Surface Mount Type

Series: HB Type : V

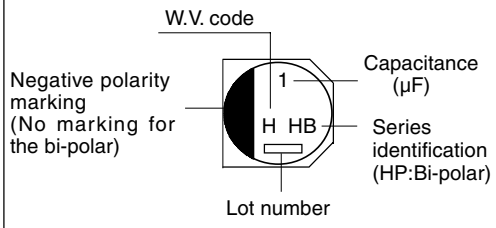
■ Features
- Endurance: 105°C 2000 h
- 5.8 mm height (≦φ6.3)
- Vibration-proof product is available upon request.(φ8≦)
- RoHS directive compliant(Parts No:EEE∗)

■ Specifications

Category temp. range	-40 to +105°C								
Rated W.V. Range	4 to 50 V .DC								
Nominal Cap. Range	0.1 to 220 μ F								
Capacitance Tolerance	±20 % (120Hz/+20°C)								
DC Leakage Current	I ≦ 0.01 CV or 3(μ A) after 2 minutes (Whichever is greater) (Bi-Polar I=0.02 CV or 6 (μA) after 2 minutes) (Whichever is greater)								
tan δ	Please see the attached standard products list								
Characteristics at Low Temperature	W.V. (V)	4	6.3	10	16	25	35	50	(Impedance ratio at 120 Hz)
	-25 / +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 2000 hours at +105±2°C and then being stabilized at +20°C, capacitors shall meet the following limits.								
	Capacitance change	±20% of initial measured value(4W.V.:±35 %, 6.3W.V.:±25 %)							
	tan δ	≦ 200 % of initial specified value							
	DC leakage current	≦ 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)								
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

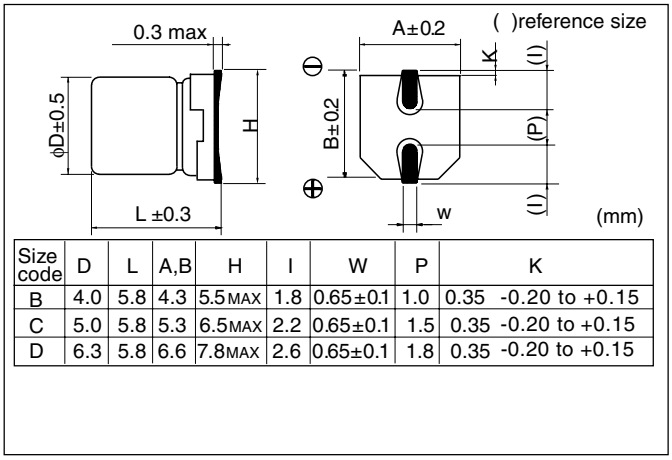
Example:50V 1 μF (Polarized)



W.V. code

V	4	6.3	10	16	25	35	50
Code	g	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 to +0.15
C	5.0	5.8	5.3	6.5MAX	2.2	0.65±0.1	1.5	0.35 -0.20 to +0.15
D	6.3	5.8	6.6	7.8MAX	2.6	0.65±0.1	1.8	0.35 -0.20 to +0.15

■ Case size

W.V.(V) / Cap.(μF)	4	6.3		10		16		25		35		50	
	Polar-ized	Polar-ized	Bi - polar	Polar-ized	Bi - polar	Polar-ized	Bi - polar	Polar-ized	Bi - polar	Polar-ized	Bi - polar	Polar-ized	Bi - polar
0.1 to 0.47												B	B
1.0												B	B
2.2											B	B	
3.3									B			B	D
4.7								B	B			C	D
6.8								B				C	
10					B	B	C		D	C		D	
22		B				C			D	D			
33		B		C	D			D					
47	B	C	D			D							
68													
100	C	D											
150	D												
220	D												

Design and specifications are subject to change without notice. Ask factory for technical specifications before purchase and/or use.
Whenever a doubt about safety arises from this product, please contact us immediately for technical consultation.

