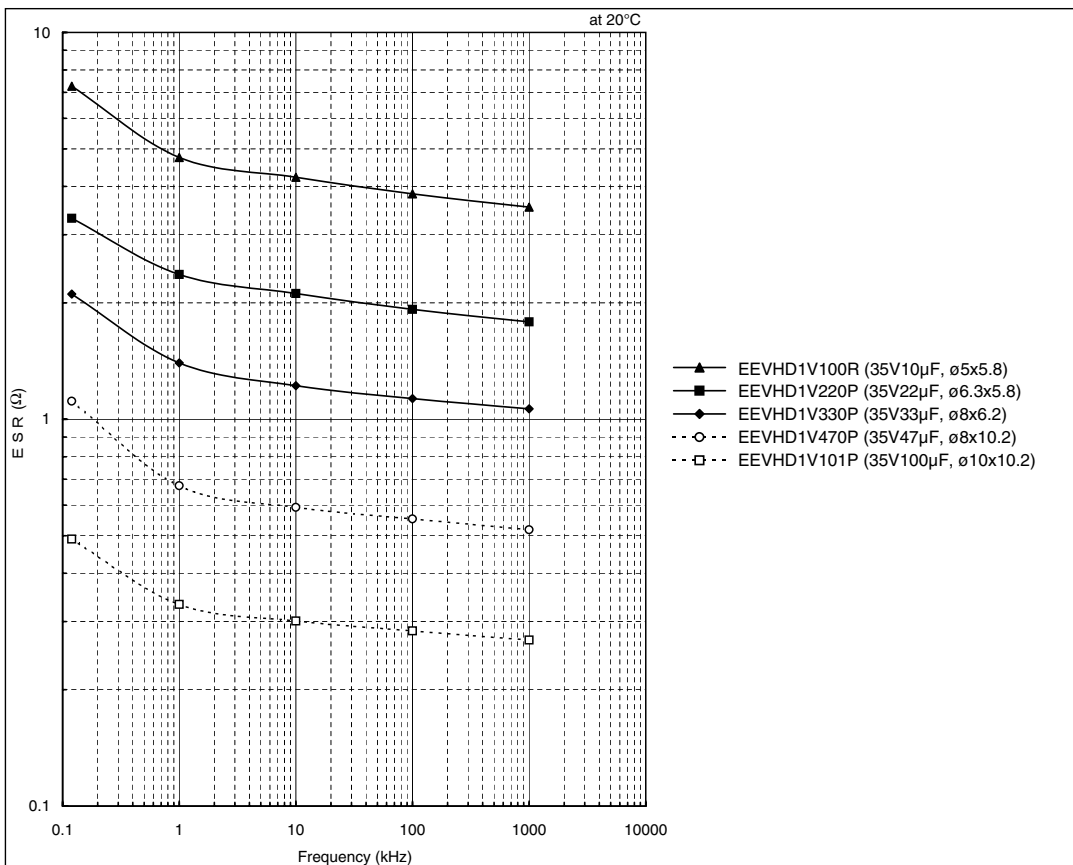


### ■ Temperature Characteristics – ESR

#### ● 16V



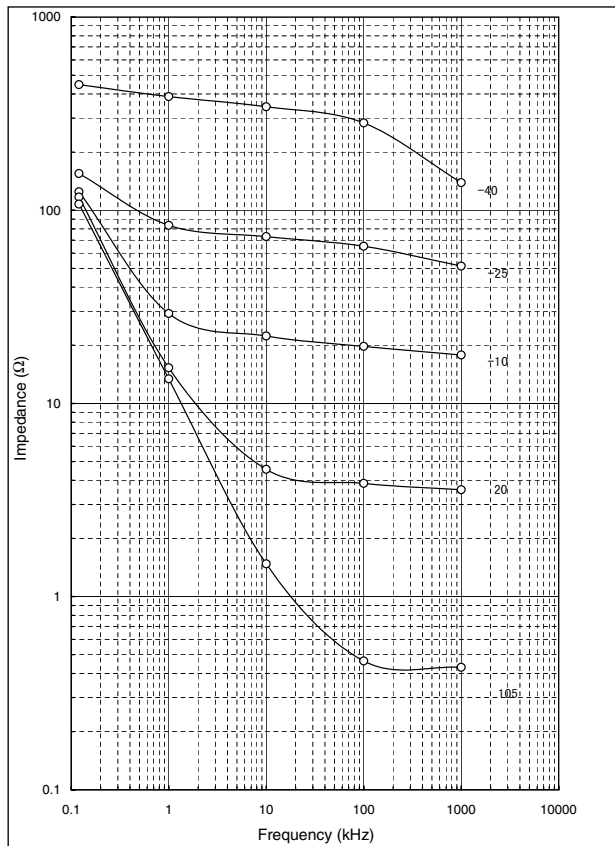
#### ● 35V



### Temperature Characteristics

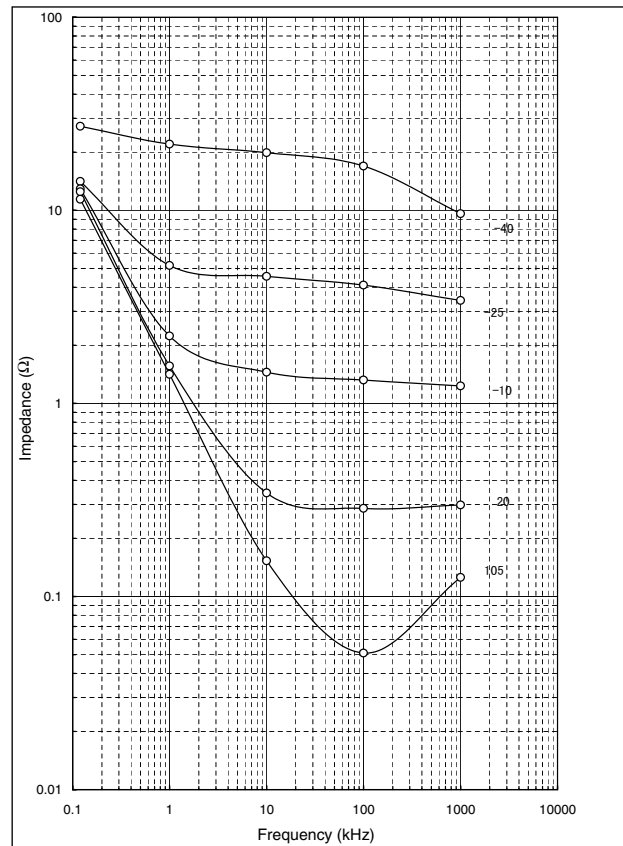
● EEVHD1V100R (35V 10 $\mu$ F,  $\phi$ 5x5.8)

