

# PHC

## Metallized Polypropylene Film Capacitors for Switching Circuits



- Switching capacitor for industrial controls
- Motor speed control
- SMPS
- High end audio
- Resonant circuits
- Induction heaters
- High frequency electronic ballasts

<b>Operating Temperature Range</b>		-40°C to +85°C					
<b>Capacitance Tolerance</b>		+/- 10% at 1kHz, 20°C					
<b>Rated Voltage</b>	WVDC	250	330	400	600	700	850
	SVDC	400	500	600	800	1000	1200
	VAC	160	200	250	330	400	450
<b>Dissipation Factor (max) at 20°C.</b>		Freq (kHz)	C≤5μF	5μF<C≤30μF	C>30μF		
		1	.06%	.1%	.15%		
<b>Insulation Resistance @20°C(&lt;70% RH) for 1 minute at 100VDC</b>		> 30,000MΩ x μF not to exceed 30,000MΩ					
<b>Peak Current - I<sub>PEAK</sub> (Non-repetitive)</b>		I <sub>PEAK</sub> = 1.5°C*dv/dt Maximum					
<b>Dielectric Strength</b>		200% of rated WVDC for 10 seconds at 20°C between leads. 3KV at 60Hz for 60 seconds between leads and case.					
<b>Self inductance</b>		<1nH/mm of body length and lead wire length.					
<b>Capacitance drift</b>		<1.0% up to 40°C after 2 years					
<b>Temperature Coefficient</b>		-200ppm/°C +/- 100ppm/°C					
<b>Life Expectancy</b> <small>Capacitance change (typical) -5%</small>		≥30,000 hours @VAC at 70°C ≥100,000 hours @WVDC at 70°C					
<b>Failure rate</b>		300/billion component hours					
<b>Dielectric</b>		Polypropylene					
<b>Electrodes</b>		Vacuum deposited metal layers					
<b>Construction</b>		Metallized film with internal series connections for VDC = 850VDC					
<b>Leads</b>		Tinned copper wire leads.					
<b>Coating</b>		Flame retardant polyester tape wrap (UL 510) with epoxy end fills (UL94V-0)					

## PHYSICAL DIMENSIONS

$\mu\text{F}$ \diagdown WVDC (VAC)	250 (160)	330 (200)	400 (250)	600 (330)	700 (400)	850 (450)
0.1						11.5x29
0.15						12x34 13x29
0.22					11.5x34 12.5x29	13.5x34 15x29
0.33			12x29	13.5x34 15x29	16x34 17.5x29	18.5x34
0.47		11x29	12.5x34 13.5x29	14x34 16x29	17.5x34	18x46 21.5x34
0.68	11x29	12.5x29	13x34 15x29	17.5x34	18x46 21.5x34	21.5x46 26x34
1	11x29	12.5x29	13x34 15x29	17.5x34	18x46 21.5x34	21.5x46 26x34
1.2				20x34	24x34	
1.5	13x29	13.5x34 15x29	15.5x34 17.5x29	20x34	21.5x46	25.5x46
2	12.5x34 14.5x29	15x34 16.5x29	17.5x34	20x46 25x34	24.5x46	29x46
2.2	13x34 15x29	15.5x34 17.5x29	18.5x34	21x46 24x34	25.5x46	25x59 26.5x55 30x46
2.5	14x34 15.5x29	16.5x34	19x34	22x46	27x46	26.5x59 28x55 32x46
3	15x34 17x29	18.5x34	21x34	24x46	29x46	29x59 30.5x55 34.5x46
3.3	15.5x34	19x34	19x46 22x34	25x46	30.5x46	30x59 32x55
4	17x34	20.5x34	20.5x46 24x34	27x46	27.5x59 29x55 33.5x46	33x59 35x55
4.7	18x34	19x46 22x34	22x46	24.5x59 26.5x55 29x46	29.5x59 31x55	33.5x59 37x55
5	18.5x34	19.5x46 22.5x34	22.5x46	25x59 27x55 29.5x46	30.5x59 32x55	36.5x59 38x55
5.6						40.5x55
6.8	21x34	22x46	26x46	28.5x59 30x55	35x59 38x55	41.5x59
8.2					38x59 41x55	
10	24x34 27.5x46	26x46	26x59 27x55 31x46	33.5x59 35x55	41.5x55	
12.5				37.5x59 42.9x55		
15	25.5x46	26.5x59 28x55 37x46	33x55	39x57 41x59		
20	22x29	30x59 31.5x55	35x59 37x55			

