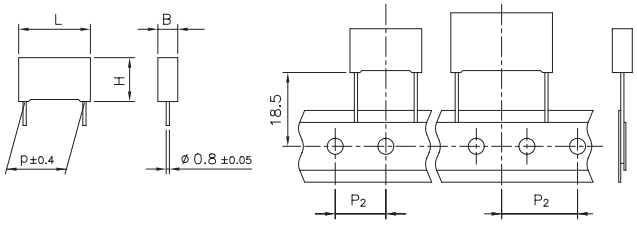
Loose Taped

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	Box thickness (B)	Maximum dimensions (mm)		
(mm)	(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

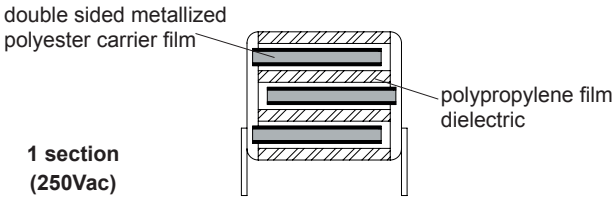
Table 1 (for more detailed information, please refer to page 14).

Standard packaging style	Lead length	Taping style			Ordering code
	(mm)	P_2 (mm)	Fig. (No.)	Pitch (mm)	(Digit 10 to 11)
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 Loose, long leads Loose, long leads	4^{+2} 30^{+5} $25^{+2/-1}$				AA 40 50

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

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

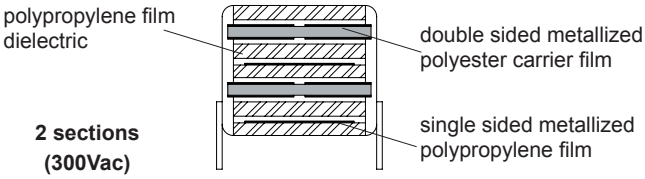
PRODUCT CODE: **R77**



1 section
(250Vac)

Rated Cap.	250Vac* (1 section) Std dimensions				Max dv/dt	Max K_0	Part Number
	B	H	L	p	(V/µs)	(V^2/µs)	
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--

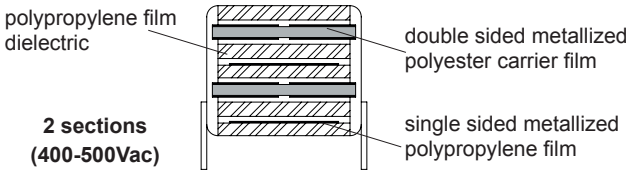
Mechanical version and packaging (Table1)
Internal use
Tolerance: H (±2.5%); J (±5%); K (±10%)



2 sections
(300Vac)

Rated Cap.	300Vac (2 sections)* Std dimensions				Max dv/dt	Max K_0	Part Number
	B	H	L	p	(V/µs)	(V^2/µs)	
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%)



2 sections
(400-500Vac)

Rated Cap.	400Vac (2 sections) Std dimensions				Max dv/dt	Max K_0	Part Number
	B	H	L	p	(V/µs)	(V^2/µs)	
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.	500Vac (2 sections) Std dimensions				Max dv/dt	Max K_0	Part Number
	B	H	L	p	(V/µs)	(V^2/µs)	
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%)

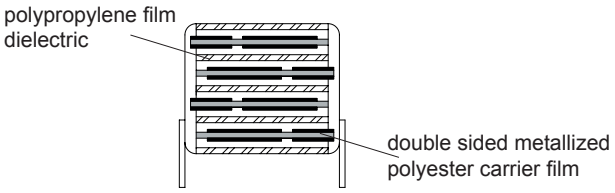
All dimensions are in mm.

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 K_0 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.

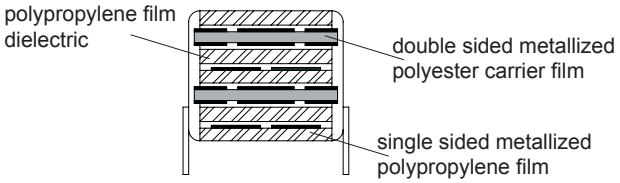
* Not suitable for across-the-line applications. Please refer to Interference Suppression Capacitors (page 145).