○ Impedance

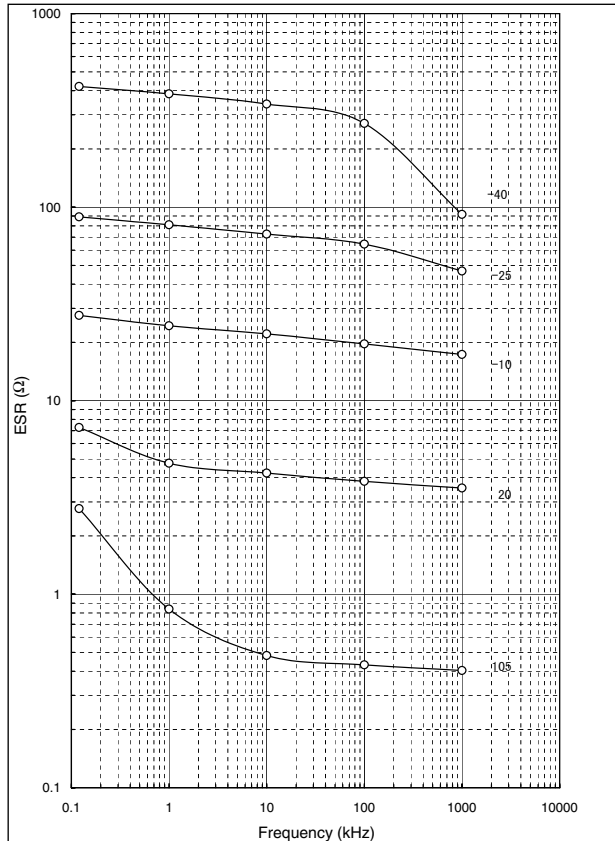


● EEVHD1V101P (35V 100 $\mu$ F,  $\phi$ 10x10.2)

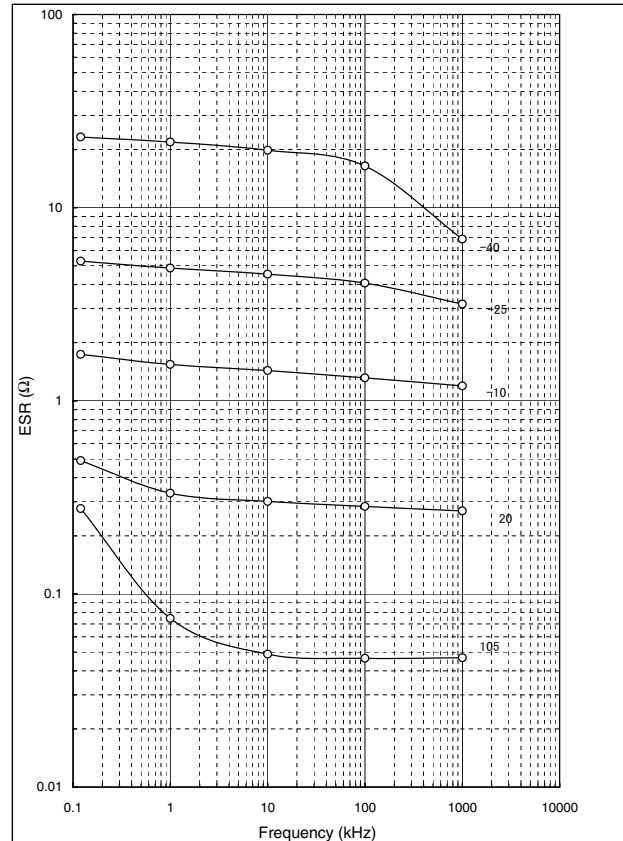
○ Impedance



○ ESR



○ ESR



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

