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Contact us

Tel: +86-755-8981 8866 Fax: +86-755-8427 6832

Email & Skype: info@chipsmall.com Web: www.chipsmall.com

Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China





Aluminum electrolytic capacitors

Single-ended capacitors

Series/Type: B41821, B43821

The following products presented in this data sheet are being withdrawn.

Ordering Code	Substitute Product	Date of Withdrawal	Deadline Last Orders	Last Shipments
see following page		2013-10-18	2014-01-18	2014-04-18

For further information please contact your nearest EPCOS sales office, which will also support you in selecting a suitable substitute. The addresses of our worldwide sales network are presented at www.epcos.com/sales.

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General-purpose grade capacitors

Applications

- General-purpose applications in the entertainment industry
- Semi-professional to professional application range
- For filtering, coupling and pulse circuits

Features

- Compact dimensions
- High CV product, i.e. very compact
- RoHS-compatible

Construction

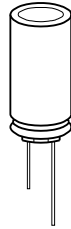
- Radial leads
- Charge-discharge proof, polar
- Aluminum case with insulating sleeve
- Minus pole marking on the insulating sleeve
- Case with safety vent from diameter 6.3 mm

Delivery mode

Terminal configurations and packing:

- Bulk
- Taped, Ammo pack
- Cut
- Kinked
- PAPR (protection against polarity reversal):
crimped leads, J leads, bent leads

Refer to chapter "Single-ended capacitors – Taping, packing and lead configurations" for further details.




Specifications and characteristics in brief

Series	B41821		B43821							
Rated voltage V_R	6.3 ... 100 V DC		160 ... 450 V DC							
Surge voltage V_S	1.15 · V_R		1.1 · V_R							
Rated capacitance C_R	0.1 ... 10000 μ F		0.47 ... 680 μ F							
Capacitance tolerance	$\pm 20\% \triangleq M$		$\pm 20\% \triangleq M$							
Dissipation factor $\tan \delta$ (20 °C, 120 Hz)	For capacitance higher than 1000 μ F add 0.02 for every increase of 1000 μ F.									
	V_R (V DC)	6.3	10	16	25	35	50	63	100	160 ... 450
	$\tan \delta$ (max.)	0.28	0.24	0.20	0.16	0.14	0.12	0.12	0.10	0.20
Leakage current I_{leak} (20 °C, 5 min)	$I_{leak} = 0.01 \mu A \cdot \left(\frac{C_R}{\mu F} \cdot \frac{V_R}{V} \right)$ or 3 μA , whichever is greater				$I_{leak} = 0.03 \mu A \cdot \left(\frac{C_R}{\mu F} \cdot \frac{V_R}{V} \right) + 15 \mu A$					
Self-inductance ESL	Diameter (mm)	≤ 6.3	8 ... 12.5		16		18		20 ... 25	
	ESL (nH)	15	20		26		34		40	
Useful life 85 °C; V_R ; $I_{AC,R}$ 40 °C; V_R ; 1.3 · $I_{AC,R}$ 40 °C; V_R ; 1.6 · $I_{AC,R}$	> 2000 h				> 3000 h					
	> 100000 h				–					
	–				> 100000 h					
Requirements	$\Delta C/C \leq \pm 45\%$ of initial value									
	$\tan \delta \leq 3$ times initial specified limit									
	$I_{leak} \leq$ initial specified limit									
Voltage endurance test 85 °C; V_R	2000 h				2000 h					
	Post test requirements									
Vibration resistance test	$\Delta C/C \leq \pm 30\%$ of initial value									
	$\tan \delta \leq 2$ times initial specified limit									
	$I_{leak} \leq$ initial specified limit									
IEC climatic category	To IEC 60068-2-6, test Fc: Frequency range 10 Hz ... 2 kHz, displacement amplitude 1.5 mm, acceleration max. 20 g, duration 3 × 2 h. Capacitor rigidly clamped by the aluminum case.									
	To IEC 60068-1: $V_R \leq 250$ V: 40/085/56 (–40 °C/+85 °C/56 days damp heat test) $V_R \geq 350$ V: 25/085/56 (–25 °C/+85 °C/56 days damp heat test)									
	Sectional specification									
IEC 60384-4										



B41821, B43821

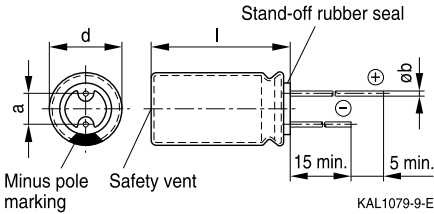
Standard series – 85 °C

Dimensional drawings

With stand-off rubber seal

Diameters (mm):

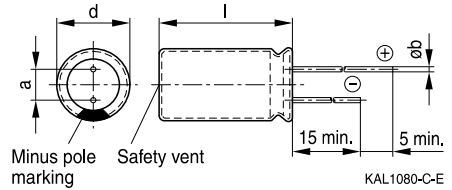
6.3, 10, 12.5, 16, 18, 22, 25



With flat rubber seal

Diameters (mm):

5, 8, 20



Safety vent for diameter ≥ 6.3 mm.

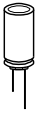
Dimensions and weights

Dimensions (mm)				Approx. weight
d +0.5	l	a ± 0.5	b	g
5	11 +1.0	2.0	0.50 ± 0.05	0.5
6.3	11 +1.0	2.5	0.50 ± 0.05	0.7
8	11.5 +1.5	3.5	0.60 ± 0.05	1.0
10	12.5 +1.0	5.0	0.60 ± 0.05	1.6
10	16 +1.0	5.0	0.60 ± 0.05	1.9
10	20 +2.0	5.0	0.60 ± 0.05	2.6
12.5	20 +2.0	5.0	0.60 ± 0.05	3.6
12.5	25 +2.0	5.0	0.60 ± 0.05	4.5
16	20 +2.0	7.5	0.80 ± 0.05	5.5
16	25 +2.0	7.5	0.80 ± 0.05	7.5
16	31.5 +2.0	7.5	0.80 ± 0.05	7.8
18	31.5 +2.0	7.5	0.80 ± 0.1	11.0
18	35 +2.0	7.5	0.80 ± 0.1	13.0
18	40 +2.0	7.5	0.80 ± 0.1	16.0
20	30 +2.0	10.0	1.0 ± 0.1	14.0
20	35 +2.0	10.0	1.0 ± 0.1	18.0
20	40 +2.0	10.0	1.0 ± 0.1	20.0
22	40 +2.0	10.0	1.0 ± 0.1	23.0
25	40 +2.0	12.5	1.0 ± 0.1	25.0


Overview of available types – B41821

Other voltage and capacitance ratings are available upon request.

