

All dimensions are in mm

### METALLIZED POLYESTER FILM CAPACITOR MULTIPURPOSE APPLICATIONS

**Typical applications:** high frequency coupling and decoupling, pulse coupling, by-passing.

PRODUCT CODE: R84

**p = 7.5 mm**

**NOT FOR NEW DESIGNS. PLEASE USE SERIES R66 INSTEAD.**

### 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	4										-	

- Digit 1 to 3 Series code.
- Digit 4 d.c. rated voltage:  
D = 63V E = 100V I = 250V  
M = 400V P = 630V
- Digit 5 Pitch: D = 7.5 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, 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 30401-009

### Winding scheme

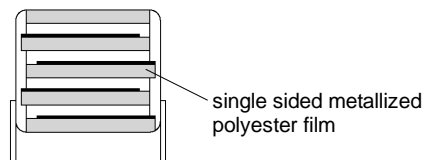


Table 1 (for more detailed information, please refer to page 14).

Standard packaging style	Lead length (mm)	Taping style Figure No.	Ordering code (Digit 10 to 11)
AMMO-PACK		1	DQ
AMMO-PACK		2	28
REEL Ø 355mm		1	CK
Loose, short leads	4 +2		AA
Loose, long leads	17 ±1		Z3

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

### METALLIZED POLYESTER FILM CAPACITOR MULTIPURPOSE APPLICATIONS

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Rated Cap.	63Vdc/40Vac				Max dv/dt (V/μs)	Max K <sub>0</sub> (V <sup>2</sup> /μs)	Part Number
	B	H	L	p			
0.068μF	3.5	6.5	10.5	7.5	5	0.63 E3	R84DD2680--0--
0.10μF	3.5	6.5	10.5	7.5	5	0.63 E3	R84DD3100--0--
0.15μF	3.5	6.5	10.5	7.5	5	0.63 E3	R84DD3150--0--
0.22μF	4.0	9.0	10.5	7.5	5	0.63 E3	R84DD3220--0--
0.33μF	4.0	9.0	10.5	7.5	5	0.63 E3	R84DD3330--0--
0.47μF	5.0	11.0	10.5	7.5	5	0.63 E3	R84DD3470--0--
0.68μF	5.0	11.0	10.5	7.5	5	0.63 E3	R84DD3680--0--
1.0μF	6.0	12.0	10.5	7.5	5	0.63 E3	R84DD4100--0--

Rated Cap.	400Vdc/200Vac				Max dv/dt (V/μs)	Max K <sub>0</sub> (V <sup>2</sup> /μs)	Part Number
	B	H	L	p			
3300pF	3.5	6.5	10.5	7.5	30	24 E3	R84MD1330--0--
4700pF	3.5	6.5	10.5	7.5	30	24 E3	R84MD1470--0--
6800pF	3.5	6.5	10.5	7.5	30	24 E3	R84MD1680--0--
0.010μF	4.0	9.0	10.5	7.5	30	24 E3	R84MD2100--0--
0.015μF	4.0	9.0	10.5	7.5	30	24 E3	R84MD2150--0--
0.022μF	5.0	11.0	10.5	7.5	30	24 E3	R84MD2220--0--
0.033μF	6.0	12.0	10.5	7.5	30	24 E3	R84MD2330--0--

Rated Cap.	100Vdc/63Vac				Max dv/dt (V/μs)	Max K <sub>0</sub> (V <sup>2</sup> /μs)	Part Number
	B	H	L	p			
0.033μF	3.5	6.5	10.5	7.5	6	1.2 E3	R84ED2330--0--
0.047μF	3.5	6.5	10.5	7.5	6	1.2 E3	R84ED2470--0--
0.068μF	4.0	9.0	10.5	7.5	6	1.2 E3	R84ED2680--0--
0.10μF	4.0	9.0	10.5	7.5	6	1.2 E3	R84ED3100--0--
0.15μF	4.0	9.0	10.5	7.5	6	1.2 E3	R84ED3150--0--
0.22μF	5.0	11.0	10.5	7.5	6	1.2 E3	R84ED3220--0--
0.33μF	5.0	11.0	10.5	7.5	6	1.2 E3	R84ED3330--0--

