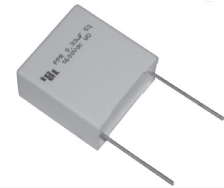


# PPR - (New 250Vdc - 400Vdc rating)

## Metallized polypropylene film capacitor

### MKP - High pulse - Small size



#### Main applications

Snubber, SCR commutating circuits, electronic ballasts, protection circuits in SMPSs, high voltage, high current and high pulse operation up to very high operating frequencies

#### Dielectric

Polypropylene

#### Electrodes

Vacuum deposited metal layers

#### Coating

Solvent resistant plastic case with resin sealing (UL 94 V-0). Flame retardant execution

#### Construction

Extended double side metallized carrier film, internal series connection and metallized film for  $U_r \geq 630VDC$  (refer to general technical information)

#### Terminals

Tinned copper wire (lead free)

#### Reference standard

IEC 60384/16, IEC 60068, RoHS compliant

#### Climatic category

55/100/56 (IEC 60068/1), FMD (DIN40040)

#### Operating temperature range

-55°...+105°C

#### Rated capacitance (Cr)

0,0022µF to 15µF, in compliance with IEC 60063, E6 series. Refer to article table

#### Capacitance tolerance (at 1kHz)

±10% (code=K), ±5% (code=J), ±20% (code=M). Other tolerances upon request

#### Capacitance temperature coefficient

Refer to graphs in general technical information

#### Long term stability (at 1 kHz)

Capacitance variation  $\leq \pm 0,5\%$  after a period of 2 years at standard environmental conditions

#### Rated voltage (Ur)

250, 400, 630, 1000, 1600, 2000 Vdc at +85°C  
(Permissible AC voltage at 60Hz: 175, 230, 400, 600, 650, 700 Vac at +75°C)

#### Category voltage (Uc)

$U_c = U_r$  DC at +85°C,  $U_c = U_r$  AC at +75°C

#### Temperature derated voltage

DC: for  $T > +85^\circ C$ ,  $U_r$  DC must be decreased 1,25% for every °C exceeding +85°C  
AC: for  $T > +75^\circ C$ ,  $U_r$  AC must be decreased 1,35% for every °C exceeding +75°C

#### Self inductance

$\leq 1nH/mm$  of capacitor pitch

#### Maximum pulse rise time

Refer to article table. The pulse characteristic  $K_o$  depends on the voltage waveform. In any case the value given in the article table must not be exceeded

#### Dissipation factor (DF), max.

$tg\delta \times 10^{-4}$ , measured at 25±5°C

Freq.	$Cr \leq 0,1\mu F$	$0,1\mu F < Cr \leq 1\mu F$	$1\mu F < Cr \leq 3,9\mu F$	$Cr > 3,9\mu F$
1kHz	5	4	5	8
10kHz	5	6	10	-
100kHz	16	-	-	-

#### Insulation resistance (IR)

Measured between terminals, at 25±5°C, after 1 minute of electrification at 100Vdc

Cr	IR
$\leq 0,33\mu F$	$\geq 100G\Omega$
$> 0,33\mu F$	$\geq 30000s$

#### Test voltage between terminals (Ut)

1,6xUr (DC) applied for 2s at 25±5°C (1 minute for type test)

#### Damp heat test (steady state)

Test conditions:

Temperature= +40±2°C

Relative humidity=93±2%

Test duration= 56 days

Performance:

Capacitance change  $\leq \pm 1\%$

DF change  $\leq 0.0010$  at 10kHz for  $Cr \leq 1\mu F$

DF change  $\leq 0.0010$  at 1kHz for  $Cr > 1\mu F$

IR  $\geq 50\%$  of initial limit value

#### Endurance test

Test conditions:

Temperature= +85±2°C

Test duration= 2000h

Voltage applied=1,25xUr(DC)

Performance:

Capacitance change  $\leq \pm 1\%$

DF change  $\leq 0.0010$  at 10kHz for  $Cr \leq 1\mu F$

DF change  $\leq 0.0010$  at 1kHz for  $Cr > 1\mu F$

IR  $\geq 50\%$  of initial limit value

#### Resistance to soldering heat test

Test conditions:

Solder bath temperature= +260±5°C

Dipping time (with heat screen)= 10±1s

Performance:

Capacitance change  $\leq \pm 1\%$

DF change  $\leq 0.0010$  at 10kHz for  $Cr \leq 1\mu F$

DF change  $\leq 0.0010$  at 1kHz for  $Cr > 1\mu F$

IR  $\geq 50\%$  of initial limit value

#### Reliability (MIL HDB 217)

Application conditions:

Applied voltage= 0,5 x Ur(DC)

Temperature= +40±2°C

Failure rate:

(1FIT=1x10<sup>-9</sup> failures/components x hours)  
 $\leq 1FIT$

Failure criteria (DIN44122):

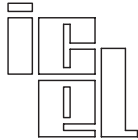
Capacitance change  $> \pm 10\%$

DF change  $> 2$  x initial value

IR  $< 0,005$  x initial limit value

Short or open circuit

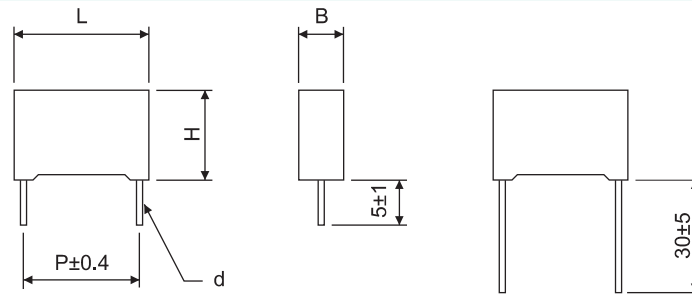
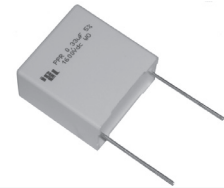
**Warning: this specification must be completed with the data given in the "General technical information" chapter**



# PPR - (New 250Vdc - 400Vdc rating)

## Metallized polypropylene film capacitor

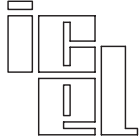
### MKP - High pulse - Small size



PPR article table (different values available upon request)

