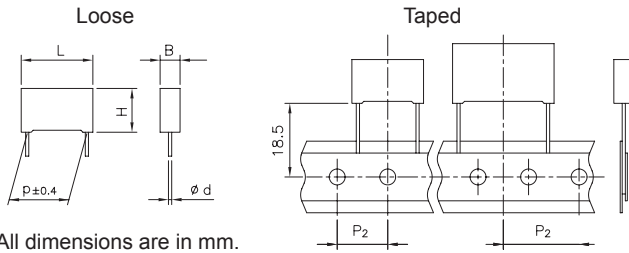




**R82**

MKT Series



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.

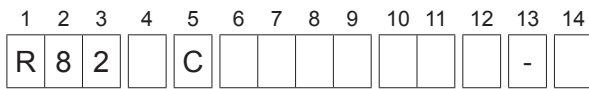
PRODUCT CODE: **R82**

**p = 5mm**

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



- 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 (table 1)
- Digit 12 Identifies the dimensions and electrical characteristics.
- Digit 13 Internal use
- Digit 14 Capacitance tolerance:  
J=5%; K=10%; M=20%.

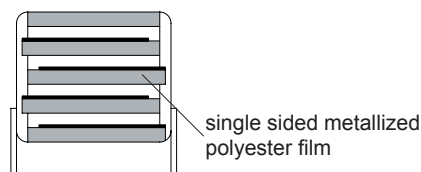
**GENERAL TECHNICAL DATA**

- 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 according to UL94.
- Marking:** 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 <sup>+1.5</sup>	AA
Loose, long leads	17 <sup>+1/-2</sup>	Z3

**Winding scheme**





MKT Series

**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 <sub>0</sub> (V <sup>2</sup> /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 <sub>0</sub> (V <sup>2</sup> /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	R82DC3320--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 <sub>0</sub> (V <sup>2</sup> /μs)	Part Number
	B	H	L	p			
1000 pF	2.5	6.5	7.2	5.0	200	40 E3	R82EC1100--5--
1500 pF	2.5	6.5	7.2	5.0	200	40 E3	R82EC1150--5--
2200 pF	2.5	6.5	7.2	5.0	200	40 E3	R82EC1220--5--
3300 pF	2.5	6.5	7.2	5.0	200	40 E3	R82EC1330--5--
4700 pF	2.5	6.5	7.2	5.0	200	40 E3	R82EC1470--5--
6800 pF	2.5	6.5	7.2	5.0	200	40 E3	R82EC1680--5--
0.010 μF	2.5	6.5	7.2	5.0	200	40 E3	R82EC2100--5--
0.015 μF	2.5	6.5	7.2	5.0	200	40 E3	R82EC2150--5--
0.022 μF	2.5	6.5	7.2	5.0	200	40 E3	R82EC2220--5--
0.033 μF	2.5	6.5	7.2	5.0	200	40 E3	R82EC2330--5--
0.047 μF	2.5	6.5	7.2	5.0	200	40 E3	R82EC2470--6--
0.068 μF	2.5	6.5	7.2	5.0	200	40 E3	R82EC2680--6--
0.10 μF	2.5	6.5	7.2	5.0	200	40 E3	R82EC3100--7--
0.15 μF	3.5	7.5	7.2	5.0	200	40 E3	R82EC3150--7--
0.22 μF	3.5	7.5	7.2	5.0	200	40 E3	R82EC3220--7--
0.33 μF	4.5	9.5	7.2	5.0	200	40 E3	R82EC3330--7--
0.47 μF	4.5	9.5	7.2	5.0	200	40 E3	R82EC3470--7--
0.68 μF	5.0	10.0	7.2	5.0	200	40 E3	R82EC3680--7--
1.0 μF	6.0	11.0	7.2	5.0	200	40 E3	R82EC4100--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<sub>R</sub>), 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<sub>R</sub>/V.  
The pulse characteristic K<sub>0</sub> 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 <sub>0</sub> (V <sup>2</sup> /μs)	Part Number
	B	H	L	p			
0.022 μF	2.5	6.5	7.2	5.0	130	65 E3	R82IC2220--6--
0.047 μF	3.5	7.5	7.2	5.0	130	65 E3	R82IC2470--6--
0.068 μF	3.5	7.5	7.2	5.0	130	65 E3	R82IC2680--6--
0.10 μF	4.5	9.5	7.2	5.0	130	65 E3	R82IC3100--6--
0.15 μF	5.0	10.0	7.2	5.0	130	65 E3	R82IC3150--6--
0.22 μF	6.0	11.0	7.2	5.0	130	65 E3	R82IC3220--6--

