

WK series

STANDARD RATINGS

VV (Vdc)	Cap (μF)	Size DxL(mm)	Rated ripple current (mA <sub>rms</sub> /85°C, 120Hz)	Part Number
160	47	12.5x20	280	EWK2CM470W20---T
	68	12.5x20	360	EWK2CM680W20---T
	100	12.5x25	470	EWK2CM101W25---T
	150	16x20	520	EWK2CM151L20---T
	180	16x25	600	EWK2CM181L25---T
	220	16x30	780	EWK2CM221L30---T
	270	18x30	860	EWK2CM271M30---T
	330	18x35	1000	EWK2CM331M35---T
	390	18x35	1020	EWK2CM391M35---T
	470	18x40	1220	EWK2CM471M40---T
200	0.47	6.3x11	10	EWK2DMR47E11---T
	1	6.3x11	15	EWK2DM010E11---T
	2.2	6.3x11	34	EWK2DM2R2E11---T
	3.3	6.3x11	45	EWK2DM3R3E11---T
	4.7	6.3x11	55	EWK2DM4R7E11---T
	4.7	8x12	60	EWK2DM4R7F12---T
	10	10x12	100	EWK2DM100G12---T
	22	10x20	170	EWK2DM220G20---T
	33	10x20	205	EWK2DM330G20---T
	47	12.5x20	270	EWK2DM470W20---T
250	68	12.5x25	370	EWK2DM680W25---T
	100	16x25	475	EWK2DM101L25---T
	150	16x25	550	EWK2DM151L25---T
	180	18x25	620	EWK2DM181M25---T
	220	18x35	810	EWK2DM221M35---T
	270	18x35	870	EWK2DM271M35---T
	330	18x35	1000	EWK2DM331M35---T
	330	18x40	1020	EWK2DM331M40---T
	0.47	6.3x11	10	EWK2EMR47E11---T
	1	6.3x11	16	EWK2EM010E11---T
2.2	6.3x11	34	EWK2EM2R2E11---T	
3.3	6.3x11	42	EWK2EM3R3E11---T	
3.3	8x12	46	EWK2EM3R3F12---T	
4.7	6.3x11	50	EWK2EM4R7E11---T	
4.7	8x12	55	EWK2EM4R7F12---T	
10	10x12	100	EWK2EM100G12---T	
10	10x16	105	EWK2EM100G16---T	
22	10x20	170	EWK2EM220G20---T	
33	10x20	200	EWK2EM330G20---T	
33	12.5x20	230	EWK2EM330W20---T	
47	12.5x20	270	EWK2EM470W20---T	
47	12.5x25	295	EWK2EM470W25---T	
68	16x25	382	EWK2EM680L25---T	
100	16x25	450	EWK2EM101L25---T	
100	16x30	515	EWK2EM101L30---T	
120	16x30	530	EWK2EM121L30---T	
150	16x30	570	EWK2EM151L30---T	
180	18x30	620	EWK2EM181M30---T	
350	0.47	6.3x11	15	EWK2VMR47E11---T
	1	6.3x11	22	EWK2VM010E11---T
	2.2	8x12	38	EWK2VM2R2F12---T
	3.3	8x12	46	EWK2VM3R3F12---T
	4.7	10x12	65	EWK2VM4R7G12---T
	10	10x12	90	EWK2VM100G12---T
	10	10x16	100	EWK2VM100G16---T
	10	10x20	120	EWK2VM100G20---T
	22	12.5x20	185	EWK2VM220W20---T
	33	16x25	275	EWK2VM330L25---T
47	16x25	325	EWK2VM470L25---T	
68	16x25	405	EWK2VM680L25---T	
100	18x30	530	EWK2VM101M30---T	
400	1	6.3x11	22	EWK2GM010E11---T
	2.2	8x12	38	EWK2GM2R2F12---T
	3.3	10x12	54	EWK2GM3R3G12---T
	4.7	10x12	60	EWK2GM4R7G12---T
	4.7	10x16	75	EWK2GM4R7G16---T