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	Max K_0	Part Number
	B	H	L	p	(V/µs)	(V^2/µs)	
1000 pF	5.0	11.0	18.0	15.0	9500	3000 E4	R777I 1100--0--
1200 pF	5.0	11.0	18.0	15.0	9500	3000 E4	R777I 1120--0--
1500 pF	5.0	11.0	18.0	15.0	9500	3000 E4	R777I 1150--0--
1800 pF	5.0	11.0	18.0	15.0	9500	3000 E4	R777I 1180--0--
2200 pF	5.0	11.0	18.0	15.0	9500	3000 E4	R777I 1220--0--
2700 pF	6.0	12.0	18.0	15.0	9500	3000 E4	R777I 1270--0--
3300 pF	6.0	12.0	18.0	15.0	9500	3000 E4	R777I 1330--0--
3900 pF	7.5	13.5	18.0	15.0	9500	3000 E4	R777I 1390--0--
4700 pF	7.5	13.5	18.0	15.0	9500	3000 E4	R777I 1470--0--
5600 pF	8.5	14.5	18.0	15.0	9500	3000 E4	R777I 1560--0--
6800 pF	8.5	14.5	18.0	15.0	9500	3000 E4	R777I 1680--0--
8200 pF	10.0	16.0	18.0	15.0	9500	3000 E4	R777I 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	Max K_0	Part Number
	B	H	L	p	(V/µs)	(V^2/µs)	
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 K_0 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 0.1μF

Capacitance values:
E12 series (IEC 60063 Norm).

Capacitance tolerances (measured at 1 kHz)**:**
±2.5% (H); ±5% (J); ±10% (K).

Total self inductance: (L)
(Lead length ≈2 mm)

Pitch (mm)	15	22.5	27.5
L (nH) ≈	10	18	18

Dissipation factor (DF):
tgδ 10^{-4} at +25°C ±5°C

kHz	tgδx10^{-4}
10	≤ 6
100	≤ 10

Insulation resistance:

Test conditions

Temperature:	+25°C±5°C
Voltage charge time:	1 min
Voltage charge:	100Vdc

Performance
≥1x10^5 MΩ (Typ.value: 5x10^5 MΩ)

Test voltage between terminations:
1.6xV_R applied for 2 s at 25°C±5°C

TEST METHOD AND PERFORMANCE

Damp heat, steady state:

Test conditions

Temperature:	+40°C±2°C
Relative humidity (RH):	93% ±2%
Test duration:	56 days

Performance

Capacitance change |ΔC/C|:	≤2%
DF change (Δtgδ):	≤10x10^{-4} at 1kHz
Insulation resistance:	≥50% of initial limit.

Endurance:

Test conditions

Temperature:	+105°C±2°C
Test duration:	2000 h
Voltage applied:	1.25xV_R (a.c.) at 50Hz

Performance

Capacitance change |ΔC/C|:	≤2%
DF change (Δtgδ):	≤10x10^{-4} at 10kHz
Insulation resistance:	≥50% of initial limit.

Resistance to soldering heat:

Test conditions

Solder bath temperature:	260°C±5°C
Dipping time (with heat screen):	10 s ±1 s

Performance

Capacitance change|ΔC/C|:	≤1%
DF change (Δtgδ):	≤10x10^{-4} at 10kHz
Insulation resistance:	≥initial limit.

Long term stability (after two years)**:**

Storage: standard environmental conditions (see page 12).

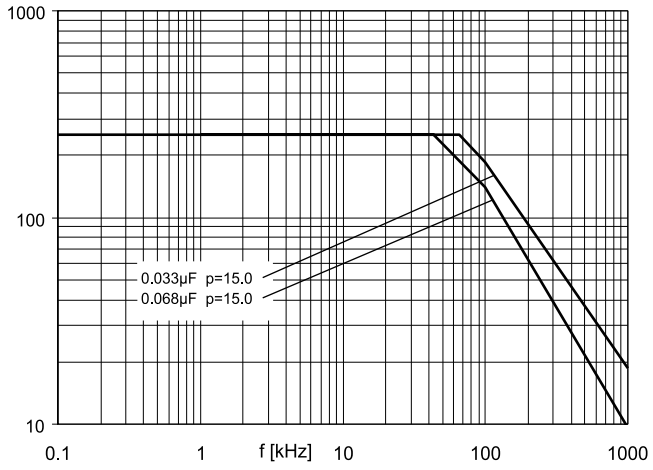
Performance
Capacitance change |ΔC/C|: ≤0.5%