V_R (V DC)	6.3	10	16	25	35
	Case dimensions $d \times l$ (mm)				
C_R (μ F)					
33					5 × 11
47				5 × 11	5 × 11
68				5 × 11	6.3 × 11
100		5 × 11	5 × 11	6.3 × 11	6.3 × 11
220		6.3 × 11	6.3 × 11	8 × 11.5	8 × 11.5
330	6.3 × 11	8 × 11.5	8 × 11.5	8 × 11.5 10 × 12.5	10 × 12.5
470	8 × 11.5	8 × 11.5	8 × 11.5	10 × 12.5	10 × 16
680	8 × 11.5	10 × 12.5	10 × 12.5	10 × 16	10 × 20
1000	10 × 12.5	10 × 12.5	10 × 16	10 × 20	12.5 × 20
1500	10 × 16	10 × 20	10 × 20	12.5 × 20	16 × 20
2200	10 × 20	10 × 20	12.5 × 20	12.5 × 25	16 × 25
3300	10 × 20	12.5 × 25	12.5 × 25 16 × 25	16 × 25	16 × 31.5
4700	12.5 × 25	16 × 20	16 × 25	16 × 31.5	18 × 35
6800		16 × 25	16 × 31.5	18 × 35	18 × 40
10000		18 × 31.5	18 × 35	20 × 40	


B41821
Standard series – 85 °C

V_R (V DC)	50	63	100
	Case dimensions $d \times l$ (mm)		
C_R (μ F)			
0.10			5 × 11
0.22			5 × 11
0.33			5 × 11
0.47			5 × 11
0.68			5 × 11
1.0			5 × 11
2.2			5 × 11
3.3			5 × 11
4.7			5 × 11
10	5 × 11	5 × 11	6.3 × 11
22	5 × 11	5 × 11	8 × 11.5
33	6.3 × 11	6.3 × 11	8 × 11.5 10 × 12.5
47	6.3 × 11	6.3 × 11	10 × 12.5
68	6.3 × 11	8 × 11.5	10 × 16
100	8 × 11.5	8 × 11.5	10 × 20
220	10 × 12.5	10 × 16	12.5 × 25
330	10 × 16	10 × 20	16 × 25
470	10 × 20	12.5 × 20	16 × 31.5
680	12.5 × 20	16 × 20	18 × 40
1000	12.5 × 25	16 × 25	18 × 40 20 × 40
1500	16 × 25	18 × 31.5	
2200	16 × 31.5	18 × 35	
3300	18 × 35	20 × 40	
4700	20 × 40	25 × 40	


Overview of available types – B43821

Other voltage and capacitance ratings are available upon request.

V_R (V DC)	160	200	250	350	400	450
	Case dimensions $d \times l$ (mm)					
C_R (μ F)						
0.47			6.3 × 11	6.3 × 11		
0.68			6.3 × 11	6.3 × 11		
1.0	6.3 × 11	6.3 × 11	6.3 × 11	6.3 × 11		
2.2	6.3 × 11	6.3 × 11	6.3 × 11	6.3 × 11 8 × 11.5	8 × 11.5	8 × 11.5
3.3	6.3 × 11	6.3 × 11	6.3 × 11	8 × 11.5	8 × 11.5	10 × 12.5
4.7	6.3 × 11	6.3 × 11	8 × 11.5	8 × 11.5	10 × 12.5	10 × 12.5
10	8 × 11.5	8 × 11.5	10 × 12.5	10 × 16	10 × 20	10 × 20
22	10 × 12.5 10 × 16	10 × 16	10 × 20	12.5 × 20	12.5 × 25	12.5 × 25
33	10 × 16 10 × 20	10 × 20	12.5 × 20	12.5 × 25	16 × 20	16 × 25
47	10 × 20 12.5 × 20	12.5 × 20	12.5 × 25	16 × 25	16 × 25	16 × 31.5
68	12.5 × 20	12.5 × 25	16 × 25	16 × 31.5	18 × 31.5	18 × 35
100	12.5 × 25 16 × 25	16 × 25	16 × 31.5	18 × 35	18 × 40	20 × 40
220	16 × 31.5 18 × 31.5	18 × 31.5	18 × 40			
330	18 × 35	20 × 35	22 × 40			
470	20 × 40	22 × 40				
680	25 × 40					


B41821
Standard series – 85 °C
Technical data and ordering codes – B41821

C_R 120 Hz 20 °C μF	Case dimensions $d \times l$ mm	ESR_{max} 120 Hz 20 °C Ω	$I_{\text{AC,R}}$ 120 Hz 85 °C mA	Ordering code (composition see below)
$V_R = 6.3 \text{ V DC}$				
330	6.3 × 11	1.4	280	B41821A2337M***
470	8 × 11.5	1.0	380	B41821B2477M***
680	8 × 11.5	0.68	400	B41821F2687M***
1000	10 × 12.5	0.46	650	B41821A2108M***
1500	10 × 16	0.31	750	B41821A2158M***
2200	10 × 20	0.23	1000	B41821A2228M***
3300	10 × 20	0.16	1190	B41821A2338M***
4700	12.5 × 25	0.12	1600	B41821A2478M***
$V_R = 10 \text{ V DC}$				
100	5 × 11	4.0	145	B41821A3107M***
220	6.3 × 11	1.8	240	B41821A3227M***
330	8 × 11.5	1.2	290	B41821B3337M***
470	8 × 11.5	0.85	400	B41821A3477M***
680	10 × 12.5	0.59	460	B41821A3687M***
1000	10 × 12.5	0.40	650	B41821A3108M***
1500	10 × 20	0.27	740	B41821A3158M***
2200	10 × 20	0.20	1100	B41821A3228M***
3300	12.5 × 25	0.14	1550	B41821A3338M***
4700	16 × 20	0.11	1700	B41821A3478M***
6800	16 × 25	0.08	2250	B41821F3688M***
10000	18 × 31.5	0.07	2600	B41821F3109M***
$V_R = 16 \text{ V DC}$				
100	5 × 11	3.3	180	B41821A4107M***
220	6.3 × 11	1.5	260	B41821F4227M***
330	8 × 11.5	1.0	370	B41821B4337M***
470	8 × 11.5	0.71	440	B41821F4477M***

Composition of ordering code

*** = Version

- 000 = for standard leads, bulk
- 001 = for kinked leads, bulk (from $d \times l = 10 \times 20 \text{ mm}$ to $18 \times 40 \text{ mm}$)
- 002 = for cut leads, bulk (from $d \times l = 10 \times 12.5 \text{ mm}$ to $22 \times 40 \text{ mm}$)
- 003 = for crimped leads, blister (from $d \times l = 16 \times 20 \text{ mm}$ to $20 \times 40 \text{ mm}$)
- 004 = for J leads, blister (from $d \times l = 10 \times 12.5 \text{ mm}$ to $18 \times 35 \text{ mm}$)
- 006 = for taped leads, Ammo pack, lead spacing $F = 3.5 \text{ mm}$ (for $d = 8 \text{ mm}$)
- 007 = for taped leads, Ammo pack, lead spacing $F = 2.5 \text{ mm}$ (from $d = 5 \text{ mm}$ to 6.3 mm)
- 008 = for taped leads, Ammo pack, lead spacing $F = 5.0 \text{ mm}$ (from $d \times l = 5 \times 11 \text{ mm}$ to $12.5 \times 25 \text{ mm}$)
- 009 = for taped leads, Ammo pack, lead spacing $F = 7.5 \text{ mm}$ (for $d \times l = 16 \times 20 \dots 16 \times 31.5 \text{ mm}$ and $18 \times 25 \dots 18 \times 31.5 \text{ mm}$)
- 012 = for bent 90° leads, blister (for $\varnothing 16$ and 18 mm)


