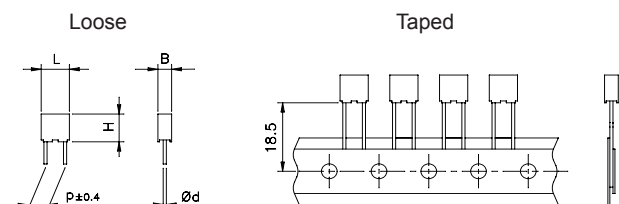


Polyester Capacitors

Order code	Manufacturer code	Description
10-3240	R82EC1100AA50K	1NF 100V 5MM POLYESTER BOX CAPACITOR RC
10-3242	R82EC1500AA50K	1N5 100V 5MM POLYESTER BOX CAPACITOR RC
10-3244	R82EC1220AA50K	2N2 100V 5MM POLYESTER BOX CAPACITOR RC
10-3246	R82EC1330AA50K	3N3 100V 5MM POLYESTER BOX CAPACITOR RC
10-3248	R82EC1470AA50K	4N7 100V 5MM POLYESTER BOX CAPACITOR RC
10-3250	R82EC2100AA50K	10NF 100V 5MM POLYESTER BOX CAPACITOR RC
10-3252	R82EC2150AA50K	15NF 100V 5MM POLYESTER BOX CAPACITOR RC
10-3254	R82EC2220AA50K	22NF 100V 5MM POLYESTER BOX CAPACITOR RC
10-3256	R82EC2330AA50K	33NF 100V 5MM POLYESTER BOX CAPACITOR RC
10-3258	R82EC2470AA60K	47NF 100V 5MM POLYESTER BOX CAPACITOR RC
10-3260	R82DC3100AA50K	100NF 63V 5MM POLYESTER BOX CAPACITOR RC
10-3262	R82DC3150AA60K	150NF 63V 5MM POLYESTER BOX CAPACITOR RC
10-3264	R82DC3220AA60K	220NF 63V 5MM POLYESTER BOX CAPACITOR RC
10-3266	R82DC3330AA60K	330NF 63V 5MM POLYESTER BOX CAPACITOR RC
10-3268	R82DC3470AA60K	470NF 63V 5MM POLYESTER BOX CAPACITOR RC
10-3270	R82DC3680AA60K	680NF 63V 5MM POLYESTER BOX CAPACITOR RC
10-3272	R82DC4100AA60K	1UF 63V 5MM POLYESTER BOX CAPACITOR (RC)

Polyester Capacitors	Page 1 of 6
The enclosed information is believed to be correct, Information may change without notice due to product improvement. Users should ensure that the product is suitable for their use. E. & O. E.	Revision A 20/02/2007



All dimensions are in mm.

B	≤6	>6
Ød ±0.05	0.5	0.6

METALLIZED POLYESTER FILM CAPACITOR D.C. MULTIPURPOSE APPLICATIONS

Typical applications: by-passing, blocking, coupling, decoupling, timing, oscillator circuits.

For inverter applications please refer to RSB Series.

PRODUCT CODE: **R82**

p = 5mm

Pitch	Box thickness (B)	Maximum dimensions (mm)		
(mm)	(mm)	B max	H max	L max
5.0	<4.5	B +0.1	H +0.1	L +0.2
5.0	≥4.5	B +0.1	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	8	2		C								-	

Digit 1 to 3 Series code.

Digit 4 d.c. rated voltage:

C = 50V D = 63V E = 100V

I = 250V M = 400V

Digit 5 Pitch: C = 5 mm

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 (table1)

Digit 12 Identifies the dimensions and electrical characteristics.

Digit 13 Internal use

Digit 14 Capacitance tolerance:
J=5%; K=10%; M=20%.

GENERAL TECHNICAL DATA

Dielectric: polyester film (polyethylene terephthalate).

Plates: aluminium layer deposited by evaporation under vacuum.

Winding: non-inductive type.

Leads: tinned wire.

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

Marking: manufacturer's logo, capacitance, tolerance, D.C. rated voltage.

