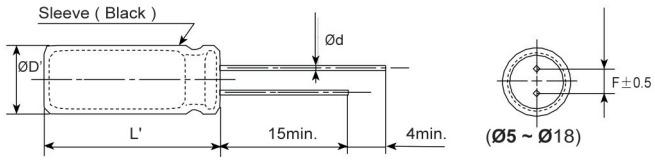
WK Series

- Standard series for general purpose
- Endurance: +85℃ 2,000 hours
- **RoHS Compliant**

◆SPECIFICATIONS

Items	Characteristics														
Category Temperature Range	−40 to +85℃(6.3 to 100Vdc) −25 to +85℃(160 to 450Vdc)														
Rated Voltage Range	6.3 to 450Vdc														
Capacitance Tolerance	±20%(M) (at 20℃, 120Hz)														
Leakage Current	6.3 to 100Vdc: I≦0.01CV or 3μA Whichever is greater; 160 to 450Vdc: I≦0.03CV+10μA. Where, I : Max. leakage current (μA), C : Nominal capacitance (μF), V : Rated voltage (V) (at 20℃ after 2minutes)														
Dissipation Factor (tanδ)	Rated voltage (Vdc)	6.3	10	16	25	35	50	63	100	160	200	250	350	400	450
	tanδ (Max.)	0.24	0.20	0.16	0.14	0.12	0.10	0.09	0.08	0.20	0.20	0.20	0.24	0.24	0.24
	When nominal capacitance exceeds 1,000 uF, add 0.02 to the value above for each 1,000 uF increase. (at 20℃, 120Hz)														
Low Temperature Characteristics (Max. Impedance Ratio)	Rated voltage (Vdc)	6.3	10	16	25	35	50	63	100	160~250		350~400		450	(at 120Hz)
	Z(−25℃)/Z(+20℃)	5	4	3	2					3		6		6	
	Z(−40℃)/Z(+20℃)	12	10	8	5	4	3			-		-		-	
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20℃ after the rated voltage is applied for 2,000hours at 85℃.														
	Capacitance change: ≤±20% of the initial value														
	D.F. (tanδ): ≤200% of the initial specified value														
	Leakage current: ≤The initial specified value														
Shelf Life	The following specifications shall be satisfied when the capacitors are restored to 20℃ after exposing them for 1,000 hours at 85℃ without voltage applied.														
	Capacitance change: ≤±20% of the initial value														
	D.F. (tanδ): ≤200% of the initial specified value														
	Leakage current: ≤200%The initial specified value														

◆ DIMENSIONS [mm]



ØD	5	6.3	8		10	12.5	16	18
Ød	0.5	0.5	0.5	0.6	0.6	0.6	0.8	0.8
F	2.0	2.5	3.5		5.0	5.0	7.5	7.5
ØD'	ØD+0.5max.							
L'	L+2max.							

◆ PART NUMBER SYSTEM

E WK 2G M 3R3 G12 O-- T

- T — Sleeve Code: PVC is “C” PET is “T”
- O-- — Terminal code
- G12 — Size Code
- 3R3 — Capacitance Code
- M — Capacitance tolerance code
- 2G — Voltage Code
- WK — Series Code
- E — Category

※Sleeve code and Terminal Code should follow the part number system

◆ RATED RIPPLE CURRENT MULTIPLIERS

Frequency correction factor for ripple current Φ5 to Φ18

Freq.(Hz) / Cap.(uF)	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

The endurance of capacitors is shorted with internal heating produced by ripple current at the rate of halving the lifetime with every 5℃ rise. When long life performance is required in actual use, the rms ripple current has to be reduced.

