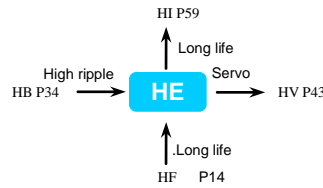


# HE SERIES



- Endurance with ripple current: 3000 hours at 105°C
- High Ripple
- Rated voltage range: 160V-500V
- Ideal for switching power and inverter smoothing capacitors.

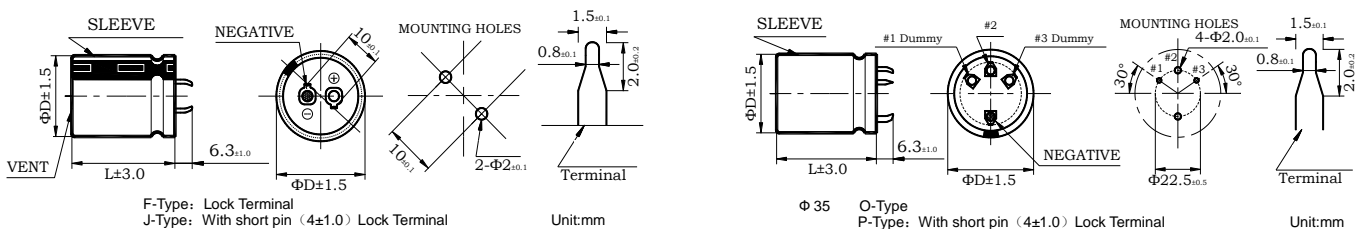


## ◆ SPECIFICATIONS

Items	Characteristics																		
Operating Temperature Range	-25~+105°C																		
Rated Working Voltage Range	160~500V																		
Capacitance Tolerance	±20% (20°C, 120Hz)																		
Dissipation Factor (MAX) 20°C, 120Hz	<table border="1"> <tr> <td>U<sub>R</sub>(V)</td> <td>160</td> <td>200</td> <td>250</td> <td>315</td> <td>350</td> <td>400</td> <td>450</td> <td>500</td> </tr> <tr> <td>tanδ</td> <td>0.15</td> <td>0.15</td> <td>0.15</td> <td>0.18</td> <td>0.18</td> <td>0.18</td> <td>0.20</td> <td>0.20</td> </tr> </table>	U <sub>R</sub> (V)	160	200	250	315	350	400	450	500	tanδ	0.15	0.15	0.15	0.18	0.18	0.18	0.20	0.20
	U <sub>R</sub> (V)	160	200	250	315	350	400	450	500										
tanδ	0.15	0.15	0.15	0.18	0.18	0.18	0.20	0.20											
Impedance Ratio (MAX) 120Hz	<table border="1"> <tr> <td>U<sub>R</sub>(V)</td> <td>160</td> <td>200</td> <td>250</td> <td>315</td> <td>350</td> <td>400</td> <td>450</td> <td>500</td> </tr> <tr> <td>Z<sub>-25°C</sub>/Z<sub>+20°C</sub></td> <td>4</td> <td>4</td> <td>4</td> <td>7</td> <td>7</td> <td>7</td> <td>8</td> <td>8</td> </tr> </table>	U <sub>R</sub> (V)	160	200	250	315	350	400	450	500	Z <sub>-25°C</sub> /Z <sub>+20°C</sub>	4	4	4	7	7	7	8	8
	U <sub>R</sub> (V)	160	200	250	315	350	400	450	500										
Z <sub>-25°C</sub> /Z <sub>+20°C</sub>	4	4	4	7	7	7	8	8											
Leakage Current (MAX)	I=0.01C <sub>R</sub> U <sub>R</sub> or 1.5mA whichever is minimum. (at 20°C, After 5 minutes application of rated voltage) I=Leakage Current(µA)      U <sub>R</sub> =Rated Voltage(V)      C <sub>R</sub> =Rated Capacitance(µF)																		

