

Loose

Taped

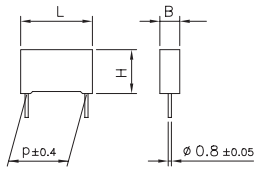
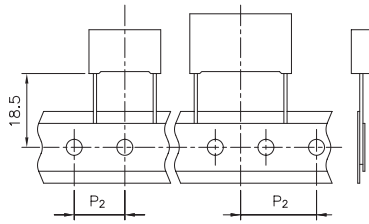


Fig. 1

Fig. 2



Ød±0.05	p ≥ 15
	0.8

All dimensions are in mm.

POLYPROPYLENE CAPACITOR WITH DOUBLE SIDED METALLIZED FILM ELECTRODES A.C. APPLICATIONS

Typical applications: electronic lighting (i.e. car headlamp and ballast), pulse applications with high A.C. voltage and HIGH current.

PRODUCT CODE: R77

Pitch (mm)	Box thickness (B) (mm)	Maximum dimensions (mm)		
		B max	H max	L max
15.0	<7.5	B +0.2	H +0.1	L +0.3
15.0	≥7.5	B +0.2	H +0.1	L +0.5
22.5	All	B +0.2	H +0.1	L +0.3
27.5	All	B +0.2	H +0.1	L +0.3

PRODUCT CODE SYSTEM

The part number, comprising 14 digits, is formed as follows:

1	2	3	4	5	6	7	8	9	10	11	12	13	14
R	7	7										-	

Digit 1 to 3 Series code.

Digit 4 a.c. rated voltage: L =250V
3 = 300V N=400V 5 =500V
7 = 700V 9 =900V

Digit 5 Pitch:
I=15mm; N=22.5mm; R=27.5mm

Digit 6 to 9 Digits 7 - 8 - 9 indicate the first three digits of Capacitance value and the 6th digit indicates the number of zeros that must be added to obtain the Rated Capacitance in pF.

Digit 10 to 11 Mechanical version and/or packaging (table 1)

Digit 12 Identifies the dimensions and electrical characteristics.

Digit 13 Internal use.

Digit 14 Capacitance tolerance:
H=2.5%; J=5%; K=10%

GENERAL TECHNICAL DATA

Dielectric: polypropylene film.

Plates: double sided metallized polyester film.

Winding: non-inductive type.

Leads: tinned wire.

Protection: plastic case, thermosetting resin filled.
Box material is solvent resistant and flame retardant according to UL94 V0.

Marking: manufacturer's logo, series (R77), dielectric code (MKP), capacitance, tolerance, A.C. rated voltage, manufacturing date code.

Climatic category: 55/105/56 IEC 60068-1

Operating temperature range: -55 to +105°C

Related documents: IEC 60384-16; IEC 60384-17

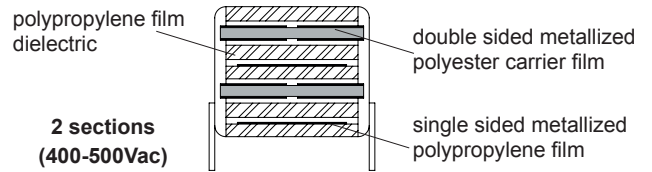
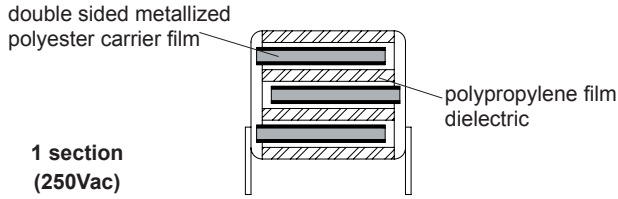
Table 1 (for more detailed information, please refer to page 14).

Standard packaging style	Lead length (mm)	Taping style			Ordering code (Digit 10 to 11)
		P ₂ (mm)	Fig. (No.)	Pitch (mm)	
AMMO-PACK		12.70	1	15.0	DQ
AMMO-PACK		19.05	2	22.5	DQ
REEL Ø 355mm		12.70	1	15.0	GY
REEL Ø 500mm		12.70	1	15.0	CK
REEL Ø 500mm		19.05	2	22.5/27.5	CK
Loose, short leads	4 ⁺²				AA
Loose, long leads	30 ⁺⁵				40
Loose, long leads	25 ^{+2/-1}				50

Note: Ammo-pack is the preferred packaging for taped version.