■ Standard Products

W.V. (V)	Cap. (±20%) (μF)	Case size Dia. (mm)	Case size Length (mm)	Case size Size Code	Specification Ripple current (120Hz) (+105°C) (mA)	Specification tan δ (120Hz) (+20°C)	Part No. (RoHS: not compliant)	Reflow	Part No. (RoHS: compliant)	Reflow	Min. Packaging Q'ty Taping (pcs)
4	47	4	5.8	B	34	0.50	EEVHB0G470R	(1)	EEEHB0G470R	(4)	2000
	100	5	5.8	C	61	0.50	EEVHB0G101R	(1)	EEEHB0G101R	(4)	1000
	150	6.3	5.8	D	82	0.50	EEVHB0G151P	(1)	EEEHB0G151P	(4)	1000
	220	6.3	5.8	D	82	0.50	EEVHB0G221P	(1)	EEEHB0G221P	(4)	1000
6.3	22	4	5.8	B	26	0.30	EEVHB0J220R	(1)	EEEHB0J220R	(4)	2000
	33	4	5.8	B	29	0.30	EEVHB0J330R	(1)	EEEHB0J330R	(4)	2000
	47	5	5.8	C	46	0.30	EEVHB0J470R	(1)	EEEHB0J470R	(4)	1000
	100	6.3	5.8	D	71	0.30	EEVHB0J101P	(1)	EEEHB0J101P	(4)	1000
10	33	5	5.8	C	43	0.22	EEVHB1A330R	(1)	EEEHB1A330R	(4)	1000
16	10	4	5.8	B	28	0.16	EEVHB1C100R	(1)	EEEHB1C100R	(4)	2000
	22	5	5.8	C	39	0.16	EEVHB1C220R	(1)	EEEHB1C220R	(4)	1000
	47	6.3	5.8	D	70	0.16	EEVHB1C470P	(1)	EEEHB1C470P	(4)	1000
25	4.7	4	5.8	B	22	0.14	EEVHB1E4R7R	(1)	EEEHB1E4R7R	(4)	2000
	6.8	4	5.8	B	25	0.14	EEVHB1E6R8R	(1)	EEEHB1E6R8R	(4)	2000
	33	6.3	5.8	D	65	0.14	EEVHB1E330P	(1)	EEEHB1E330P	(4)	1000
35	10	5	5.8	C	28	0.12	EEVHB1V100R	(1)	EEEHB1V100R	(4)	1000
	22	6.3	5.8	D	55	0.12	EEVHB1V220P	(1)	EEEHB1V220P	(4)	1000
50	0.1	4	5.8	B	1	0.12	EEVHB1HR10R	(1)	EEEHB1HR10R	(4)	2000
	0.22	4	5.8	B	2	0.12	EEVHB1HR22R	(1)	EEEHB1HR22R	(4)	2000
	0.33	4	5.8	B	3	0.12	EEVHB1HR33R	(1)	EEEHB1HR33R	(4)	2000
	0.47	4	5.8	B	5	0.12	EEVHB1HR47R	(1)	EEEHB1HR47R	(4)	2000
	1	4	5.8	B	10	0.12	EEVHB1H1R0R	(1)	EEEHB1H1R0R	(4)	2000
	2.2	4	5.8	B	16	0.12	EEVHB1H2R2R	(1)	EEEHB1H2R2R	(4)	2000
	3.3	4	5.8	B	16	0.12	EEVHB1H3R3R	(1)	EEEHB1H3R3R	(4)	2000
	4.7	5	5.8	C	23	0.12	EEVHB1H4R7R	(1)	EEEHB1H4R7R	(4)	1000
	6.8	5	5.8	C	23	0.12	EEVHB1H6R8R	(1)	EEEHB1H6R8R	(4)	1000
	10	6.3	5.8	D	35	0.12	EEVHB1H100P	(1)	EEEHB1H100P	(4)	1000

An explanation of the taping dimensions can be found on page 84.
Reflow profiles can be found on page 86.
Endurance: 105°C 2000h

Design and specifications are subject to change without notice. Ask factory for technical specifications before purchase and/or use.
Whenever a doubt about safety arises from this product, please contact us immediately for technical consultation.