B41821
Standard series – 85 °C
Technical data and ordering codes – B41821

C_R 120 Hz 20 °C μF	Case dimensions $d \times l$ mm	ESR_{max} 120 Hz 20 °C Ω	$I_{\text{AC,R}}$ 120 Hz 85 °C mA	Ordering code (composition see below)
$V_R = 16 \text{ V DC}$				
680	10 × 12.5	0.49	600	B41821F4687M***
1000	10 × 16	0.33	790	B41821A4108M***
1500	10 × 20	0.22	950	B41821F4158M***
2200	12.5 × 20	0.17	1300	B41821K4228M***
3300	12.5 × 25	0.12	1700	B41821F4338M***
3300	16 × 25	0.12	1800	B41821A4338M***
4700	16 × 25	0.09	2100	B41821A4478M***
6800	16 × 31.5	0.07	2300	B41821F4688M***
10000	18 × 35	0.06	2750	B41821F4109M***
$V_R = 25 \text{ V DC}$				
47	5 × 11	5.6	115	B41821A5476M***
68	5 × 11	3.9	125	B41821F5686M***
100	6.3 × 11	2.7	190	B41821A5107M***
220	8 × 11.5	1.2	330	B41821B5227M***
330	8 × 11.5	0.80	440	B41821F5337M***
330	10 × 12.5	0.80	440	B41821A5337M***
470	10 × 12.5	0.56	550	B41821B5477M***
680	10 × 16	0.39	630	B41821F5687M***
1000	10 × 20	0.27	960	B41821A5108M***
1500	12.5 × 20	0.18	1100	B41821F5158M***
2200	12.5 × 25	0.14	1550	B41821F5228M***
3300	16 × 25	0.10	1980	B41821A5338M***
4700	16 × 31.5	0.08	2450	B41821A5478M***
6800	18 × 35	0.06	2650	B41821F5688M***
10000	20 × 40	0.06	2900	B41821F5109M***

Composition of ordering code

*** = Version

000 = for standard leads, bulk

 001 = for kinked leads, bulk (from $d \times l = 10 \times 20 \text{ mm}$ to $18 \times 40 \text{ mm}$)

 002 = for cut leads, bulk (from $d \times l = 10 \times 12.5 \text{ mm}$ to $22 \times 40 \text{ mm}$)

 003 = for crimped leads, blister (from $d \times l = 16 \times 20 \text{ mm}$ to $20 \times 40 \text{ mm}$)

 004 = for J leads, blister (from $d \times l = 10 \times 12.5 \text{ mm}$ to $18 \times 35 \text{ mm}$)

 006 = for taped leads, Ammo pack, lead spacing $F = 3.5 \text{ mm}$ (for $d = 8 \text{ mm}$)

 007 = for taped leads, Ammo pack, lead spacing $F = 2.5 \text{ mm}$ (from $d = 5 \text{ mm}$ to 6.3 mm)

 008 = for taped leads, Ammo pack, lead spacing $F = 5.0 \text{ mm}$ (from $d \times l = 5 \times 11 \text{ mm}$ to $12.5 \times 25 \text{ mm}$)

 009 = for taped leads, Ammo pack, lead spacing $F = 7.5 \text{ mm}$ (for $d \times l = 16 \times 20 \dots 16 \times 31.5 \text{ mm}$ and $18 \times 25 \dots 18 \times 31.5 \text{ mm}$)

 012 = for bent 90° leads, blister (for $\varnothing 16$ and 18 mm)


B41821
Standard series – 85 °C
Technical data and ordering codes – B41821

C_R 120 Hz 20 °C μF	Case dimensions $d \times l$ mm	ESR_{max} 120 Hz 20 °C Ω	$I_{\text{AC,R}}$ 120 Hz 85 °C mA	Ordering code (composition see below)
$V_R = 35 \text{ V DC}$				
33	5 × 11	7.0	105	B41821A7336M***
47	5 × 11	4.9	130	B41821A7476M***
68	6.3 × 11	3.4	160	B41821A7686M***
100	6.3 × 11	2.3	210	B41821F7107M***
220	8 × 11.5	1.1	385	B41821F7227M***
330	10 × 12.5	0.70	490	B41821A7337M***
470	10 × 16	0.49	650	B41821A7477M***
680	10 × 20	0.34	840	B41821A7687M***
1000	12.5 × 20	0.23	1150	B41821K7108M***
1500	16 × 20	0.15	1400	B41821F7158M***
2200	16 × 25	0.12	1800	B41821F7228M***
3300	16 × 31.5	0.09	2100	B41821F7338M***
4700	18 × 35	0.07	2550	B41821F7478M***
6800	18 × 40	0.06	2800	B41821K7688M***
$V_R = 50 \text{ V DC}$				
10	5 × 11	20	60	B41821A6106M***
22	5 × 11	9.0	95	B41821A6226M***
33	6.3 × 11	6.0	110	B41821A6336M***
47	6.3 × 11	4.2	155	B41821A6476M***
68	6.3 × 11	2.9	210	B41821F6686M***
100	8 × 11.5	2.0	260	B41821A6107M***
220	10 × 12.5	0.90	430	B41821A6227M***
330	10 × 16	0.60	590	B41821A6337M***

Composition of ordering code

*** = Version

000 = for standard leads, bulk

 001 = for kinked leads, bulk (from $d \times l = 10 \times 20 \text{ mm}$ to $18 \times 40 \text{ mm}$)

 002 = for cut leads, bulk (from $d \times l = 10 \times 12.5 \text{ mm}$ to $22 \times 40 \text{ mm}$)

 003 = for crimped leads, blister (from $d \times l = 16 \times 20 \text{ mm}$ to $20 \times 40 \text{ mm}$)

 004 = for J leads, blister (from $d \times l = 10 \times 12.5 \text{ mm}$ to $18 \times 35 \text{ mm}$)

 006 = for taped leads, Ammo pack, lead spacing $F = 3.5 \text{ mm}$ (for $d = 8 \text{ mm}$)

 007 = for taped leads, Ammo pack, lead spacing $F = 2.5 \text{ mm}$ (from $d = 5 \text{ mm}$ to 6.3 mm)

 008 = for taped leads, Ammo pack, lead spacing $F = 5.0 \text{ mm}$ (from $d \times l = 5 \times 11 \text{ mm}$ to $12.5 \times 25 \text{ mm}$)