**POLYPROPYLENE CAPACITOR WITH DOUBLE SIDED METALLIZED FILM ELECTRODES
A.C. APPLICATIONS**

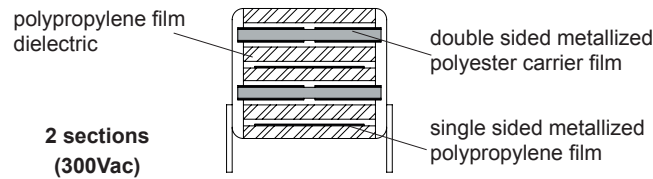
PRODUCT CODE: R77



Rated Cap.	250Vac* (1 section) Std dimensions				Max dv/dt (V/μs)	Max K ₀ (V ² /μs)	Part Number
	B	H	L	p			
0.027 μF	6.0	12.0	18.0	15.0	900	110 E4	R77LI 2270--0--
0.033 μF	6.0	12.0	18.0	15.0	900	110 E4	R77LI 2330--0--
0.039 μF	6.0	12.0	18.0	15.0	900	110 E4	R77LI 2390--0--
0.047 μF	7.5	13.5	18.0	15.0	900	110 E4	R77LI 2470--0--
0.056 μF	7.5	13.5	18.0	15.0	900	110 E4	R77LI 2560--0--
0.068 μF	8.5	14.5	18.0	15.0	900	110 E4	R77LI 2680--0--
0.082 μF	10.0	16.0	18.0	15.0	900	110 E4	R77LI 2820--0--
0.10 μF	10.0	16.0	18.0	15.0	900	110 E4	R77LI 3100--0--

Mechanical version and packaging (Table1) _____
Internal use _____
Tolerance: H (±2.5%); J (±5%); K (±10%) _____

Rated Cap.	400Vac (2 sections) Std dimensions				Max dv/dt (V/μs)	Max K ₀ (V ² /μs)	Part Number
	B	H	L	p			
5600 pF	5.0	11.0	18.0	15.0	3300	660 E4	R77NI 1560--0--
6800 pF	5.0	11.0	18.0	15.0	3300	660 E4	R77NI 1680--0--
8200 pF	5.0	11.0	18.0	15.0	3300	660 E4	R77NI 1820--0--
0.010 μF	6.0	12.0	18.0	15.0	3300	660 E4	R77NI 2100--0--
0.012 μF	6.0	12.0	18.0	15.0	3300	660 E4	R77NI 2120--0--
0.015 μF	7.5	13.5	18.0	15.0	3300	660 E4	R77NI 2150--0--
0.018 μF	7.5	13.5	18.0	15.0	3300	660 E4	R77NI 2180--0--
0.022 μF	8.5	14.5	18.0	15.0	3300	660 E4	R77NI 2220--0--
0.027 μF	10.0	16.0	18.0	15.0	3300	660 E4	R77NI 2270--0--
0.033 μF	10.0	16.0	18.0	15.0	3300	660 E4	R77NI 2330--0--
0.027 μF	6.0	15.0	26.5	22.5	2100	420 E4	R77NN2270--0--
0.033 μF	7.0	16.0	26.5	22.5	2100	420 E4	R77NN2330--0--
0.039 μF	7.0	16.0	26.5	22.5	2100	420 E4	R77NN2390--0--
0.047 μF	8.5	17.0	26.5	22.5	2100	420 E4	R77NN2470--0--
0.056 μF	8.5	17.0	26.5	22.5	2100	420 E4	R77NN2560--0--
0.068 μF	10.0	18.5	26.5	22.5	2100	420 E4	R77NN2680--0--
0.082 μF	10.0	18.5	26.5	22.5	2100	420 E4	R77NN2820--0--
0.10 μF	11.0	20.0	26.5	22.5	2100	420 E4	R77NN3100--0--



Rated Cap.	300Vac (2 sections)* Std dimensions				Max dv/dt (V/μs)	Max K ₀ (V ² /μs)	Part Number
	B	H	L	p			
0.010 μF	5.0	11.0	18.0	15.0	2500	400 E4	R773I 2100--0--
0.012 μF	5.0	11.0	18.0	15.0	2500	400 E4	R773I 2120--0--
0.015 μF	5.0	11.0	18.0	15.0	2500	400 E4	R773I 2150--0--
0.018 μF	5.0	11.0	18.0	15.0	2500	400 E4	R773I 2180--0--
0.022 μF	6.0	12.0	18.0	15.0	2500	400 E4	R773I 2220--0--
0.027 μF	6.0	12.0	18.0	15.0	2500	400 E4	R773I 2270--0--
0.033 μF	7.5	13.5	18.0	15.0	2500	400 E4	R773I 2330--0--
0.039 μF	7.5	13.5	18.0	15.0	2500	400 E4	R773I 2390--0--
0.047 μF	8.5	14.5	18.0	15.0	2500	400 E4	R773I 2470--0--
0.056 μF	10.0	16.0	18.0	15.0	2500	400 E4	R773I 2560--0--
0.068 μF	10.0	16.0	18.0	15.0	2500	400 E4	R773I 2680--0--
0.056 μF	6.0	15.0	26.5	22.5	1500	240 E4	R773N2560--0--
0.068 μF	7.0	16.0	26.5	22.5	1500	240 E4	R773N2680--0--
0.082 μF	7.0	16.0	26.5	22.5	1500	240 E4	R773N2820--0--
0.10 μF	8.5	17.0	26.5	22.5	1500	240 E4	R773N3100--0--