■ Standard Products(Bi-polar)

W.V. (V)	Cap. (±20%) (μF)	Case size Dia. (mm)	Length (mm)	Size Code	Specification Ripple current (120Hz) (+105°C) (mA)	tan δ (120Hz) (+20°C)	Part No. (RoHS: not compliant)	Reflow	Part No. (RoHS: compliant)	Reflow	Min. Packaging Q'ty Taping (pcs)
6.3	47	6.3	5.8	D	35	0.60	EEVHP0J470P	(1)	EEEHP0J470P	(4)	1000
10	10	4	5.8	B	20	0.44	EEVHP1A100R	(1)	EEEHP1A100R	(4)	2000
	33	6.3	5.8	D	26	0.44	EEVHP1A330P	(1)	EEEHP1A330P	(4)	1000
16	10	5	5.8	C	25	0.32	EEVHP1C100R	(1)	EEEHP1C100R	(4)	1000
25	3.3	4	5.8	B	12	0.28	EEVHP1E3R3R	(1)	EEEHP1E3R3R	(4)	2000
	4.7	4	5.8	B	12	0.28	EEVHP1E4R7R	(1)	EEEHP1E4R7R	(4)	2000
	10	6.3	5.8	D	28	0.28	EEVHP1E100P	(1)	EEEHP1E100P	(4)	1000
	22	6.3	5.8	D	55	0.28	EEVHP1E220P	(1)	EEEHP1E220P	(4)	1000
35	2.2	4	5.8	B	10	0.24	EEVHP1V2R2R	(1)	EEEHP1V2R2R	(4)	2000
50	0.22	4	5.8	B	2	0.24	EEVHP1HR22R	(1)	EEEHP1HR22R	(4)	2000
	0.33	4	5.8	B	3	0.24	EEVHP1HR33R	(1)	EEEHP1HR33R	(4)	2000
	0.47	4	5.8	B	5	0.24	EEVHP1HR47R	(1)	EEEHP1HR47R	(4)	2000
	1	4	5.8	B	10	0.24	EEVHP1H1R0R	(1)	EEEHP1H1R0R	(4)	2000
	3.3	6.3	5.8	D	16	0.24	EEVHP1H3R3P	(1)	EEEHP1H3R3P	(4)	1000
	4.7	6.3	5.8	D	23	0.24	EEVHP1H4R7P	(1)	EEEHP1H4R7P	(4)	1000

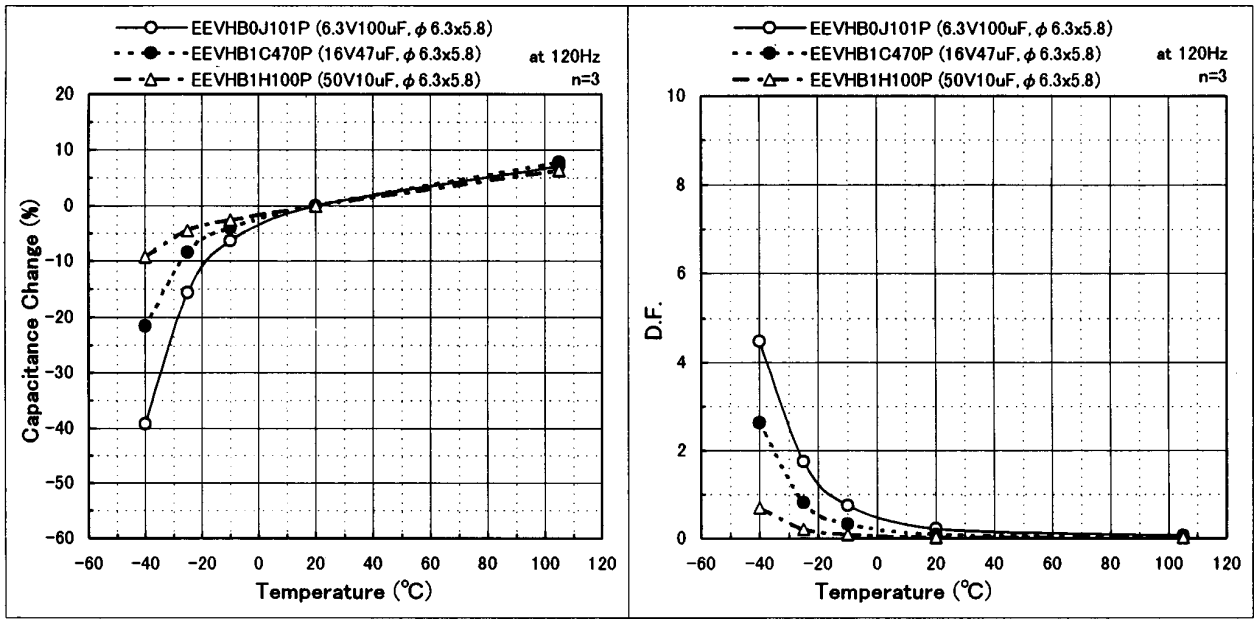
An explanation of the taping dimensions can be found on page 84.
Reflow profiles can be found on page 86.
Endurance: 105°C 2000h

