RSB Series, 5 – 37.5 mm Lead Spacing, 50 – 630 VDC



Overview

The RSB Series is constructed of metallized stacked polyester film capacitor with radial leads of tinned wire. Radial leads are electrically welded to the contact metal layer on the ends of the capacitor winding. The capacitor is encapsulated in a selfextinguishing material meeting the requirements of UL 94 V–0.

Applications

Typical applications include high performance, high temperature blocking, coupling, decoupling, bypassing and interference suppression in low voltage applications such as automotive. Not for use with the mains.

Benefits

- Voltage range: 50 630 VDC
- Capacitance range: 0.001 2.2 µF
- Lead spacing: 5 37.5 mm
- Capacitance tolerance: ±20%, ±10% standard, ±5% on request

- Climatic category: 55/125/56
- Tape and reel packaging in accordance with IEC 60286-2
- RoHS Compliant and lead-free terminations
- Operating temperature range of -55°C to +125°C
- Designed for high performance, high temperature applications

Ordering Information

RSB	D	С	3100	AA	00	J
Series	Rated Voltage (VDC)	Lead Spacing (mm)	Capacitance Code (pF)	Lead and Packaging Code	Internal Use	Capacitance Tolerance
Metallized Polyester	C = 50 D = 63 E = 100 I = 250 M = 400 W = 500 P = 630	C = 5.0	Digits 2-4 indicate the first three digits of the capacitance value. First digit indicates the number of zeros to be added.	See Ordering Options Table	00,10 (Standard)	J = ±5% K = ±10% M = ±20%

Ordering Options Table

Lead Spacing Nominal (mm)	Type of Leads and Packaging	Lead Length (mm)	Lead and Packaging Code
	Standard Lead and Packaging Options		
	Bulk (Bag)–Short Leads	4 +1.5/-0	SE
5	Ammo Pack	H ₀ = 18.5 +/-0.5	DQ
5	Other Lead and Packaging Options		
	Bulk (Bag)–Long Leads	17 +2/-1	Z3
	Tape & Reel (Large Reel)	H ₀ = 18.5 +/-0.5	СК



Dimensions – Millimeters



F	p		В	Н		H L		d	
Nominal	Tolerance	Nominal	Tolerance	Nominal	Tolerance	Nominal	Tolerance	Nominal	Tolerance
5.0	+/-0.4	2.5	Maximum	6.5	Maximum	7.2	Maximum	0.6	+/-0.05
5.0	+/-0.4	3.5	Maximum	7.5	Maximum	7.2	Maximum	0.6	+/-0.05
5.0	+/-0.4	4.5	Maximum	9.5	Maximum	7.2	Maximum	0.6	+/-0.05
5.0	+/-0.4	5.0	Maximum	10.0	Maximum	7.2	Maximum	0.6	+/-0.05
5.0	+/-0.4	6.0	Maximum	11.0	Maximum	7.2	Maximum	0.6	+/-0.05
	Note: See Ordering Options Table for lead length (LL) options.								



Performance Characteristics

Capacitance Tolerance	±20%, ±10%, ±5% on request					
Category Temperature Range	-55°C to 125°C	-55°C to 125°C				
Voltage Derating	Above +85°C DC and AC v	oltage derating is 1.25%/°C				
Rated Temperature	+85°C					
	–55 to +125°C					
Olimatia Catagory	Average relative humidity ≤	≤ 75%				
Climatic Category	RH = 95% for 30 days per	year				
	RH = 85% for further days	limited by average value per y	<i>'ear</i>			
Test Voltage	1.6 x V _R VDC for 2 seconds	3				
Capacitance Drift	Maximum 3% after a 2 year	storage period at a temperatur	e of +10°C to +40°C and a rela	tive humidity of 40% to 60%		
	Operational life > 200,000	hours				
Reliability	Failure rate < 3 FIT, T = +40°C, V = $0.5 \times V_R$					
	Failure criteria: open circuit, short circuit, cap change > 10%, DF 2 times the catalog limits, IR < 50 M Ω					
Maximum Pulse Steepness	dV/dt according to Table 1. be multiplied by the factor V	dV/dt according to Table 1. For peak to peak voltages lower than rated voltage (Vpp < V_R), the specified dV/dt can be multiplied by the factor V_R /Vpp.				
Temperature Coefficient	+400 (±200) ppm/°C at 1 k	Hz				
Self Inductance	Approximately 6 nH/cm for	the total length of capacitor w	rinding and the leads			
		Maximum Va	lues at +23°C			
		C ≤ 0.1 µF	0.1 µF < C ≤ 1.0 µF	C > 1.0 µF		
Dissipation Factor tanδ	1 kHz	0.8%	0.8%	0.8%		
	10 kHz	1.2%	1.2%	1.5%		
	100 kHz	2.5%				
	Measured at +20°C, according to IEC 60384–2					
		Minimum Values E	Between Terminals			
Insulation Resistance		C ≤ 0.33 µF	C > 0.33 μF and < 1 μF	C > 1.0 µF		
	V _R ≤ 100 VDC	15,000 MΩ	5,000 MΩ • μF	1,000 MΩ • μF		
	V _R > 100 VDC	30,000 MΩ	10,000 MΩ • μF			