Mechanical version and packaging (Table1) _____
Internal use _____
Tolerance: H (±2.5%); J (±5%); K (±10%) _____

Rated Cap.	500Vac (2 sections) Std dimensions				Max dv/dt (V/μs)	Max K ₀ (V ² /μs)	Part Number
	B	H	L	p			
1000 pF	5.0	11.0	18.0	15.0	4500	1200 E4	R775I 1100--0--
1200 pF	5.0	11.0	18.0	15.0	4500	1200 E4	R775I 1120--0--
1500 pF	5.0	11.0	18.0	15.0	4500	1200 E4	R775I 1150--0--
1800 pF	5.0	11.0	18.0	15.0	4500	1200 E4	R775I 1180--0--
2200 pF	5.0	11.0	18.0	15.0	4500	1200 E4	R775I 1220--0--
2700 pF	5.0	11.0	18.0	15.0	4500	1200 E4	R775I 1270--0--
3300 pF	5.0	11.0	18.0	15.0	4500	1200 E4	R775I 1330--0--
3900 pF	5.0	11.0	18.0	15.0	4500	1200 E4	R775I 1390--0--
4700 pF	5.0	11.0	18.0	15.0	4500	1200 E4	R775I 1470--0--
5600 pF	5.0	11.0	18.0	15.0	4500	1200 E4	R775I 1560--0--
6800 pF	6.0	12.0	18.0	15.0	4500	1200 E4	R775I 1680--0--
8200 pF	6.0	12.0	18.0	15.0	4500	1200 E4	R775I 1820--0--
0.010 μF	7.5	13.5	18.0	15.0	4500	1200 E4	R775I 2100--0--
0.012 μF	7.5	13.5	18.0	15.0	4500	1200 E4	R775I 2120--0--
0.015 μF	8.5	14.5	18.0	15.0	4500	1200 E4	R775I 2150--0--
0.018 μF	10.0	16.0	18.0	15.0	4500	1200 E4	R775I 2180--0--
0.022 μF	10.0	16.0	18.0	15.0	4500	1200 E4	R775I 2220--0--
0.018 μF	6.0	15.0	26.5	22.5	2500	650 E4	R775N2180--0--
0.022 μF	7.0	16.0	26.5	22.5	2500	650 E4	R775N2220--0--
0.027 μF	7.0	16.0	26.5	22.5	2500	650 E4	R775N2270--0--
0.033 μF	8.5	17.0	26.5	22.5	2500	650 E4	R775N2330--0--
0.039 μF	10.0	18.5	26.5	22.5	2500	650 E4	R775N2390--0--
0.047 μF	10.0	18.5	26.5	22.5	2500	650 E4	R775N2470--0--
0.056 μF	11.0	20.0	26.5	22.5	2500	650 E4	R775N2560--0--
0.068 μF	11.0	20.0	32.0	27.5	1100	290 E4	R775R2680--0--
0.082 μF	11.0	20.0	32.0	27.5	1100	290 E4	R775R2820--0--
0.10 μF	13.0	22.0	32.0	27.5	1100	290 E4	R775R3100--0--

Mechanical version and packaging (Table1) _____
Internal use _____
Tolerance: H (±2.5%); J (±5%); K (±10%) _____

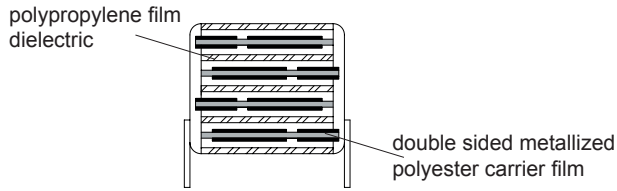
All dimensions are in mm.