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

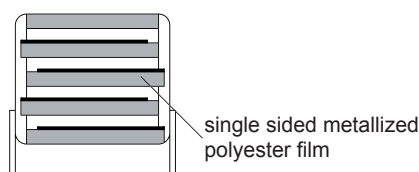
Operating temperature range: -55 to +105°C

Related documents: IEC 60384-2

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

Standard packaging style	Lead length (mm)	Ordering code (Digit 10 to 11)
AMMO-PACK		DQ
Reel Ø 355 mm		CK
Loose, short leads	4 ^{+1.5}	AA
Loose, long leads	17 ^{+1/-2}	Z3

Winding scheme



**METALLIZED POLYESTER FILM CAPACITOR
D.C. MULTIPURPOSE APPLICATIONS**

p = 5 mm

PRODUCT CODE: R82

- a) STACKED version
b) WOUND version

Rated Cap.	50Vdc/30Vac Std dimensions				Max dv/dt (V/μs)	Max K ₀ (V ² /μs)	Part Number
	B	H	L	p			
a) 2.2 μF	6.0	11.0	7.2	5.0	100	10.0 E3	R82CC4220--7--
b) 3.3 μF	7.2	13.0	7.2	5.0	25	2.5 E3	R82CC4330--3--
b) 4.7 μF	7.2	13.0	7.2	5.0	25	2.5 E3	R82CC4470--3--

Mechanical version and packaging (Table1)

Internal use

Tolerance: J (±5%); K (±10%); M (±20%)

STACKED version

Rated Cap.	63Vdc/40Vac Std dimensions				Max dv/dt (V/μs)	Max K ₀ (V ² /μs)	Part Number
	B	H	L	p			
0.10 μF	2.5	6.5	7.2	5.0	160	20 E3	R82DC3100--5--
0.15 μF	2.5	6.5	7.2	5.0	160	20 E3	R82DC3150--6--
0.22 μF	2.5	6.5	7.2	5.0	160	20 E3	R82DC3220--6--
0.33 μF	3.5	7.5	7.2	5.0	160	20 E3	R82DC3330--6--
0.47 μF	3.5	7.5	7.2	5.0	160	20 E3	R82DC3470--6--
0.68 μF	4.5	9.5	7.2	5.0	160	20 E3	R82DC3680--6--
1.0 μF	5.0	10.0	7.2	5.0	160	20 E3	R82DC4100--6--
1.5 μF	6.0	11.0	7.2	5.0	160	20 E3	R82DC4150--6--

Rated Cap.	100Vdc/63Vac Std dimensions				Max dv/dt (V/μs)	Max K ₀ (V ² /μs)	Part Number
	B	H	L	p			
1000 pF	2.5	6.5	7.2	5.0	200	40 E3	R82EC 1100--5--
1500 pF	2.5	6.5	7.2	5.0	200	40 E3	R82EC 1150--5--
2200 pF	2.5	6.5	7.2	5.0	200	40 E3	R82EC 1220--5--
3300 pF	2.5	6.5	7.2	5.0	200	40 E3	R82EC 1330--5--
4700 pF	2.5	6.5	7.2	5.0	200	40 E3	R82EC 1470--5--
6800 pF	2.5	6.5	7.2	5.0	200	40 E3	R82EC 1680--5--
0.010 μF	2.5	6.5	7.2	5.0	200	40 E3	R82EC 2100--5--
0.015 μF	2.5	6.5	7.2	5.0	200	40 E3	R82EC 2150--5--
0.022 μF	2.5	6.5	7.2	5.0	200	40 E3	R82EC 2220--5--
0.033 μF	2.5	6.5	7.2	5.0	200	40 E3	R82EC 2330--5--
0.047 μF	2.5	6.5	7.2	5.0	200	40 E3	R82EC 2470--6--
0.068 μF	2.5	6.5	7.2	5.0	200	40 E3	R82EC 2680--6--
0.10 μF	2.5	6.5	7.2	5.0	200	40 E3	R82EC 3100--7--
0.15 μF	3.5	7.5	7.2	5.0	200	40 E3	R82EC 3100--7--
0.22 μF	3.5	7.5	7.2	5.0	200	40 E3	R82EC 3220--7--
0.33 μF	4.5	9.5	7.2	5.0	200	40 E3	R82EC 3330--7--
0.47 μF	4.5	9.5	7.2	5.0	200	40 E3	R82EC 3470--7--
0.68 μF	5.0	10.0	7.2	5.0	200	40 E3	R82EC 3680--7--
1.0 μF	6.0	11.0	7.2	5.0	200	40 E3	R82EC 4100--7--

