

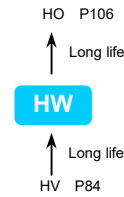
HW 系列 SERIES

Charge-discharge

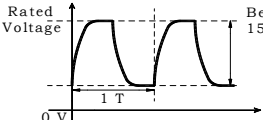
High reliability

RoHS

- 应对 AC 伺服放大器、变频器再生引起的大电压变化。
For frequently change of regenerative voltage from AC servo amplifier and inverter control.
- 保证 105℃、5000 小时寿命。(叠加纹波电流)
Endurance with ripple current: 5000 hours at 105℃
- 额定工作电压范围: 160V~500V
Rated voltage range: 160V-500V
- 最适合高频度打开/关闭电源及电压变化大的电源用。
Ideal use to power supply, specially power source with turn on and off frequently and highly voltage fluctuation.



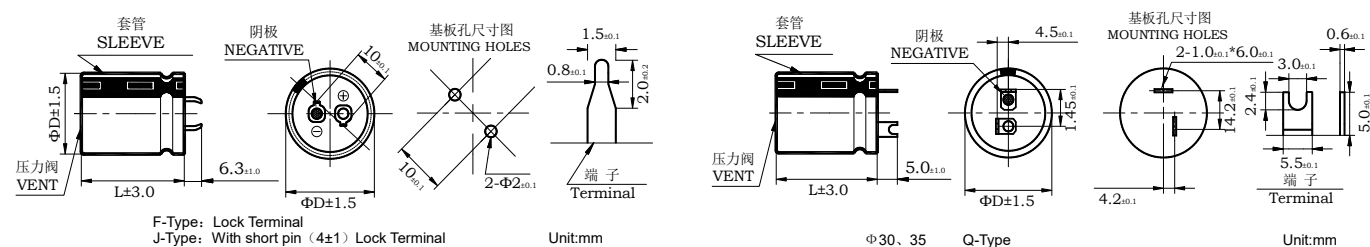
规格表 SPECIFICATIONS

项 目 Items	特 性 Characteristics																										
工作温度范围 Operating Temperature Range	-25~+105℃																										
额定工作电压范围 Rated Working Voltage Range	160~500V																										
静电容量允许偏差 Capacitance Tolerance	±20% (20℃, 120Hz)																										
损耗角正切值 Dissipation Factor (MAX) 20℃, 120Hz	<table><tr><td>U_R(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>0.15</td><td>0.15</td><td>0.15</td><td>0.20</td><td>0.20</td></tr></table>									U _R (V)	160	200	250	315	350	400	450	500	tanδ	0.15	0.15	0.15	0.15	0.15	0.15	0.20	0.20
U _R (V)	160	200	250	315	350	400	450	500																			
tanδ	0.15	0.15	0.15	0.15	0.15	0.15	0.20	0.20																			
阻抗比 Impedance Ratio (MAX) 120Hz	<table><tr><td>U_R(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_{-25℃}/ Z_{+20℃}</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 _R (V)	160	200	250	315	350	400	450	500	Z _{-25℃} / Z _{+20℃}	4	4	4	7	7	7	8	8
U _R (V)	160	200	250	315	350	400	450	500																			
Z _{-25℃} / Z _{+20℃}	4	4	4	7	7	7	8	8																			
漏电流 Leakage Current (MAX)	I=0.01C _R U _R 或 1.5mA 取小者 (20℃, 施加额定电压 5 分钟后) I=0.01C _R U _R or 1.5mA whichever is smaller. (at 20℃, After 5 minutes application of rated voltage) I=漏电流 (μA) U _R =额定电压 (V) C _R =静电容量 (μF) Leakage Current Rated Voltage Rated Capacitance																										
充放电特性 Charge and Discharge			在 15~35℃ 环境下, 用如图 6Hz 频率波形电压充放电 5000 万次, 恢复 20℃ 后检测, 满足表中要求: The following specifications shall be satisfied when the capacitors are restored to 20℃ after subjected to charge and discharge test (50million times) with the voltage waveform shown left at room temperature (15-35℃)			漏电流 Leakage current		≤规定值 ≤Specified value																			
						损耗角正切值变化率 tanδ change		≤规定值的 200% ≤200% of specified value																			
						静电容量变化率 Capacitance change		初始值±20%以内 Within±20% of initial value																			