Convert to inches, divide by 25.4

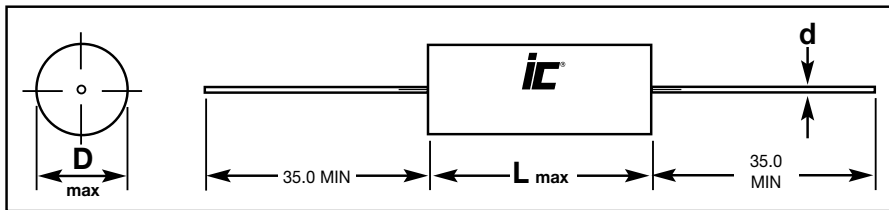
DxL(mm)

## PHYSICAL DIMENSIONS

$\mu\text{F}$ \diagdown WVDC (VAC)	250 (160)	330 (200)	400 (250)	600 (330)	700 (400)	850 (450)
22	30.5x46	31x59 33x55	37x59 39x55			
25	32x46	33x59 35x55	39x59 41.5x55			
30	29.5x59 31x55	36x59 38x55				
33	31x59 32.5x55	37.5x59 39.5x55				
35	→	38.5x59 41x55				
40	33.5x59 36x55	41x59				
50	37x59 40x55					
60	40x59					

Convert to inches, divide by 25.4

DxL(mm)



D	d
≤14	0.8
14 < D ≤ 23	1.0
>23	1.2

## STANDARD PART LISTING

Capacitance (µF)	VVDC	IC <sup>®</sup> PART NUMBER	dv/dt (V/µs)	Maximum RMS Current @100 kHz, +70°C in Amps	Typical ESR @100 kHz, +25°C in mΩ	Dimensions DxL (mm)
0.1	850	104PHC850KG	375	3.5	12.9	11.5x29
0.15	850	154PHC850K	300	4.5	10.8	12x34
0.15	850	154PHC850KG	375	4.5	9.8	13x29
0.22	700	224PHC700KJ	105	3.5	11.0	11.5x34
0.22	700	224PHC700KG	135	3.5	10.2	12.5x29
0.22	850	224PHC850K	300	5.5	8.4	13.5x34
0.22	850	224PHC850KG	375	5.5	7.7	15x29
0.33	600	334PHC600KG	95	4	9.0	12x29
0.33	700	334PHC700KJ	105	4.5	8.9	13.5x34
0.33	700	334PHC700KG	135	4.5	8.1	15x29
0.33	850	334PHC850K	300	7	6.6	16x34
0.33	850	334PHC850KG	375	7	5.9	17.5x29
0.47	400	474PHC400K	75	4	8.2	11x29
0.47	600	474PHC600K	75	5	8.9	12.5x34
0.47	600	474PHC600KG	95	5	7.9	13.5x29
0.47	700	474PHC700KG	105	6.5	7.3	15.5x34
0.47	700	474PHC700K	135	6.5	6.6	17x29
0.47	850	474PHC850K	300	9	5.4	18.5x34
0.68	330	684PHC330KG	60	4.5	8.7	11x29
0.68	400	684PHC400K	55	5.5	8.5	12x34
0.68	400	684PHC400KG	75	5.5	6.7	13x29
0.68	600	684PHC600K	75	6	7.4	14x34
0.68	600	684PHC600KG	95	6	6.5	16x29
0.68	700	684PHC700K	105	8	5.7	17.5x34
0.68	850	684PHC850KN	200	9	5.4	18x46
0.68	850	684PHC850K	300	9	4.3	21.5x34
1	250	105PHC250K	50	4.5	7.2	11x29
1	330	105PHC330KG	60	5.5	6.6	12.5x29
1	400	105PHC400K	55	6	6.4	13x34
1	400	105PHC400KG	75	6	5.5	15x29
1	600	105PHC600K	75	8	5.8	17.5x34
1	700	105PHC700KN	70	9	6.3	18x46
1	700	105PHC700K	150	9	4.3	21.5x34
1	850	105PHC850K	200	9	4.3	21.5x46
1	850	105PHC850KJ	300	12	3.2	26x34
1.2	700	125PHC700KN	70	9	6.0	20x46
1.2	700	125PHC700K	105	9	3.7	24x34
1.5	250	155PHC250K	50	5	5.8	13x29
1.5	330	155PHC330KJ	45	6	6.0	13.5x34
1.5	330	155PHC330KG	60	6.5	5.3	15x29
1.5	400	155PHC400K	55	7	5.3	15.5x34
1.5	400	155PHC400KG	75	7	4.5	17.5x29
1.5	600	155PHC600K	75	9	4.7	20x34
1.5	700	155PHC700K	70	9	5.3	21.5x46
1.5	850	155PHC850K	200	12	3.5	25.5x46
2	250	205PHC250KG	40	5	5.7	12.5x34
2	250	205PHC250K	50	5.5	4.9	14.5x29

