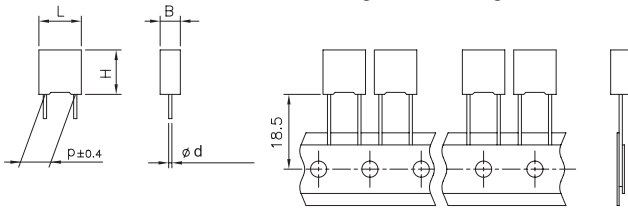


Loose

Taped



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

Typical applications: this series combines small size, good performances in by-passing, blocking and interference suppression in low voltage applications (i.e.: AUTOMOTIVE).

PRODUCT CODE: **R66**

p = 7.5mm

Note: R66 series has replaced the R84 series (available only upon request).

For new design we suggest the use of the R66 series

B	<3.5	≥4.0
Ød ±0.05	0.5	0.6

All dimensions are in mm.

Pitch (mm)	Box thickness (B) (mm)	Maximum dimensions (mm)		
		B max	H max	L max
7.5	All	B +0.1	H +0.1	L +0.2

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	6	6		D								-	

- Digit 1 to 3 Series code.
- Digit 4 d.c. rated voltage:
C = 50V 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%.

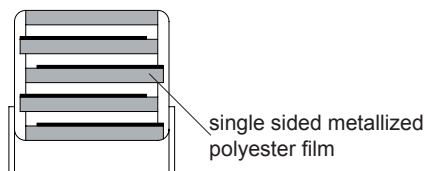
Table 1 (for more detailed information, please refer to page 14).

Standard packaging style	Lead length (mm)	Taping style	Ordering code
		Figure No.	
AMMO-PACK		1	DQ
AMMO-PACK		2	Z8
Reel Ø 355 mm		1	CK
Loose, short leads	4 ⁺²		AA
Loose, long leads	17 ^{+1/-2}		Z3

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
For stacked technology an upper operating temperature of +125°C is allowed for a max operating time of 1000 h.
- Related documents:** IEC 60384-2

Winding scheme



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

p = 7.5 mm

PRODUCT CODE: R66

STACKED VERSION

Rated Cap.	50Vdc/30Vac Std dimensions				Max dv/dt (V/μs)	Max K ₀ (V ² /μs)	Part Number
	B	H	L	p			
0.68 μF	3.0	8.0	10.0	7.5	100	10 E3	R66CD3680--6--
1.0 μF	3.0	8.0	10.0	7.5	100	10 E3	R66CD4100--6--
1.5 μF	4.0	9.0	10.0	7.5	100	10 E3	R66CD4150--6--
2.2 μF	5.0	10.5	10.0	7.5	100	10 E3	R66CD4220--6--
4.7 μF	6.0	12.0	10.5	7.5	100	10 E3	R66CD4470--6--

Rated Cap.	63Vdc/40Vac Std dimensions				Max dv/dt (V/μs)	Max K ₀ (V ² /μs)	Part Number
	B	H	L	p			
0.33 μF	3.0	8.0	10.0	7.5	120	15 E3	R66DD3330--7--
0.47 μF	3.0	8.0	10.0	7.5	120	15 E3	R66DD3470--6--
0.68 μF	4.0	9.0	10.0	7.5	120	15 E3	R66DD3680--7--
1.0 μF	4.0	9.0	10.0	7.5	120	15 E3	R66DD4100--7--
1.5 μF	5.0	10.5	10.0	7.5	120	15 E3	R66DD4150--7--
2.2 μF	6.0	12.0	10.5	7.5	120	15 E3	R66DD4220--6--
3.3 μF	6.0	12.0	10.5	7.5	120	15 E3	R66DD4330--6--