■ Frequency Correction Factor of Rated Ripple Current

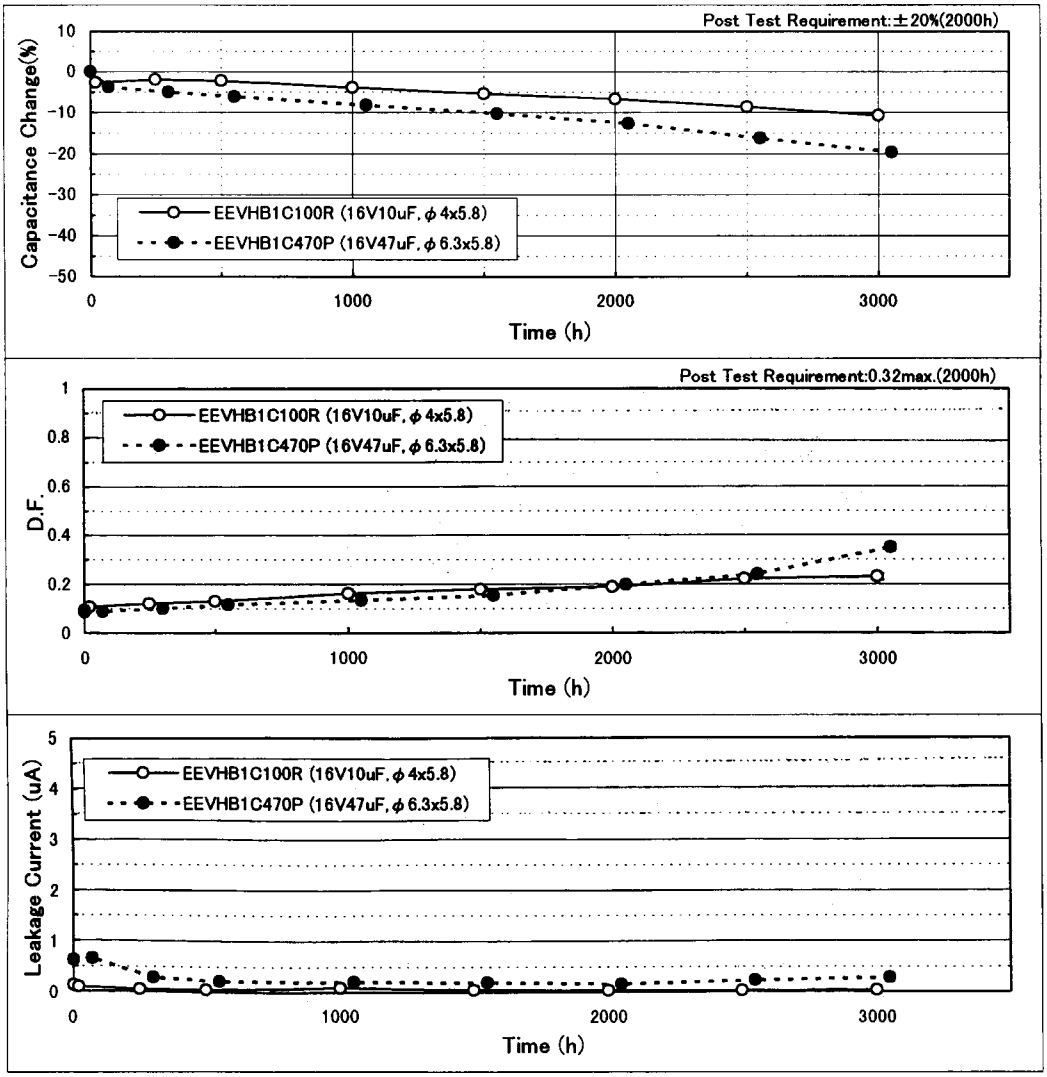
	Frequency (Hz)			
	50,60	120	1k	10k~
coefficient	0.70	1.0	1.3	1.7

