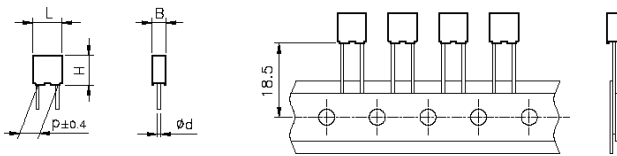


Loose

Taped



B	≤ 3.5	> 3.5
∅ d ± 0.05	0.5	0.6

All dimensions are in mm

METALLIZED POLYESTER FILM CAPACITOR HIGH PERFORMANCES - DIN 44122 MULTIPURPOSE APPLICATIONS

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

PRODUCT CODE: R82

p = 5 mm

Note: R82 series has replaced the R85 series (available only upon request). For new design we suggest the use of the R82 series.

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										-	

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 = 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:
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, epoxy resin filled.
Box material is solvent resistant and flame retardant according to UL94 V0.

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

Climatic category: 55/100/56 IEC 60068-1

Operating temperature range: -55 to +105°C

Related documents: IEC 60384-2; CECC 30400

Detail specifications: CECC 30401-011

Winding scheme

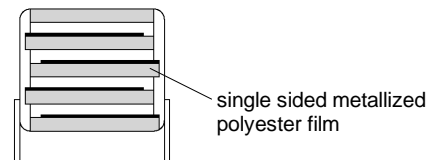


Table 1 (for more detailed information, please refer to page 14).

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

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

**METALLIZED POLYESTER FILM CAPACITOR
HIGH PERFORMANCES - DIN 44122
MULTIPURPOSE APPLICATIONS**

**p = 5 mm
PRODUCT CODE: R82**

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

Rated Cap.	63Vdc/40Vac				Max dv/dt (V/μs)	Max K ₀ (V ² /μs)	Part Number
	B	H	L	p			
0.10μF	2.5	6.5	7.2	5.0	70	8.8 E3	R82DC3100--5--
0.15μF	2.5	6.5	7.2	5.0	70	8.8 E3	R82DC3150--6--
0.22μF	2.5	6.5	7.2	5.0	70	8.8 E3	R82DC3220--6--
0.33μF	3.5	7.5	7.2	5.0	70	8.8 E3	R82DC3330--6--
0.47μF	3.5	7.5	7.2	5.0	70	8.8 E3	R82DC3470--6--
0.68μF	4.5	9.5	7.2	5.0	70	8.8 E3	R82DC3680--6--
1.0μF	5.0	10.0	7.2	5.0	70	8.8 E3	R82DC4100--8--
1.5μF	6.0	11.0	7.2	5.0	70	8.8 E3	R82DC4150--6--

Rated Cap.	100Vdc/63Vac				Max dv/dt (V/μs)	Max K ₀ (V ² /μs)	Part Number
	B	H	L	p			
1000pF	2.5	6.5	7.2	5.0	100	20 E3	R82EC 1100--5--
1500pF	2.5	6.5	7.2	5.0	100	20 E3	R82EC 1150--5--
2200pF	2.5	6.5	7.2	5.0	100	20 E3	R82EC 1220--5--
3300pF	2.5	6.5	7.2	5.0	100	20 E3	R82EC 1330--5--
4700pF	2.5	6.5	7.2	5.0	100	20 E3	R82EC 1470--5--
6800pF	2.5	6.5	7.2	5.0	100	20 E3	R82EC 1680--5--
0.010μF	2.5	6.5	7.2	5.0	100	20 E3	R82EC 2100--5--
0.015μF	2.5	6.5	7.2	5.0	100	20 E3	R82EC 2150--5--
0.022μF	2.5	6.5	7.2	5.0	100	20 E3	R82EC 2220--5--
0.033μF	2.5	6.5	7.2	5.0	100	20 E3	R82EC 2330--5--
0.047μF	2.5	6.5	7.2	5.0	100	20 E3	R82EC 2470--6--
0.068μF	2.5	6.5	7.2	5.0	100	20 E3	R82EC 2680--6--
0.10μF	2.5	6.5	7.2	5.0	100	20 E3	R82EC 3100--7--
0.15μF	3.5	7.5	7.2	5.0	100	20 E3	R82EC 3150--7--
0.22μF	3.5	7.5	7.2	5.0	100	20 E3	R82EC 3220--7--
0.33μF	4.5	9.5	7.2	5.0	100	20 E3	R82EC 3330--7--
0.47μF	4.5	9.5	7.2	5.0	100	20 E3	R82EC 3470--7--
0.68μF	5.0	10.0	7.2	5.0	100	20 E3	R82EC 3680--7--
1.0μF	6.0	11.0	7.2	5.0	100	20 E3	R82EC 4100--7--