Rated Cap.	630Vdc/220Vac*				Max dv/dt (V/μs)	Max K <sub>0</sub> (V <sup>2</sup> /μs)	Part Number
	B	H	L	p			
1000pF	3.5	6.5	10.5	7.5	40	50 E3	R84PD1100--0--
1500pF	3.5	6.5	10.5	7.5	40	50 E3	R84PD1150--0--
2200pF	3.5	6.5	10.5	7.5	40	50 E3	R84PD1220--0--
3300pF	4.0	9.0	10.5	7.5	40	50 E3	R84PD1330--0--
4700pF	4.0	9.0	10.5	7.5	40	50 E3	R84PD1470--0--
6800pF	4.0	9.0	10.5	7.5	40	50 E3	R84PD1680--0--
0.010μF	5.0	11.0	10.5	7.5	40	50 E3	R84PD2100--0--
0.015μF	6.0	12.0	10.5	7.5	40	50 E3	R84PD2150--0--

Rated Cap.	250Vdc/160Vac				Max dv/dt (V/μs)	Max K <sub>0</sub> (V <sup>2</sup> /μs)	Part Number
	B	H	L	p			
0.010μF	3.5	6.5	10.5	7.5	15	7.5 E3	R84ID 2100--0--
0.015μF	3.5	6.5	10.5	7.5	15	7.5 E3	R84ID 2150--0--
0.022μF	3.5	6.5	10.5	7.5	15	7.5 E3	R84ID 2220--0--
0.033μF	4.0	9.0	10.5	7.5	15	7.5 E3	R84ID 2330--0--
0.047μF	4.0	9.0	10.5	7.5	15	7.5 E3	R84ID 2470--0--
0.068μF	5.0	11.0	10.5	7.5	15	7.5 E3	R84ID 2680--0--
0.10μF	5.0	11.0	10.5	7.5	15	7.5 E3	R84ID 3100--0--
0.15μF	6.0	12.0	10.5	7.5	15	7.5 E3	R84ID 3150--0--

Mechanical version and packaging (Table 1)

Internal use

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

Mechanical version and packaging (Table 1)

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.

\* Not suitable for across-the-line applications. Please refer to Interference Suppression Capacitors (page 105).

**METALLIZED POLYESTER FILM CAPACITOR  
MULTIPURPOSE APPLICATIONS**

p = 7.5 mm  
PRODUCT CODE: R84

**ELECTRICAL CHARACTERISTICS**

**Rated voltage (V<sub>R</sub>):** 63 Vdc - 100 Vdc - 250Vdc  
400 Vdc - 630 Vdc

**Rated temperature (T<sub>R</sub>):** +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<sub>R</sub> has to be applied.

**Capacitance range:** 1000pF to 1µF

**Capacitance values:**  
E6 series (IEC 60063 Norm).

**Capacitance tolerances** (measured at 1 kHz):  
± 5% (J) ; ± 10% (K); ± 20% (M).

**Total self-inductance (L):** ≈ 8nH  
(Lead length ~2 mm)

**Dissipation factor (DF):**  
tgδ × 10<sup>-4</sup> at +25°C ± 5°C

kHz	tgδ x 10 <sup>-4</sup>
1	≤ 100
10	≤ 150

**Insulation resistance:**

**Test conditions**

Temperature: +25°C ± 5°C  
Voltage charge time: 1 min  
Voltage charge: 50 Vdc for V<sub>R</sub> < 100 Vdc  
100 Vdc for V<sub>R</sub> ≥ 100 Vdc

**Performance**

**For V<sub>R</sub> ≤ 100 Vdc**  
≥ 3750MΩ for C ≤ 0.33µF (50000 MΩ)\*  
≥ 1250 s for C > 0.33µF (5000 s)\*

**For V<sub>R</sub> > 100 Vdc**  
≥ 30000MΩ (50000 MΩ)\*  
\* Typical value

**Test voltage between terminations:**  
1.6 × V<sub>R</sub> 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<sup>-4</sup> at 1kHz  
Insulation resistance: ≥ 50% of initial limit.

**Endurance:**

**Test conditions**

Temperature: +85°C ± 2°C  
Test duration: 2000 h  
Voltage applied: 1.25 × V<sub>R</sub>

**Performance**

Capacitance change |ΔC/C|: ≤ 5%  
DF change (Δtgδ): ≤ 50 × 10<sup>-4</sup> 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|: ≤ 2%  
DF change (Δtgδ): ≤ 50 × 10<sup>-4</sup> at 10kHz  
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