VV (Vdc)	Cap (μF)	Size DxL(mm)	Rated ripple current (mA <sub>rms</sub> /85°C, 120Hz)	Part Number
400	10	10x16	100	EWK2GM100G16---T
	10	10x20	120	EWK2GM100G20---T
	22	12.5x25	205	EWK2GM220W25---T
	33	16x25	275	EWK2GM330L25---T
	47	16x25	325	EWK2GM470L25---T
	47	16x30	350	EWK2GM470L30---T
	56	16x30	385	EWK2GM560L30---T
	68	18x25	420	EWK2GM680M25---T
	82	18x30	475	EWK2GM820M30---T
	100	18x35	545	EWK2GM101M35---T
450	1	8x12	16	EWK2WM010F12---T
	2.2	8x12	32	EWK2WM2R2F12---T
	2.2	10x12	35	EWK2WM2R2G12---T
	3.3	10x12	40	EWK2WM3R3G12---T
	3.3	10x16	44	EWK2WM3R3G16---T
	4.7	10x12	50	EWK2WM4R7G12---T
	4.7	10x16	58	EWK2WM4R7G16---T
	4.7	10x20	65	EWK2WM4R7G20---T
	10	10x20	80	EWK2WM100G20---T
	10	12.5x20	92	EWK2WM100W20---T
22	12.5x25	150	EWK2WM220W25---T	
22	16x25	165	EWK2WM220L25---T	
33	16x30	215	EWK2WM330L30---T	
47	16x30	260	EWK2WM470L30---T	
47	16x35	280	EWK2WM470L35---T	
68	18x30	370	EWK2WM680M30---T	
82	18x35	390	EWK2WM820M35---T	
100	18x40	420	EWK2WM101M40---T	

Specifications subject to change without notice.

WH series

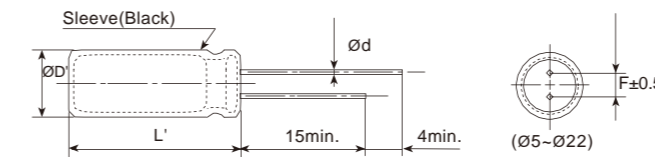
- Standard series for general purpose
- Wide temperature range from -40 °C to +105 °C
- Endurance: 2,000 hours at 105 °C
- RoHS Compliant



SPECIFICATIONS

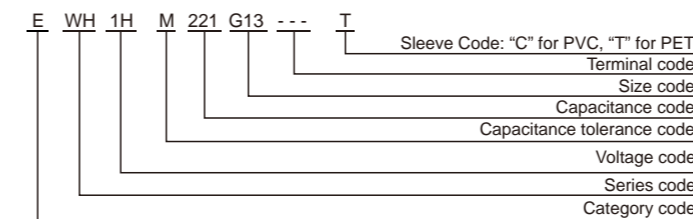
Items	Characteristics	
Category Temperature Range	-40~+105 °C (6.3~100 V <sub>dc</sub> )    -25~+105°C(160~500 V <sub>dc</sub> )	
Rated Voltage Range	6.3~500 V <sub>dc</sub>	
Capacitance Tolerance	±20%(M) (at 20°C, 120Hz)	
Leakage Current	6.3~100 V <sub>dc</sub>	160~500 V <sub>dc</sub>
	I 0.03CV or 4μA (at 1 minute) I 0.01CV or 3μA (at 2 minutes) Whichever is greater	CV 1,000 CV>1,000
Dissipation Factor (tan δ)	Rated Voltage(V <sub>dc</sub> )	6.3 10 16 25 35 50 63 100 160~250 350~500
	Dissipation Factor (Max.)	0.28 0.24 0.20 0.16 0.14 0.12 0.10 0.08 0.20 0.24
Low Temperature Characteristics (Max. Impedance Ratio)	Rated Voltage(V <sub>dc</sub> )	6.3 10 16 25 35 50 63 100 160~250 350~450 500
	Z(-25°C)/Z(+20°C)	5 4 3 2 3 6 8
Endurance	The specifications listed below shall be satisfied when the capacitors are restored to 20°C after DC voltage plus rated ripple current is applied for 2,000 hours at 105°C.	
	Capacitance Change	±20% of the initial value
Shelf Life	The following specifications shall be satisfied when the capacitors are restored to 20°C after leaving them under no load at 105°C for 1,000 hours.	
	Capacitance Change	±20% of the initial value

DIMENSIONS[mm]



øD	5	6.3	8	10	12.5/13	16/18	22
ød	0.5	0.5	0.5	0.6	0.6	0.8	0.8
F	2.0	2.5	3.5	5.0	5.0	7.5	10.0
øD'	øD+0.5max.						
L'	L+2max.						