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◆ STANDARD RATINGS

WV (Vdc)	Cap (μF)	Case size ΦD×L(mm)	tanδ	Ripple current (mArms/85℃,120Hz)
6.3(0J)	33	5×11	0.24	65
	47	5×11	0.24	80
	100	5×11	0.24	135
	220	5×12	0.24	220
	330	6.3×11	0.24	280
	470	6.3×12	0.24	360
	1000	8×12	0.24	590
	2200	10×20	0.26	1000
	3300	10×25	0.28	1200
	4700	13×20	0.30	1550
	6800	13×25	0.34	1920
	10000	16×25	0.42	2370
	15000	16×35	0.52	2880
	22000	18×40	0.66	3350
10(1A)	22	5×11	0.20	60
	33	5×11	0.20	75
	47	5×11	0.20	95
	100	5×11	0.20	140
	220	5×12	0.20	240
	330	6.3×11	0.20	310
	470	6.3×12	0.20	400
	1000	10×13	0.20	660
	2200	10×20	0.22	1090
	3300	13×20	0.24	1450
	4700	13×25	0.26	1800
	6800	16×25	0.30	2250
	10000	16×35	0.38	2710
	15000	18×35	0.48	3120
16(1C)	10	5×11	0.16	50
	22	5×11	0.16	65
	33	5×11	0.16	80
	47	5×11	0.16	115
	100	5×11	0.16	175
	220	6.3×11	0.16	280
	330	8×11	0.16	380
	470	8×11	0.16	460
	1000	10×16	0.16	800
	2200	13×20	0.18	1320
	3300	13×25	0.20	1670
	4700	16×25	0.22	2120
	6800	16×30	0.26	2550
25(1E)	4.7	5×11	0.14	30
	10	5×11	0.14	45
	22	5×11	0.14	70
	33	5×11	0.14	98
	47	5×11	0.14	120
	100	6.3×11	0.14	190
	220	8×11	0.14	330
	330	8×12	0.14	440
	470	10×13	0.14	550
	1000	10×20	0.14	970
	2200	13×25	0.16	1570
	3300	16×25	0.18	2000
	4700	16×30	0.20	2450

WV (Vdc)	Cap (μF)	Case size ΦD×L(mm)	tanδ	Ripple current (mArms/85℃,120Hz)
35(1V)	4.7	5×11	0.12	40
	10	5×11	0.12	55
	22	5×11	0.12	90
	33	5×11	0.12	110
	47	5×11	0.12	135
	100	6.3×11	0.12	215
	220	8×12	0.12	385
	330	10×13	0.12	500
	470	10×16	0.12	680
	1000	13×20	0.12	1180
	2200	16×25	0.14	1810
	3300	16×35	0.16	2300
	4700	18×35	0.18	2750
50(1H)	0.1	5×11	0.10	1.3
	0.22	5×11	0.10	2.9
	0.33	5×11	0.10	4.3
	0.47	5×11	0.10	7.0
	1	5×11	0.10	17
	2.2	5×11	0.10	28
	3.3	5×11	0.10	35
	4.7	5×11	0.10	41
	10	5×11	0.10	60
	22	5×11	0.10	95
	33	6.3×11	0.10	130
	47	6.3×11	0.10	160
	100	8×11	0.10	270
	220	10×16	0.10	435
	330	10×20	0.10	590
	470	10×20	0.10	760
	1000	13×25	0.10	1350
	2200	16×35	0.12	2110
	3300	18×35	0.14	2550
63(1J)	4.7	5×11	0.09	45
	10	5×11	0.09	70
	22	6.3×11	0.09	110
	33	6.3×11	0.09	140
	47	6.3×12	0.09	190
	100	10×13	0.09	300
	220	10×16	0.09	490
	330	10×20	0.09	710
	470	13×20	0.09	900
	1000	16×25	0.09	1350
	2200	18×35	0.11	2330
100(1K)	0.1	5×11	0.08	2.1
	0.22	5×11	0.08	4.7
	0.33	5×11	0.08	7.0
	0.47	5×11	0.08	10
	1	5×11	0.08	21
	2.2	5×11	0.08	35
	3.3	5×11	0.08	45
	4.7	5×11	0.08	50
	10	6.3×11	0.08	75
	22	8×11	0.08	135
	33	8×12	0.08	185