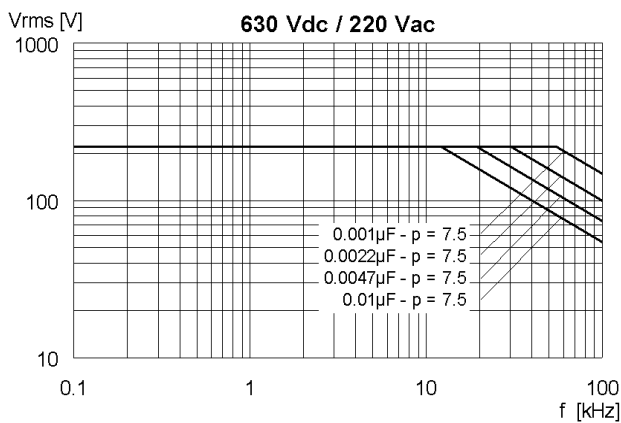
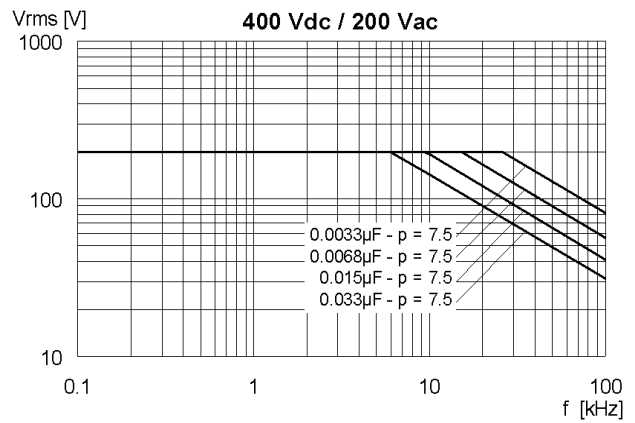
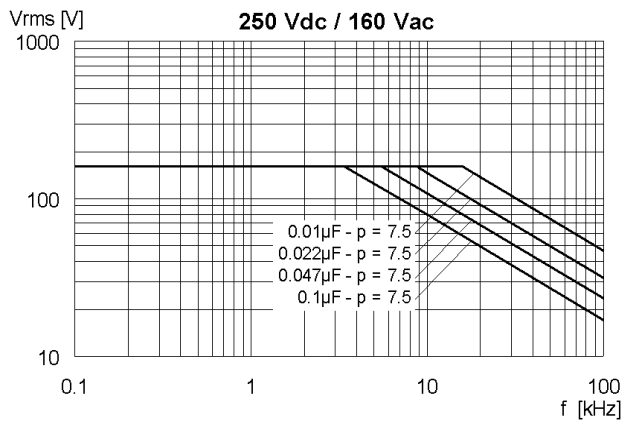
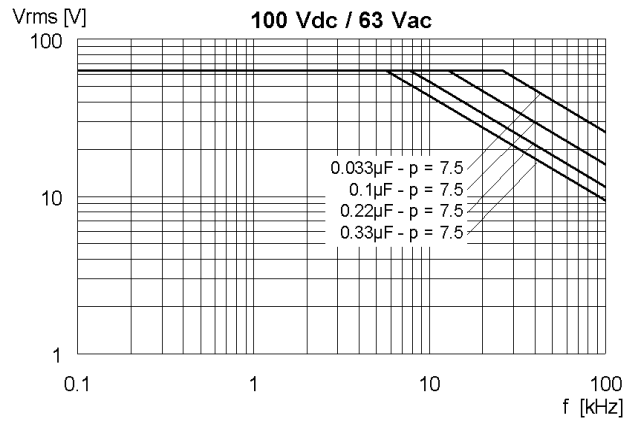
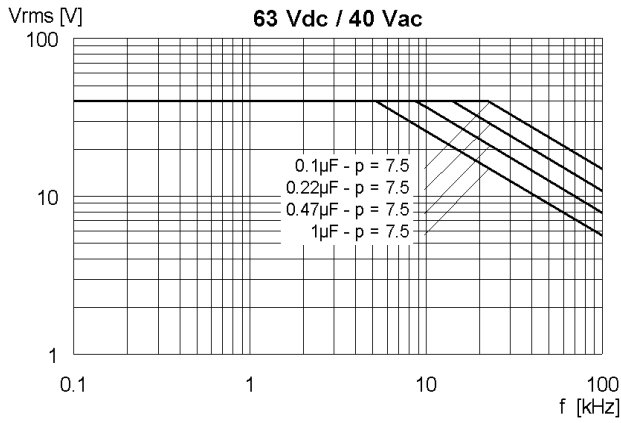
**Application conditions:**

Temperature: +40°C ± 2°C  
Voltage: 0.5 × V<sub>R</sub>  
Failure rate: ≤ 2 FIT  
(1 FIT = 1 × 10<sup>-9</sup> 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.

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



Note: p (pitch) in mm.