Rated Cap.	100Vdc/63Vac Std dimensions				Max dv/dt (V/μs)	Max K ₀ (V ² /μs)	Part Number
	B	H	L	p			
0.068 μF	3.0	8.0	10.0	7.5	150	30 E3	R66ED2680--7--
0.10 μF	3.0	8.0	10.0	7.5	150	30 E3	R66ED3100--7--
0.15 μF	3.0	8.0	10.0	7.5	150	30 E3	R66ED3150--7--
0.22 μF	3.0	8.0	10.0	7.5	150	30 E3	R66ED3220--7--
0.33 μF	4.0	9.0	10.0	7.5	150	30 E3	R66ED3330--7--
0.47 μF	4.0	9.0	10.0	7.5	150	30 E3	R66ED3470--7--
0.68 μF	4.0	9.0	10.0	7.5	150	30 E3	R66ED3680--7--
1.0 μF	5.0	10.5	10.0	7.5	150	30 E3	R66ED4100--7--
1.5 μF	6.0	12.0	10.5	7.5	150	30 E3	R66ED4150--6--

Mechanical version and packaging (Table1) _____
Internal use _____
Tolerance: J (±5%); K (±10%); M (±20%) _____

Rated Cap.	250Vdc/160Vac Std dimensions				Max dv/dt (V/μs)	Max K ₀ (V ² /μs)	Part Number
	B	H	L	p			
0.022 μF	3.0	8.0	10.0	7.5	200	100 E3	R66ID2220--7--
0.033 μF	3.0	8.0	10.0	7.5	200	100 E3	R66ID2330--7--
0.047 μF	3.0	8.0	10.0	7.5	200	100 E3	R66ID2470--7--
0.068 μF	3.0	8.0	10.0	7.5	200	100 E3	R66ID2680--6--
0.10 μF	4.0	9.0	10.0	7.5	200	100 E3	R66ID3100--7--
0.15 μF	4.0	9.0	10.0	7.5	200	100 E3	R66ID3150--7--
0.22 μF	5.0	10.5	10.0	7.5	200	100 E3	R66ID3220--7--
0.33 μF	6.0	12.0	10.5	7.5	200	100 E3	R66ID3330--6--

Rated Cap.	400Vdc/200Vac Std dimensions				Max dv/dt (V/μs)	Max K ₀ (V ² /μs)	Part Number
	B	H	L	p			
6800 pF	3.0	8.0	10.0	7.5	275	220 E3	R66MD1680--7--
0.010 μF	3.0	8.0	10.0	7.5	275	220 E3	R66MD2100--7--
0.015 μF	3.0	8.0	10.0	7.5	275	220 E3	R66MD2150--7--
0.022 μF	3.0	8.0	10.0	7.5	275	220 E3	R66MD2220--6--
0.033 μF	4.0	9.0	10.0	7.5	275	220 E3	R66MD2330--7--
0.047 μF	4.0	9.0	10.0	7.5	275	220 E3	R66MD2470--7--
0.068 μF	5.0	10.5	10.0	7.5	275	220 E3	R66MD2680--7--
0.10 μF	6.0	12.0	10.5	7.5	275	220 E3	R66MD3100--6--
0.15 μF	6.0	12.0	10.5	7.5	275	220 E3	R66MD3150--6--

Mechanical version and packaging (Table1) _____
Internal use _____
Tolerance: J (±5%); K (±10%); M (±20%) _____

a) WOUND version

b) STACKED version

Rated Cap.	630Vdc/220Vac* Std dimensions				Max dv/dt (V/μs)	Max K ₀ (V ² /μs)	Part Number
	B	H	L	p			
a) 1000 pF	3.0	8.0	10.0	7.5	40	50 E3	R66PD1100--1--
a) 1500 pF	3.0	8.0	10.0	7.5	40	50 E3	R66PD1150--1--
a) 2200 pF	3.0	8.0	10.0	7.5	40	50 E3	R66PD1220--1--
a) 3300 pF	3.0	8.0	10.0	7.5	40	50 E3	R66PD1330--1--
a) 4700 pF	3.0	8.0	10.0	7.5	40	50 E3	R66PD1470--1--
a) 6800 pF	4.0	9.0	10.0	7.5	40	50 E3	R66PD1680--1--
b) 0.010 μF	4.0	9.0	10.0	7.5	300	378 E3	R66PD2100--7--
b) 0.015 μF	4.0	9.0	10.0	7.5	300	378 E3	R66PD2150--7--
b) 0.022 μF	5.0	10.5	10.0	7.5	300	378 E3	R66PD2220--7--
b) 0.033 μF	6.0	12.0	10.5	7.5	300	378 E3	R66PD2330--6--
b) 0.047 μF	6.0	12.0	10.5	7.5	300	378 E3	R66PD2470--6--

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.