Maximum Voltage (Vrms) vs. Frequency (Sinusoidal Waveform/Th \leq 40°C)

Lead Spacing 5 mm



0.001 μF 0.0022 μF

f [kHz]

10

0.01 µF

10

1

0 1



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100



Maximum Current (Irms) vs. Frequency (Sinusoidal Waveform/Th \leq 40°C)

Lead Spacing 5 mm







Imms [A] 630 Vdc / 220 Vac

f [kHz]

10

0.01

0.1







Irms [A] 500 Vdc / 220 Vac



100



Environmental Test Data

Damp Heat Test	Test Conditions	T = +40°C, RH = 93%, t = 56 days
	Test Criteria	Δ C/C ≤ ±5%, Δ tanδ ≤ 0.005 (1 kHz) IR after test 0.5 x IR min.
Endurance Test	Test Conditions	T = +100°C, U = 1.25 x (0.8 x U _R)
	Test Criteria	t = 2,000 hours $\Delta C/C \le \pm 5\%$, $\Delta \tan \delta \le 0.005$ (1 kHz) $\Delta \tan \delta \le 0.010$ (100 kHz) IR after test 0.5 x IR min.

Environmental Compliance

All KEMET MKTI capacitors are RoHS Compliant.





Table 1 – Ratings & Part Number Reference

Lead	Capacitance	В	Н	L			dV/dt	E Antiple Carls	Deut Neurshau
Spacing	Value (µF)	(mm)	(mm)	(mm)	VDC	VAC	(V/µsec)	F Article Code	Part Number
5.0	2.2	6.0	11.0	7.2	50	30	200	SBCC4220AA10M	RSBCC4220AA10M
5.0	0.10	2.5	6.5	7.2	63	40	250	SBDC3100AA00M	RSBDC3100AA00M
5.0	0.15	2.5	6.5	7.2	63	40	250	SBDC3150AA00M	RSBDC3150AA00M
5.0	0.22	2.5	6.5	7.2	63	40	250	SBDC3220AA10M	RSBDC3220AA10M
5.0	0.33	3.5	7.5	7.2	63	40	250	SBDC3330AA00M	RSBDC3330AA00M
5.0	0.47	3.5	7.5	7.2	63	40	250	SBDC3470AA10M	RSBDC3470AA10M
5.0	0.68	4.5	9.5	7.2	63	40	250	SBDC3680AA10M	RSBDC3680AA10M
5.0	1.0	5.0	10.0	7.2	63	40	250	SBDC4100AA10M	RSBDC4100AA10M
5.0	0.0047	2.5	65	7.2	100	40 63	200	SBEC1/70AA00M	RSBEC1/70AA00M
5.0	0.0068	2.5	6.5	7.2	100	63	300	SBEC1680AA00M	RSBEC1680AA00M
5.0	0.010	2.5	6.5	7.2	100	63	300	SBEC2100AA00M	RSBEC2100AA00M
5.0	0.015	2.5	6.5	7.2	100	63	300	SBEC2150AA00M	RSBEC2150AA00M
5.0	0.022	2.5	6.5	7.2	100	63	300	SBEC2220AA00M	RSBEC2220AA00M
5.0	0.033	2.5	6.5	7.2	100	63	300	SBEC2330AA00M	RSBEC2330AA00M
5.0	0.047	2.5	6.5	7.2	100	63	300	SBEC2470AA00M	RSBEC2470AA00M
5.0	0.068	2.5	6.5	7.2	100	63	300	SBEC2680AA10M	RSBEC2680AA10M
5.0	0.10	3.5	7.5	7.2	100	63	300	SBEC3100AA00M	RSBEC3100AA00M
5.0	0.15	4.5	9.5	7.2	100	63	300	SBEC3150AA00M	RSBEC3150AA00M
5.0	0.22	5.0	10.0	7.2	100	63	300	SBEC3220AA00M	RSBEC3220AA00M
5.0	0.33	6.0	11.0	7.2	100	63	300	SBEC3330AAUUW SBEC3470AA10M	
5.0	0.47	2.5	65	7.2	250	160	400	SBIC1100AA00M	RSBIC1100AA00M
5.0	0.0015	2.5	6.5	72	250	160	400	SBIC1150AA00M	RSBIC1150AA00M