Capacitance (µF)	VVDC	IC <sup>®</sup> PART NUMBER	dv/dt (V/µs)	Maximum RMS Current @100 kHz, +70°C in Amps	Typical ESR @100 kHz, +25°C in mΩ	Dimensions DxL (mm)
2	330	205PHC330KJ	45	7.0	4.5	15x34
2	330	205PHC330KG	60	7.0	4.5	16.5x29
2	400	205PHC400K	55	9.0	4.4	17.5x34
2	600	205PHC600KJ	75	9.0	3.9	23x34
2	600	205PHC600K	70	12.0	4.5	24.5x46
2	700	205PHC700K	70	12.0	4.6	22.5x46
2	850	205PHC850K	200	12.0	2.9	29x46
2.2	250	225PHC250K	40	6.0	5.4	13x34
2.2	250	225PHC250KG	50	6.5	4.8	15x29
2.2	330	225PHC330KJ	45	7.0	5.1	15.5x34
2.2	330	225PHC330KG	60	7.0	4.1	17.5x29
2.2	400	225PHC400K	55	9.0	4.2	18.5x34
2.2	600	225PHC600K	55	9.0	4.6	21x46
2.2	600	225PHC600KJ	75	9.0	3.6	24x34
2.2	700	225PHC700K	70	12.0	4.3	25.5x46
2.2	850	225PHC850KS	110	12.0	4.3	25x59
2.2	850	225PHC850KR	125	12.0	3.8	26.5x55
2.2	850	225PHC850KS	200	12.0	2.9	30x46
2.5	250	255PHC250K	40	7.0	5.1	14x34
2.5	250	255PHC250KG	50	7.0	4.5	15.5x29
2.5	330	255PHC330KJ	45	8.0	4.8	16.5x34
2.5	400	255PHC400K	55	9.0	4.0	19x34
2.5	600	255PHC600K	55	9.0	4.4	22x46
2.5	700	255PHC700K	70	12.0	4.0	27x46
2.5	850	255PHC850KS	110	12.0	4.1	28.5x59
2.5	850	255PHC850KR	125	12.0	3.6	28x55
2.5	850	255PHC850K	200	12.0	2.7	32x46
3	250	305PHC250K	40	7.0	4.6	15x34
3	250	305PHC250KG	50	7.0	4.2	17x29
3	330	305PHC330KJ	45	9.0	4.2	18.5x34
3	400	305PHC400K	55	9.0	3.6	21x34
3	600	305PHC600K	55	9.0	4.0	24x46
3	700	305PHC700K	70	12.0	6.1	27x44
3	850	305PHC850KS	110	12.0	3.6	29x59
3	850	305PHC850KR	125	12.0	3.2	30.5x55
3	850	305PHC850K	200	12.0	2.4	34.5x46
3.3	250	335PHC250K	40	7.0	4.2	15.5x34
3.3	330	335PHC330KJ	45	9.0	4.1	19x34
3.3	400	335PHC400KN	40	9.0	4.1	19x46
3.3	400	335PHC400K	55	9.0	3.5	22x34
3.3	600	335PHC600K	55	9.0	3.8	25x46
3.3	700	335PHC700K	70	12.0	5.9	30.5x46
3.3	850	335PHC850KS	110	12.0	3.5	30x59
3.3	850	335PHC850K	125	12.0	3.1	32x56
4	250	405PHC250K	40	9.0	3.6	17x34
4	330	405PHC330KJ	45	9.0	3.6	20.5x34
4	400	405PHC400K	40	9.0	3.7	20.5x46