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

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

$p = 7.5 \text{ mm}$

PRODUCT CODE: **R66**

ELECTRICAL CHARACTERISTICS

Rated voltage (V_R):

50 Vdc 63 Vdc 100 Vdc
250 Vdc 400 Vdc 630 Vdc

Rated temperature (T_R): +85°C

Temperature derated voltage:

for temperatures between +85°C and the upper operating temperature (+105°C for wound technology and +125°C for stacked technology) 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: 1000 pF to 4.7 μF

Capacitance values:

E6 series (IEC 60063 Norm).

Capacitance tolerances (measured at 1 kHz):

$\pm 5\%$ (J); $\pm 10\%$ (K); $\pm 20\%$ (M).

Total self-inductance (L): $\approx 8\text{nH}$

(lead length $\sim 2\text{mm}$)

Dissipation factor (DF):

$\text{tg}\delta 10^{-4}$ at +25°C $\pm 5^\circ\text{C}$

kHz	$\text{tg}\delta \times 10^{-4}$
1	≤ 100
10	≤ 150

Insulation resistance:

Test conditions

Temperature: +25°C $\pm 5^\circ\text{C}$
Voltage charge time: 1 min
Voltage charge: 50 Vdc for $V_R < 100 \text{ Vdc}$
100 Vdc for $V_R \geq 100 \text{ Vdc}$

Performance

For $V_R \leq 100 \text{ Vdc}$

$\geq 3750 \text{ M}\Omega$ for $C \leq 0.33\mu\text{F}$ (5000 $\text{M}\Omega$)*
 $\geq 1250 \text{ s}$ for $C > 0.33\mu\text{F}$ (5000 s)*

For $V_R > 100 \text{ Vdc}$

$\geq 30000 \text{ M}\Omega$ (50000 $\text{M}\Omega$)*

*Typical value

Test voltage between terminals:

$1.6 \times V_R$ applied for 2 s at +25°C $\pm 5^\circ\text{C}$

TEST METHOD AND PERFORMANCE

Damp heat, steady state:

Test conditions

Temperature: +40°C $\pm 2^\circ\text{C}$
Relative humidity (RH): 93% $\pm 2\%$
Test duration: 56 days

Performance

Capacitance change $|\Delta C/C|$: $\leq 5\%$
DF change ($\Delta \text{tg}\delta$): $\leq 50 \times 10^{-4}$ at 1kHz
Insulation resistance: $\geq 50\%$ of initial limit.

Endurance:

Test conditions

Temperature: +105°C $\pm 2^\circ\text{C}$
Test duration: 2000 h
Voltage applied: $1.25 \times V_C$

Performance

Capacitance change $|\Delta C/C|$: $\leq 5\%$
DF change ($\Delta \text{tg}\delta$): $\leq 50 \times 10^{-4}$ at 10kHz
Insulation resistance: $\geq 50\%$ of initial limit.

Resistance to soldering heat:

Test conditions

Solder bath temperature: +260°C $\pm 5^\circ\text{C}$
Dipping time (with heat screen): 10 s $\pm 1 \text{ s}$

Performance

Capacitance change $|\Delta C/C|$: $\leq 2\%$
DF change ($\Delta \text{tg}\delta$): $\leq 50 \times 10^{-4}$ at 10kHz
Insulation resistance: \geq initial limit.

Long term stability (after two years):

Storage

standard environmental conditions (see page 12).