Design and specifications are subject to change without notice. Ask factory for technical specifications before purchase and/or use.
Whenever a doubt about safety arises from this product, please contact us immediately for technical consultation.

■ Temperature Characteristics



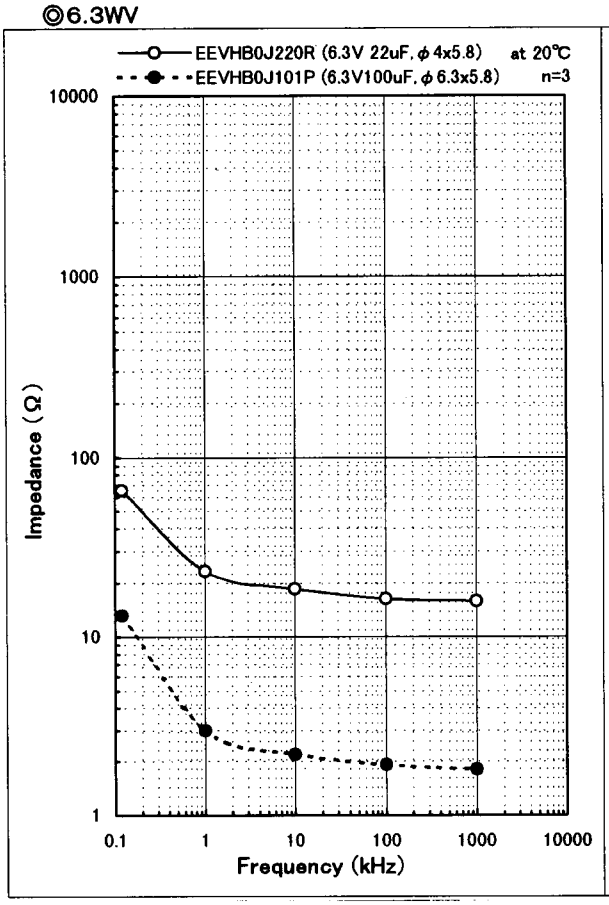
■ Endurance



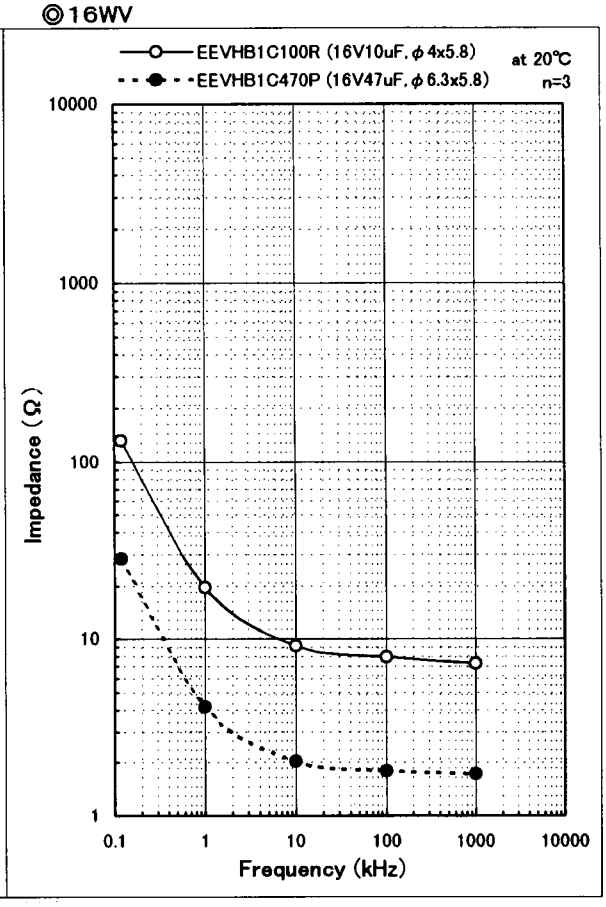
Design and specifications are subject to change without notice. Ask factory for technical specifications before purchase and/or use.
Whenever a doubt about safety arises from this product, please contact us immediately for technical consultation.