Rated Cap.	250Vdc/160Vac Std dimensions				Max dv/dt (V/μs)	Max K <sub>0</sub> (V <sup>2</sup> /μs)	Part Number
	B	H	L	p			
6800 pF	2.5	6.5	7.2	5.0	250	125 E3	R82IC1680--5-
0.010 μF	2.5	6.5	7.2	5.0	250	125 E3	R82IC2100--5--
0.015 μF	2.5	6.5	7.2	5.0	250	125 E3	R82IC2150--5--
0.022 μF	3.5	7.5	7.2	5.0	250	125 E3	R82IC2220--5--
0.033 μF	3.5	7.5	7.2	5.0	250	125 E3	R82IC2330--5--
0.047 μF	4.5	9.5	7.2	5.0	250	125 E3	R82IC2470--5--
0.068 μF	4.5	9.5	7.2	5.0	250	125 E3	R82IC2680--5--
0.10 μF	5.0	10.0	7.2	5.0	250	125 E3	R82IC3100--55-
0.15 μF	6.0	11.0	7.2	5.0	250	125 E3	R82IC3150--5--

Rated Cap.	400Vdc/160Vac REDUCED SIZES Std dimensions				Max dv/dt (V/μs)	Max K <sub>0</sub> (V <sup>2</sup> /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 <sub>0</sub> (V <sup>2</sup> /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<sup>-4</sup> 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  $V_R ≥ 100$  Vdc
**Performance****For  $V_R ≤ 100$  Vdc**

≥ 15000 MΩ for C ≤ 0.33µF

≥ 5000 s for C &gt; 0.33µF and ≤ 1µF

≥ 1000 s for C &gt; 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  $|\Delta C/C|$ : ≤ 5%DF change ( $\Delta \text{tg}\delta$ ): ≤ 50x10<sup>-4</sup> 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  $|\Delta C/C|$ : ≤ 5%
 DF change ( $\Delta \text{tg}\delta$ ): ≤ 30x10<sup>-4</sup> at 10kHz for C ≤ 1µF  
 ≤ 20x10<sup>-4</sup> 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  $|\Delta C/C|$ : ≤ 2%
 DF change ( $\Delta \text{tg}\delta$ ): ≤ 30x10<sup>-4</sup> at 10kHz for C ≤ 1µF  
 ≤ 20x10<sup>-4</sup> 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  $|\Delta C/C|$ : ≤ 3% for C ≤ 0.1µF

≤ 2% for C &gt; 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<sup>-9</sup> failures/components x h)**Failure criteria:**

(according to DIN 44122)

Short or open circuit

Capacitance change  $|\Delta C/C|$ : > 10%DF change ( $\Delta \text{tg}\delta$ ): > 2 x initial limit.