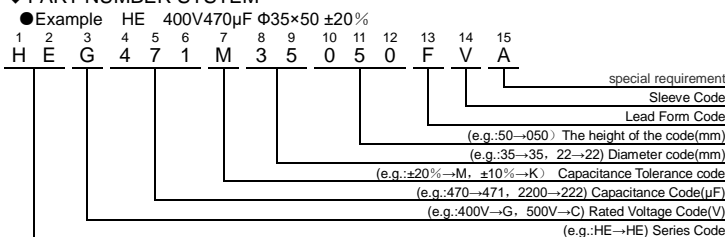
	Useful Life		Load Life	Endurance Test	Shelf Life
Life Time	5000h	>180000h	3000h	3000h	1000h
Leakage Current	≤ Specified value		≤ Specified value	≤ Specified value	≤ Specified value
tanδ change	≤ 300% of specified value		≤ 200% of specified value	≤ 200% of specified value	≤ 200% of specified value
Capacitance Change	Within ±30% of initial value		Within ±20% of initial value	Within ±20% of initial value	Within ±20% of initial value
Condition Applied Voltage Applied Ripple Current Applied Temperature Failure Rate Level	U <sub>R</sub> I <sub>R</sub> 105°C ≤ 1% Failure rate	U <sub>R</sub> 1.4 × I <sub>R</sub> 40°C ≤ 1% Failure rate	U <sub>R</sub> I <sub>R</sub> 105°C 0%	U <sub>R</sub> I <sub>R</sub> =0 105°C 0%	U <sub>R</sub> =0 I <sub>R</sub> =0 105°C 0% Back up to 20°C and placed more than 24 hours. U <sub>R</sub> to be applied for 60 min before measurement.

- ◆ Dimensions
- Terminal Code



- Please ask for advice for other sizes.

## ◆ PART NUMBER SYSTEM



## ◆ Rated Ripple Current Multiplies

● Frequency coefficient

Rated voltage (v)	Frequency (Hz)				
	50 (60)	100 (120)	300	1k	≥10k
160~250VV	0.80	1.00	1.17	1.32	1.45
315~500VV	0.80	1.00	1.16	1.30	1.41

● Temperature coefficient

Rated voltage (v)	Temperature (°C)				
	+40	+55	+70	+85	+105
160~500VV	2.7	2.5	2.1	1.7	1.0

# HE SERIES

## ◆ Standard Ratings

WV <sub>DC</sub> (Surge Voltage) (V)	Cap (μF)	Size D×L (mm)	tanδ 20°C/120Hz	Ripple Current 105°C/120Hz (Arms)	Catalog Part Number
160 (200)	330	22×25	0.15	1.70	HEN331M22025□VA
	390	25×25	0.15	1.80	HEN391M25025□VA
	470	22×35	0.15	2.00	HEN471M22035□VA
	560	22×35	0.15	2.50	HEN561M22035□VA
	560	25×30	0.15	2.40	HEN561M25030□VA
	560	30×25	0.15	2.30	HEN561M30025□VA
	680	22×40	0.15	2.80	HEN681M22040□VA
	680	25×35	0.15	2.70	HEN681M25035□VA
	820	22×50	0.15	3.00	HEN821M22050□VA
	820	25×40	0.15	2.90	HEN821M25040□VA
	820	30×30	0.15	3.10	HEN821M30030□VA
	820	35×25	0.15	3.00	HEN821M35025□VA
	1000	25×45	0.15	3.50	HEN102M25045□VA
	1000	30×35	0.15	3.60	HEN102M30035□VA
	1000	35×30	0.15	3.50	HEN102M35030□VA
	1200	25×50	0.15	3.90	HEN122M25050□VA
	1200	30×40	0.15	4.00	HEN122M30040□VA
	1200	35×35	0.15	3.80	HEN122M35035□VA
	1500	30×45	0.15	4.60	HEN152M30045□VA
	1500	35×40	0.15	4.50	HEN152M35040□VA
1800	35×45	0.15	4.60	HEN182M35045□VA	
2200	35×40	0.15	6.10	HEN222M35040□VA	
200 (250)	220	22×25	0.15	1.30	HEL221M22025□VA
	270	22×25	0.15	1.37	HEL271M22025□VA
	330	22×30	0.15	1.60	HEL331M22030□VA
	330	25×25	0.15	1.60	HEL331M25025□VA
	390	22×30	0.15	1.65	HEL391M22030□VA
	470	22×35	0.15	1.75	HEL471M22035□VA
	470	25×30	0.15	1.75	HEL471M25030□VA
	470	30×25	0.15	1.80	HEL471M30025□VA
	560	22×45	0.15	1.85	HEL561M22045□VA
	560	25×35	0.15	1.85	HEL561M25035□VA
	680	22×50	0.15	1.88	HEL681M22050□VA
	680	25×40	0.15	2.12	HEL681M25040□VA
	680	30×30	0.15	2.12	HEL681M30030□VA
	680	35×25	0.15	2.40	HEL681M35025□VA
	820	25×45	0.15	2.40	HEL821M25045□VA
	820	30×35	0.15	2.40	HEL821M30035□VA
	820	35×30	0.15	2.60	HEL821M35030□VA
	1000	30×40	0.15	2.60	HEL102M30040□VA
	1000	35×35	0.15	2.60	HEL102M35035□VA
	1200	30×45	0.15	2.95	HEL122M30045□VA
1200	35×40	0.15	2.95	HEL122M35040□VA	
1500	35×40	0.15	3.65	HEL152M35040□VA	
1800	35×45	0.15	4.20	HEL182M35045□VA	
2200	35×50	0.15	4.70	HEL222M35050□VA	
250 (300)	180	22×25	0.15	1.20	HEJ181M22025□VA
	220	22×30	0.15	1.40	HEJ221M22030□VA
	220	25×25	0.15	1.40	HEJ221M25025□VA
	270	22×35	0.15	1.45	HEJ271M22035□VA
	330	22×40	0.15	1.50	HEJ331M22040□VA
	330	25×30	0.15	1.65	HEJ331M25030□VA
	330	30×25	0.15	1.55	HEJ331M30025□VA
	390	22×45	0.15	1.60	HEJ391M22045□VA
	390	25×35	0.15	1.65	HEJ391M25035□VA
	470	22×50	0.15	1.85	HEJ471M22050□VA
	470	30×30	0.15	1.85	HEJ471M30030□VA
	470	35×25	0.15	1.85	HEJ471M35025□VA