 009 = for taped leads, Ammo pack, lead spacing $F = 7.5 \text{ mm}$ (for $d \times l = 16 \times 20 \dots 16 \times 31.5 \text{ mm}$ and $18 \times 25 \dots 18 \times 31.5 \text{ mm}$)

 012 = for bent 90° leads, blister (for $\varnothing 16$ and 18 mm)


B41821
Standard series – 85 °C
Technical data and ordering codes – B41821

C_R 120 Hz 20 °C μF	Case dimensions $d \times l$ mm	ESR_{max} 120 Hz 20 °C Ω	$I_{\text{AC,R}}$ 120 Hz 85 °C mA	Ordering code (composition see below)
$V_R = 50 \text{ V DC}$				
470	10 × 20	0.42	760	B41821A6477M***
680	12.5 × 20	0.29	1000	B41821F6687M***
1000	12.5 × 25	0.20	1350	B41821F6108M***
1500	16 × 25	0.13	1800	B41821F6158M***
2200	16 × 31.5	0.11	1980	B41821F6228M***
3300	18 × 35	0.08	2500	B41821F6338M***
4700	20 × 40	0.06	2800	B41821K6478M***
$V_R = 63 \text{ V DC}$				
10	5 × 11	20	65	B41821A8106M***
22	5 × 11	9.0	100	B41821F8226M***
33	6.3 × 11	6.0	140	B41821A8336M***
47	6.3 × 11	4.2	170	B41821F8476M***
68	8 × 11.5	2.9	220	B41821F8686M***
100	8 × 11.5	2.0	280	B41821F8107M***
220	10 × 16	0.90	490	B41821A8227M***
330	10 × 20	0.60	710	B41821A8337M***
470	12.5 × 20	0.42	900	B41821F8477M***
680	16 × 20	0.29	1100	B41821F8687M***
1000	16 × 25	0.20	1300	B41821F8108M***
1500	18 × 31.5	0.13	1800	B41821F8158M***
2200	18 × 35	0.11	2300	B41821K8228M***
3300	20 × 40	0.08	2700	B41821A8338M***
4700	25 × 40	0.06	3200	B41821F8478M***

Composition of ordering code

*** = Version

000 = for standard leads, bulk

 001 = for kinked leads, bulk (from $d \times l = 10 \times 20 \text{ mm}$ to $18 \times 40 \text{ mm}$)

 002 = for cut leads, bulk (from $d \times l = 10 \times 12.5 \text{ mm}$ to $22 \times 40 \text{ mm}$)

 003 = for crimped leads, blister (from $d \times l = 16 \times 20 \text{ mm}$ to $20 \times 40 \text{ mm}$)

 004 = for J leads, blister (from $d \times l = 10 \times 12.5 \text{ mm}$ to $18 \times 35 \text{ mm}$)

 006 = for taped leads, Ammo pack, lead spacing $F = 3.5 \text{ mm}$ (for $d = 8 \text{ mm}$)

 007 = for taped leads, Ammo pack, lead spacing $F = 2.5 \text{ mm}$ (from $d = 5 \text{ mm}$ to 6.3 mm)

 008 = for taped leads, Ammo pack, lead spacing $F = 5.0 \text{ mm}$ (from $d \times l = 5 \times 11 \text{ mm}$ to $12.5 \times 25 \text{ mm}$)

 009 = for taped leads, Ammo pack, lead spacing $F = 7.5 \text{ mm}$ (for $d \times l = 16 \times 20 \dots 16 \times 31.5 \text{ mm}$ and $18 \times 25 \dots 18 \times 31.5 \text{ mm}$)

 012 = for bent 90° leads, blister (for $\varnothing 16$ and 18 mm)


B41821
Standard series – 85 °C
Technical data and ordering codes – B41821

\hat{C}_R 120 Hz 20 °C μF	Case dimensions $d \times l$ mm	ESR_{max} 120 Hz 20 °C Ω	$I_{\text{AC,R}}$ 120 Hz 85 °C mA	Ordering code (composition see below)
$V_R = 100 \text{ V DC}$				
0.1	5 × 11	1658	2	B41821A9104M***
0.22	5 × 11	754	5	B41821A9224M***
0.33	5 × 11	502	7	B41821A9334M***
0.47	5 × 11	353	10	B41821A9474M***
0.68	5 × 11	244	13	B41821A9684M***
1	5 × 11	166	21	B41821A9105M***
2.2	5 × 11	75	30	B41821A9225M***
3.3	5 × 11	50	40	B41821A9335M***
4.7	5 × 11	35	45	B41821A9475M***
10	6.3 × 11	17	75	B41821A9106M***
22	8 × 11.5	7.5	140	B41821B9226M***
33	8 × 11.5	5.0	180	B41821F9336M***
33	10 × 12.5	5.0	190	B41821A9336M***
47	10 × 12.5	3.5	230	B41821B9476M***
68	10 × 16	2.4	280	B41821A9686M***
100	10 × 20	1.7	350	B41821A9107M***
220	12.5 × 25	0.75	620	B41821A9227M***
330	16 × 25	0.50	800	B41821A9337M***
470	16 × 31.5	0.35	1000	B41821A9477M***
680	18 × 40	0.24	1100	B41821F9687M***
1000	18 × 40	0.17	1300	B41821G9108M***
1000	20 × 40	0.17	1400	B41821A9108M***

Composition of ordering code

*** = Version

000 = for standard leads, bulk

 001 = for kinked leads, bulk (from $d \times l = 10 \times 20 \text{ mm}$ to $18 \times 40 \text{ mm}$)

 002 = for cut leads, bulk (from $d \times l = 10 \times 12.5 \text{ mm}$ to $22 \times 40 \text{ mm}$)

 003 = for crimped leads, blister (from $d \times l = 16 \times 20 \text{ mm}$ to $20 \times 40 \text{ mm}$)

 004 = for J leads, blister (from $d \times l = 10 \times 12.5 \text{ mm}$ to $18 \times 35 \text{ mm}$)

 006 = for taped leads, Ammo pack, lead spacing $F = 3.5 \text{ mm}$ (for $d = 8 \text{ mm}$)

 007 = for taped leads, Ammo pack, lead spacing $F = 2.5 \text{ mm}$ (from $d = 5 \text{ mm}$ to 6.3 mm)

 008 = for taped leads, Ammo pack, lead spacing $F = 5.0 \text{ mm}$ (from $d \times l = 5 \times 11 \text{ mm}$ to $12.5 \times 25 \text{ mm}$)

 009 = for taped leads, Ammo pack, lead spacing $F = 7.5 \text{ mm}$ (for $d \times l = 16 \times 20 \dots 16 \times 31.5 \text{ mm}$ and $18 \times 25 \dots 18 \times 31.5 \text{ mm}$)

 012 = for bent 90° leads, blister (for $\varnothing 16$ and 18 mm)