	使用寿命 Useful Life	负荷寿命 Load Life	耐久性特性 Endurance Test	高温无负荷特性 Shelf Life
产品寿命 Life Time	7000h	>200000h	5000h	1000h
漏电流 Leakage Current	≤规定值 ≤Specified value	≤规定值 ≤Specified value	≤规定值 ≤Specified value	≤规定值 ≤Specified value
损耗角正切值变化率 $\tan\delta$ Change	≤规定值的 300% ≤300% of specified value	≤规定值的 200% ≤200% of specified value	≤规定值的 200% ≤200% of specified value	≤规定值的 200% ≤200% of specified value
静电容量变化率 Capacitance Change	初始值±30%以内 Within±30% of initial value	初始值±20%以内 Within±20% of initial value	初始值±20%以内 Within±20% of initial value	初始值±20%以内 Within±20% of initial value
施加条件 Condition 施加电压 Applied Voltage 施加纹波电流 Applied Ripple Current 环境温度 Applied Temperature 失效等级 Failure Rate Level	U_R I_R 105℃ ≤1% Failure rate	U_R $1.6 \times I_R$ 40℃ ≤1% Failure rate	U_R $I_R=0$ 105℃ 0%	$U_R=0$ $I_R=0$ 105℃ 0% Back up to 20℃ and placed more than 24 hours. U_R to be applied for 60 min before measurement.

尺寸图 Dimensions

- 常用端子型式代码: Terminal Code



- 记载以外的端子形状, 请另行咨询。Please consult to us for the terminal type not displayed in content.

产品编码体系 PART NUMBER SYSTEM

- 例如: Example HW 500V390μF Φ35×50 ±20%



纹波电流修正系数 Rated Ripple Current Multiplies

●频率修正系数 Frequency coefficient					
频率 (Hz) Frequency	50 (60)	100 (120)	300	1k	≥10k
电压范围 (V) Rated voltage					
160~250WV	0.81	1.00	1.17	1.32	1.45
315~500WV	0.70	1.00	1.16	1.30	1.42

●温度修正系数 Temperature coefficient					
温度 (℃) Temperature	+40	+55	+70	+85	+105
电压范围 (V) Rated voltage					
160~500WV	2.7	2.5	2.1	1.7	1.0

◆产品一览表 Standard Ratings

WV _{DC} (Surge Voltage) (V)	Cap (μF)	Size D×L (mm)	tanδ 20℃ 120Hz	ESR _{typ} 20℃ 120Hz (mΩ)	Ripple Current 105℃ 120Hz (Arms)	Catalog Part Number
160 (200)	330	22×25	0.15	342	1.25	HWN331M22025□VA
	390	25×25	0.15	289	1.35	HWN391M25025□VA
	470	22×35	0.15	240	1.48	HWN471M22035□VA
	560	22×35	0.15	201	1.62	HWN561M22035□VA
	560	25×30	0.15	201	1.62	HWN561M25030□VA
	560	30×25	0.15	201	1.63	HWN561M30025□VA
	680	22×40	0.15	166	1.85	HWN681M22040□VA
	680	25×35	0.15	166	1.86	HWN681M25035□VA
	820	22×50	0.15	138	2.21	HWN821M22050□VA
	820	25×40	0.15	138	2.20	HWN821M25040□VA
	820	30×30	0.15	138	2.05	HWN821M30030□VA
	820	35×25	0.15	138	2.10	HWN821M35025□VA
	1000	25×45	0.15	113	2.51	HWN102M25045□VA
	1000	30×35	0.15	113	2.50	HWN102M30035□VA
	1000	35×30	0.15	113	2.51	HWN102M35030□VA
	1200	25×50	0.15	94	2.91	HWN122M25050□VA
	1200	30×40	0.15	94	2.90	HWN122M30040□VA
	1200	35×35	0.15	94	2.92	HWN122M35035□VA
	1500	30×45	0.15	75	3.23	HWN152M30045□VA
	1500	35×40	0.15	75	3.30	HWN152M35040□VA
	1800	35×45	0.15	63	3.70	HWN182M35045□VA
	2200	35×50	0.15	51	4.10	HWN222M35050□VA
200 (250)	220	22×25	0.15	531	1.06	HWL221M22025□VA
	270	22×25	0.15	433	1.15	HWL271M22025□VA
	330	22×30	0.15	354	1.28	HWL331M22030□VA
	330	25×25	0.15	354	1.25	HWL331M25025□VA
	390	22×30	0.15	299	1.35	HWL391M22030□VA
	470	22×35	0.15	249	1.55	HWL471M22035□VA
	470	25×30	0.15	249	1.55	HWL471M25030□VA
	470	30×25	0.15	249	1.60	HWL471M30025□VA
	560	22×45	0.15	209	1.75	HWL561M22045□VA
	560	25×35	0.15	209	1.73	HWL561M25035□VA
	680	22×50	0.15	172	2.22	HWL681M22050□VA
	680	25×40	0.15	172	2.21	HWL681M25040□VA
	680	30×30	0.15	172	2.05	HWL681M30030□VA
	680	35×25	0.15	172	2.10	HWL681M35025□VA
	820	25×45	0.15	142	2.20	HWL821M25045□VA
	820	30×35	0.15	142	2.17	HWL821M30035□VA
	820	35×30	0.15	142	2.20	HWL821M35030□VA
	1000	30×40	0.15	117	2.60	HWL102M30040□VA
	1000	35×35	0.15	117	2.66	HWL102M35035□VA
	1200	30×45	0.15	97	2.75	HWL122M30045□VA
	1200	35×40	0.15	97	2.90	HWL122M35040□VA
	1500	35×40	0.15	78	3.45	HWL152M35040□VA
	1800	35×45	0.15	65	4.00	HWL182M35045□VA
	2200	35×50	0.15	53	4.35	HWL222M35050□VA
250 (300)	180	22×25	0.15	664	1.00	HWJ181M22025□VA
	220	22×30	0.15	543	1.13	HWJ221M22030□VA
	220	25×25	0.15	543	1.10	HWJ221M25025□VA
	270	22×35	0.15	442	1.20	HWJ271M22035□VA
	330	22×40	0.15	362	1.30	HWJ331M22040□VA
	330	25×30	0.15	362	1.35	HWJ331M25030□VA
	330	30×25	0.15	362	1.37	HWJ331M30025□VA
	390	22×45	0.15	306	1.45	HWJ391M22045□VA
	390	25×35	0.15	306	1.40	HWJ391M25035□VA
	470	22×50	0.15	254	1.65	HWJ471M22050□VA
	470	30×30	0.15	254	1.62	HWJ471M30030□VA
	470	35×25	0.15	254	1.63	HWJ471M35025□VA