5.0	0.0022	2.5	6.5	7.2	250	160	400	SBIC1220AA00M	RSBIC1220AA00M
5.0	0.0033	2.5	6.5	7.2	250	160	400	SBIC1330AA00M	RSBIC1330AA00M
5.0	0.0047	2.5	6.5	7.2	250	160	400	SBIC1470AA00M	RSBIC1470AA00M
5.0	0.0068	2.5	6.5	7.2	250	160	400	SBIC1680AA00M	RSBIC1680AA00M
5.0	0.010	2.5	6.5	7.2	250	160	400	SBIC2100AA00M	RSBIC2100AA00M
5.0	0.015	2.5	6.5	7.2	250	160	400	SBIC2150AA00M	RSBIC2150AA00M
5.0	0.022	3.5	7.5	7.2	250	160	400	SBIC2220AA00M	RSBIC2220AA00M
5.0	0.033	3.5	1.5	7.2	250	160	400	SBIC2330AA00M	RSBIC2330AA00M
5.0	0.047	4.5	9.5	7.2	250	160	400	SBIC24/UAAUUW SBIC2680AA00M	RSBIC24/UAAUUM
5.0	0.000	5.0	10.0	72	250	160	400	SBIC3100AA00M	RSBIC3100AA00M
5.0	0.15	6.0	11.0	72	250	160	400	SBIC3150AA00M	RSBIC3150AA00M
5.0	0.001	2.5	6.5	7.2	400	200	600	SBMC1100AA00M	RSBMC1100AA00M
5.0	0.0015	2.5	6.5	7.2	400	200	600	SBMC1150AA00M	RSBMC1150AA00M
5.0	0.0022	2.5	6.5	7.2	400	200	600	SBMC1220AA00M	RSBMC1220AA00M
5.0	0.0033	2.5	6.5	7.2	400	200	600	SBMC1330AA00M	RSBMC1330AA00M
5.0	0.0047	2.5	6.5	7.2	400	200	600	SBMC1470AA00M	RSBMC1470AA00M
5.0	0.0068	3.5	7.5	7.2	400	200	600	SBMC1680AA00M	RSBMC1680AA00M
5.0	0.010	3.5	7.5	7.2	400	200	600	SBMC2100AA00M	RSBMC2100AA00M
5.0	0.015	3.5	1.5	7.2	400	200	600	SBMC2150AA00M	RSBMC2150AA00M
5.0	0.022	4.0	9.5	7.2	400	200	600	SBINC2220AA00M	RSBMC2220AA00M
5.0	0.033	6.0	11.0	7.2	400	200	600	SBMC2330AA00W	RSBMC24704 A00M
5.0	0.001	2.5	6.5	7.2	500	220	700	SBWC1100AA00M	RSBWC1100AA00M
5.0	0.0015	2.5	6.5	7.2	500	220	700	SBWC1150AA00M	RSBWC1150AA00M
5.0	0.0022	3.5	7.5	7.2	500	220	700	SBWC1220AA00M	RSBWC1220AA00M
5.0	0.0033	3.5	7.5	7.2	500	220	700	SBWC1330AA00M	RSBWC1330AA00M
5.0	0.0047	3.5	7.5	7.2	500	220	700	SBWC1470AA00M	RSBWC1470AA00M
5.0	0.0068	4.5	9.5	7.2	500	220	700	SBWC1680AA00M	RSBWC1680AA00M
5.0	0.010	5.0	10.0	7.2	500	220	700	SBWC2100AA00M	RSBWC2100AA00M
5.0	0.015	6.0	11.0	7.2	500	220	700	SBWC2150AA00M	RSBWC2150AA00M
5.0	0.001	2.5	6.5	7.2	630	220	800	SBPC1100AA00M	RSBPC1100AA00M
5.0	0.0015	3.5 2 F	1.5	1.2	630	220	800	SBPC1150AA00M	RSBPUT150AA00M
5.0	0.0022	3.5	1.5	7.2	630	220	800	SBPC122UAAUUM SBPC1330AA00M	RSBPC1220AAUUM
5.0	0.0033	4.5	9.5	72	630	220	800	SBPC1470A A00M	RSBPC1470A A00M
5.0	0.0068	5.0	10.0	7.2	630	220	800	SBPC1680AA00M	RSBPC1680AA00M
5.0	0.010	6.0	11.0	7.2	630	220	800	SBPC2100AA00M	RSBPC2100AA00M
	Canacitanco						dV/dt		
Lead Spacing	Value (µF)	B (mm)	H (mm)	L (mm)	VDC	VAC	(V/µsec)	F Article Code	Part Number