B43821
Standard series – 85 °C
Technical data and ordering codes – B43821

C_R 120 Hz 20 °C μF	Case dimensions $d \times l$ mm	ESR_{max} 120 Hz 20 °C Ω	$I_{\text{AC,R}}$ 120 Hz 85 °C mA	Ordering code (composition see below)
---	---------------------------------------	--	--	--

 $V_R = 160 \text{ V DC}$

1	6.3 × 11	186	22	B43821A1105M***
2.2	6.3 × 11	85	33	B43821A1225M***
3.3	6.3 × 11	56	40	B43821A1335M***
4.7	6.3 × 11	40	50	B43821F1475M***
10	8 × 11.5	18	80	B43821G1106M***
22	10 × 12.5	13	130	B43821F1226M***
22	10 × 16	8.4	155	B43821A1226M***
33	10 × 16	7.5	180	B43821F1336M***
33	10 × 20	5.6	205	B43821A1336M***
47	10 × 20	4.9	210	B43821K1476M***
47	12.5 × 20	4.5	270	B43821F1476M***
68	12.5 × 20	3.0	350	B43821K1686M***
100	12.5 × 25	2.3	430	B43821F1107M***
100	16 × 25	1.8	475	B43821A1107M***
220	16 × 31.5	1.0	760	B43821F1227M***
220	18 × 31.5	0.84	800	B43821A1227M***
330	18 × 35	0.70	995	B43821F1337M***
470	20 × 40	0.42	1300	B43821F1477M***
680	25 × 40	0.34	1500	B43821F1687M***

 $V_R = 200 \text{ V DC}$

1	6.3 × 11	186	22	B43821A2105M***
2.2	6.3 × 11	85	33	B43821A2225M***
3.3	6.3 × 11	56	40	B43821A2335M***
4.7	6.3 × 11	40	50	B43821R2475M***
10	8 × 11.5	21	80	B43821G2106M***
22	10 × 16	8.4	155	B43821B2226M***

Composition of ordering code

*** = Version

000 = for standard leads, bulk

 001 = for kinked leads, bulk (from $d \times l = 10 \times 20 \text{ mm}$ to $18 \times 40 \text{ mm}$)

 002 = for cut leads, bulk (from $d \times l = 10 \times 12.5 \text{ mm}$ to $22 \times 40 \text{ mm}$)

 003 = for crimped leads, blister (from $d \times l = 16 \times 20 \text{ mm}$ to $20 \times 40 \text{ mm}$)

 004 = for J leads, blister (from $d \times l = 10 \times 12.5 \text{ mm}$ to $18 \times 35 \text{ mm}$)

 006 = for taped leads, Ammo pack, lead spacing $F = 3.5 \text{ mm}$ (for $d = 8 \text{ mm}$)

 007 = for taped leads, Ammo pack, lead spacing $F = 2.5 \text{ mm}$ (from $d = 5 \text{ mm}$ to 6.3 mm)

 008 = for taped leads, Ammo pack, lead spacing $F = 5.0 \text{ mm}$ (from $d \times l = 5 \times 11 \text{ mm}$ to $12.5 \times 25 \text{ mm}$)

 009 = for taped leads, Ammo pack, lead spacing $F = 7.5 \text{ mm}$ (for $d \times l = 16 \times 20 \dots 16 \times 31.5 \text{ mm}$ and $18 \times 25 \dots 18 \times 31.5 \text{ mm}$)

 012 = for bent 90° leads, blister (for $\varnothing 16$ and 18 mm)


B43821
Standard series – 85 °C
Technical data and ordering codes – B43821

C_R 120 Hz 20 °C μF	Case dimensions $d \times l$ mm	ESR_{max} 120 Hz 20 °C Ω	$I_{\text{AC,R}}$ 120 Hz 85 °C mA	Ordering code (composition see below)
$V_R = 200 \text{ V DC}$				
33	10 × 20	5.6	205	B43821B2336M***
47	12.5 × 20	4.5	270	B43821B2476M***
68	12.5 × 25	3.3	350	B43821B2686M***
100	16 × 25	1.8	475	B43821A2107M***
220	18 × 31.5	0.95	690	B43821B2227M***
330	20 × 35	0.65	950	B43821R2337M***
470	22 × 40	0.46	1300	B43821R2477M***
$V_R = 250 \text{ V DC}$				
0.47	6.3 × 11	395	15	B43821F2474M***
0.68	6.3 × 11	273	18	B43821F2684M***
1	6.3 × 11	186	22	B43821F2105M***
2.2	6.3 × 11	85	33	B43821F2225M***
3.3	6.3 × 11	65	40	B43821K2335M***
4.7	8 × 11.5	40	55	B43821K2475M***
10	10 × 12.5	23	95	B43821K2106M***
22	10 × 20	8.4	170	B43821F2226M***
33	12.5 × 20	5.6	230	B43821K2336M***
47	12.5 × 25	4.3	290	B43821K2476M***
68	16 × 25	2.7	380	B43821F2686M***
100	16 × 31.5	1.8	520	B43821K2107M***
220	18 × 40	0.84	680	B43821F2227M***
330	22 × 40	0.56	940	B43821F2337M***

Composition of ordering code

*** = Version

000 = for standard leads, bulk

 001 = for kinked leads, bulk (from $d \times l = 10 \times 20 \text{ mm}$ to $18 \times 40 \text{ mm}$)

 002 = for cut leads, bulk (from $d \times l = 10 \times 12.5 \text{ mm}$ to $22 \times 40 \text{ mm}$)

 003 = for crimped leads, blister (from $d \times l = 16 \times 20 \text{ mm}$ to $20 \times 40 \text{ mm}$)

 004 = for J leads, blister (from $d \times l = 10 \times 12.5 \text{ mm}$ to $18 \times 35 \text{ mm}$)

 006 = for taped leads, Ammo pack, lead spacing $F = 3.5 \text{ mm}$ (for $d = 8 \text{ mm}$)

 007 = for taped leads, Ammo pack, lead spacing $F = 2.5 \text{ mm}$ (from $d = 5 \text{ mm}$ to 6.3 mm)

 008 = for taped leads, Ammo pack, lead spacing $F = 5.0 \text{ mm}$ (from $d \times l = 5 \times 11 \text{ mm}$ to $12.5 \times 25 \text{ mm}$)

 009 = for taped leads, Ammo pack, lead spacing $F = 7.5 \text{ mm}$ (for $d \times l = 16 \times 20 \dots 16 \times 31.5 \text{ mm}$ and $18 \times 25 \dots 18 \times 31.5 \text{ mm}$)

 012 = for bent 90° leads, blister (for $\varnothing 16$ and 18 mm)