Mechanical version and packaging (Table 1) _____
 Internal use _____
 Tolerance: J (± 5%); K (± 10%); M (± 20%) _____

Rated Cap.	250Vdc/160Vac				Max dv/dt (V/μs)	Max K ₀ (V ² /μs)	Part Number
	B	H	L	p			
6800pF	2.5	6.5	7.2	5.0	130	65 E3	R82IC 1680--5--
0.010μF	2.5	6.5	7.2	5.0	130	65 E3	R82IC 2100--5--
0.015μF	2.5	6.5	7.2	5.0	130	65 E3	R82IC 2150--5--
0.022μF	3.5	7.5	7.2	5.0	130	65 E3	R82IC 2220--5--
0.033μF	3.5	7.5	7.2	5.0	130	65 E3	R82IC 2330--5--
0.047μF	4.5	9.5	7.2	5.0	130	65 E3	R82IC 2470--5--
0.068μF	4.5	9.5	7.2	5.0	130	65 E3	R82IC 2680--5--
0.10μF	6.0	11.0	7.2	5.0	130	65 E3	R82IC 3100--5--
0.15μF	6.0	11.0	7.2	5.0	130	65 E3	R82IC 3150--5--

Rated Cap.	400Vdc/200Vac				Max dv/dt (V/μs)	Max K ₀ (V ² /μs)	Part Number
	B	H	L	p			
1000pF	2.5	6.5	7.2	5.0	200	160 E3	R82MC1100--5--
1500pF	2.5	6.5	7.2	5.0	200	160 E3	R82MC1150--5--
2200pF	2.5	6.5	7.2	5.0	200	160 E3	R82MC1220--5--
3300pF	2.5	6.5	7.2	5.0	200	160 E3	R82MC1330--5--
4700pF	2.5	6.5	7.2	5.0	200	160 E3	R82MC1470--5--
6800pF	3.5	7.5	7.2	5.0	200	160 E3	R82MC1680--5--
0.010μF	3.5	7.5	7.2	5.0	200	160 E3	R82MC2100--5--
0.015μF	4.5	9.5	7.2	5.0	200	160 E3	R82MC2150--5--
0.022μF	4.5	9.5	7.2	5.0	200	160 E3	R82MC2220--5--
0.033μF	5.0	10.0	7.2	5.0	200	160 E3	R82MC2330--5--
0.047μF	6.0	11.0	7.2	5.0	200	160 E3	R82MC2470--5--

Mechanical version and packaging (Table 1) _____
 Internal use _____
 Tolerance: J (± 5%); K (± 10%); M (± 20%) _____

All dimensions are in mm.

Note 1: 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.

Note 2: Special version for high temperature applications (125°C / RM2 series) is available upon request.
 Typical application: Engine control in AUTOMOTIVE FIELD.

ELECTRICAL CHARACTERISTICS

Rated voltage (V_R): 50Vdc - 63Vdc - 100Vdc
250Vdc - 400Vdc

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 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
(lead length ~2mm)

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 ≥ 100 Vdc

Performance

For V_R ≤ 100 Vdc
≥ 15000MΩ for C ≤ 0.33µF
≥ 5000 s for C > 0.33µF and ≤ 1µF
≥ 1000 s for C > 1µF

For V_R > 100 Vdc
≥ 30000MΩ

Test voltage between terminals:

1.4 × 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): ≤ 50 × 10⁻⁴ at 1kHz
Insulation resistance: ≥ 50% of initial limit.

Endurance:

Test conditions

Temperature: +100°C ± 2°C
Test duration: 2000 h
Voltage applied: 1.25 × V_C

Performance

Capacitance change |ΔC/C|: ≤ 5%
DF change (Δtgδ): ≤ 30 × 10⁻⁴ at 10kHz for C ≤ 1 µF
≤ 20 × 10⁻⁴ at 1kHz for C > 1 µF
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): ≤ 30 × 10⁻⁴ at 10kHz for C ≤ 1 µF
≤ 20 × 10⁻⁴ at 1kHz for C > 1 µF
Insulation resistance: ≥ initial limit.

Long term stability (after two years):

Storage

standard environmental conditions (see page 10).