Note: If the working voltage (V) is lower than the rated voltage (V_R), the capacitor may work at higher dv/dt. In this case the maximum value allowed is obtained multiplying the above value (see table dv/dt) with the ratio V_R/V. The pulse characteristic K₀ depends on the voltage wave-form and in any case it cannot overcome the value given in the above table. The dv/dt test is carried out at 2 times the above values.

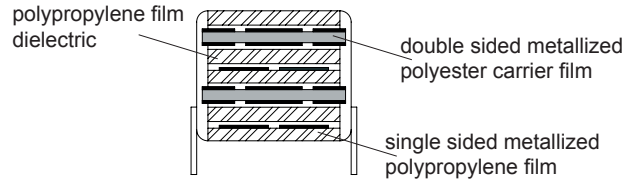
* Not suitable for across-the-line applications. Please refer to Interference Suppression Capacitors (page 145).

**POLYPROPYLENE CAPACITOR WITH DOUBLE SIDED METALLIZED FILM ELECTRODES
A.C. APPLICATIONS**

PRODUCT CODE: R77



**3 sections
(700Vac)**



**4 sections
(900Vac)**

Rated Cap.	700Vac (3 sections) Std dimensions				Max dv/dt (V/μs)	Max K ₀ (V ² /μs)	Part Number
	B	H	L	p			
1000 pF	5.0	11.0	18.0	15.0	9500	3000 E4	R7771 1100--0--
1200 pF	5.0	11.0	18.0	15.0	9500	3000 E4	R7771 1120--0--
1500 pF	5.0	11.0	18.0	15.0	9500	3000 E4	R7771 1150--0--
1800 pF	5.0	11.0	18.0	15.0	9500	3000 E4	R7771 1180--0--
2200 pF	5.0	11.0	18.0	15.0	9500	3000 E4	R7771 1220--0--
2700 pF	6.0	12.0	18.0	15.0	9500	3000 E4	R7771 1270--0--
3300 pF	6.0	12.0	18.0	15.0	9500	3000 E4	R7771 1330--0--
3900 pF	7.5	13.5	18.0	15.0	9500	3000 E4	R7771 1390--0--
4700 pF	7.5	13.5	18.0	15.0	9500	3000 E4	R7771 1470--0--
5600 pF	8.5	14.5	18.0	15.0	9500	3000 E4	R7771 1560--0--
6800 pF	8.5	14.5	18.0	15.0	9500	3000 E4	R7771 1680--0--
8200 pF	10.0	16.0	18.0	15.0	9500	3000 E4	R7771 1820--0--
8200 pF	6.0	15.0	26.5	22.5	4500	1400 E4	R777N1820--0--
0.010 μF	6.0	15.0	26.5	22.5	4500	1400 E4	R777N2100--0--
0.012 μF	7.0	16.0	26.5	22.5	4500	1400 E4	R777N2120--0--
0.015 μF	8.5	17.0	26.5	22.5	4500	1400 E4	R777N2150--0--
0.018 μF	10.0	18.5	26.5	22.5	4500	1400 E4	R777N2180--0--
0.022 μF	10.0	18.5	26.5	22.5	4500	1400 E4	R777N2220--0--
0.027 μF	11.0	20.0	26.5	22.5	4500	1400 E4	R777N2270--0--

Mechanical version and packaging (Table1) _____
Internal use _____
Tolerance: H (±2.5%); J (±5%); K (±10%) _____

Rated Cap.	900Vac (4 sections) Std dimensions				Max dv/dt (V/μs)	Max K ₀ (V ² /μs)	Part Number
	B	H	L	p			
1000 pF	6.0	15.0	26.5	22.5	9500	3800 E4	R779N1100--0--
1200 pF	6.0	15.0	26.5	22.5	9500	3800 E4	R779N1120--0--
1500 pF	6.0	15.0	26.5	22.5	9500	3800 E4	R779N1150--0--
1800 pF	6.0	15.0	26.5	22.5	9500	3800 E4	R779N1180--0--
2200 pF	6.0	15.0	26.5	22.5	9500	3800 E4	R779N1220--0--
2700 pF	6.0	15.0	26.5	22.5	9500	3800 E4	R779N1270--0--
3300 pF	6.0	15.0	26.5	22.5	9500	3800 E4	R779N1330--0--
3900 pF	6.0	15.0	26.5	22.5	9500	3800 E4	R779N1390--0--
4700 pF	6.0	15.0	26.5	22.5	9500	3800 E4	R779N1470--0--
5600 pF	6.0	15.0	26.5	22.5	9500	3800 E4	R779N1560--0--
6800 pF	7.0	16.0	26.5	22.5	9500	3800 E4	R779N1680--0--
8200 pF	7.0	16.0	26.5	22.5	9500	3800 E4	R779N1820--0--
0.010 μF	8.5	17.0	26.5	22.5	9500	3800 E4	R779N2100--0--
0.012 μF	10.0	18.5	26.5	22.5	9500	3800 E4	R779N2120--0--
0.015 μF	10.0	18.5	26.5	22.5	9500	3800 E4	R779N2150--0--
0.018 μF	11.0	20.0	26.5	22.5	9500	3800 E4	R779N2180--0--