## STANDARD PART LISTING

Capacitance (µF)	VVDC	IC PART NUMBER	dv/dt (v/µs)	Maximum RMS Current @100 kHz, +70°C in Amps	Typical ESR @100 kHz, +25°C in mΩ	Dimensions DxL (mm)
4	400	405PHC400KJ	55	9	3.1	24x34
4	600	405PHC600K	55	12	3.4	27x46
4	700	405PHC700K	70	12	5.4	33.5x46
4	700	405PHC700KR	60	12	6.7	29x55
4	700	405PHC700KS	45	12	7.7	27.5x57
4	850	405PHC850K	125	12	2.8	35x55
4	850	405PHC850KS	110	12	3.1	33x59
4	850	405PHC850KJ	40	9	3.3	31x57
4.7	250	475PHC250KJ	40	9	3.3	18x34
4.7	330	475PHC330KN	30	9	4.0	19x46
4.7	330	475PHC330KJ	45	9	3.1	22x34
4.7	400	475PHC400K	40	9	7.7	22x46
4.7	600	475PHC600KS	40	12	8.6	24.5x59
4.7	600	475PHC600KR	50	12	7.7	26.5x55
4.7	600	475PHC600K	55	12	6.4	29x46
4.7	700	475PHC700KS	45	12	7.0	29.5x59
4.7	700	475PHC700K	60	12	6.1	31x55
4.7	850	475PHC850KS	110	12	2.8	35.5x59
4.7	850	475PHC850K	125	12	2.5	37x55
5	250	505PHC250K	40	9	3.2	18.5x34
5	330	505PHC330KN	30	9	3.9	19.5x46
5	330	505PHC330KJ	45	9	3.0	21.5x34
5	400	505PHC400K	40	9	7.5	22.5x46
5	600	505PHC600KS	40	11.5	8.3	25x59
5	600	505PHC600K	50	12	7.4	27x55
5	600	505PHC600KN	55	12	6.3	29.5x46
5	700	505PHC700KS	45	12	6.6	30.5x59
5	700	505PHC700K	60	12	5.8	32x55
5	850	505PHC850KS	110	12	2.7	36.5x59
5	850	505PHC850K	125	12	2.4	38x55
5.6	850	565PHC850K	125	12	2.1	40.5x55
6.8	250	685PHC250K	40	9	2.9	21x34
6.8	330	685PHC330KN	30	9	3.4	22x46
6.8	400	685PHC400K	40	11	6.4	26x46
6.8	600	685PHC600KS	40	12	7.3	28.5x59
6.8	600	685PHC600K	50	12	6.5	30x55
6.8	700	685PHC700KS	45	12	5.8	35x59
6.8	700	685PHC700K	60	12	5.1	37x55
6.8	850	685PHC850KS	110	12	2.3	41.5x59
8.2	700	825PHC700KS	45	12	5.3	38x59
8.2	700	825PHC700K	60	12	4.6	41x55
10	250	106PHC250KN	25	9	3.1	21.5x46
10	250	106PHC250K	40	9	2.4	24x34
10	330	106PHC330KN	30	10	6.7	26x46
10	400	106PHC400KS	25	11	7.1	26x59

Capacitance (µF)	VVDC	IC PART NUMBER	dv/dt (v/µs)	Maximum RMS Current @100 kHz, +70°C in Amps	Typical ESR @100 kHz, +25°C in mΩ	Dimensions DxL (mm)
10	400	106PHC400KON	40	12	5.4	31x46
10	400	106PHC400K	30	12	6.3	27x55
10	600	106PHC600KS	40	12	6.1	33.5x59
10	600	106PHC600K	50	12	5.4	35x55
10	700	106PHC700KS	45	12	4.9	41.5x59
12.5	600	126PHC600KS	40	12	5.5	37.5x59
12.5	600	126PHC600K	50	12	4.9	40.5x55
15	250	156PHC250K	25	12	2.6	25.5x46
15	330	156PHC330KS	20	12	6.8	26.5x59
15	330	156PHC330KR	25	12	6.0	28x55
15	330	156PHC330KN	30	12	5.4	31x46
15	400	156PHC400KS	25	12	5.6	31x59
15	400	156PHC400K	30	12	5.0	33x55
15	600	156PHC600KS	40	12	5.1	41x59
20	250	206PHC250K	25	12	5.0	29x46
20	330	206PHC330KS	20	12	5.8	30x59
20	330	206PHC330KR	25	12	5.1	31.5x55
20	400	206PHC400KS	25	12	4.7	35x59
20	400	206PHC400K	30	12	4.3	37x55
22	250	226PHC250KN	25	12	4.7	30.5x46
22	330	226PHC330KS	20	12	5.4	31x59
22	330	226PHC330KR	25	12	4.8	33x55
22	400	226PHC400KS	25	12	4.5	37x59
22	400	226PHC400KR	30	12	4.1	39x55
25	250	256PHC250K	25	12	4.4	32x46
25	330	256PHC330KS	20	12	5.0	33x59
25	330	256PHC330KR	25	12	4.5	35x55
25	400	256PHC400KS	25	12	4.2	39x59
25	400	256PHC400K	30	12	3.8	41.5x56
30	250	306PHC250KS	15	12	5.3	29.5x59
30	250	306PHC250K	20	12	4.5	31x55
30	330	306PHC330KS	20	12	4.5	36x59
30	330	306PHC330KR	25	12	4.1	38x55
33	250	336PHC250KS	15	12	5	31x59
33	250	336PHC250KR	20	12	4.3	32.5x55
33	330	336PHC330KS	20	12	4.3	37.5x59
33	330	336PHC330KR	25	12	3.9	39.5x55
35	330	356PHC330KS	20	12	4.2	38.5x59
35	330	356PHC330KR	25	12	3.8	41x55
40	250	406PHC250KS	15	12	4.5	33.5x59
40	250	406PHC250K	20	12	3.9	36x55
40	330	406PHC330KS	20	12	3.9	41x59
50	250	506PHC250KS	15	12	3.9	37x59
50	250	506PHC250K	20	12	3.5	40x55
60	250	606PHC250KS	15	12	3.5	40x59