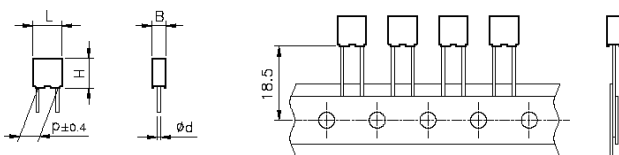


Loose

Taped



B max	2.5	≥ 3.5
∅ d ± 0.05	0.5	0.5 to 0.6

All dimensions are in mm.

METALLIZED POLYESTER FILM CAPACITOR HIGH PERFORMANCES - HIGH TEMPERATURE PULSE APPLICATIONS

STACKED VERSION

Typical applications: blocking, coupling, decoupling for a signal from DC to high frequency; pulse, logic and timing circuit, lamp capacitor for electronic compact lamps, inverter for LCD monitors, automotive DC motor suppression.

PRODUCT CODE: **RSB**

p = 5 mm

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	S	B										-	

Digit 1 to 3 Series code.

Digit 4 d.c. rated voltage:

C = 50V D = 63V E = 100V I = 250V

M = 400V W = 500V P = 630V

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

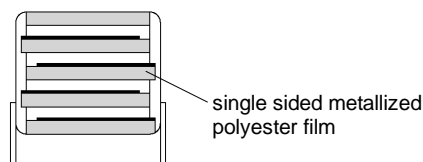
Marking : Manufacturer's logo, series (RSB), capacitance, tolerance, D.C. rated voltage.

Climatic category: 55/125/56 IEC 60068-1

Operating temperature range: -55 to +125°C

Related documents: IEC 60384-2

Winding scheme



single sided metallized polyester film

Table 1 (for more detailed information please refer to page 15).

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/-2	Z3

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

**METALLIZED POLYESTER FILM CAPACITOR
HIGH PERFORMANCES - HIGH TEMPERATURE
PULSE APPLICATIONS**

STACKED VERSION

p = 5 mm

PRODUCT CODE: RSB

Rated Cap.	50Vdc/30Vac				Max dv/dt (V/μs)	Max K ₀ (V ² /μs)	Part Number
	B	H	L	p			
2.2μF	6.0	11.0	7.2	5.0	200	20 E3	RSBCC4220--1--

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	250	31.5 E3	RSBDC3100--0--
0.15μF	2.5	6.5	7.2	5.0	250	31.5 E3	RSBDC3150--0--
0.22μF	2.5	6.5	7.2	5.0	250	31.5 E3	RSBDC3220--1--
0.33μF	3.5	7.5	7.2	5.0	250	31.5 E3	RSBDC3330--0--
0.47μF	3.5	7.5	7.2	5.0	250	31.5 E3	RSBDC3470--1--
0.68μF	4.5	9.5	7.2	5.0	250	31.5 E3	RSBDC3680--1--
1.0μF	5.0	10.0	7.2	5.0	250	31.5 E3	RSBDC4100--1--
1.5μF	6.0	11.0	7.2	5.0	250	31.5 E3	RSBDC4150--1--

Rated Cap.	100Vdc/63Vac				Max dv/dt (V/μs)	Max K ₀ (V ² /μs)	Part Number
	B	H	L	p			
4700pF	2.5	6.5	7.2	5.0	300	60 E3	RSBEC1470--0--
6800pF	2.5	6.5	7.2	5.0	300	60 E3	RSBEC1680--0--
0.010μF	2.5	6.5	7.2	5.0	300	60 E3	RSBEC2100--0--
0.015μF	2.5	6.5	7.2	5.0	300	60 E3	RSBEC2150--0--
0.022μF	2.5	6.5	7.2	5.0	300	60 E3	RSBEC2220--0--
0.033μF	2.5	6.5	7.2	5.0	300	60 E3	RSBEC2330--0--
0.047μF	2.5	6.5	7.2	5.0	300	60 E3	RSBEC2470--0--
0.068μF	2.5	6.5	7.2	5.0	300	60 E3	RSBEC2680--1--
0.10μF	3.5	7.5	7.2	5.0	300	60 E3	RSBEC3100--0--
0.15μF	4.5	9.5	7.2	5.0	300	60 E3	RSBEC3150--0--
0.22μF	5.0	10.0	7.2	5.0	300	60 E3	RSBEC3220--0--
0.33μF	6.0	11.0	7.2	5.0	300	60 E3	RSBEC3330--0--
0.47μF	6.0	11.0	7.2	5.0	300	60 E3	RSBEC3470--1--