Mechanical version and packaging (Table1) _____
Internal use _____
Tolerance: H (±2.5%); J (±5%); K (±10%) _____

All dimensions are in mm.

Note: If the working voltage (V) is lower than the rated voltage (V_R), the capacitor may work at higher dv/dt. In this case the maximum value allowed is obtained multiplying the above value (see table dv/dt) with the ratio V_R/V.
The pulse characteristic K₀ depends on the voltage wave-form and in any case it cannot overcome the value given in the above table. The dv/dt test is carried out at 2 times the above values.

**POLYPROPYLENE CAPACITOR WITH DOUBLE SIDED METALLIZED FILM ELECTRODES
A.C. APPLICATIONS**

PRODUCT CODE: R77

ELECTRICAL CHARACTERISTICS

Rated voltage (V_R):

250Vac (630Vdc) 300Vac (800Vdc)
400Vac (1000Vdc) 500Vac (1300Vdc)
700Vac(1600Vdc) 900Vac (2000Vdc)

Rated temperature (T_R): + 85°C for V_R (d.c.)
+105°C for V_R (a.c.)

Temperature derated voltage:

For temperatures between +85°C and +105°C a decreasing factor of 1.25% per degree C on the rated voltage V_R (d.c.) has to be applied.

Capacitance range:

1000pF to 0.1 μ F

Capacitance values:

E12 series (IEC 60063 Norm).

Capacitance tolerances (measured at 1 kHz):

$\pm 2.5\%$ (H); $\pm 5\%$ (J); $\pm 10\%$ (K).

Total self inductance: (L)

(Lead length ≈ 2 mm)

Pitch (mm)	15	22.5	27.5
L (nH) \approx	10	18	18

Dissipation factor (DF):

$\text{tg}\delta$ 10^{-4} at +25°C $\pm 5^\circ\text{C}$

kHz	$\text{tg}\delta \times 10^{-4}$
10	≤ 6
100	≤ 10

Insulation resistance:

Test conditions

Temperature: +25°C $\pm 5^\circ\text{C}$
Voltage charge time: 1 min
Voltage charge: 100Vdc

Performance

$\geq 1 \times 10^5 \text{ M}\Omega$ (Typ. value: $5 \times 10^5 \text{ M}\Omega$)

Test voltage between terminations:

$1.6 \times V_R$ applied for 2 s at 25°C $\pm 5^\circ\text{C}$

TEST METHOD AND PERFORMANCE

Damp heat, steady state:

Test conditions

Temperature: +40°C $\pm 2^\circ\text{C}$
Relative humidity (RH): 93% $\pm 2\%$
Test duration: 56 days

Performance

Capacitance change $|\Delta C/C|$: $\leq 2\%$
DF change ($\Delta \text{tg}\delta$): $\leq 10 \times 10^{-4}$ at 1kHz
Insulation resistance: $\geq 50\%$ of initial limit.

Endurance:

Test conditions

Temperature: +105°C $\pm 2^\circ\text{C}$
Test duration: 2000 h
Voltage applied: $1.25 \times V_R$ (a.c.) at 50Hz

Performance

Capacitance change $|\Delta C/C|$: $\leq 2\%$
DF change ($\Delta \text{tg}\delta$): $\leq 10 \times 10^{-4}$ at 10kHz
Insulation resistance: $\geq 50\%$ of initial limit.

Resistance to soldering heat:

Test conditions

Solder bath temperature: 260°C $\pm 5^\circ\text{C}$
Dipping time (with heat screen): 10 s ± 1 s

Performance

Capacitance change $|\Delta C/C|$: $\leq 1\%$
DF change ($\Delta \text{tg}\delta$): $\leq 10 \times 10^{-4}$ at 10kHz
Insulation resistance: \geq initial limit.

Long term stability (after two years):

Storage: standard environmental conditions (see page 12).