PART NUMBERING SYSTEM



RATED RIPPLE CURRENT MULTIPLIERS

Frequency correction factor for ripple current

Cap.(μF)	Freq.(Hz)					
	50	120	300	1k	10k	100k
Cap.<10	0.65	1.00	1.35	1.75	2.30	2.50
10 Cap.<100	0.75	1.00	1.25	1.50	1.75	1.80
100 Cap.<1000	0.80	1.00	1.15	1.30	1.40	1.50
Cap. 1000	0.85	1.00	1.03	1.05	1.08	1.08

**WH series**

■ STANDARD RATINGS

WV (Vdc)	Cap (µF)	Size DxDL(mm)	Rated ripple current (mA <sub>RMS</sub> /105°C, 120Hz)	Part Number
6.3	33	5x11	54	EWHOJM330D11---T
	47	5x11	64	EWHOJM470D11---T
	100	5x11	94	EWHOJM101D11---T
	220	5x11	140	EWHOJM221D11---T
	330	6.3x11	190	EWHOJM331E11---T
	470	6.3x11	230	EWHOJM471E11---T
	1000	8x12	380	EWHOJM102F12---T
	2200	10x20	710	EWHOJM222G20---T
	3300	10x20	840	EWHOJM332G20---T
	4700	12.5x20	1090	EWHOJM472W20---T
	6800	12.5x25	1350	EWHOJM682W25---T
	10000	16x25	1650	EWHOJM103L25---T
	15000	16x35	2010	EWHOJM153L35---T
	22000	18x40	2350	EWHOJM223M40---T
	22	5x11	46	EWHA1M220D11---T
33	5x11	57	EWHA1M330D11---T	
47	5x11	68	EWHA1M470D11---T	
100	5x11	100	EWHA1M101D11---T	
220	6.3x11	170	EWHA1M221E11---T	
330	6.3x11	200	EWHA1M331E11---T	
470	8x11	250	EWHA1M471F11---T	
1000	10x13	460	EWHA1M102G13---T	
2200	10x20	760	EWHA1M222G20---T	
3300	12.5x20	1000	EWHA1M332W20---T	
4700	12.5x25	1260	EWHA1M472W25---T	
6800	16x25	1570	EWHA1M682L25---T	
10000	16x35	1890	EWHA1M103L35---T	
15000	18x35	2180	EWHA1M153M35---T	
10	5x11	34	EWHA1CM100D11---T	
22	5x11	51	EWHA1CM220D11---T	
33	5x11	63	EWHA1CM330D11---T	
47	5x11	75	EWHA1CM470D11---T	
100	5x11	110	EWHA1CM101D11---T	
220	6.3x11	180	EWHA1CM221E11---T	
330	8x11	260	EWHA1CM331F11---T	
470	8x12	310	EWHA1CM471F12---T	
1000	10x16	560	EWHA1CM102G16---T	
2200	12.5x20	920	EWHA1CM222W20---T	
3300	12.5x25	1170	EWHA1CM332W25---T	
4700	16x25	1480	EWHA1CM472L25---T	
6800	16x30	1780	EWHA1CM682L30---T	
10000	18x35	2060	EWHA1CM103M35---T	
4.7	5x11	25	EWHA1EM4R7D11---T	
10	5x11	36	EWHA1EM100D11---T	
22	5x11	54	EWHA1EM220D11---T	
33	5x11	67	EWHA1EM330D11---T	
47	5x11	80	EWHA1EM470D11---T	
100	6.3x11	130	EWHA1EM101E11---T	
220	8x11	230	EWHA1EM221F11---T	
330	8x12	310	EWHA1EM331F12---T	
470	10x13	380	EWHA1EM471G13---T	
1000	10x20	680	EWHA1EM102G20---T	
2200	12.5x25	1090	EWHA1EM222W25---T	
3300	16x25	1400	EWHA1EM332L25---T	
4700	16x30	1710	EWHA1EM472L30---T	
6800	18x35	2040	EWHA1EM682M35---T	
4.7	5x11	28	EWHA1VM4R7D11---T	
10	5x11	41	EWHA1VM100D11---T	
22	5x11	61	EWHA1VM220D11---T	
33	5x11	75	EWHA1VM330D11---T	
47	5x11	90	EWHA1VM470D11---T	
100	6.3x11	150	EWHA1VM101E11---T	
220	8x12	270	EWHA1VM221F12---T	
330	10x13	350	EWHA1VM331G13---T	
470	10x16	460	EWHA1VM471G16---T	
1000	12.5x20	810	EWHA1VM102W20---T	
2200	16x25	1260	EWHA1VM222L25---T	
3300	16x35	1610	EWHA1VM332L35---T	
4700	18x35	1910	EWHA1VM472M35---T	