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			
1000pF	2.5	6.5	7.2	5.0	400	20 E4	RSBIC1100--0--
1500pF	2.5	6.5	7.2	5.0	400	20 E4	RSBIC1150--0--
2200pF	2.5	6.5	7.2	5.0	400	20 E4	RSBIC1220--0--
3300pF	2.5	6.5	7.2	5.0	400	20 E4	RSBIC1330--0--
4700pF	2.5	6.5	7.2	5.0	400	20 E4	RSBIC1470--0--
6800pF	2.5	6.5	7.2	5.0	400	20 E4	RSBIC1680--0--
0.010μF	2.5	6.5	7.2	5.0	400	20 E4	RSBIC2100--0--
0.015μF	2.5	6.5	7.2	5.0	400	20 E4	RSBIC2150--0--
0.022μF	3.5	7.5	7.2	5.0	400	20 E4	RSBIC2220--0--
0.033μF	3.5	7.5	7.2	5.0	400	20 E4	RSBIC2330--0--
0.047μF	4.5	9.5	7.2	5.0	400	20 E4	RSBIC2470--0--
0.068μF	4.5	9.5	7.2	5.0	400	20 E4	RSBIC2680--0--
0.10μF	5.0	10.0	7.2	5.0	400	20 E4	RSBIC3100--0--
0.15μF	6.0	11.0	7.2	5.0	400	20 E4	RSBIC3150--0--

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	600	48 E4	RSBMC1100--0--
1500pF	2.5	6.5	7.2	5.0	600	48 E4	RSBMC1150--0--
2200pF	2.5	6.5	7.2	5.0	600	48 E4	RSBMC1220--0--
3300pF	2.5	6.5	7.2	5.0	600	48 E4	RSBMC1330--0--
4700pF	2.5	6.5	7.2	5.0	600	48 E4	RSBMC1470--0--
6800pF	3.5	7.5	7.2	5.0	600	48 E4	RSBMC1680--0--
0.010μF	3.5	7.5	7.2	5.0	600	48 E4	RSBMC2100--0--
0.015μF	3.5	7.5	7.2	5.0	600	48 E4	RSBMC2150--0--
0.022μF	4.5	9.5	7.2	5.0	600	48 E4	RSBMC2220--0--
0.033μF	5.0	10.0	7.2	5.0	600	48 E4	RSBMC2330--0--
0.047μF	6.0	11.0	7.2	5.0	600	48 E4	RSBMC2470--0--

Rated Cap.	500Vdc/220Vac*				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	700	70 E4	RSBWC1100--0--
1500pF	2.5	6.5	7.2	5.0	700	70 E4	RSBWC1150--0--
2200pF	3.5	7.5	7.2	5.0	700	70 E4	RSBWC1220--0--
3300pF	3.5	7.5	7.2	5.0	700	70 E4	RSBWC1330--0--
4700pF	3.5	7.5	7.2	5.0	700	70 E4	RSBWC1470--0--
6800pF	4.5	9.5	7.2	5.0	700	70 E4	RSBWC1680--0--
0.010μF	5.0	10.0	7.2	5.0	700	70 E4	RSBWC2100--0--
0.015μF	6.0	11.0	7.2	5.0	700	70 E4	RSBWC2150--0--

Rated Cap.	630Vdc/220Vac*				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	800	100 E4	RSBPC1100--0--
1500pF	3.5	7.5	7.2	5.0	800	100 E4	RSBPC1150--0--
2200pF	3.5	7.5	7.2	5.0	800	100 E4	RSBPC1220--0--
3300pF	4.5	9.5	7.2	5.0	800	100 E4	RSBPC1330--0--
4700pF	4.5	9.5	7.2	5.0	800	100 E4	RSBPC1470--0--
6800pF	5.0	10.0	7.2	5.0	800	100 E4	RSBPC1680--0--
0.010μF	6.0	11.0	7.2	5.0	800	100 E4	RSBPC2100--0--

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

All dimensions are in mm.

Note1: 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: The rated voltages from 250Vdc to 630Vdc are for pulse applications (i.e.: lamp capacitors).

*Not suitable for across-the-line applications. Please refer to Interference Suppression Capacitors (page 109).

**METALLIZED POLYESTER FILM CAPACITOR
HIGH PERFORMANCES - HIGH TEMPERATURE
PULSE APPLICATIONS**

STACKED VERSION

p = 5 mm
PRODUCT CODE: RSB

ELECTRICAL CHARACTERISTICS

Rated voltage (V_R): 50Vdc - 63 Vdc - 100 Vdc -
250 Vdc - 400 Vdc - 500 Vdc -
630 Vdc

Rated temperature (T_R): +85°C

Temperature derated voltage:

for temperatures between +85°C and +125°C a decreasing factor of 1.25% per degree °C on the rated voltage V_R has to be applied.

Capacitance range: 1000pF to 2.2µF

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 ≥ 100 Vdc

Performance

For V_R ≤ 100Vdc

≥ 15000MΩ for C ≤ 0.33µF

≥ 5000 s for C > 0.33µF and ≤ 1µF

≥ 1000 s for C > 1µF

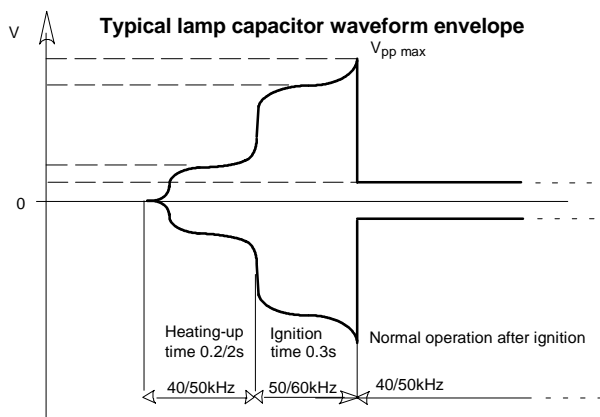
For V_R > 100 Vdc

≥ 30000MΩ

Test voltage between terminations:

1.6 × V_R applied for 2 s at +25°C ± 5°C.