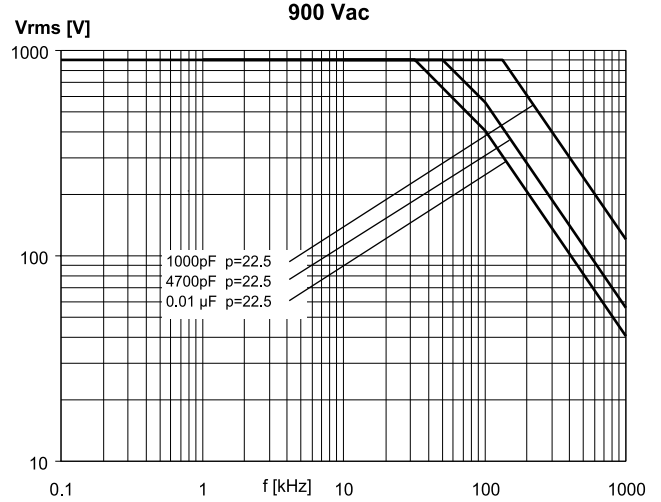
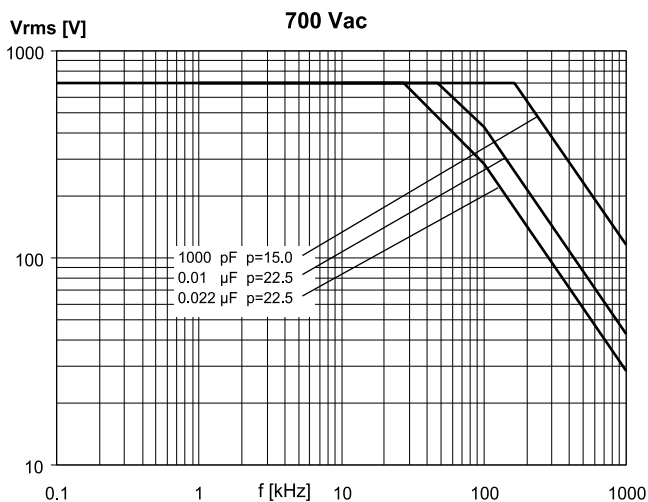
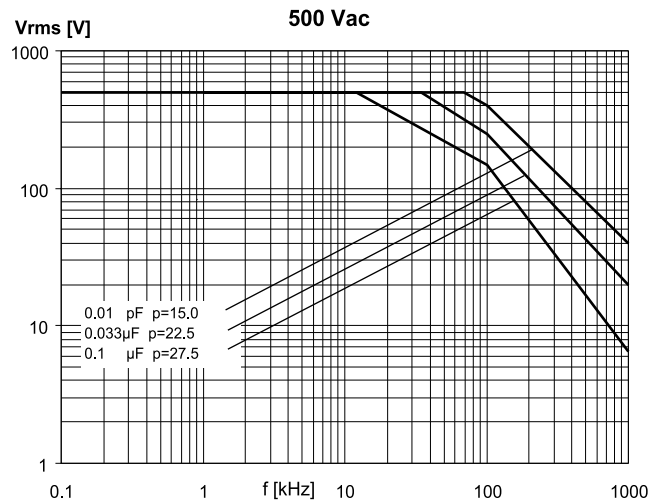
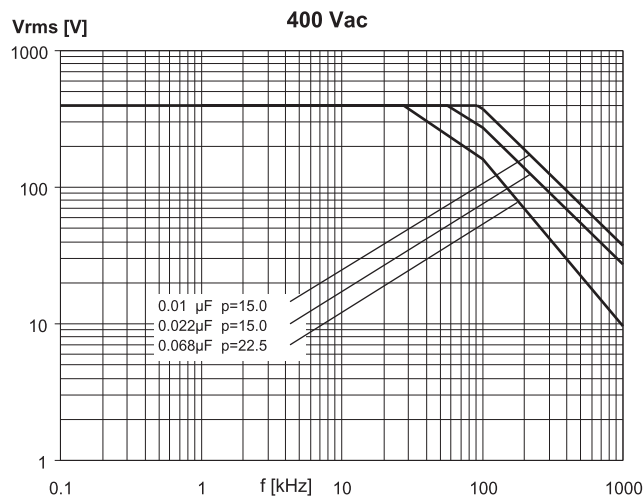
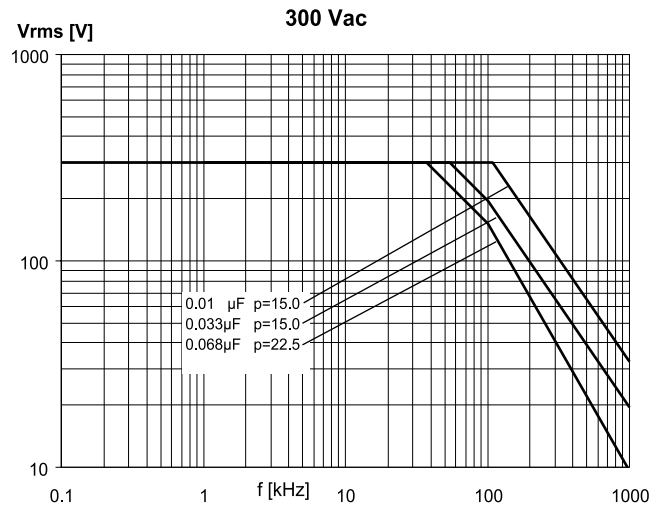
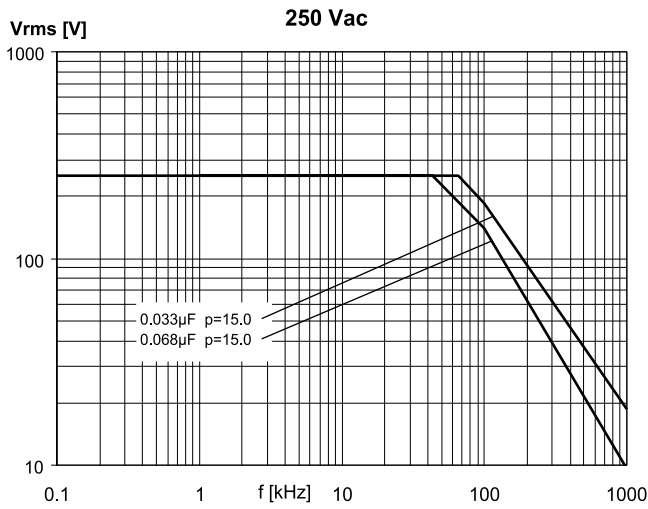
Performance