B43821
Standard series – 85 °C
Technical data and ordering codes – B43821

C_R 120 Hz 20 °C μF	Case dimensions $d \times l$ mm	ESR_{max} 120 Hz 20 °C Ω	$I_{\text{AC,R}}$ 120 Hz 85 °C mA	Ordering code (composition see below)
$V_R = 350 \text{ V DC}$				
0.47	6.3 × 11	395	15	B43821A4474M***
0.68	6.3 × 11	273	18	B43821A4684M***
1	6.3 × 11	186	22	B43821A4105M***
2.2	6.3 × 11	97	30	B43821F4225M***
2.2	8 × 11.5	85	38	B43821B4225M***
3.3	8 × 11.5	65	43	B43821F4335M***
4.7	8 × 11.5	45	55	B43821F4475M***
10	10 × 16	21	90	B43821F4106M***
22	12.5 × 20	9.0	170	B43821F4226M***
33	12.5 × 25	5.6	240	B43821F4336M***
47	16 × 25	4.0	300	B43821F4476M***
68	16 × 31.5	3.1	400	B43821F4686M***
100	18 × 35	2.3	520	B43821F4107M***
$V_R = 400 \text{ V DC}$				
2.2	8 × 11.5	97	38	B43821F9225M***
3.3	8 × 11.5	65	48	B43821F9335M***
4.7	10 × 12.5	46	60	B43821F9475M***
10	10 × 20	18	115	B43821A9106M***
22	12.5 × 25	8.4	200	B43821F9226M***
33	16 × 20	5.6	240	B43821F9336M***
47	16 × 25	4.0	280	B43821F9476M***
68	18 × 31.5	2.8	420	B43821A9686M***
100	18 × 40	1.9	450	B43821F9107M***

Composition of ordering code

*** = Version

000 = for standard leads, bulk

 001 = for kinked leads, bulk (from $d \times l = 10 \times 20 \text{ mm}$ to $18 \times 40 \text{ mm}$)

 002 = for cut leads, bulk (from $d \times l = 10 \times 12.5 \text{ mm}$ to $22 \times 40 \text{ mm}$)

 003 = for crimped leads, blister (from $d \times l = 16 \times 20 \text{ mm}$ to $20 \times 40 \text{ mm}$)

 004 = for J leads, blister (from $d \times l = 10 \times 12.5 \text{ mm}$ to $18 \times 35 \text{ mm}$)

 006 = for taped leads, Ammo pack, lead spacing $F = 3.5 \text{ mm}$ (for $d = 8 \text{ mm}$)

 007 = for taped leads, Ammo pack, lead spacing $F = 2.5 \text{ mm}$ (from $d = 5 \text{ mm}$ to 6.3 mm)

 008 = for taped leads, Ammo pack, lead spacing $F = 5.0 \text{ mm}$ (from $d \times l = 5 \times 11 \text{ mm}$ to $12.5 \times 25 \text{ mm}$)

 009 = for taped leads, Ammo pack, lead spacing $F = 7.5 \text{ mm}$ (for $d \times l = 16 \times 20 \dots 16 \times 31.5 \text{ mm}$ and $18 \times 25 \dots 18 \times 31.5 \text{ mm}$)

 012 = for bent 90° leads, blister (for $\varnothing 16$ and 18 mm)


B43821
Standard series – 85 °C
Technical data and ordering codes – B43821

C_R 120 Hz 20 °C μF	Case dimensions $d \times l$ mm	ESR_{max} 120 Hz 20 °C Ω	$I_{\text{AC,R}}$ 120 Hz 85 °C mA	Ordering code (composition see below)
$V_R = 450 \text{ V DC}$				
2.2	8 × 11.5	97	28	B43821F5225M***
3.3	10 × 12.5	65	40	B43821F5335M***
4.7	10 × 12.5	45	50	B43821K5475M***
10	10 × 20	26	80	B43821F5106M***
22	12.5 × 25	14	140	B43821F5226M***
33	16 × 25	7.6	180	B43821F5336M***
47	16 × 31.5	4.8	220	B43821F5476M***
68	18 × 35	2.7	275	B43821A5686M***
100	20 × 40	1.8	295	B43821A5107M***

Composition of ordering code

*** = Version

000 = for standard leads, bulk

 001 = for kinked leads, bulk (from $d \times l = 10 \times 20 \text{ mm}$ to $18 \times 40 \text{ mm}$)

 002 = for cut leads, bulk (from $d \times l = 10 \times 12.5 \text{ mm}$ to $22 \times 40 \text{ mm}$)

 003 = for crimped leads, blister (from $d \times l = 16 \times 20 \text{ mm}$ to $20 \times 40 \text{ mm}$)

 004 = for J leads, blister (from $d \times l = 10 \times 12.5 \text{ mm}$ to $18 \times 35 \text{ mm}$)

 006 = for taped leads, Ammo pack, lead spacing $F = 3.5 \text{ mm}$ (for $d = 8 \text{ mm}$)

 007 = for taped leads, Ammo pack, lead spacing $F = 2.5 \text{ mm}$ (from $d = 5 \text{ mm}$ to 6.3 mm)

 008 = for taped leads, Ammo pack, lead spacing $F = 5.0 \text{ mm}$ (from $d \times l = 5 \times 11 \text{ mm}$ to $12.5 \times 25 \text{ mm}$)

 009 = for taped leads, Ammo pack, lead spacing $F = 7.5 \text{ mm}$ (for $d \times l = 16 \times 20 \dots 16 \times 31.5 \text{ mm}$ and $18 \times 25 \dots 18 \times 31.5 \text{ mm}$)

 012 = for bent 90° leads, blister (for $\varnothing 16$ and 18 mm)



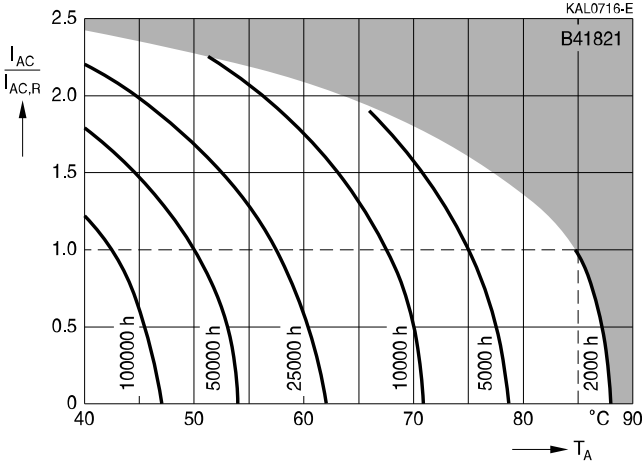
B41821, B43821

Standard series – 85 °C

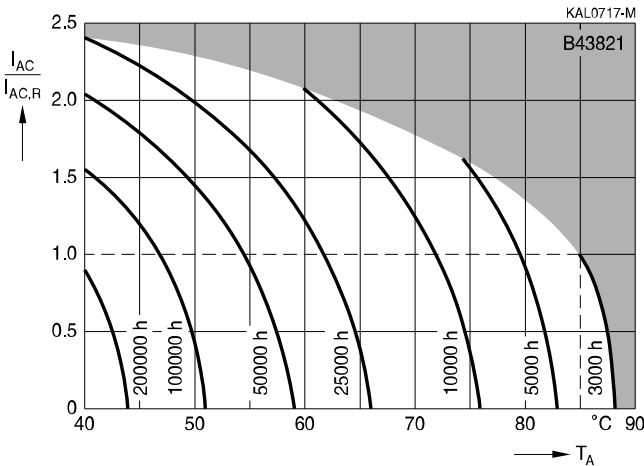
Useful life

depending on ambient temperature T_A under ripple current operating conditions¹⁾

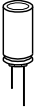
$V_R = 6.3 \dots 100 \text{ V DC}$



$V_R = 160 \dots 450 \text{ V DC}$



1) Refer to chapter "General technical information, 5.3 Calculation of useful life" for an explanation on how to interpret the useful life graphs.