**Electrical characteristics for use as lamp capacitors
in lighting applications.**



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: +125°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 11).

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)

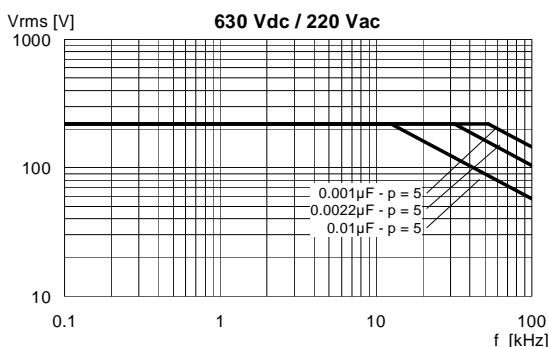
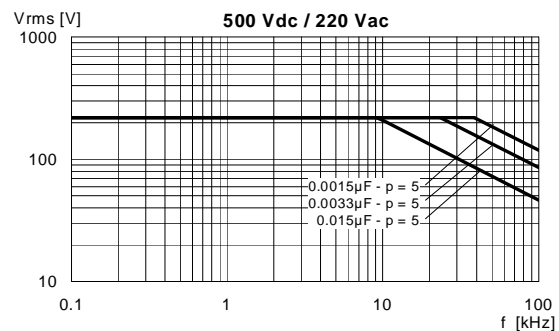
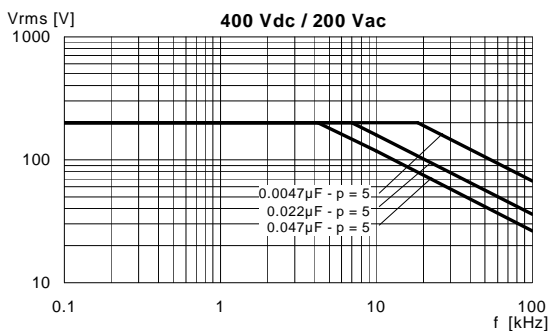
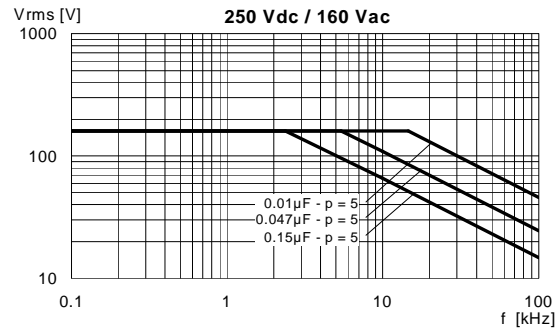
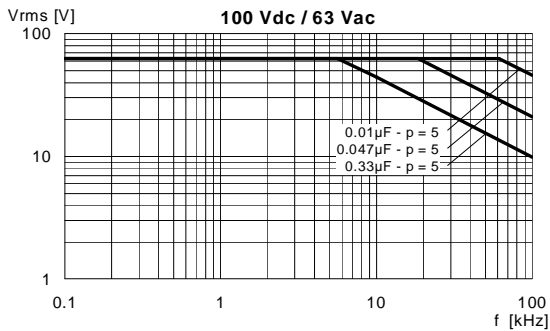
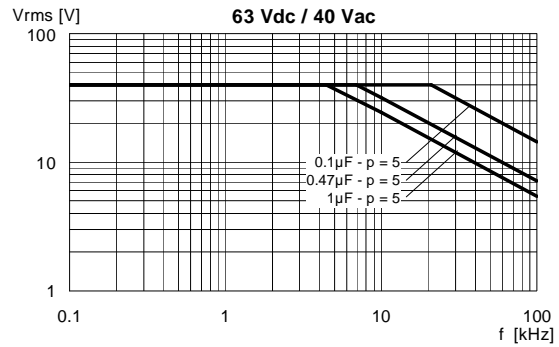
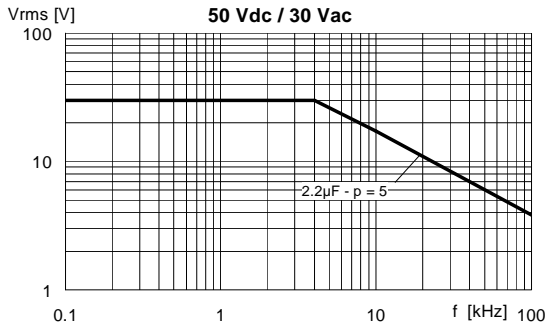
Short or open circuit

Capacitance change |ΔC/C|: > 10%

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

Insulation resistance: < 0.005 × initial limit.

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



Note: p (pitch) in mm.