Rated voltage Vdc	Vac <sup>(2)</sup>	Cap. value (µF)	B	H	Dimension in mm			du/dt V/µs	Ko V <sup>2</sup> /µs	ICEL ordering code <sup>(1)</sup>
					L	P	d			
250	175	0,1	5	11	18	15	0,8	315	158E03	PPR1253100*E#
250	175	0,15	6	12	18	15	0,8	315	158E03	PPR1253150*E#
250	175	0,22	7,5	13,5	18	15	0,8	315	158E03	PPR1253220*E#
250	175	0,27	8,5	14,5	18	15	0,8	315	158E03	PPR1253270*E#
250	175	0,33	10	16	18	15	0,8	315	158E03	PPR1253330*E#
250	175	0,39	10	16	18	15	0,8	315	190E03	PPR1253390*E#
250	175	0,47	7	16	26,5	22,5	0,8	200	100E03	PPR1253470*G#
250	175	0,68	10	18,5	26,5	22,5	0,8	200	100E03	PPR1253680*G#
250	175	0,82	10	18,5	26,5	22,5	0,8	200	100E03	PPR1253820*G#
250	175	0,82	9	17	32	27,5	0,8	155	77500	PPR1253820*H#
250	175	1	11	20	26,5	22,5	0,8	200	100E03	PPR1254100*G#
250	175	1	11	20	32	27,5	0,8	155	77500	PPR1254100*H#
250	175	1,5	13	22	26,5	22,5	0,8	200	100E03	PPR1254150*G#
250	175	1,5	13	22	32	27,5	0,8	155	77500	PPR1254150*H#
250	175	2,2	15	24,5	32	27,5	0,8	155	77500	PPR1254220*H#
250	175	3,3	18	33	32	27,5	0,8	155	77500	PPR1254330*H#
250	175	3,3	17	28	42,5	37,5	1	105	52500	PPR1254330*J#
250	175	3,9	18	33	32	27,5	0,8	155	77500	PPR1254390*H#
250	175	3,9	17	28	42,5	37,5	1	105	52500	PPR1254390*J#
250	175	4,7	22	37	32	27,5	0,8	155	77500	PPR1254470*H#
250	175	4,7	17	32	42	37,5	1	105	52500	PPR1254470*J#
250	175	5,6	22	37	32	27,5	0,8	155	77500	PPR1254560*H#
250	175	5,6	22	30	42,5	37,5	1	105	52500	PPR1254560*J#
250	175	6,8	22	33,3	42,5	37,5	1	105	52500	PPR1254680*J#
250	175	10	28	37	42,5	37,5	1	105	52500	PPR1255100*J#
250	175	15	30	45	42,5	37,5	1	105	52500	PPR1255150*J#
400	230	0,047	5	11	18	15	0,8	480	384E03	PPR1402470*E#
400	230	0,068	6	12	18	15	0,8	480	384E03	PPR1402680*E#
400	230	0,1	7,5	13,5	18	15	0,8	480	384E03	PPR1403100*E#
400	230	0,15	8,5	14,5	18	15	0,8	480	384E03	PPR1403150*E#
400	230	0,22	10	16	18	15	0,8	480	384E03	PPR1403220*E#
400	230	0,22	7	16	26,5	22,5	0,8	305	244E03	PPR1403220*G#
400	230	0,33	8,5	17	26,5	22,5	0,8	305	244E03	PPR1403330*G#
400	230	0,47	10	18,5	26,5	22,5	0,8	305	244E03	PPR1403470*G#
400	230	0,47	9	17	32	27,5	0,8	235	188E03	PPR1403470*H#
400	230	0,68	13	22	26,5	22,5	0,8	305	244E03	PPR1403680*G#
400	230	0,68	11	20	32	27,5	0,8	235	188E03	PPR1403680*H#
400	230	1	13	22	32	27,5	0,8	235	188E03	PPR1404100*H#
400	230	1,2	15	24,5	32	27,5	0,8	235	188E03	PPR1404120*H#
400	230	1,5	18	33	32	27,5	0,8	235	188E03	PPR1404150*H#
400	230	2,2	22	37	32	27,5	0,8	235	188E03	PPR1404220*H#
400	230	2,2	17	28	42,5	37,5	1	160	128E03	PPR1404220*J#
400	230	3,3	22	37	32	27,5	0,8	235	188E03	PPR1404330*H#
400	230	3,3	22	30	42,5	37,5	1	160	128E03	PPR1404330*J#
400	230	4,7	22	33,5	42,5	37,5	1	160	128E03	PPR1404470*J#
400	230	5,6	28	37	42,5	37,5	1	160	128E03	PPR1404560*J#
400	230	6,8	30	45	42,5	37,5	1	160	128E03	PPR1404680*J#
630	400	0,022	5	11	18	15	0,8	2500	315E04	PPR1632220*E#
630	400	0,033	6	12	18	15	0,8	2500	315E04	PPR1632330*E#
630	400	0,047	7,5	13,5	18	15	0,8	2500	315E04	PPR1632470*E#
630	400	0,068	8,5	14,5	18	15	0,8	2500	315E04	PPR1632680*E#
630	400	0,068	6	15	26,5	22,5	0,8	1500	189E04	PPR1632680*G#
630	400	0,1	10	16	18	15	0,8	2500	315E04	PPR1633100*E#
630	400	0,1	6	15	26,5	22,5	0,8	1500	189E04	PPR1633100*G#
630	400	0,15	8,5	17	26,5	22,5	0,8	1500	189E04	PPR1633150*G#
630	400	0,15	9	17	32	27,5	0,8	900	113E04	PPR1633150*H#
630	400	0,22	10	18,5	26,5	22,5	0,8	1500	189E04	PPR1633220*G#
630	400	0,22	9	17	32	27,5	0,8	900	113E04	PPR1633220*H#
630	400	0,33	13	22	26,5	22,5	0,8	1500	189E04	PPR1633330*G#

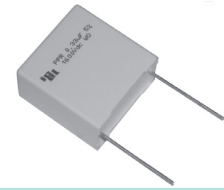
<sup>(1)</sup>Change the \* symbol with the needed capacitance tolerance code: J=±5%, K=±10%, M=±20% and the # symbol with S for 5mm lead length and with L for 30 mm lead length - <sup>(2)</sup>Not suitable for across the line application.