Mechanical version and packaging (Table1)

Internal use

Tolerance: J (±5%); K (±10%); M (±20%)

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.

Rated Cap.	250Vdc/140Vac REDUCED SIZES Std dimensions				Max dv/dt (V/μs)	Max K ₀ (V ² /μs)	Part Number
	B	H	L	p			
0.022 μF	2.5	6.5	7.2	5.0	130	65 E3	R82IC 2220--6--
0.047 μF	3.5	7.5	7.2	5.0	130	65 E3	R82IC 2470--6--
0.068 μF	3.5	7.5	7.2	5.0	130	65 E3	R82IC 2680--6--
0.10 μF	4.5	9.5	7.2	5.0	130	65 E3	R82IC 3100--6--
0.15 μF	5.0	10.0	7.2	5.0	130	65 E3	R82IC 3150--6--
0.22 μF	6.0	11.0	7.2	5.0	130	65 E3	R82IC 3220--6--

Rated Cap.	250Vdc/160Vac Std dimensions				Max dv/dt (V/μs)	Max K ₀ (V ² /μs)	Part Number
	B	H	L	p			
6800 pF	2.5	6.5	7.2	5.0	250	125 E3	R82IC 1680--5-
0.010 μF	2.5	6.5	7.2	5.0	250	125 E3	R82IC 2100--5--
0.015 μF	2.5	6.5	7.2	5.0	250	125 E3	R82IC 2150--5--
0.022 μF	3.5	7.5	7.2	5.0	250	125 E3	R82IC 2220--5--
0.033 μF	3.5	7.5	7.2	5.0	250	125 E3	R82IC 2330--5--
0.047 μF	4.5	9.5	7.2	5.0	250	125 E3	R82IC 2470--5--
0.068 μF	4.5	9.5	7.2	5.0	250	125 E3	R82IC 2680--5--
0.10 μF	5.0	10.0	7.2	5.0	250	125 E3	R82IC 3100--55-
0.15 μF	6.0	11.0	7.2	5.0	250	125 E3	R82IC 3150--5--

Rated Cap.	400Vdc/160Vac REDUCED SIZES Std dimensions				Max dv/dt (V/μs)	Max K ₀ (V ² /μs)	Part Number
	B	H	L	p			
6800 pF	2.5	6.5	7.2	5.0	200	160 E3	R82MC1680--6--
0.015 μF	3.5	7.5	7.2	5.0	200	160 E3	R82MC2150--6--
0.033 μF	4.5	9.5	7.2	5.0	200	160 E3	R82MC2330--6--
0.047 μF	5.0	10.0	7.2	5.0	200	160 E3	R82MC2470--6--
0.068 μF	6.0	11.0	7.2	5.0	200	160 E3	R82MC2680--6--