WV _{DC} (Surge Voltage) (V)	Cap (μF)	Size D×L (mm)	tanδ 20℃ 120Hz	ESR _{typ} 20℃ 120Hz (mΩ)	Ripple Current 105℃ 120Hz (Arms)	Catalog Part Number
250 (300)	560	25×45	0.15	213	1.88	HWJ561M25045□VA
	560	30×35	0.15	213	1.86	HWJ561M30035□VA
	560	35×30	0.15	213	1.88	HWJ561M35030□VA
	680	25×50	0.15	176	2.30	HWJ681M25050□VA
	680	30×40	0.15	176	2.20	HWJ681M30040□VA
	820	30×45	0.15	146	2.40	HWJ821M30045□VA
	820	30×50	0.15	146	2.50	HWJ821M30050□VA
	1000	30×50	0.15	119	2.68	HWJ102M30050□VA
	1000	35×40	0.15	119	2.66	HWJ102M35040□VA
	1200	35×45	0.15	100	3.11	HWJ122M35045□VA
	1500	35×50	0.15	80	3.57	HWJ152M35050□VA
315 (365)	150	22×30	0.15	664	0.86	HWI151M22030□VA
	180	22×35	0.15	553	0.98	HWI181M22035□VA
	180	25×30	0.15	553	0.97	HWI181M25030□VA
	220	22×40	0.15	452	1.10	HWI221M22040□VA
	220	30×25	0.15	452	1.05	HWI221M30025□VA
	270	22×45	0.15	369	1.27	HWI271M22045□VA
	270	25×35	0.15	369	1.21	HWI271M25035□VA
	330	22×50	0.15	302	1.43	HWI331M22050□VA
	330	25×40	0.15	302	1.40	HWI331M25040□VA
	330	30×30	0.15	302	1.38	HWI331M30030□VA
	390	25×45	0.15	255	1.60	HWI391M25045□VA
	470	25×50	0.15	212	1.82	HWI471M25050□VA
	470	30×40	0.15	212	1.81	HWI471M30040□VA
	470	35×30	0.15	212	1.80	HWI471M35030□VA
350 (400)	560	30×45	0.15	178	2.02	HWI561M30045□VA
	560	35×35	0.15	178	2.00	HWI561M35035□VA
	680	30×50	0.15	146	2.26	HWI681M30050□VA
	680	35×40	0.15	146	2.22	HWI681M35040□VA
	820	35×45	0.15	121	2.57	HWI821M35045□VA
	1000	35×50	0.15	100	2.91	HWI102M35050□VA
	1200	35×60	0.15	86	3.25	HWI122M35060□VA
	68	22×35	0.15	1464	0.66	HWH680M22035□VA
	100	22×30	0.15	995	0.76	HWH101M22030□VA
	100	25×25	0.15	995	0.76	HWH101M25025□VA
	120	22×35	0.15	829	0.80	HWH121M22035□VA
	150	22×40	0.15	664	0.88	HWH151M22040□VA
	150	25×30	0.15	664	0.86	HWH151M25030□VA
	150	30×25	0.15	664	0.87	HWH151M30025□VA
	180	22×45	0.15	553	0.98	HWH181M22045□VA
	180	25×35	0.15	553	0.96	HWH181M25035□VA
	180	30×30	0.15	553	0.97	HWH181M30030□VA
	220	22×50	0.15	452	1.11	HWH221M22050□VA
	220	25×40	0.15	452	1.10	HWH221M25040□VA
	220	35×25	0.15	452	1.10	HWH221M35025□VA
	270	25×50	0.15	369	1.26	HWH271M25050□VA
	270	30×35	0.15	369	1.25	HWH271M30035□VA
	270	35×30	0.15	369	1.26	HWH271M35030□VA
	330	30×45	0.15	302	1.50	HWH331M30045□VA
	330	35×35	0.15	302	1.48	HWH331M35035□VA
	390	30×50	0.15	255	1.65	HWH391M30050□VA
	390	35×40	0.15	255	1.62	HWH391M35040□VA
	470	30×50	0.15	212	1.85	HWH471M30050□VA
	470	35×45	0.15	212	1.86	HWH471M35045□VA
	560	35×50	0.15	178	2.05	HWH561M35050□VA
	680	35×50	0.15	146	2.30	HWH681M35050□VA
	820	35×60	0.15	121	2.60	HWH821M35060□VA
	1000	35×60	0.15	100	2.95	HWH102M35060□VA