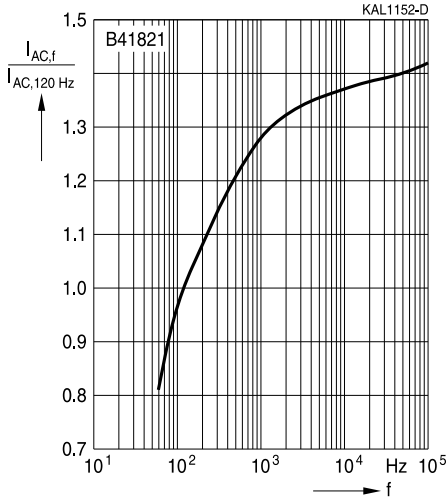


B41821, B43821

Standard series – 85 °C

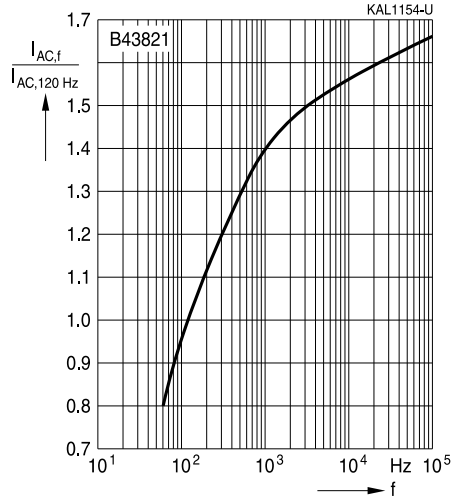
Frequency factor of permissible ripple current I_{AC} versus frequency f

$V_R \leq 100$ V DC



Frequency factor of permissible ripple current I_{AC} versus frequency f

$V_R \geq 160$ V DC





Taping, packing and lead configurations

Taping

Single-ended capacitors are available taped in Ammo pack from diameter 8 to 18 mm as follows:

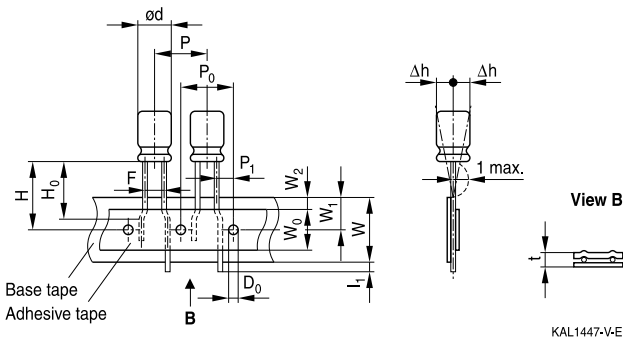
Lead spacing $F = 3.5$ mm ($\varnothing d = 8$ mm)

Lead spacing $F = 5.0$ mm ($\varnothing d = 8 \dots 12.5$ mm)

Lead spacing $F = 7.5$ mm ($\varnothing d = 16 \dots 18$ mm).

Lead spacing 3.5 mm ($\varnothing d = 8$ mm)

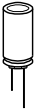
Last 3 digits of ordering code: 006



Dimensions in mm

$\varnothing d$	F	H	W	W_0	W_1	W_2	P	P_0	P_1	l_1	t	Δh	D_0
8	3.5	18.5	18.0	9.5	9.0	3.0	12.7	12.7	4.6	1.0	0.7	1.0	4.0
Tolerance	+0.8 -0.2	± 1.0	± 0.5	min.	± 0.5	max.	± 1.0	± 0.3	± 0.6	max.	± 0.2	max.	± 0.2

Leads can also run straight through the taping area.

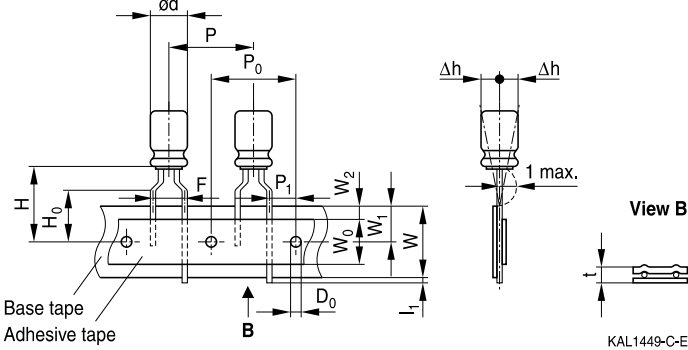


B41821, B43821

Standard series – 85 °C

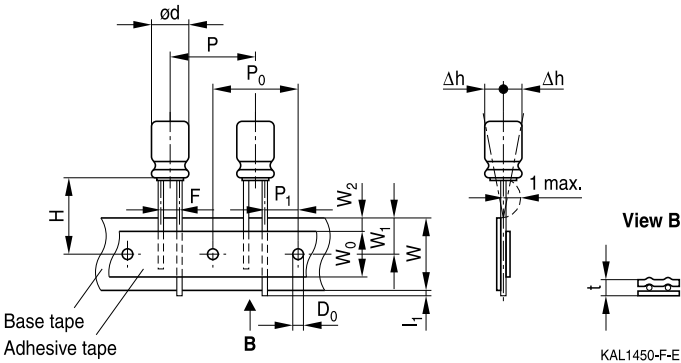
Lead spacing 5.0 mm (∅ d = 8 mm)

Last 3 digits of ordering code: 008



Lead spacing 5.0 mm (∅ d = 10 ... 12.5 mm)