Rated Cap.	400Vdc/200Vac Std dimensions				Max dv/dt (V/μs)	Max K ₀ (V ² /μs)	Part Number
	B	H	L	p			
1000 pF	2.5	6.5	7.2	5.0	400	320 E3	R82MC1100--5--
1500 pF	2.5	6.5	7.2	5.0	400	320 E3	R82MC1150--5--
2200 pF	2.5	6.5	7.2	5.0	400	320 E3	R82MC1220--5--
3300 pF	2.5	6.5	7.2	5.0	400	320 E3	R82MC1330--5--
4700 pF	2.5	6.5	7.2	5.0	400	320 E3	R82MC1470--5--
6800 pF	3.5	7.5	7.2	5.0	400	320 E3	R82MC1680--5--
0.010 μF	3.5	7.5	7.2	5.0	400	320 E3	R82MC2100--5--
0.015 μF	4.5	9.5	7.2	5.0	400	320 E3	R82MC2150--5--
0.022 μF	4.5	9.5	7.2	5.0	400	320 E3	R82MC2220--5--
0.033 μF	5.0	10.0	7.2	5.0	400	320 E3	R82MC2330--5--
0.047 μF	6.0	11.0	7.2	5.0	400	320 E3	R82MC2470--5--

Mechanical version and packaging (Table1)

Internal use

Tolerance: J (±5%); K (±10%); M (±20%)

**METALLIZED POLYESTER FILM CAPACITOR
D.C. MULTIPURPOSE APPLICATIONS****p = 5 mm****PRODUCT CODE: R82****ELECTRICAL CHARACTERISTICS****Rated voltage (V_R):**

50 Vdc	63 Vdc	100 Vdc
250 Vdc	400 Vdc	

Rated temperature (T_R): +85°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. and a.c.) has to be applied.

Capacitance range: 1000pF to 4.7μF**Capacitance values:** E6 series (IEC 60063 Norm).**Capacitance tolerances (measured at 1 kHz):**

±5% (J); ±10% (K); ±20% (M).

Total self-inductance (L): ≈7nH

max 1 nH per 1 mm lead and capacitor length.

Dissipation factor (DF):tgδ 10⁻⁴ at +25°C ±5°C

kHz	C ≤ 0.1μF	C > 0.1μF
1	≤ 80	≤ 80
10	≤ 120	≤ 120
100	≤ 250	

Insulation resistance:**Test conditions**

Temperature: +25°C±5°C

Voltage charge time: 1 min

Voltage charge:

50 Vdc	for $V_R < 100$ Vdc
100 Vdc	for $V_R \geq 100$ Vdc

Performance**For $V_R \leq 100$ Vdc**

≥ 15000 MΩ for C ≤ 0.33μF

≥ 5000 s for C > 0.33μF and ≤ 1μF

≥ 1000 s for C > 1μF

For $V_R > 100$ Vdc

≥ 30000 MΩ

*Typical value

Test voltage between terminations:1.4x V_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|: ≤ 5%

DF change (Δtgδ): ≤ 50x10⁻⁴ at 1kHz

Insulation resistance: ≥ 50% of initial limit.

Endurance:**Test conditions**

Temperature: +105°C ±2°C

Test duration: 2000 h

Voltage applied: 1.25x V_C

Performance

Capacitance change |ΔC/C|: ≤ 5%

DF change (Δtgδ):	≤ 30x10 ⁻⁴ at 10kHz	for C ≤ 1μF
	≤ 20x10 ⁻⁴ at 1kHz	for C > 1μF

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|: ≤ 2%

DF change (Δtgδ):	≤ 30x10 ⁻⁴ at 10kHz	for C ≤ 1μF
	≤ 20x10 ⁻⁴ at 1kHz	for C > 1μF

Insulation resistance: ≥ initial limit.

Long term stability (after two years):**Storage:** standard environmental conditions (see page 12).**Performance**

Capacitance change |ΔC/C|: ≤ 3% for C ≤ 0.1μF

≤ 2% for C > 0.1μF

RELIABILITY:

Reference MIL HDB 217

Application conditions:

Temperature: +40°C±2°C

Voltage: 0.5x V_R

Failure rate: ≤ 1 FIT

(1 FIT = 1x10⁻⁹ failures/components x h)**Failure criteria:**

(according to DIN 44122)

Short or open circuit

Capacitance change |ΔC/C|: > 10%

DF change (Δtgδ): > 2 x initial limit.