# PPR - (New 250Vdc - 400Vdc rating)

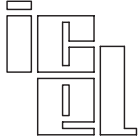
## Metallized polypropylene film capacitor

### MKP - High pulse - Small size

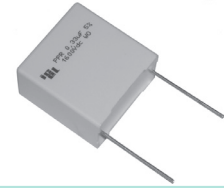


Rated voltage Vdc	Vac <sup>(2)</sup>	Cap. value (µF)	Dimension in mm					du/dt V/µs	Ko V <sup>2</sup> /µs	ICEL ordering code <sup>(1)</sup>
			B	H	L	P	d			
630	400	0,33	11	20	32	27,5	0,8	900	113E04	PPR1633330*H#
630	400	0,47	13	22	32	27,5	0,8	900	113E04	PPR1633470*H#
630	400	0,68	15	24,5	32	27,5	0,8	900	113E04	PPR1633680*H#
630	400	1	18	33	32	27,5	0,8	900	113E04	PPR1634100*H#
630	400	1	17	28	42,5	37,5	1	450	567E03	PPR1634100*J#
630	400	1,5	22	37	32	27,5	0,8	900	113E04	PPR1634150*H#
630	400	1,5	22	30	42,5	37,5	1	450	567E03	PPR1634150*J#
630	400	2,2	28	37	42,5	37,5	1	450	567E03	PPR1634220*J#
630	400	3,3	30	45	42,5	37,5	1	450	567E03	PPR1634330*J#
630	400	3,9	30	45	42,5	37,5	1	450	567E03	PPR1634390*J#
1000	600	0,01	5	11	18	15	0,8	3300	660E04	PPR2102100*E#
1000	600	0,015	6	12	18	15	0,8	3300	660E04	PPR2102150*E#
1000	600	0,022	7,5	13,5	18	15	0,8	3300	660E04	PPR2102220*E#
1000	600	0,033	8,5	14,5	18	15	0,8	3300	660E04	PPR2102330*E#
1000	600	0,033	6	15	26,5	22,5	0,8	2100	420E04	PPR2102330*G#
1000	600	0,047	7	16	26,5	22,5	0,8	2100	420E04	PPR2102470*G#
1000	600	0,068	8,5	17	26,5	22,5	0,8	2100	420E04	PPR2102680*G#
1000	600	0,1	10	18,5	26,5	22,5	0,8	2100	420E04	PPR2103100*G#
1000	600	0,1	9	17	32	27,5	0,8	1000	200E04	PPR2103100*H#
1000	600	0,15	13	22	26,5	22,5	0,8	2100	420E04	PPR2103150*G#
1000	600	0,15	11	20	32	27,5	0,8	1000	200E04	PPR2103150*H#
1000	600	0,22	13	22	32	27,5	0,8	1000	200E04	PPR2103220*H#
1000	600	0,33	14	28	32	27,5	0,8	1000	200E04	PPR2103330*H#
1000	600	0,47	18	33	32	27,5	0,8	1000	200E04	PPR2103470*H#
1000	600	0,68	22	37	32	27,5	0,8	1000	200E04	PPR2103680*H#
1000	600	0,68	22	30	42,5	37,5	1	500	100E04	PPR2103680*J#
1000	600	1	28	37	42,5	37,5	1	500	100E04	PPR2104100*J#
1000	600	1,5	28	37	42,5	37,5	1	500	100E04	PPR2104150*J#
1000	600	1,8	30	45	42,5	37,5	1	500	100E04	PPR2104180*J#
1600	650	0,0033	5	11	18	15	0,8	6000	192E05	PPR2161330*E#
1600	650	0,0047	5	11	18	15	0,8	6000	192E05	PPR2161470*E#
1600	650	0,0068	5	11	18	15	0,8	6000	192E05	PPR2161680*E#
1600	650	0,01	6	12	18	15	0,8	6000	192E05	PPR2162100*E#
1600	650	0,015	7,5	13,5	18	15	0,8	6000	192E05	PPR2162150*E#
1600	650	0,022	8,5	14,5	18	15	0,8	6000	192E05	PPR2162220*E#
1600	650	0,022	6	15	26,5	22,5	0,8	3000	960E04	PPR2162220*G#
1600	650	0,033	7	16	26,5	22,5	0,8	3000	960E04	PPR2162330*G#
1600	650	0,047	10	18,5	26,5	22,5	0,8	3000	960E04	PPR2162470*G#