Capacitance change $|\Delta C/C|$: $\leq 0.5\%$

**POLYPROPYLENE CAPACITOR WITH DOUBLE SIDED METALLIZED FILM ELECTRODES
A.C. APPLICATIONS**

PRODUCT CODE: R77

MAX. VOLTAGE (Vr.m.s.) VERSUS FREQUENCY (sinusoidal wave-form / Th ≤ 40°C)

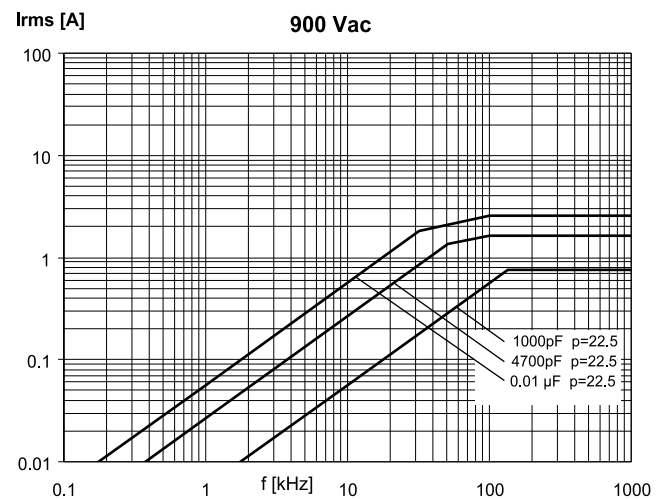
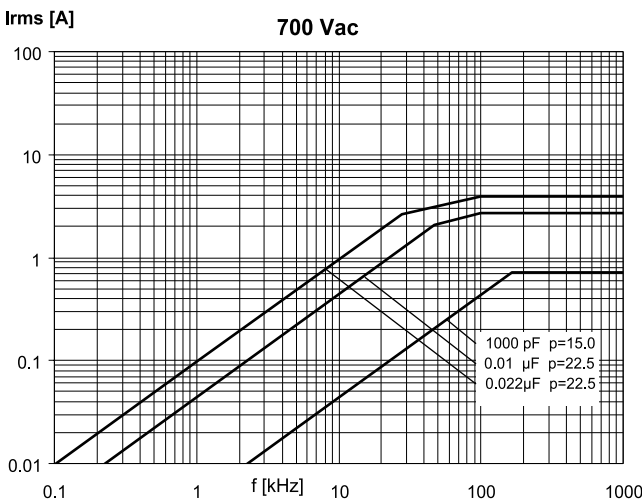
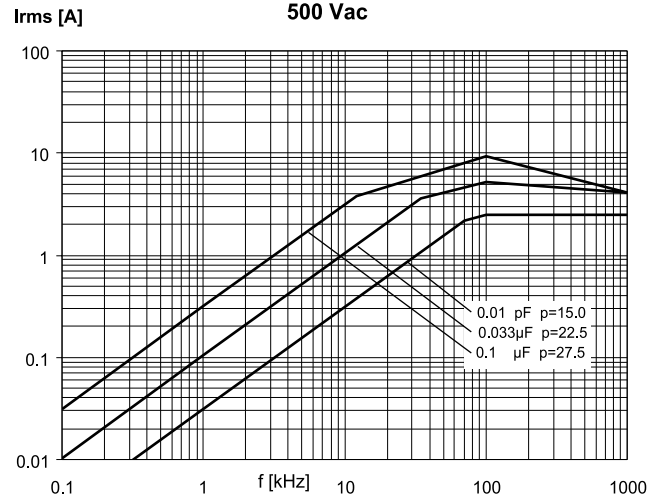