WV <sub>DC</sub> (Surge Voltage) (V)	Cap (μF)	Size D×L (mm)	tanδ 20°C/120Hz	Ripple Current 105°C/120Hz (Arms)	Catalog Part Number	
250 (300)	560	25×45	0.15	2.05	HEJ561M25045□VA	
	560	30×35	0.15	2.05	HEJ561M30035□VA	
	560	35×30	0.15	2.05	HEJ561M35030□VA	
	680	25×50	0.15	2.40	HEJ681M25050□VA	
	680	30×40	0.15	2.40	HEJ681M30040□VA	
	820	30×45	0.15	2.70	HEJ821M30045□VA	
	820	30×50	0.15	2.70	HEJ821M30050□VA	
	1000	30×50	0.15	3.10	HEJ102M30050□VA	
	1000	35×40	0.15	3.10	HEJ102M35040□VA	
	1200	35×45	0.15	3.50	HEJ122M35045□VA	
	1500	35×50	0.15	4.00	HEJ152M35050□VA	
	350 (400)	68	22×25	0.18	0.90	HEH680M22025□VA
		100	22×30	0.18	1.07	HEH101M22030□VA
		100	25×25	0.18	1.07	HEH101M25025□VA
		120	22×35	0.18	1.10	HEH121M22035□VA
150		22×40	0.18	1.18	HEH151M22040□VA	
150		25×30	0.18	1.22	HEH151M25030□VA	
150		30×25	0.18	1.22	HEH151M30025□VA	
180		22×45	0.18	1.31	HEH181M22045□VA	
180		25×35	0.18	1.31	HEH181M25035□VA	
180		30×30	0.18	1.32	HEH181M30030□VA	
220		22×50	0.18	1.36	HEH221M22050□VA	
220		25×40	0.18	1.40	HEH221M25040□VA	
220		35×25	0.18	1.40	HEH221M35025□VA	
270		25×50	0.18	1.46	HEH271M25050□VA	
270		30×35	0.18	1.51	HEH271M30035□VA	
270	35×30	0.18	1.46	HEH271M35030□VA		
330	30×45	0.18	1.65	HEH331M30045□VA		
330	35×35	0.18	1.65	HEH331M35035□VA		
390	30×50	0.18	1.78	HEH391M30050□VA		
390	35×40	0.18	1.78	HEH391M35040□VA		
470	35×45	0.18	1.89	HEH471M35045□VA		
560	35×50	0.18	2.09	HEH561M35050□VA		
400 (450)	68	22×25	0.18	0.68	HEG680M22025□VA	
	82	22×30	0.18	0.77	HEG820M22030□VA	
	82	25×25	0.18	0.76	HEG820M25025□VA	
	100	22×35	0.18	0.85	HEG101M22035□VA	
	100	25×25	0.18	0.85	HEG101M25025□VA	
	120	22×35	0.18	0.91	HEG121M22035□VA	
	120	25×30	0.18	0.91	HEG121M25030□VA	
	120	30×25	0.18	0.91	HEG121M30025□VA	
	150	22×40	0.18	1.05	HEG151M22040□VA	
	150	25×35	0.18	1.05	HEG151M25035□VA	
	150	30×25	0.18	1.05	HEG151M30025□VA	
	180	22×50	0.18	1.20	HEG181M22050□VA	
	180	25×40	0.18	1.20	HEG181M25040□VA	
	180	30×30	0.18	1.20	HEG181M30030□VA	
	180	35×25	0.18	1.20	HEG181M35025□VA	
220	25×45	0.18	1.40	HEG221M25045□VA		
220	30×35	0.18	1.40	HEG221M30035□VA		
220	35×30	0.18	1.40	HEG221M35030□VA		
270	25×50	0.18	1.55	HEG271M25050□VA		
270	30×40	0.18	1.55	HEG271M30040□VA		
270	35×30	0.18	1.55	HEG271M35030□VA		
330	30×45	0.18	1.80	HEG331M30045□VA		
330	35×35	0.18	1.80	HEG331M35035□VA		
390	30×50	0.18	2.00	HEG391M30050□VA		
390	35×40	0.18	2.00	HEG391M35040□VA		