*产品编码中□内为产品端子引出型式代码

* □Enter the appropriate terminal code

HW 系列 SERIES

◆产品一览表 Standard Ratings

WV _{DC} (Surge Voltage) (V)	Cap (μF)	Size D×L (mm)	tanδ 20℃ 120Hz	ESR _{typ} 20℃ 120Hz (mΩ)	Ripple Current 105℃120Hz (Arms)	Catalog Part Number
400 (450)	47	22×25	0.15	1920	0.42	HWG470M22025□VA
	68	22×25	0.15	1327	0.50	HWG680M22025□VA
	82	22×30	0.15	1100	0.60	HWG820M22030□VA
	82	25×25	0.15	1100	0.59	HWG820M25025□VA
	100	22×35	0.15	902	0.70	HWG101M22035□VA
	100	25×25	0.15	902	0.65	HWG101M25025□VA
	120	22×35	0.15	752	0.78	HWG121M22035□VA
	120	25×30	0.15	752	0.77	HWG121M25030□VA
	120	30×25	0.15	752	0.80	HWG121M30025□VA
	150	22×40	0.15	602	0.91	HWG151M22040□VA
	150	25×35	0.15	602	0.92	HWG151M25035□VA
	150	30×25	0.15	602	0.88	HWG101M30025□VA
	180	22×50	0.15	501	1.03	HWG181M22050□VA
	180	25×40	0.15	501	1.00	HWG181M25040□VA
	180	30×30	0.15	501	0.97	HWG181M30030□VA
	180	35×25	0.15	501	0.98	HWG181M35025□VA
	220	25×45	0.15	410	1.18	HWG221M25045□VA
	220	30×35	0.15	410	1.16	HWG221M30035□VA
	220	35×30	0.15	410	1.18	HWG221M35030□VA
	270	25×50	0.15	334	1.34	HWG271M25050□VA
	270	30×40	0.15	334	1.33	HWG271M30040□VA
	270	35×30	0.15	334	1.28	HWG271M35030□VA
	330	30×45	0.15	273	1.53	HWG331M30045□VA
	330	35×35	0.15	273	1.49	HWG331M35035□VA
	390	30×50	0.15	231	1.69	HWG391M30050□VA
	390	35×40	0.15	231	1.66	HWG391M35040□VA
	470	30×50	0.15	192	1.89	HWG471M30050□VA
	470	35×45	0.15	192	1.95	HWG471M35045□VA
	560	35×50	0.15	161	2.14	HWG561M35050□VA
	560	30×60	0.15	161	2.15	HWG561M30060□VA
	680	35×60	0.15	133	2.41	HWG681M35060□VA
	820	35×70	0.15	110	2.70	HWG821M35070□VA
450 (500)	68	22×30	0.20	1327	0.56	HWE680M22030□VA
	82	22×35	0.20	1100	0.65	HWE820M22035□VA
	100	22×35	0.20	902	0.69	HWE101M22035□VA
	100	25×30	0.20	902	0.68	HWE101M25030□VA
	100	30×25	0.20	902	0.71	HWE101M30025□VA
	120	22×45	0.20	774	0.84	HWE121M22045□VA
	120	25×35	0.20	774	0.81	HWE121M25035□VA
	150	22×50	0.20	619	0.94	HWE151M22050□VA
	150	25×40	0.20	619	0.91	HWE151M25040□VA
	150	30×30	0.20	619	0.89	HWE151M30030□VA