■ Frequency Characteristics

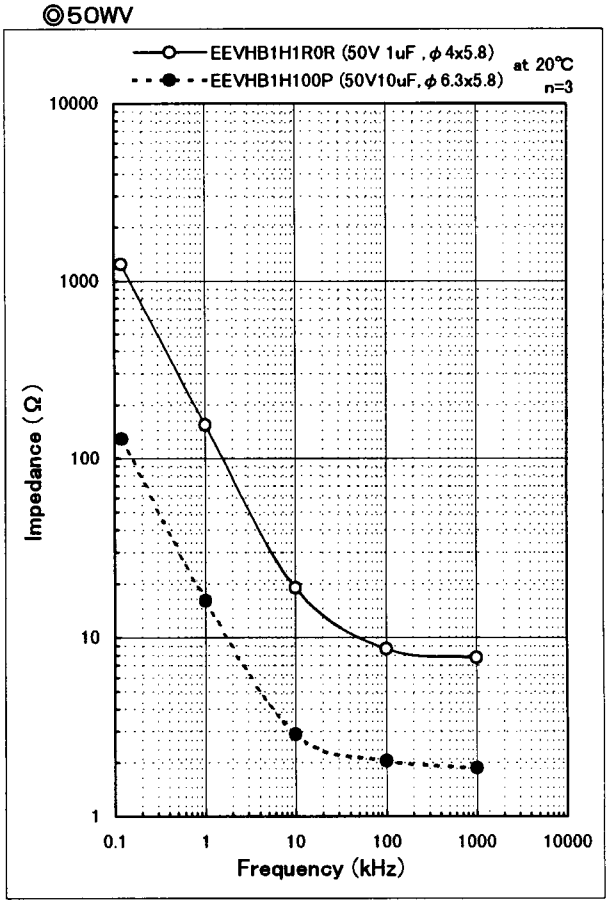
◎6.3WV



◎16WV

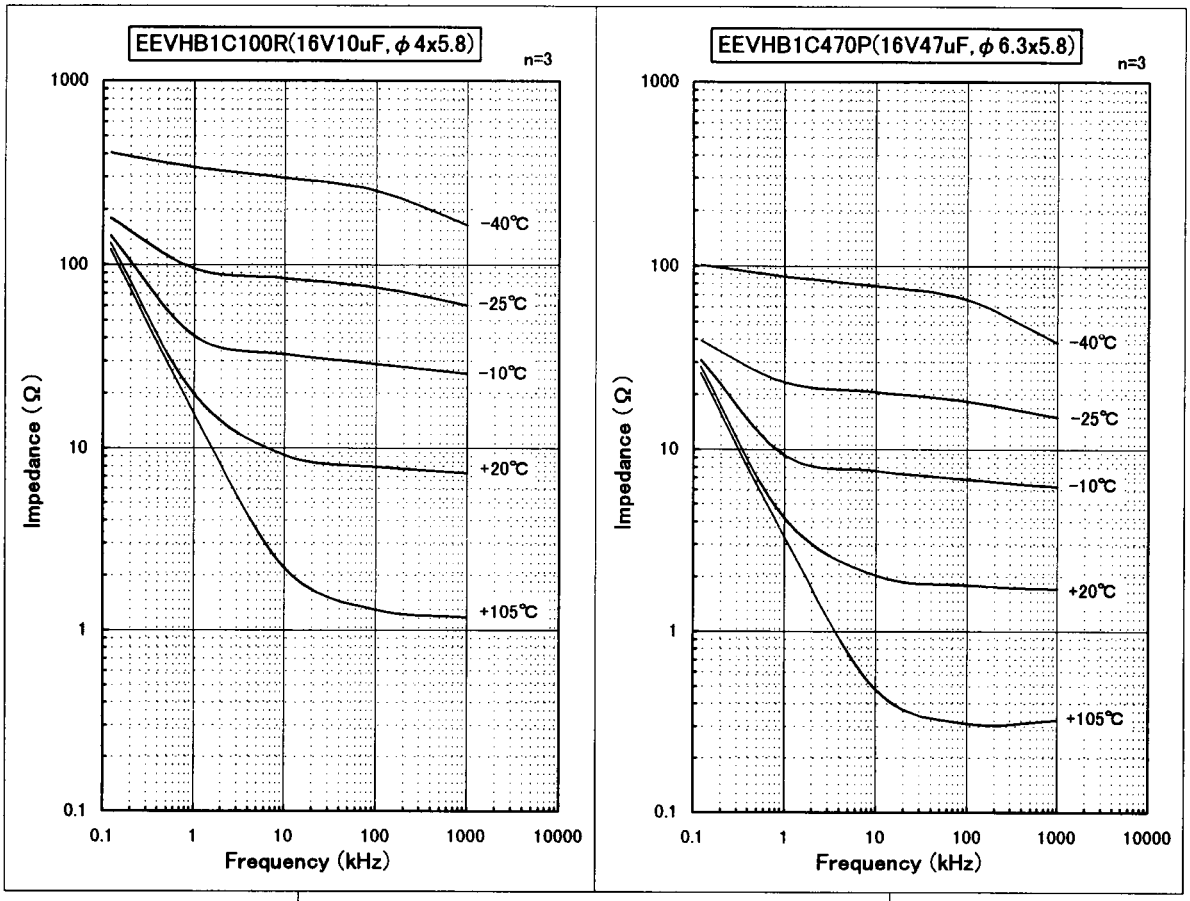


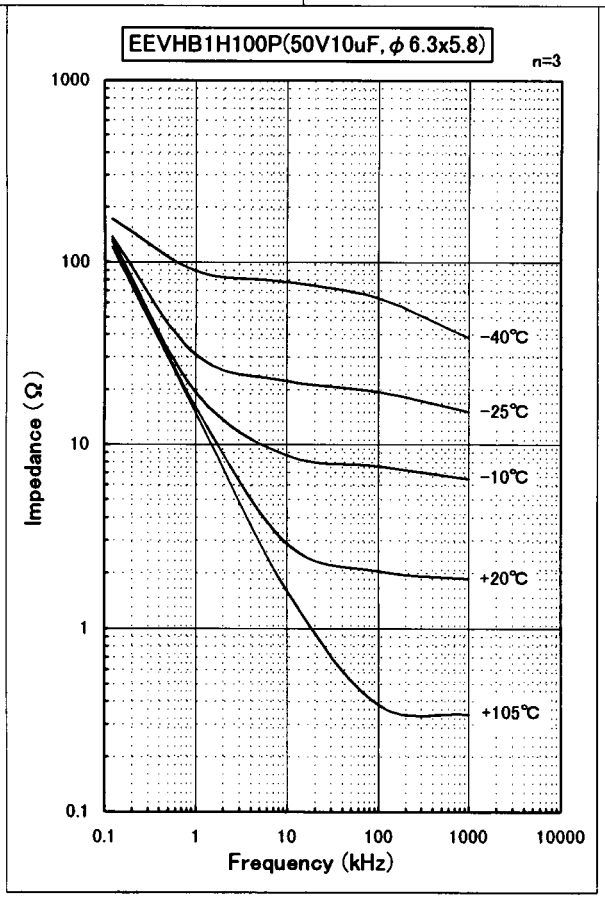
◎50WV



Design and specifications are subject to change without notice. Ask factory for technical specifications before purchase and/or use.
Whenever a doubt about safety arises from this product, please contact us immediately for technical consultation.

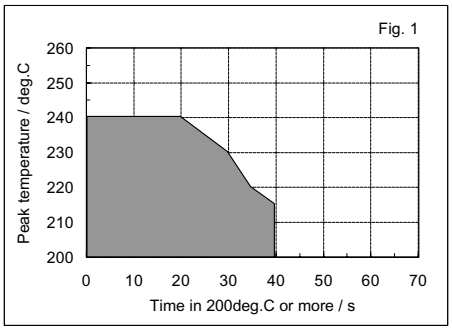
■ Temperature Characteristics