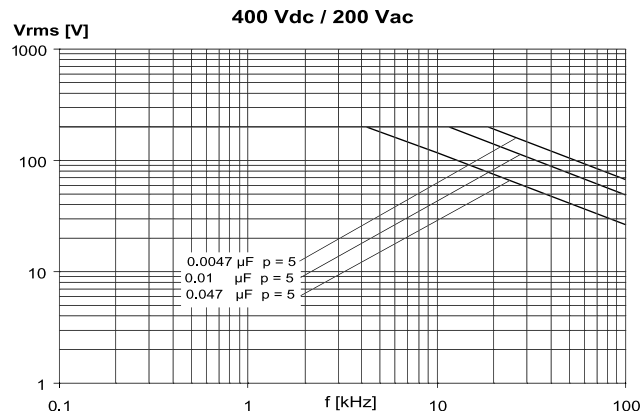
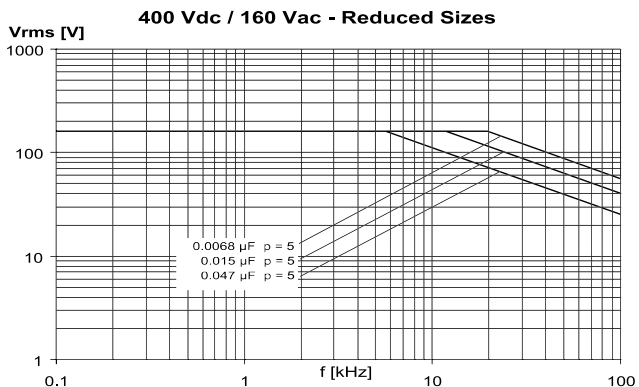
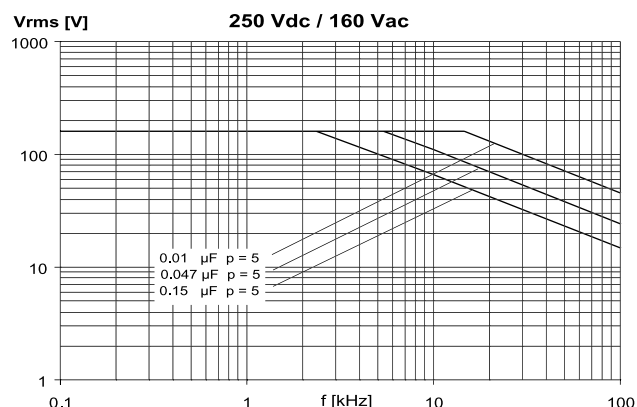
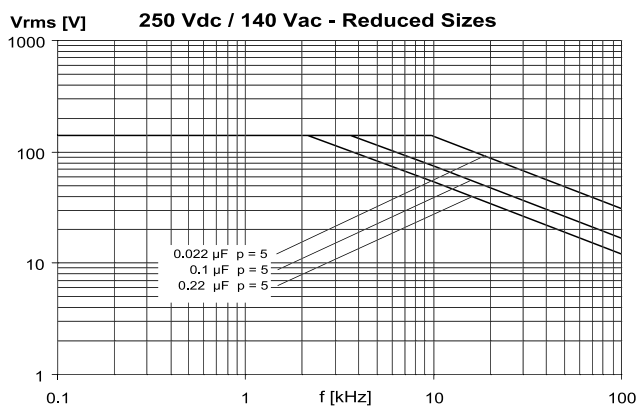