Last 3 digits of ordering code: 008



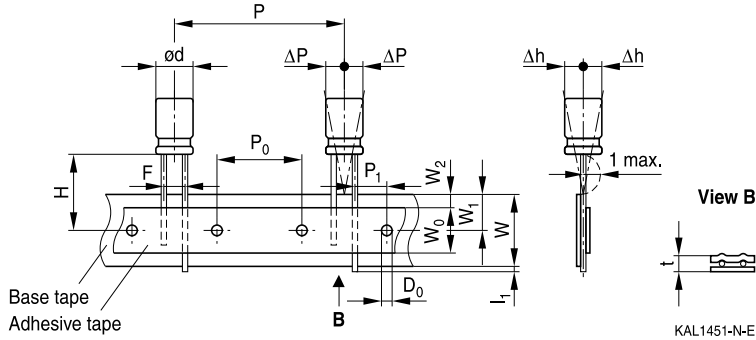
Dimensions in mm

∅ d	F	H	W	W ₀	W ₁	W ₂	H ₀	P	P ₀	P ₁	l ₁	t	Δh	D ₀
4 ... 6.3	5.0	18.5	18.0	5.5	9.0	1.5	16.0	12.7	12.7	3.85	1.0	0.6	1.0	4.0
8	5.0	20.0	18.0	9.5	9.0	1.5	16.0	12.7	12.7	3.85	1.0	0.6	1.0	4.0
10		19.0		9.5			–	12.7	12.7	3.85				
12.5		19.0		11.5			–	15.0	15.0	5.0				
Tolerance	+0.8 –0.2	±0.75	±0.5	min.	±0.5	max.	±0.5	±1.0	±0.2	±0.5	max.	+0.3 –0.2	max.	±0.2

Taping is available up to dimensions d × l = 12.5 × 25 mm.

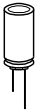

Lead spacing 7.5 mm (∅ d = 16 ...18 mm)

Last 3 digits of ordering code: 009


Dimensions in mm

∅ d	F	H	W	W ₀	W ₁	W ₂	P	P ₀	P ₁	l ₁	t	ΔP	Δh	D ₀
16	7.5	18.5	18.0	12.5	9.0	1.5	30.0	15.0	3.75	1.0	0.7	0	0	4.0
18														
Tolerance	±0.8	-0.5 +0.75	±0.5	min.	±0.5	max.	±1.0	±0.2	±0.5	max.	±0.2	±1.0	±1.0	±0.2

Taping is available up to dimensions d × l = 16 × 31.5 mm and 18 × 31.5 mm.



B41821, B43821

Standard series – 85 °C

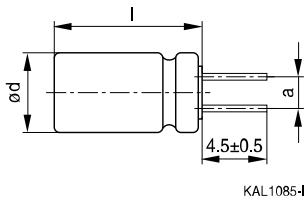
Cut or kinked leads

Single-ended capacitors are available with cut or kinked leads. Other lead configurations also available upon request.

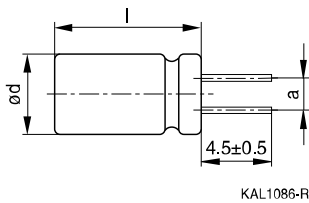
Cut leads

Last 3 digits of ordering code: 002

With stand-off rubber seal



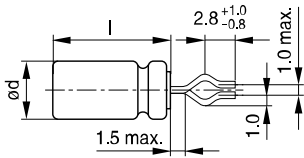
With flat rubber seal



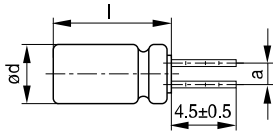
Case size d × l (mm)	Dimensions (mm) a ±0.5
10 × 12.5	5.0
10 × 16	5.0
10 × 20	5.0
12.5 × 20	5.0
12.5 × 25	5.0
16 × 20	7.5
16 × 25	7.5
16 × 31.5	7.5
16 × 35.5	7.5
18 × 20	7.5
18 × 25	7.5
18 × 31.5	7.5
18 × 35	7.5
18 × 40	7.5


Kinked leads

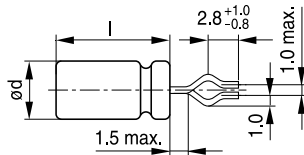
Last 3 digits of ordering code: 001

With stand-off rubber seal


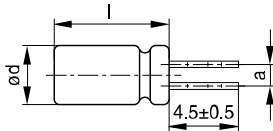
KAL1081-K



KAL1083-2

With flat rubber seal


KAL1082-T



KAL1084-A

Case size d × l (mm)	Dimensions (mm) a ±0.5
10 × 20	5.0
12.5 × 20	5.0
12.5 × 25	5.0
16 × 20	7.5
16 × 25	7.5
16 × 31.5	7.5
16 × 35.5	7.5
18 × 20	7.5
18 × 25	7.5
18 × 31.5	7.5
18 × 35	7.5
18 × 40	7.5



B41821, B43821

Standard series – 85 °C

PAPR leads (Protection Against Polarity Reversal)

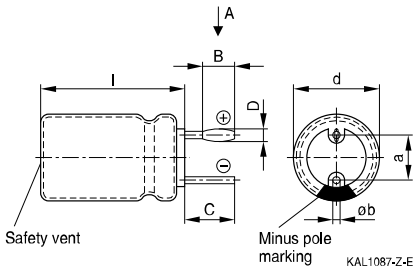
These lead configurations ensure correct placement of the capacitor on the PCB with regard to polarity. PAPR leads are available for diameters from 10 mm up to 18 mm (excluding $d \times l = 12.5 \times 30/35/40$ mm).

There are three configurations available: Crimped leads, J leads, bent 90° leads

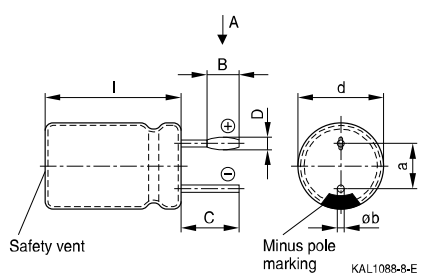
Crimped leads

Last 3 digits of ordering code: 003

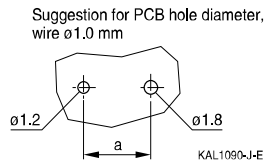
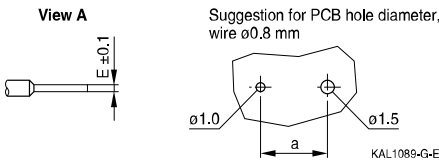
With stand-off rubber seal



With flat rubber seal



Suggestion for PCB hole diameter



Case size $d \times l$ (mm)	Dimensions (mm)					
	B ±0.2	C ±0.5	D ±0.1	E ±0.1	a ±0.5	Øb
16 × 20	1.5	3.0	1.3	0.3	7.5	0.8 ±0.05
16 × 25	1.5	3.0	1.3	0.3	7.5	0.8 ±0.05
16 × 31.5	1.5	3.0	1.3	0.3	7.5	0.8 ±0.05
16 × 35.5	1.5	3.0	1.3	0.3	7.5	0.8 ±0.05
18 × 20	1.5	3.0	1.3	0.3	7.5	0.8 ±0.1
18 × 25	1.5	3.0	1.3	0.3	7.5	0.8 ±0.1
18 × 31.5	1.5	3.0	1.3	0.3	7.5	0.8 ±0.1
18 × 35	1.5	3.0	1.3	0.3	7.5	0.8 ±0.1
18 × 40	1.5	3.0	1.3	0.3	7.5	0.8 ±0.1