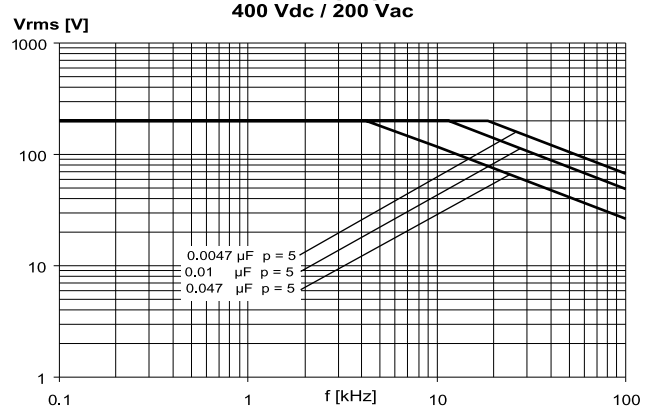
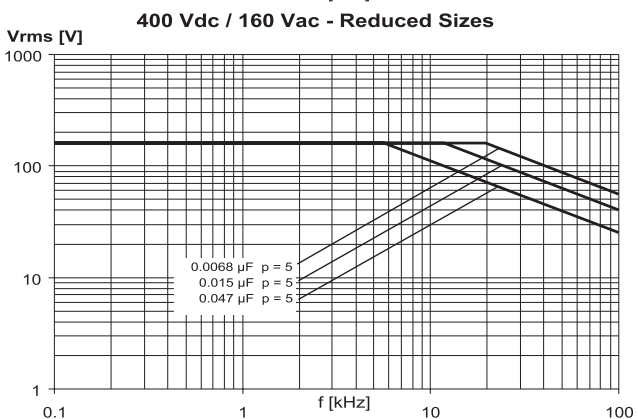
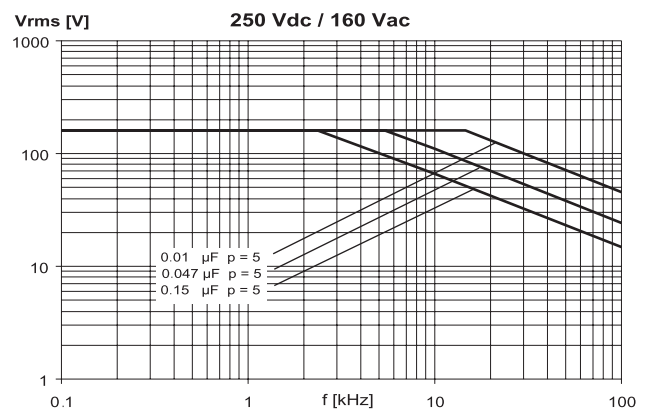
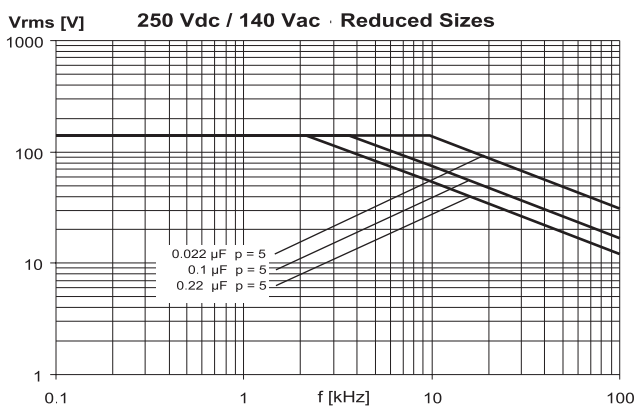