Performance

Capacitance change $|\Delta C/C|$: $\leq 3\%$ for $C \leq 0.1\mu\text{F}$
 $\leq 2\%$ for $C > 0.1\mu\text{F}$

RELIABILITY

Reference MIL HDB 217

Application conditions:

Temperature: +40°C $\pm 2^\circ\text{C}$
Voltage: $0.5 \times V_R$
Failure rate: $\leq 2 \text{ FIT}$
(1 FIT = 1×10^{-9} failures/components h)

Failure criteria:

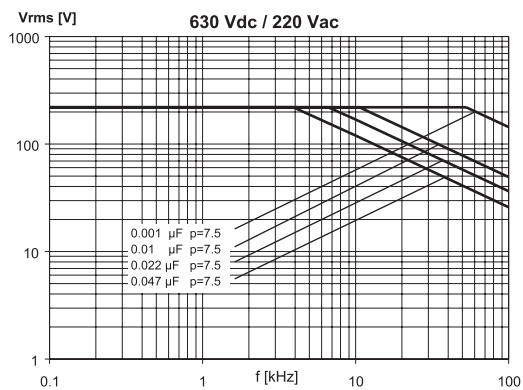
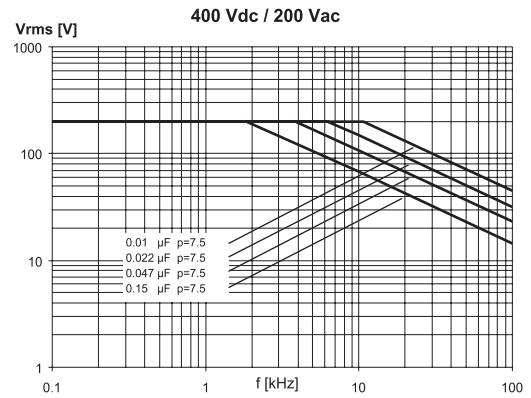
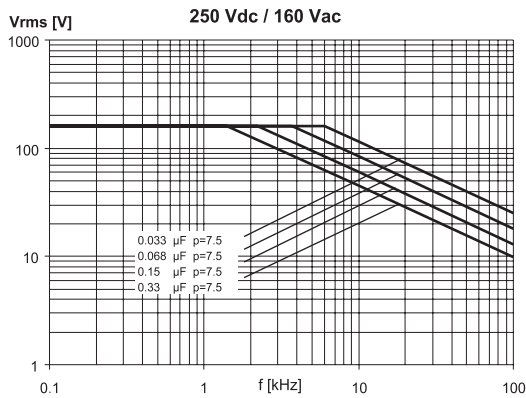
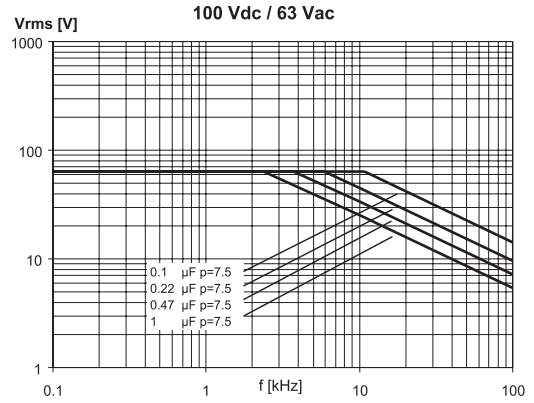
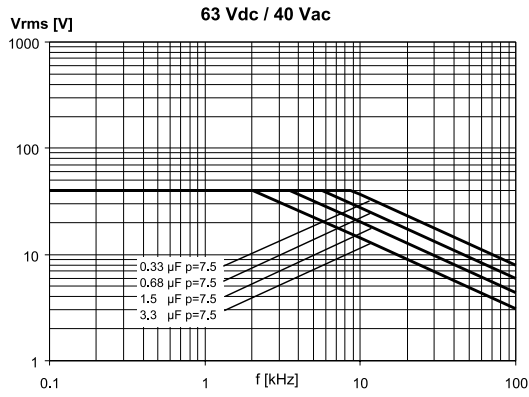
(according to DIN 44122)

Short or open circuit
Capacitance change $|\Delta C/C|$: $> 10\%$
DF change ($\Delta \text{tg}\delta$): $> 2 \times$ initial limit.
Insulation resistance: $< 0.005 \times$ initial limit.