1600	650	0,047	9	17	32	27,5	0,8	2000	640E04	PPR2162470*H#
1600	650	0,068	11	20	26,5	22,5	0,8	3000	960E04	PPR2162680*G#
1600	650	0,068	9	17	32	27,5	0,8	2000	640E04	PPR2162680*H#
1600	650	0,1	13	22	26,5	22,5	0,8	3000	960E04	PPR2163100*G#
1600	650	0,1	11	20	32	27,5	0,8	2000	640E04	PPR2163100*H#
1600	650	0,15	15	24,5	32	27,5	0,8	2000	640E04	PPR2163150*H#
1600	650	0,22	18	33	32	27,5	0,8	2000	640E04	PPR2163220*H#
1600	650	0,33	18	33	32	27,5	0,8	2000	640E04	PPR2163330*H#
1600	650	0,33	17	28	42,5	37,5	1	1200	384E04	PPR2163330*J#
1600	650	0,47	22	37	32	27,5	0,8	2000	640E04	PPR2163470*H#
1600	650	0,47	22	30	42,5	37,5	1	1200	384E04	PPR2163470*J#
1600	650	0,68	28	37	42,5	37,5	1	1200	384E04	PPR2163680*J#
1600	650	1	30	45	42,5	37,5	1	1200	384E04	PPR2164100*J#
2000	700	0,0022	5	11	18	15	0,8	7000	280E05	PPR2201220*E#
2000	700	0,0033	6	12	18	15	0,8	7000	280E05	PPR2201330*E#
2000	700	0,0047	7,5	13,5	18	15	0,8	7000	280E05	PPR2201470*E#
2000	700	0,0068	7,5	13,5	18	15	0,8	7000	280E05	PPR2201680*E#
2000	700	0,01	10	16	18	15	0,8	7000	280E05	PPR2202100*E#
2000	700	0,01	6	15	26,5	22,5	0,8	3500	140E05	PPR2202100*G#
2000	700	0,015	7	16	26,5	22,5	0,8	3500	140E05	PPR2202150*G#
2000	700	0,022	8,5	17	26,5	22,5	0,8	3500	140E05	PPR2202220*G#
2000	700	0,022	9	17	32	27,5	0,8	2300	920E04	PPR2202220*H#
2000	700	0,033	10	18,5	26,5	22,5	0,8	3500	140E05	PPR2202330*G#
2000	700	0,033	9	17	32	27,5	0,8	2300	920E04	PPR2202330*H#
2000	700	0,047	13	22	26,5	22,5	0,8	3500	140E05	PPR2202470*G#
2000	700	0,047	11	20	32	27,5	0,8	2300	920E04	PPR2202470*H#
2000	700	0,068	13	22	32	27,5	0,8	2300	920E04	PPR2202680*H#
2000	700	0,1	14	28	32	27,5	0,8	2300	920E04	PPR2203100*H#
2000	700	0,15	18	33	32	27,5	0,8	2300	920E04	PPR2203150*H#
2000	700	0,15	17	28	42,5	37,5	1	1500	600E04	PPR2203150*J#
2000	700	0,22	22	37	32	27,5	0,8	2300	920E04	PPR2203220*H#
2000	700	0,22	22	30	42,5	37,5	1	1500	600E04	PPR2203220*J#
2000	700	0,33	28	37	42,5	37,5	1	1500	600E04	PPR2203330*J#
2000	700	0,47	28	37	42,5	37,5	1	1500	600E04	PPR2203470*J#
2000	700	0,56	30	45	42,5	37,5	1	1500	600E04	PPR2203560*J#

<sup>(1)</sup>Change the \* symbol with the needed capacitance tolerance code: J=±5%, K=±10%, M=±20% and the # symbol with S for 5mm lead length and with L for 30 mm lead length - <sup>(2)</sup>Not suitable for across the line application.



# PPR - (New 250Vdc - 400Vdc rating) Metallized polypropylene film capacitor MKP - High pulse - Small size



Permissible AC voltage versus frequency (sinusoidal waveform) for  $\Delta T = +10^\circ\text{C}$   
Referred to the largest pitch execution among available ones