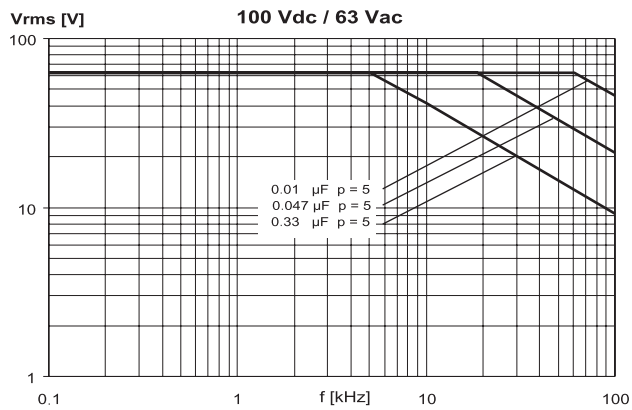
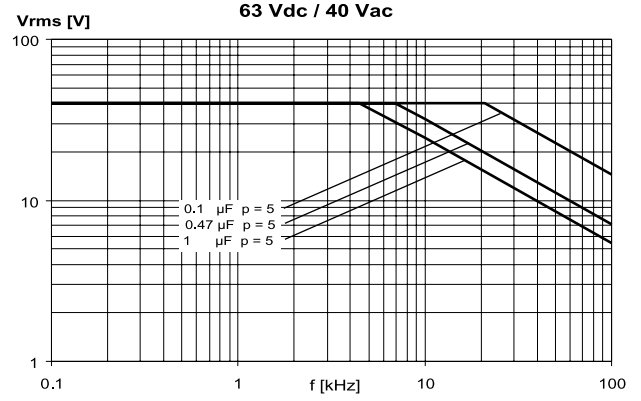
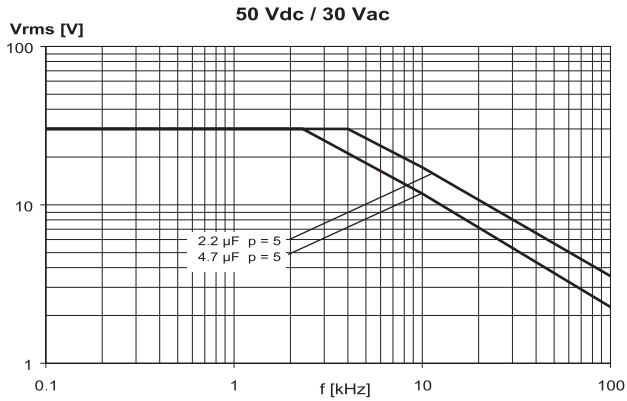
Insulation resistance: &lt; 0.005 x initial limit.