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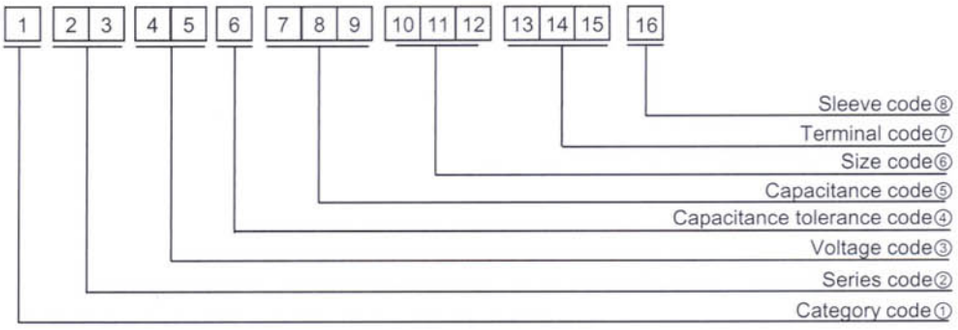
◆ STANDARD RATINGS

WV (Vdc)	Cap (μF)	Case size ΦD×L(mm)	tanδ	Ripple current (mArms/85℃,120Hz)
100(1K)	47	10 x 13	0.08	235
	100	10 x 20	0.08	380
	220	13 x 25	0.08	630
	330	13 x 30	0.08	760
	470	16 x 30	0.08	1000
	1000	18 × 40	0.08	1350
160(2C)	0.47	6.3×11	0.20	10
	1	6.3×11	0.20	15
	2.2	6.3×11	0.20	30
	3.3	6.3×11	0.20	40
	4.7	6.3×11	0.20	48
	10	8×12	0.20	80
	10	10×12	0.20	94
	22	10×12	0.20	130
	22	10×16	0.20	150
	22	10×20	0.20	170
	33	10×16	0.20	180
	33	10×20	0.20	210
	47	10×20	0.20	240
	47	12.5×20	0.20	280
	68	12.5×20	0.20	360
	100	12.5×25	0.20	470
	150	16×20	0.20	520
	180	16×25	0.20	600
	220	16×30	0.20	780
	270	18×30	0.20	860
	330	18×35	0.20	1000
	390	18×35	0.20	1020
	470	18×40	0.20	1220
200(2D)	0.47	6.3×11	0.20	10
	1	6.3×11	0.20	15
	2.2	6.3×11	0.20	34
	3.3	6.3×11	0.20	45
	4.7	6.3×11	0.20	55
	4.7	8×12	0.20	60
	10	10×12	0.20	100
	22	10×20	0.20	170
	33	10×20	0.20	205
	47	12.5×20	0.20	270
	68	12.5×25	0.20	370
	100	16×25	0.20	475
	150	16×25	0.20	550
	180	18×25	0.20	620
	220	18×35	0.20	810
	270	18×35	0.20	870
	330	18×35	0.20	1000
	330	18×40	0.20	1020
250(2E)	0.47	6.3×11	0.20	10
	1	6.3×11	0.20	16
	2.2	6.3×11	0.20	34
	3.3	6.3×11	0.20	42
	3.3	8×12	0.20	46
	4.7	6.3×11	0.20	50
	4.7	8×12	0.20	55
	10	10×12	0.20	100
	10	10×16	0.20	105
	22	10×20	0.20	170

WV (Vdc)	Cap (μF)	Case size ΦD×L(mm)	tanδ	Ripple current (mArms/85℃,120Hz)
250(2E)	33	10×20	0.20	200
	33	12.5×20	0.20	230
	47	12.5×20	0.20	270
	47	12.5×25	0.20	295
	68	16×25	0.20	382
	100	16×25	0.20	450
	100	16×30	0.20	515
	120	16×30	0.20	530
	150	16×30	0.20	570
	180	18×30	0.20	620
350(2V)	0.47	6.3×11	0.24	15
	1	6.3×11	0.24	22
	2.2	8×12	0.24	38
	3.3	8×12	0.24	46
	4.7	10×12	0.24	65
	10	10×12	0.24	90
	10	10×16	0.24	100
	10	10×20	0.24	120
	22	12.5×20	0.24	185
	33	16×25	0.24	275
	47	16×25	0.24	325
	68	16×25	0.24	405
	100	18×30	0.24	530
400(2G)	1	6.3×11	0.24	22
	2.2	8×12	0.24	38
	3.3	10×12	0.24	54
	4.7	10×12	0.24	60
	4.7	10×16	0.24	75
	10	10×16	0.24	100
	10	10×20	0.24	120
	22	12.5×25	0.24	205
	33	16×25	0.24	275
	47	16×25	0.24	325
	47	16×30	0.24	350
	56	16×30	0.24	385
	68	18×25	0.24	420
	82	18×30	0.24	475
	100	18×35	0.24	545
450(2W)	1	8×12	0.24	16
	2.2	8×12	0.24	32
	2.2	10×12	0.24	35
	3.3	10×12	0.24	40
	3.3	10×16	0.24	44
	4.7	10×12	0.24	50
	4.7	10×16	0.24	58
	4.7	10×20	0.24	65
	10	10×20	0.24	80
	10	12.5×20	0.24	92
	22	12.5×25	0.24	150
	22	16×25	0.24	165
	33	16×30	0.24	215
	47	16×30	0.24	260
	47	16×35	0.24	280
	68	18×30	0.24	370
	82	18×35	0.24	390
	100	18×40	0.24	420