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: 0.5 × V_R
Failure rate: ≤ 1 FIT
(1 FIT = 1 × 10⁻⁹ failures/components × h)

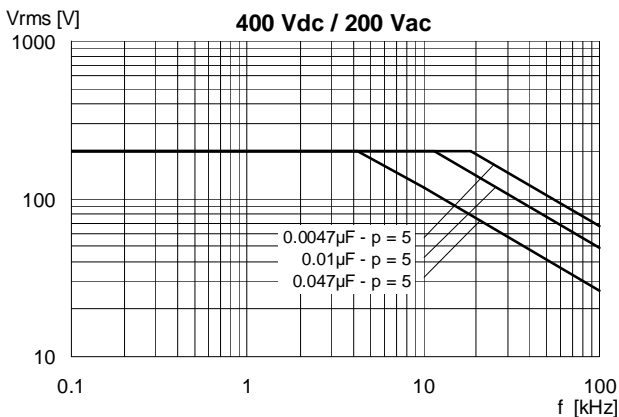
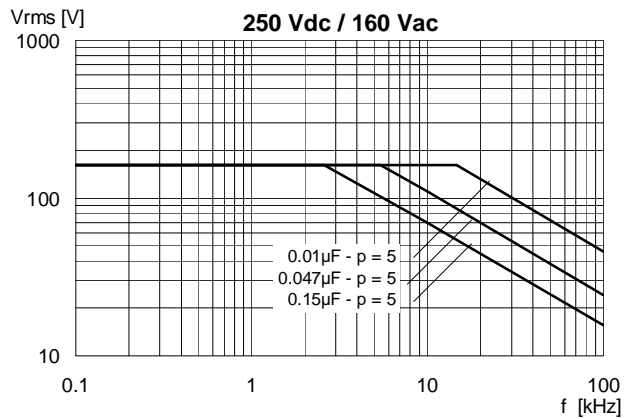
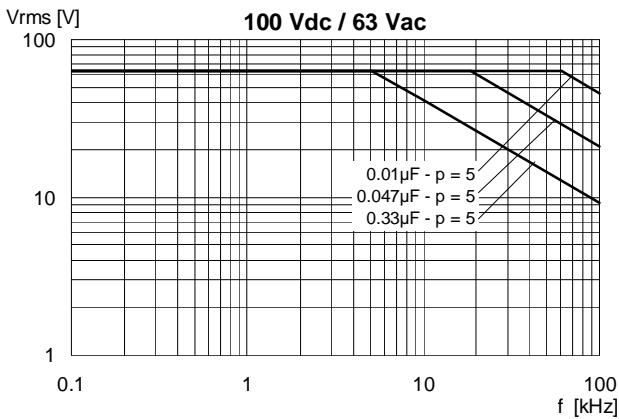
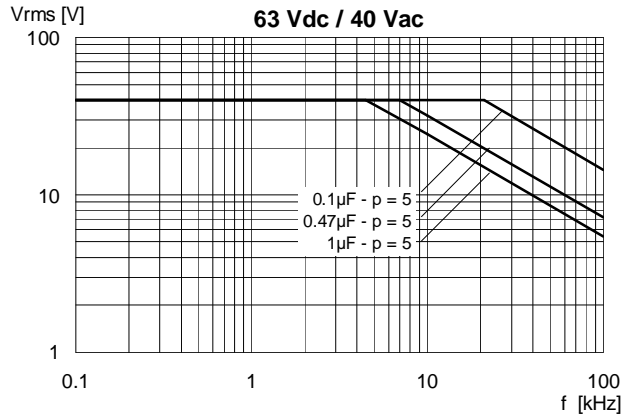
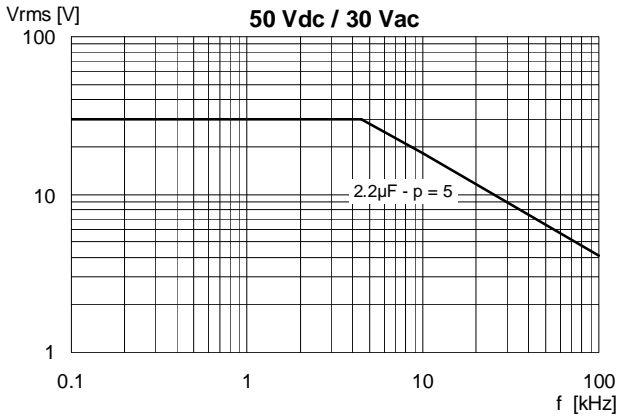
Failure criteria:

(according to DIN 44122)

Short or open circuit
Capacitance change |ΔC/C|: >10%
DF change (Δtgδ): >2 × initial limit.
Insulation resistance: <0.005 × initial limit.

METALLIZED POLYESTER FILM CAPACITOR
HIGH PERFORMANCES - DIN 44122
MULTIPURPOSE APPLICATIONS
 p = 5 mm
 PRODUCT CODE: R82

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



Note: p (pitch) in mm.