\*□Enter the appropriate terminal code

# HE SERIES

## ◆ Standard Ratings

WV <sub>DC</sub> (Surge Voltage) (V)	Cap ( $\mu$ F)	Size D×L (mm)	$\tan\delta$ 20°C/120Hz	Ripple Current 105°C/120Hz (Arms)	Catalog Part Number
400 (450)	470	35×45	0.18	2.30	HEG471M35045□VA
	470	35×50	0.18	2.30	HEG471M35050□VA
	560	35×50	0.18	2.50	HEG561M35050□VA
450 (500)	56	22×25	0.20	0.70	HEE560M22025□VA
	68	22×30	0.20	0.80	HEE680M22030□VA
	82	22×35	0.20	0.85	HEE820M22035□VA
	100	22×35	0.20	0.92	HEE101M22035□VA
	100	25×30	0.20	0.92	HEE101M25030□VA
	100	30×25	0.20	0.92	HEE101M30025□VA
	120	22×45	0.20	1.00	HEE121M22045□VA
	120	25×35	0.20	1.00	HEE121M25035□VA
	150	22×50	0.20	1.15	HEE151M22050□VA
	150	25×40	0.20	1.15	HEE151M25040□VA
	150	30×30	0.20	1.15	HEE151M30030□VA
	150	35×25	0.20	1.15	HEE151M35025□VA
	180	25×45	0.20	1.25	HEE181M25045□VA
	180	30×35	0.20	1.25	HEE181M30035□VA
	220	25×50	0.20	1.50	HEE221M25050□VA
	220	30×40	0.20	1.50	HEE221M30040□VA
	220	35×30	0.20	1.50	HEE221M35030□VA
	270	30×45	0.20	1.70	HEE271M30045□VA
	270	35×35	0.20	1.70	HEE271M35035□VA
	330	30×50	0.20	2.10	HEE331M30050□VA

WV <sub>DC</sub> (Surge Voltage) (V)	Cap ( $\mu$ F)	Size D×L (mm)	$\tan\delta$ 20°C/120Hz	Ripple Current 105°C/120Hz (Arms)	Catalog Part Number
450 (500)	330	35×40	0.20	2.10	HEE331M35040□VA
	390	35×45	0.20	2.10	HEE391M35045□VA
	470	35×50	0.20	2.40	HEE471M35050□VA
500 (550)	100	22×45	0.20	0.82	HEC101M22045□VA
	100	25×40	0.20	0.82	HEC101M25040□VA
	100	30×30	0.20	0.82	HEC101M30030□VA
	120	22×50	0.20	0.91	HEC121M22050□VA
	120	25×40	0.20	0.89	HEC121M25040□VA
	120	30×35	0.20	0.93	HEC121M30035□VA
	120	35×30	0.20	0.91	HEC121M35030□VA
	150	25×45	0.20	1.01	HEC151M25045□VA
	150	30×40	0.20	1.05	HEC151M30040□VA
	150	35×35	0.20	1.08	HEC151M35035□VA
	180	25×50	0.20	1.06	HEC181M25050□VA
	180	30×45	0.20	1.11	HEC181M30045□VA
	220	30×50	0.20	1.27	HEC221M30050□VA
	220	35×40	0.20	1.24	HEC221M35040□VA
	270	30×50	0.20	1.46	HEC271M30050□VA
	270	35×40	0.20	1.43	HEC271M35040□VA
	330	35×45	0.20	1.61	HEC331M35045□VA
	390	35×50	0.20	1.79	HEC391M35050□VA
	470	35×60	0.20	2.04	HEC471M35060□VA
	560	35×70	0.20	2.38	HEC561M35070□VA

\*□Enter the appropriate terminal code

\* Please ask for advice for other sizes.

\*Aluminum electrolytic capacitor will emit heat when ripple current is applied, the performance will deteriorate when temp. rises. the useful life will be half of original life when temp rises every 5°C. Please reduce the ripple current when using capacitor.