Part Number System



①Category

Type	Code
	1th
Electrolytic Capacitor	E

②Series code

Series name	Code	
	2 th	3 th
WH	W	H
CD11GE	G	E

③Voltage code

WV (V)	Code	
	4th	5th
4	0	G
6.3	0	J
10	1	A
16	1	C
25	1	E
35	1	V
40	1	G
50	1	H
63	1	J
80	1	B
100	1	K
160	2	C
180	2	L
200	2	D
220	2	N
250	2	E
315	2	F
350	2	V
380	2	P
400	2	G
420	2	T
450	2	W
500	2	H

④ Capacitance Tolerance

Tol. (%)	Code
	6th
-10 ~ +10	K
-20 ~ +20	M
-10 ~ +30	Q
-10 ~ +50	T
-10 ~ +20	V
-0 ~ +20	A
-0 ~ +30	
-5 ~ +20	C
-10 ~ -20	B
-5 ~ +5	D
-0 ~ +10	E
-5 ~ +20	F
-15 ~ +5	N

⑤Capacitance code

Cap (μF)	Code		
	7th	8th	9th
0.10	0	R	1
0.22	R	2	2
0.33	R	3	3
0.47	R	4	7
0.68	R	6	8
1	0	1	0
2.2	2	R	2
3.3	3	R	3
4.7	4	R	7
6.8	6	R	8
10	1	0	0
22	2	2	0
33	3	3	0
47	4	7	0
68	6	8	0
100	1	0	1
220	2	2	1
330	3	3	1
470	4	7	1
680	6	8	1
1000	1	0	2
2200	2	2	2
3300	3	3	2
4700	4	7	2
6800	6	8	2
10000	1	0	3
22000	2	2	3
33000	3	3	3
68000	6	8	3

⑥ Size code

ΦD	Code
	10th
4	C
5	D
6.3	E
8	F
10	G
11	H
12	J
12.5	W
13	K
14	X
16	L
18	M
19	Z
20	N
22	O
25	P
30	Q
35	R
40	Y
51	S
63.5	T
76	U
89	V

L	Code	
	11th	12th
5	0	5
7	0	7
11	1	1
12	1	2
16	1	6
20	2	0
25	2	5
30	3	0
35	3	5
40	4	0
46	4	6
50	5	0
60	6	0
80	8	0
100	A	0
115	B	5
120	C	0
130	D	0
140	E	0
160	G	0
200	K	0

⑦Terminal Code

Specification	Code	Size	
	13th	14th	15th
Bulk packing	O	-	-
Taping F=5.0mm	P	5	0
Lead Cut L=3.5mm	C	3	5
Lead Cut L=11.0mm	C	B	0
Lead Forming & cut L=4.5mm	F	4	5
Kink & cut L=4.5mm	J	4	5
Snap-in type Terminal 4.0mm in Length	K	4	0
Horizontal mounting Terminal	M	-	-
Screw Terminal	S	-	-
Lug Terminal	L	-	-
Three terminals	T	-	-
Four terminals	Q	-	-
Five terminals	Y	-	-

⑧Sleeve Code

Sleeve	Code
	16th
PVC	C
PET	T