Soldering Process

Film Through-Hole Capacitors

The implementation of the RoHS Directive has required the selection SnAuCu (SAC) alloys or SnCu alloys as primary solder. This has increased the liquidus temperature from that of 183° C for SnPb eutectic alloy to 217° C – 221° C for the new alloys. As a result, the heat stress to components, even in wave soldering, has increased considerably due to higher pre-heat and wave temperatures. Wave soldering can be destructive especially for mechanically small polypropylene capacitors and great care must be taken during soldering. The solder profiles from KEMET are highly recommended. You may also refer to the wave soldering curve from IEC Publication 61760–1 Edition 2. Please consult KEMET with any questions.

General Purpose Metallized Polyester Film Capacitors - RSB Series, 5 - 37.5 mm Lead Spacing, 50 - 630 VDC



Marking

- · Manufacturer's logo
- Article series
- · Rated capacitance
- · Capacitance tolerance
- Rated voltage
- · Manufacturing date code
- IEC climatic category
- · Passive flammability class
- · Manufacturing date code

Packaging Quantities

Lead Spacing	Thickness	Height	Length	Bulk Short Leads	Bulk Long Leads	Standard Reel 355 mm	Ammo
	2.5	6.5	7.2	3000	4000	2500	3500
	3.5	7.5	7.2	2000	3000	1800	2500
5	4.5	9.5	7.2	1500	2000	1400	1900
5	5	10	7.2	1000	1500	1200	1700
	6	11	7.2	2000	1000	1000	1400
	7.2	13	7.2	1500	750	800	1150



Lead Taping & Packaging (IEC 60286–2)

Figure 1 – Lead Space 5 & 7.5 mm



Figure 2 – Lead Space 7.5 mm



Packaging Option 1 – Ammo Pack Lead Space 5 & 7.5 mm



*Lower dimension available upon request (max. 295 mm).

Packaging Option 2 – Reel ø 355 mm Lead Space 5 & 7.5 mm



Dimensions

		Dimensions (mm)				
Description	Symbol	L	е			
Decomption	Cymbol	5	7.5	7.5	Tol.	
		Fig. 1	Fig. 1	Fig. 2		
Lead wire diameter	d	0.5–0.6	0.5–0.6	0.5-0.6	±0.05	
Taping lead space	Р	12.7	12.7	12.7	±1	
Feed hole lead space	Po	12.7	12.7	12.7	±0.2*	
Centering of the lead wire	P ₁	3.85	2.6	3.75	±0.7	
Centering of the body	P ₂	6.35	6.35		±1.3	
Lead spacing	F	5	7.5	7.5	+0.6 -0.1	
Component alignment	Δh	0	0	0	±2	
Height of component from tape center	H**	18.5	18.5	18.5	±0.5	
Carrier tape width	W	18	18	18	+1 -0.5	
Hold down tape width	W _o	6	6	6	min.	
Hole position	W ₁	9	9	9	±0.5	
Hold down tape position	W ₂	3	3	3	max.	
Feed hole diameter	D ₀	4	4	4	±0.2	
Tape thickness	t	0.7	0.7	0.7	±0.2	

*Max 1 mm on 20 lead spaces.

**H = 16.5 mm is available upon request.

For orders of capacitors with lead space = 7.5 mm, please specify the requested version (Figure 1 or Figure 2).