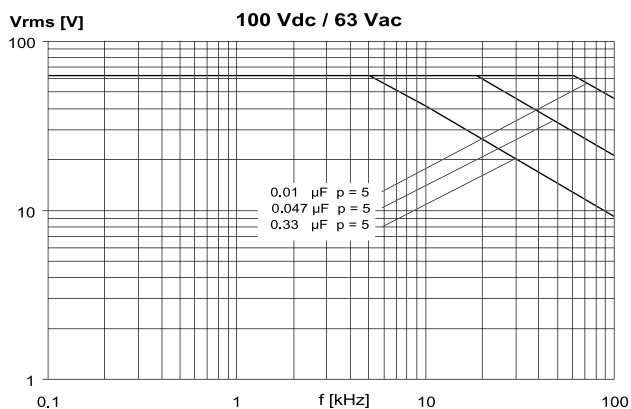
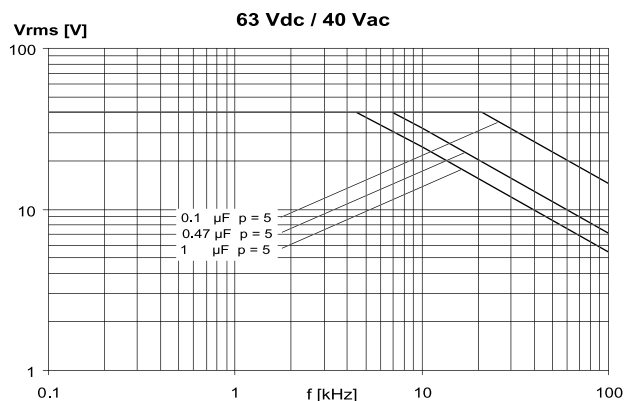
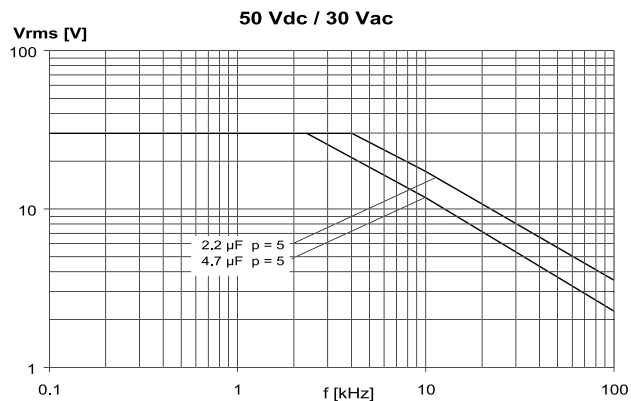
Insulation resistance: < 0.005 x initial limit.