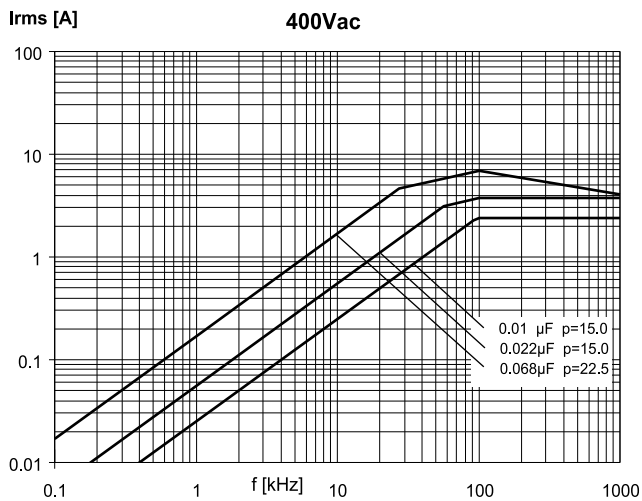
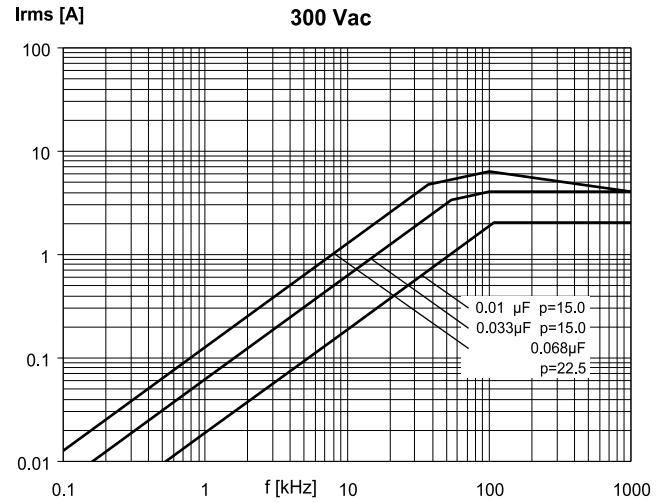
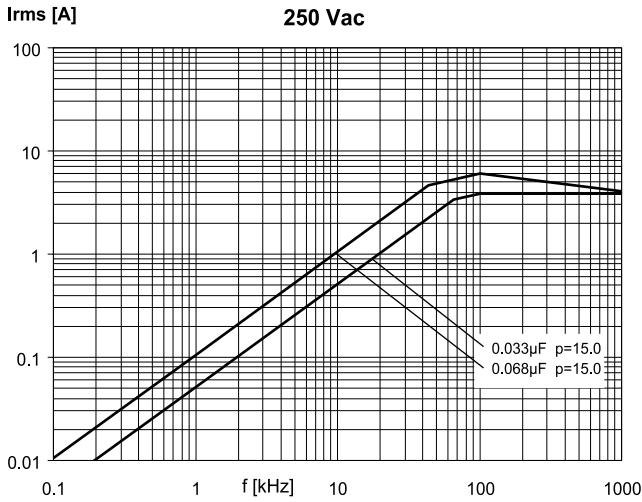


Note: p (pitch) in mm.

**POLYPROPYLENE CAPACITOR WITH DOUBLE SIDED METALLIZED FILM ELECTRODES
A.C. APPLICATIONS**

PRODUCT CODE: R77

MAX. CURRENT ($I_{r.m.s.}$) VERSUS FREQUENCY (sinusoidal wave-form / $T_h \leq 40^\circ\text{C}$)



Note: p (pitch) in mm.