Number of Pieces per Packing Unit

Dime	nsions	(mm)	Lead	Lo	ose	Ammo	Reel
В	Н	L	Space (p)	*Short Leads (Pieces)	**Long Leads (Pieces)	(Pieces)	Ø 355 mm (Pieces)
2.5	6.5	7.2	5.0	3000	4000	3500	2500
3.5	7.5	7.2	5.0	2000	3000	2500	1800
4.5	9.5	7.2	5.0	1500	2000	1900	1400
5.0	10.0	7.2	5.0	1000	1500	1700	1200
6.0	11.0	7.2	5.0	2000	1000	1400	1000
7.2	13.0	7.2	5.0	1500	750	1150	800
3.0	8.0	10.0	7.5	1500	1750	2800	2100
4.0	9.0	10.0	7.5	2000	1500	2100	1500
5.0	10.5	10.0	7.5	1500	1000	1600	1200
6.0	12.0	10.5	7.5	1000	800	1350	1000

*Short leads, lead length = 04 + 1.5 mm (lead space = 5 mm); 4 + 2 mm (lead space = 7.5 mm).

**Long leads, lead length = 17 + 1/-2 mm.



Lead Taping & Packaging (IEC 60286-2) cont'd

Figure 3 – Lead Space 10 mm



Figure 4 – Lead Space 15 mm



Figure 5 – Lead Space 22.5 & 27.5 mm



Dimensions

		Dimensions (mm)					
Description	Symbol						
Description	Oymbol	10	15	22.5	27.5	Tol.	
		Fig. 3	Fig. 4	Fig. 5	Fig. 5		
Lead wire diameter	d	0.6	0.6/0.8	0.8	0.8	±0.05	
Taping lead space	Р	25.4	25.4	38.1	38.1	±1	
Feed hole lead space*	P ₀	12.7	12.7	12.7	12.7	±0.2**	
Centering of the lead wire	P ₁	7.7	5.2	7.8	5.3	±0.7	
Centering of the body	P ₂	12.7	12.7	19.05	19.05	±1.3	
Lead spacing***	F	10	15	22.5	27.5	+ 0.6 - 0.1	
Component alignment	Δh	0	0	0	0	±2	
Height of component from tape center	H****	18.5	18.5	18.5	18.5	±0.5	
Carrier tape width	W	18	18	18	18	+1 -0. 5	
Hold down tape width	W _o	9	10	10	10	min.	
Hole position	W ₁	9	9	9	9	±0.5	
Hold down tape position	W ₂	3	3	3	3	max.	
Feed hole diameter	D ₀	4	4	4	4	±0.2	
Tape thickness	t	0.7	0.7	0.7	0.7	±0.2	

*Available also 15 mm.

**Max 1 mm on 20 lead spaces.

***Lead spaces 15 mm and 10 mm taped to 7.5 mm (crimped leads) available upon request.

****H = 16.5 mm is available upon request.



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Kamen, Germany Tel: 49-2307-438110

Northern Europe Bishop's Stortford, United Kingdom Tel: 44-1279-460122

Espoo, Finland Tel: 358-9-5406-5000

Asia

Northeast Asia Hong Kong Tel: 852-2305-1168

Shenzhen, China Tel: 86-755-2518-1306

Beijing, China Tel: 86-10-5829-1711

Shanghai, China Tel: 86-21-6447-0707

Taipei, Taiwan Tel: 886-2-27528585

Southeast Asia Singapore Tel: 65-6586-1900

Penang, Malaysia Tel: 60-4-6430200

Bangalore, India Tel: 91-806-53-76817

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Other KEMET Resources

Tools					
Resource	Location				
Configure A Part: CapEdge	http://capacitoredge.kemet.com				
SPICE & FIT Software	http://www.kemet.com/spice				
Search Our FAQs: KnowledgeEdge	http://www.kemet.com/keask				
Electrolytic LifeCalculator	http://www.kemet.com:8080/elc				

Product Information				
Resource	Location			
Products	http://www.kemet.com/products			
Technical Resources (Including Soldering Techniques)	http://www.kemet.com/technicalpapers			
RoHS Statement	http://www.kemet.com/rohs			
Quality Documents	http://www.kemet.com/qualitydocuments			

Product Request	
Resource	Location
Sample Request	http://www.kemet.com/sample
Engineering Kit Request	http://www.kemet.com/kits

Contact	
Resource	Location
Website	www.kemet.com
Contact Us	http://www.kemet.com/contact
Investor Relations	http://www.kemet.com/ir
Call Us	1-877-MyKEMET
Twitter	http://twitter.com/kemetcapacitors

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Although all product-related warnings, cautions and notes must be observed, the customer should not assume that all safety measures are indicted or that other measures may not be required.