WV (Vdc)	Cap (µF)	Size DxDL(mm)	Rated ripple current (mA <sub>RMS</sub> /105°C, 120Hz)	Part Number
50	0.1	5x11	1.3	EWHA1HMR10D11---T
	0.22	5x11	2.9	EWHA1HMR22D11---T
	0.33	5x11	4.3	EWHA1HMR33D11---T
	0.47	5x11	6.2	EWHA1HMR47D11---T
	1	5x11	13	EWHA1HM010D11---T
	2.2	5x11	20	EWHA1HM2R2D11---T
	3.3	5x11	25	EWHA1HM3R3D11---T
	4.7	5x11	30	EWHA1HM4R7D11---T
	10	5x11	40	EWHA1HM100D11---T
	22	5x11	65	EWHA1HM220D11---T
	33	6.3x11	90	EWHA1HM330E11---T
	47	6.3x11	110	EWHA1HM470E11---T
	100	8x11	180	EWHA1HM101F11---T
	220	10x13	300	EWHA1HM221G13---T
	330	10x16	410	EWHA1HM331G16---T
470	10x20	530	EWHA1HM471G20---T	
1000	12.5x25	950	EWHA1HM102W25---T	
2200	16x35	1470	EWHA1HM222L35---T	
3300	18x35	1770	EWHA1HM332M35---T	
10	5x11	46	EWHA1JM100D11---T	
22	5x11	71	EWHA1JM220D11---T	
33	6.3x11	100	EWHA1JM330E11---T	
47	6.3x11	120	EWHA1JM470E11---T	
100	10x13	215	EWHA1JM101G13---T	
220	10x16	335	EWHA1JM221G16---T	
330	10x20	510	EWHA1JM331G20---T	
470	12.5x20	640	EWHA1JM471W20---T	
1000	16x25	930	EWHA1JM102L25---T	
0.1	5x11	1.5	EWHA1KMR10D11---T	
0.22	5x11	3.4	EWHA1KMR22D11---T	
0.33	5x11	5	EWHA1KMR33D11---T	
0.47	5x11	7.1	EWHA1KMR47D11---T	
1	5x11	15	EWHA1KM010D11---T	
2.2	5x11	21	EWHA1KM2R2D11---T	
3.3	5x11	29	EWHA1KM3R3D11---T	
4.7	5x11	32	EWHA1KM4R7D11---T	
10	6.3x11	54	EWHA1KM100E11---T	
22	8x11	93	EWHA1KM220F11---T	
33	8x12	130	EWHA1KM330F12---T	
47	10x13	165	EWHA1KM470G13---T	
100	10x20	265	EWHA1KM101G20---T	
220	12.5x25	440	EWHA1KM221W25---T	
330	16x25	540	EWHA1KM331L25---T	
470	16x30	715	EWHA1KM471L30---T	
1000	18x40	985	EWHA1KM102M40---T	
3.3	6.3x9	28	EWHA2CM3R3E09---T	
4.7	6.3x9	34	EWHA2CM4R7E09---T	
10	6.3x12	60	EWHA2CM100E12---T	
10	8x9	60	EWHA2CM100F09---T	
22	8x12	88	EWHA2CM220F12---T	
22	10x12	98	EWHA2CM220G12---T	
33	10x12	140	EWHA2CM330G12---T	
33	10x16	158	EWHA2CM330G16---T	
47	10x14	142	EWHA2CM470G14---T	
47	10x20	182	EWHA2CM470G20---T	
68	10x20	240	EWHA2CM680G20---T	
100	12.5x20	300	EWHA2CM101W20---T	
100	16x20	316	EWHA2CM101L20---T	
220	16x25	530	EWHA2CM221L25---T	
330	18x25	600	EWHA2CM331M25---T	
470	18x35	820	EWHA2CM471M35---T	
1	6.3x7	12	EWHA2DM010E07---T	
2.2	6.3x7	18	EWHA2DM2R2E07---T	
3.3	6.3x9	28	EWHA2DM3R3E09---T	
4.7	6.3x9	40	EWHA2DM4R7E09---T	
10	8x12	78	EWHA2DM100F12---T	
22	8x16	110	EWHA2DM220F16---T	
22	10x12	110	EWHA2DM220G12---T	
33	10x16	166	EWHA2DM330G16---T	