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*□Enter the appropriate terminal code

*记载之外的体积，请另行咨询。

*Please ask for advice for other sizes.

*铝电解电容器由于承受纹波电流而发热，随着温升而发生性能劣化。请在使用中降低产品承受的纹波电流。

*Aluminum electrolytic capacitor will emit heat when ripple current is applied, the performance will deteriorate when temp. rises. Please reduce the ripple current when using capacitor.

WV _{DC} (Surge Voltage) (V)	Cap (μF)	Size D×L (mm)	tanδ 20℃ 120Hz	ESR _{typ} 20℃ 120Hz (mΩ)	Ripple Current 105℃120Hz (Arms)	Catalog Part Number
450 (500)	150	35×25	0.20	619	0.90	HWE151M35025□VA
	180	25×45	0.20	516	1.07	HWE151M25045□VA
	180	30×35	0.20	516	1.05	HWE151M30035□VA
	220	25×50	0.20	422	1.25	HWE151M25050□VA
	220	30×40	0.20	422	1.24	HWE151M30040□VA
	220	35×30	0.20	422	1.19	HWE151M35030□VA
	270	30×45	0.20	344	1.41	HWE151M30045□VA
	270	35×35	0.20	344	1.37	HWE151M35035□VA
	330	30×50	0.20	282	1.53	HWE151M30050□VA
	330	35×40	0.20	282	1.50	HWE151M35040□VA
	390	35×45	0.20	238	1.73	HWE391M35045□VA
	470	35×50	0.20	198	1.98	HWE471M35050□VA
	470	30×60	0.20	198	1.99	HWE471M30060□VA
	560	35×60	0.20	166	2.23	HWE561M35060□VA
	680	35×70	0.20	113	2.65	HWE681M35070□VA
500 (550)	100	22×45	0.20	1061	0.82	HWC101M22045□VA
	100	25×40	0.20	1061	0.82	HWC101M25040□VA
	100	30×30	0.20	1061	0.82	HWC101M30030□VA
	120	22×50	0.20	885	0.91	HWC121M22050□VA
	120	25×40	0.20	885	0.89	HWC121M25040□VA
	120	30×35	0.20	885	0.93	HWC121M30035□VA
	120	35×30	0.20	885	0.91	HWC121M35030□VA
	150	25×45	0.20	708	1.01	HWC151M25045□VA
	150	30×40	0.20	708	1.05	HWC151M30040□VA
	150	35×35	0.20	708	1.08	HWC151M35035□VA
	180	25×50	0.20	590	1.06	HWC181M25050□VA
	180	30×45	0.20	590	1.11	HWC181M30045□VA
	220	30×50	0.20	483	1.27	HWC221M30050□VA
	220	35×40	0.20	483	1.24	HWC221M35040□VA
	270	30×50	0.20	393	1.46	HWC271M30050□VA
	270	35×40	0.20	393	1.43	HWC271M35040□VA
	330	35×45	0.20	322	1.61	HWC331M35045□VA
	390	35×50	0.20	272	1.79	HWC391M35050□VA
	470	35×60	0.20	226	2.04	HWC471M35060□VA
	560	35×70	0.20	190	2.38	HWC561M35070□VA