**METALLIZED POLYESTER FILM CAPACITOR
D.C. MULTIPURPOSE APPLICATIONS**

p = 5 mm

PRODUCT CODE: R82

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



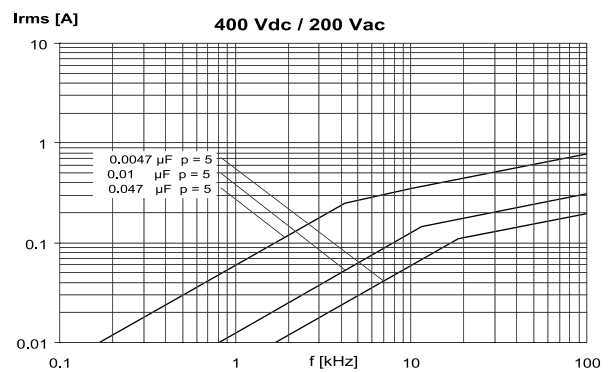
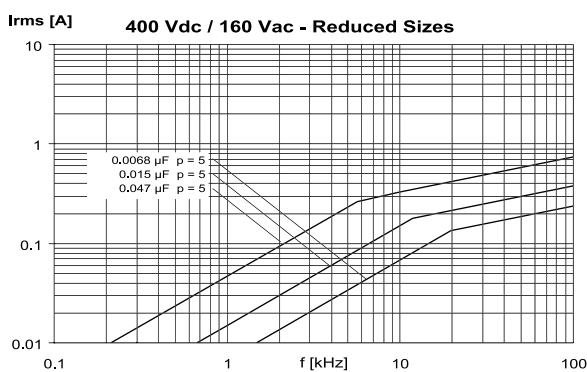
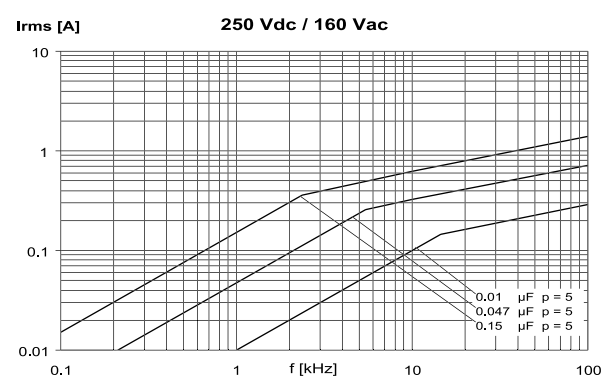
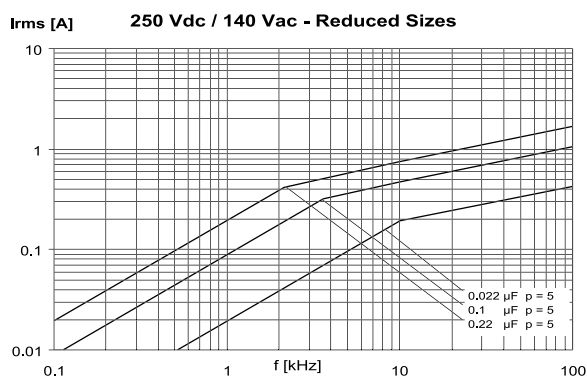
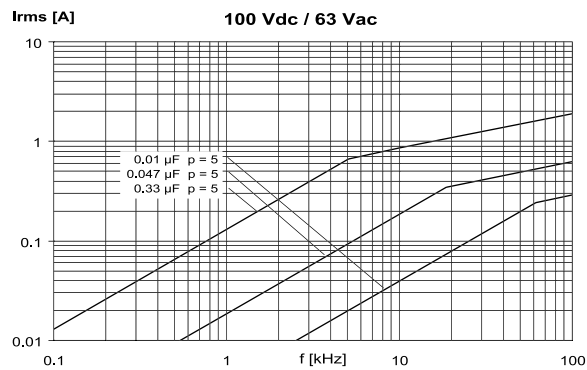
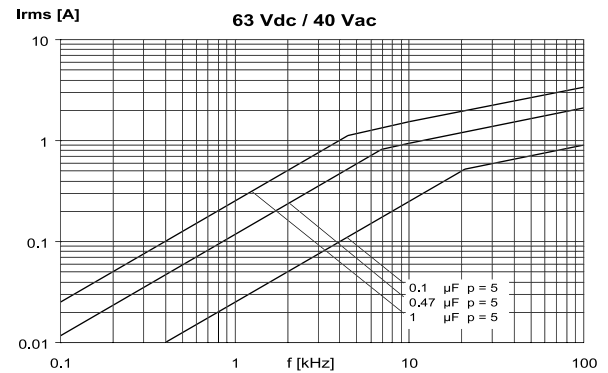
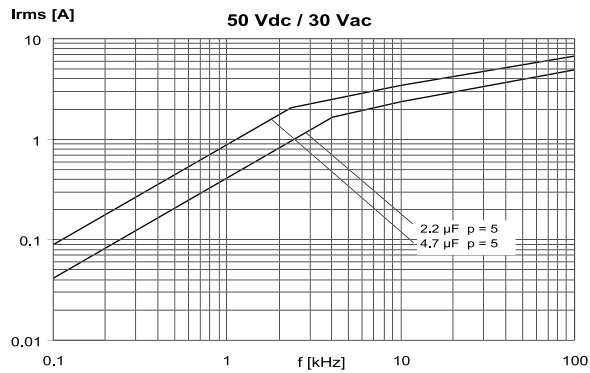
Note: p (pitch) in mm.

**METALLIZED POLYESTER FILM CAPACITOR
D.C. MULTIPURPOSE APPLICATIONS**

p = 5 mm

PRODUCT CODE: R82

MAX. CURRENT (I_{r.m.s.}) VERSUS FREQUENCY (sinusoidal wave-form / Th ≤ 40°C)



Note: p (pitch) in mm.