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

p = 7.5 mm
PRODUCT CODE: R66

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



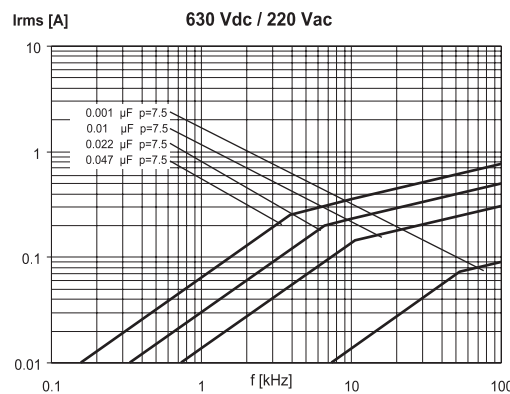
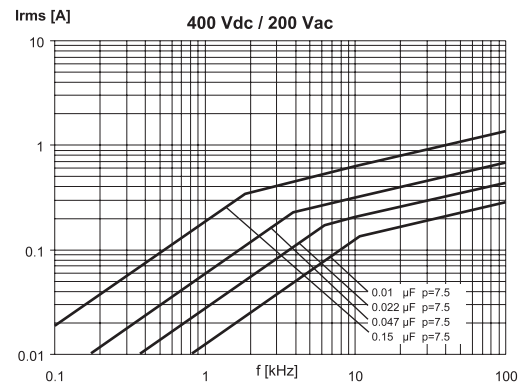
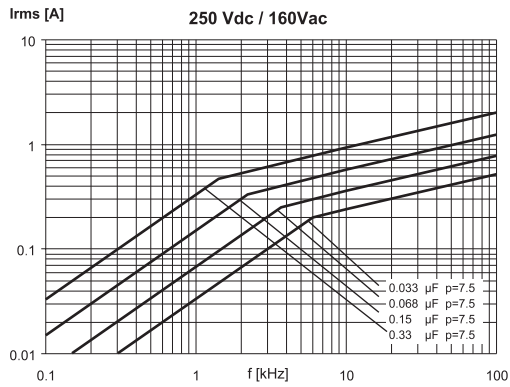
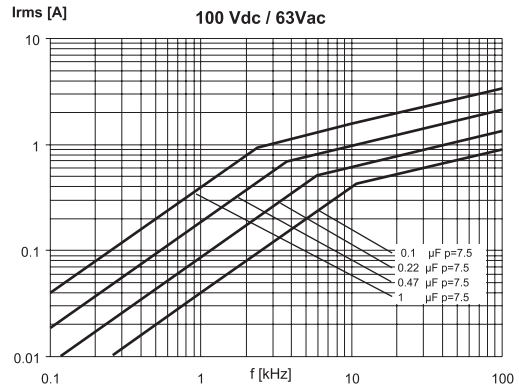
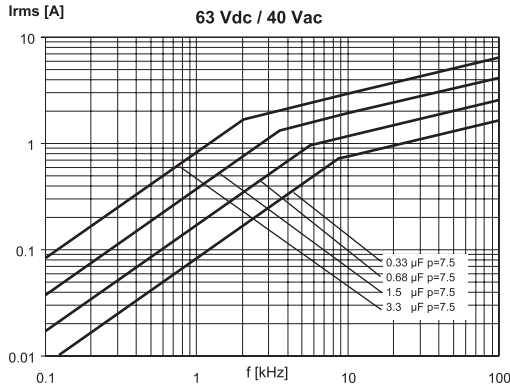
Note: p (pitch) in mm.

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

$p = 7.5 \text{ mm}$

PRODUCT CODE: **R66**

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



Note: p (pitch) in mm.