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

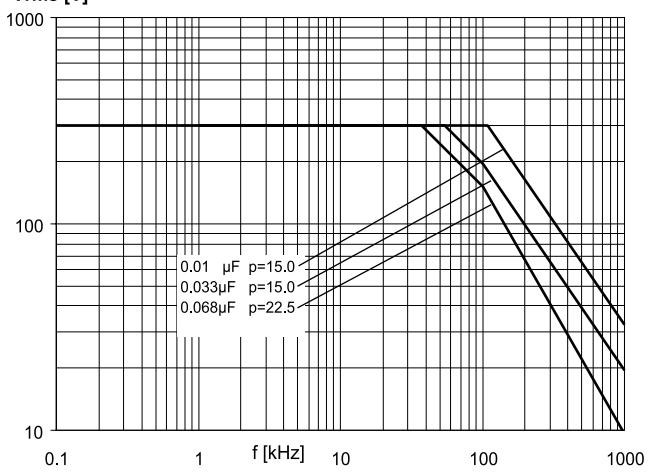
PRODUCT CODE: **R77**

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

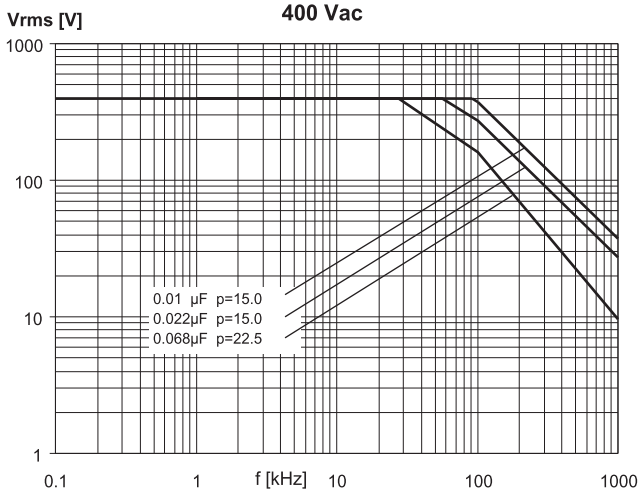
250 Vac



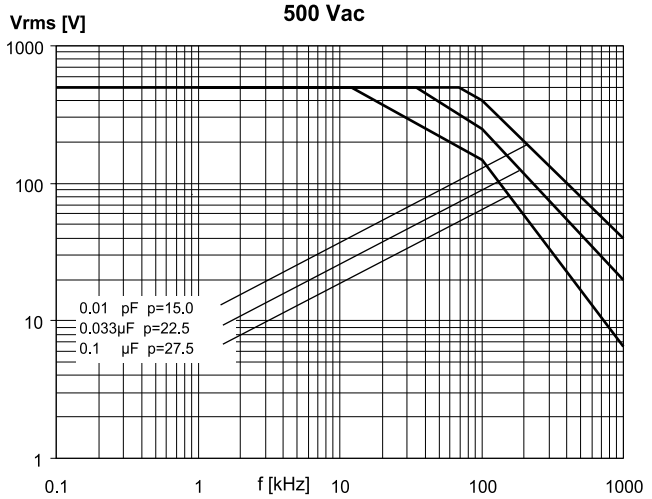