**WH series**

■ STANDARD RATINGS

WV (Vdc)	Cap (µF)	Size DxDL(mm)	Rated ripple current (mA <sub>RMS</sub> /105°C, 120Hz)	Part Number
200	33	10x20	185	EWHA2DM330G20---T
	47	10x20	200	EWHA2DM470G20---T
	68	12.5x20	290	EWHA2DM680W20---T
	82	12.5x20	300	EWHA2DM820W20---T
	100	13x20	305	EWHA2DM101K20---T
	100	16x20	325	EWHA2DM101L20---T
	150	16x25	446	EWHA2DM151L25---T
	180	16x25	530	EWHA2DM181L25---T
	220	18x25	620	EWHA2DM221M25---T
	330	18x30	720	EWHA2DM331M30---T
	470	18x40	840	EWHA2DM471M40---T
	2.2	6.3x9	21	EWHA2EM2R2E09---T
	3.3	6.3x9	30	EWHA2EM3R3E09---T
	4.7	6.3x12	38	EWHA2EM4R7E12---T
	4.7	8x9	45	EWHA2EM4R7F09---T
10	8x12	70	EWHA2EM100F12---T	
10	10x12	75	EWHA2EM100G12---T	
22	8x16	100	EWHA2EM220F16---T	
22	10x16	116	EWHA2EM220G16---T	
33	10x20	150	EWHA2EM330G20---T	
33	12.5x16	165	EWHA2EM330W16---T	
47	12.5x20	232	EWHA2EM470W20---T	
100	16x25	370	EWHA2EM101L25---T	
150	18x25	455	EWHA2EM151M25---T	
220	18x30	600	EWHA2EM221M30---T	
330	18x35	705	EWHA2EM331M35---T	
1	6.3x9	13	EWHA2VM010E09---T	
2.2	6.3x9	23	EWHA2VM2R2E09---T	
3.3	8x9	31	EWHA2VM3R3F09---T	
4.7	8x9	45	EWHA2VM4R7F09---T	
10	10x12	68	EWHA2VM100G12---T	
22	10x20	135	EWHA2VM220G20---T	
33	12.5x20	184	EWHA2VM330W20---T	
47	16x20	225	EWHA2VM470L20---T	
68	16x25	336	EWHA2VM680L25---T	
100	18x30	398	EWHA2VM101M30---T	
1	6.3x9	14	EWHA2GM010E09---T	
2.2	6.3x9	25	EWHA2GM2R2E09---T	
2.2	8x9	30	EWHA2GM2R2F09---T	
3.3	6.3x12	33	EWHA2GM3R3E12---T	
3.3	8x9	34	EWHA2GM3R3F09---T	
4.7	8x9	45	EWHA2GM4R7F09---T	
4.7	8x12	48	EWHA2GM4R7F12---T	
10	8x16	92	EWHA2GM100F16---T	
10	10x12	92	EWHA2GM100G12---T	
22	10x20	160	EWHA2GM220G20---T	
33	16x20	258	EWHA2GM330L20---T	
47	16x20	290	EWHA2GM470L20---T	
68	16x25	420	EWHA2GM680L25---T	
68	18x20	420	EWHA2GM680M20---T	
82	18x25	474	EWHA2GM820M25---T	
100	18x30	532	EWHA2GM101M30---T	
120	18x35	588	EWHA2GM121M35---T	
150	18x35	610	EWHA2GM151M35---T	
1	6.3x9	14	EWHA2WM010E09---T	
1	6.3x12	16	EWHA2WM010E12---T	
2.2	8x9	22	EWHA2WM2R2F09---T	
2.2	8x12	25	EWHA2WM2R2F12---T	
3.3	8x12	32	EWHA2WM3R3F12---T	
4.7	10x12	48	EWHA2WM4R7G12---T	
10	10x16	85	EWHA2WM100G16---T	
10	10x20	90	EWHA2WM100G20---T	
22	12.5x20	150	EWHA2WM220W20---T	
22	16x20	185	EWHA2WM220L20---T	
33	16x20	200	EWHA2WM330L20---T	
47	16x25	335	EWHA2WM470L25---T	
68	18x25	400	EWHA2WM680M25---T	
82	18x30	472	EWHA2WM820M30---T	

Specifications subject to change without notice.

WV (Vdc)	Cap (µF)	Size DxDL(mm)	Rated ripple current (mA <sub>RMS</sub> /105°C, 120Hz)	Part Number
450	100	18x35	530	EWHA2WM101M35---T
	120	18x40	582	EWHA2WM121M40---T
	150	18x45	610	EWHA2WM151M45---T
	4.7	10x16	50	EWHA2HM4R7G16---T
10	12.5x20	115	EWHA2HM100W20---T	
15	12.5x25	140	EWHA2HM150W25---T	
22	16x25	185	EWHA2HM220L25---T	
33	18x25	215	EWHA2HM330M25---T	
47	18x35	345	EWHA2HM470M35---T	
68	18x35	390	EWHA2HM680M35---T	
82	18x40	490	EWHA2HM820M40---T	
100	22x35	535	EWHA2HM101O35---T	
120	22x40	550	EWHA2HM121O40---T	

Radial Type

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