**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)**

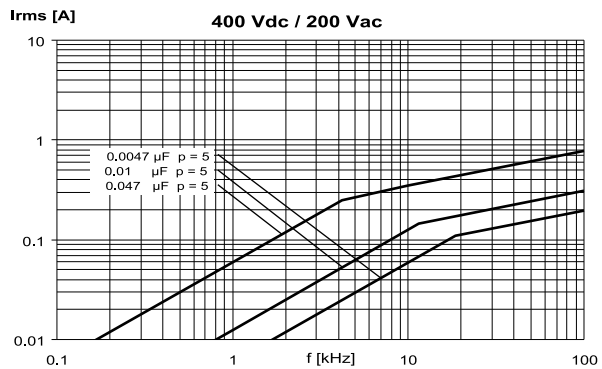
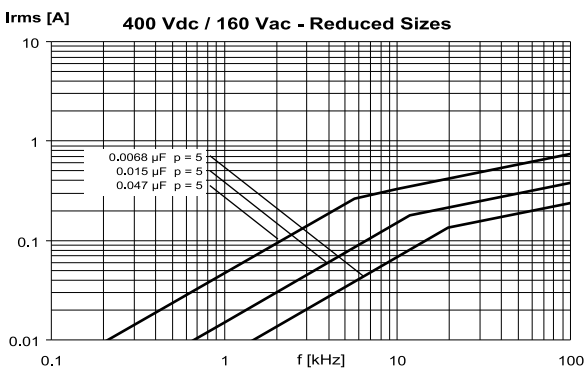
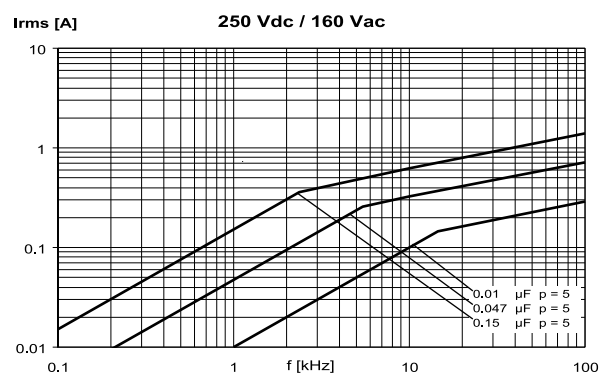
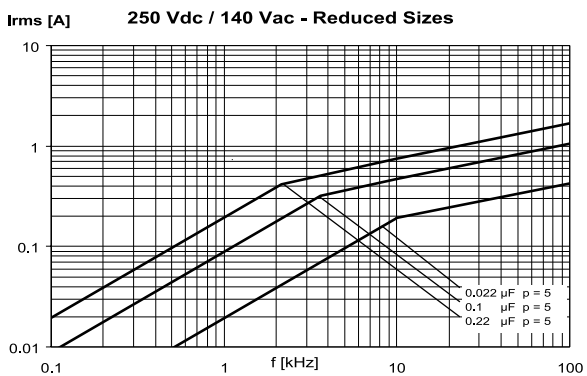
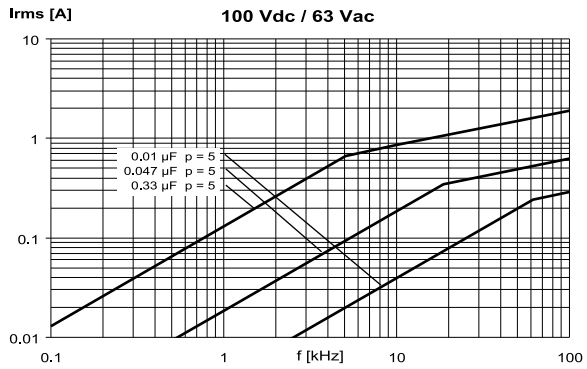
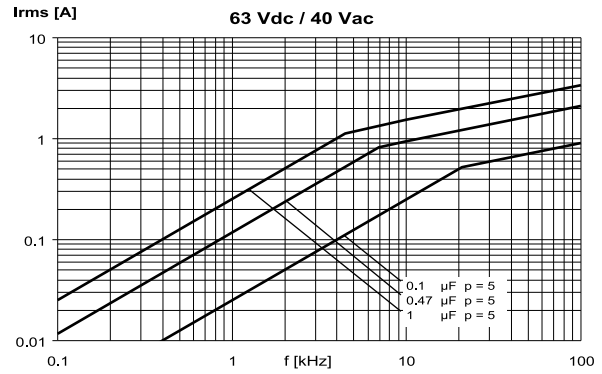
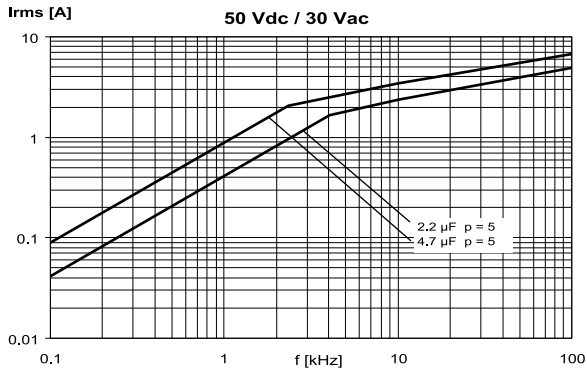


**METALLIZED POLYESTER FILM CAPACITOR  
D.C. MULTIPURPOSE APPLICATIONS**

$\rho = 5 \text{ mm}$

PRODUCT CODE: R82

**MAX. CURRENT (I<sub>r.m.s.</sub>) VERSUS FREQUENCY (sinusoidal wave-form / Th ≤ 40°C)**



Statements of suitability for certain applications are based on our knowledge of typical operating conditions for such applications, but are not intended to constitute – and we specifically disclaim – any warranty concerning suitability for a specific customer application or use. This information is intended for use only by customers who have the requisite experience and capability to determine the correct products for their application. Any technical advice inferred from this information or otherwise provided by us with reference to the use of our products is given gratis, and we assume no obligation or liability for the advice given or results obtained.