300 Vac



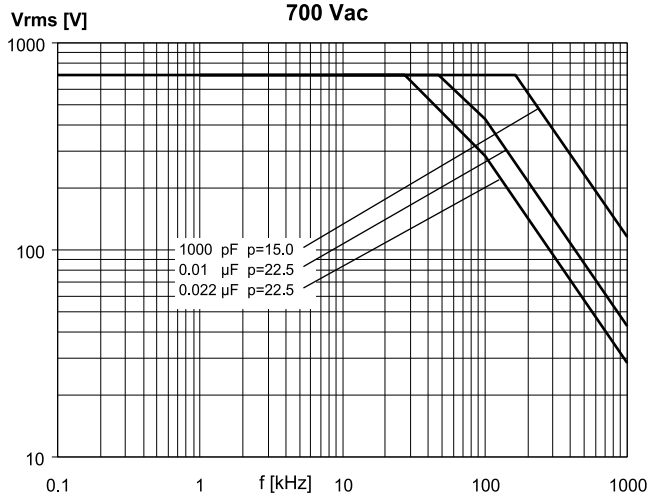
400 Vac



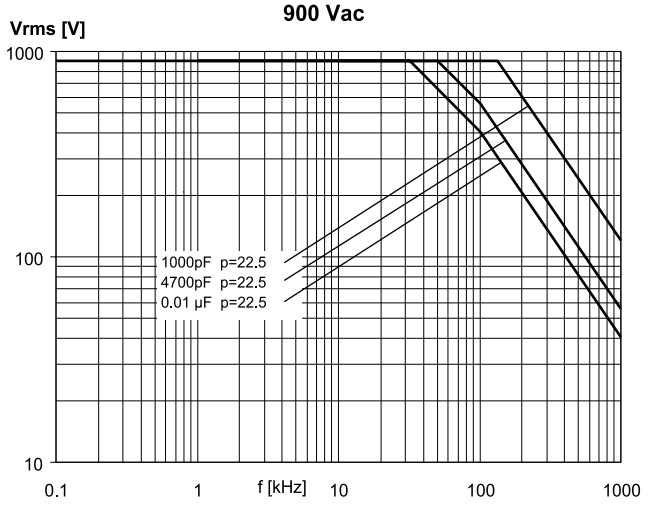
500 Vac



700 Vac



900 Vac

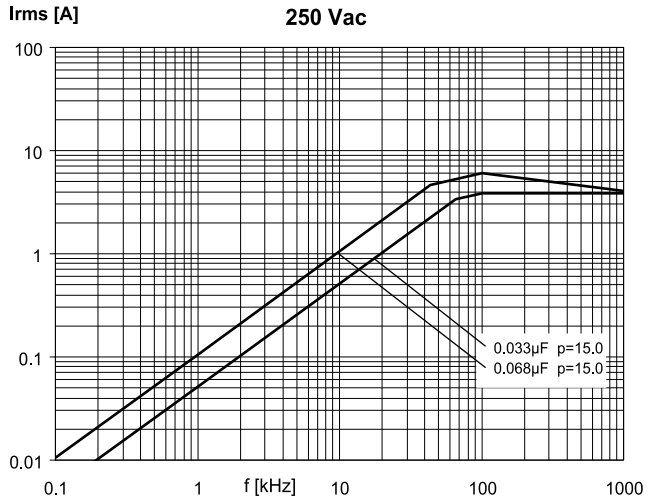


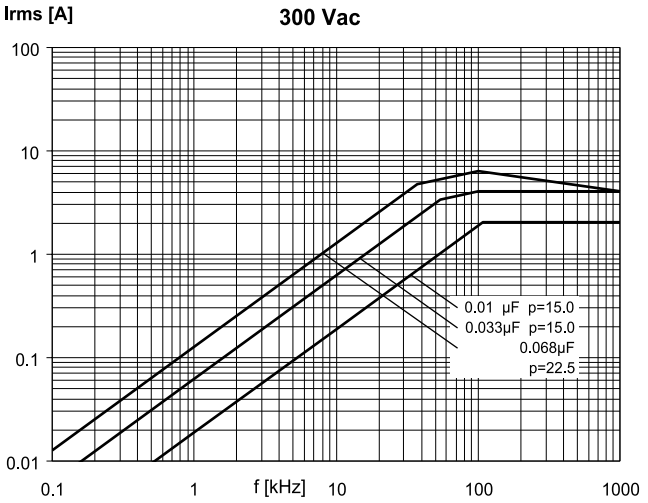
Note: p (pitch) in mm.