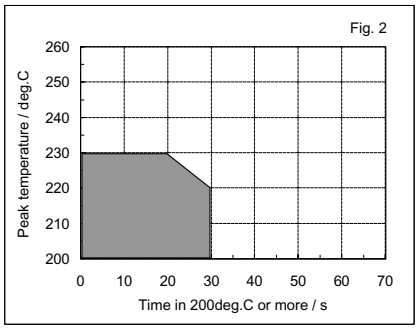


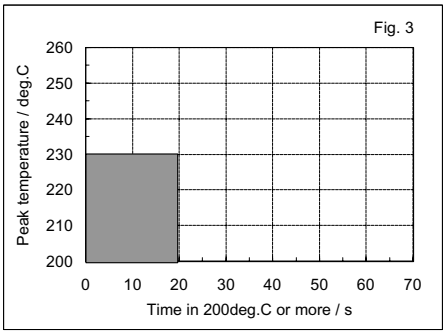


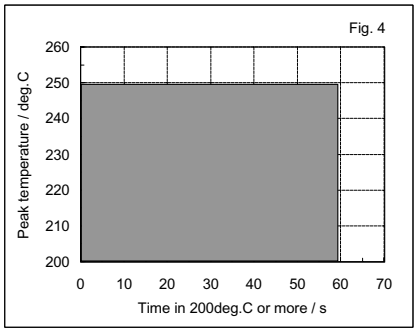
Design and specifications are subject to change without notice. Ask factory for technical specifications before purchase and/or use.
Whenever a doubt about safety arises from this product, please contact us immediately for technical consultation.

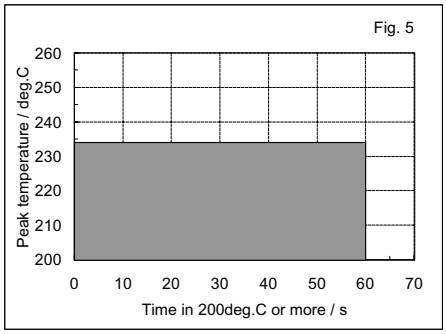
Pre-fix	Suffix	Case Diameter	RoHS Compliant	Terminal Finish	Reflow Condition		Reflow Chart
					Peak Temperature	Time above 200	
ECE-V	R	3mm to 5mm	No	Sn-Pb	240 for 5 seconds	20 seconds	(1) Fig.1
	P	6mm	No	Sn-Pb	240 for 5 seconds	20 seconds	(1) Fig.1
	P	8mm to 10mm	No	Sn-Pb	230 for 5 seconds	20 seconds	(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











Design and specifications are subject to change without notice. Ask factory for technical specifications before purchase and/or use.
Whenever a doubt about safety arises from this product, please contact us immediately for technical consultation.