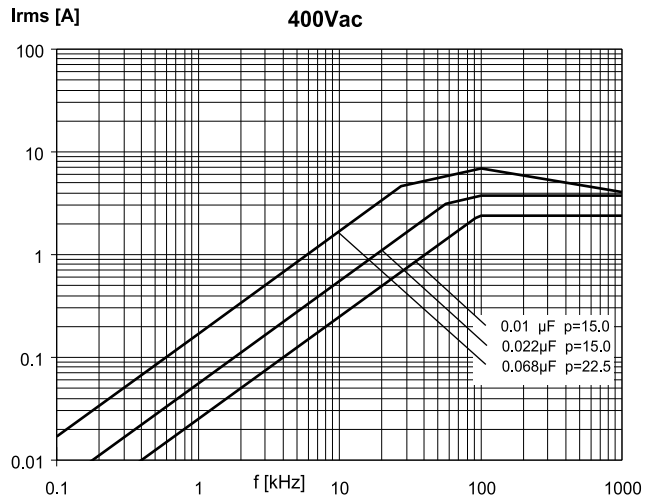
POLYPROPYLENE CAPACITOR WITH DOUBLE SIDED METALLIZED FILM ELECTRODES
A.C. APPLICATIONS

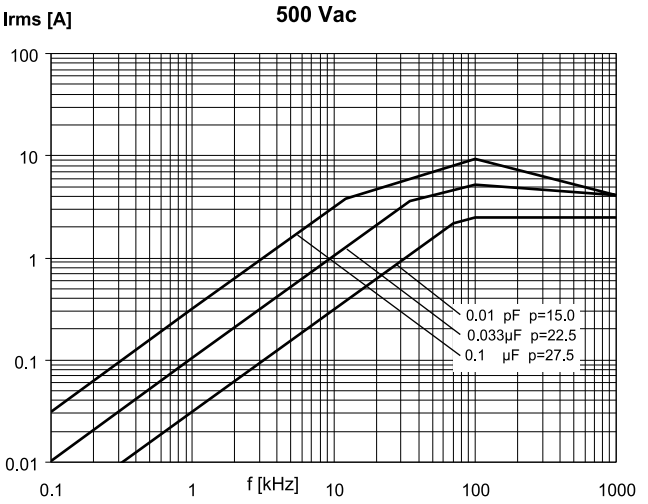
PRODUCT CODE: **R77**

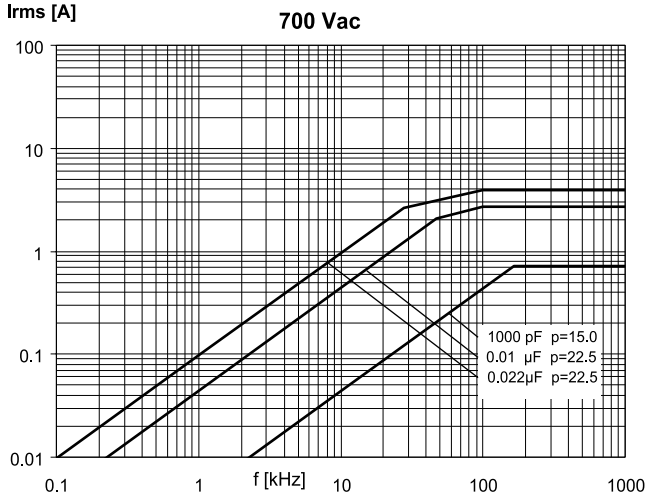
MAX. CURRENT (Ir.m.s.) VERSUS FREQUENCY (sinusoidal wave-form / Th ≤ 40°C)

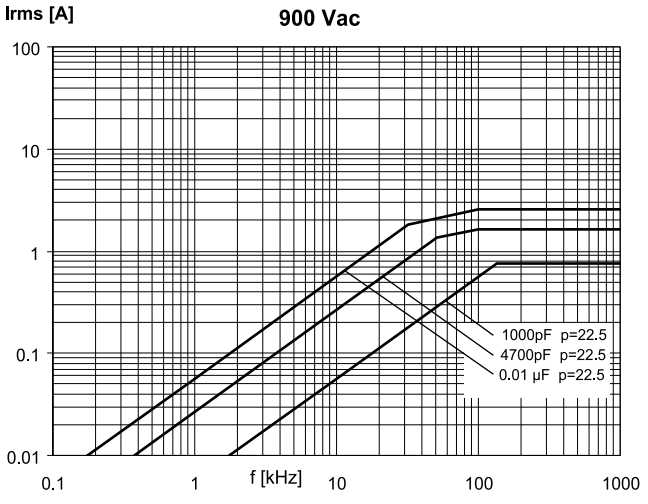












Note: p (pitch) in mm.