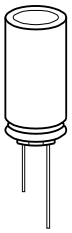
Aluminum electrolytic capacitors

Single-ended capacitors

Series/Type: **B41851, B43851**
Date: December 2010

General-purpose grade capacitors



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

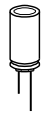
Features
- Compact dimensions
- High CV product, i.e. very compact
- RoHS-compatible

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 (see chapter "Single-ended – Taping, packing and lead configurations, Cut leads (Chapter B)")
- Kinked (see chapter "Single-ended – Taping, packing and lead configurations, Kinked leads (Chapter B)")
- 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.

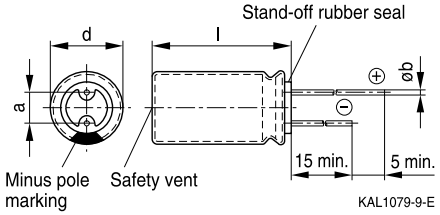


Specifications and characteristics in brief

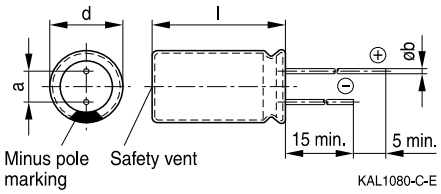
Series	B41851				B43851					
Rated voltage V_R Surge voltage V_S	6.3 ... 100 V DC 1.15 · V_R				160 ... 450 V DC 1.1 · V_R					
Rated capacitance C_R Capacitance tolerance	0.1 ... 10000 µF ±20% ≙ M				0.47 ... 680 µF ±20% ≙ M					
Dissipation factor tan δ (20 °C, 120 Hz)	For capacitance higher than 1000 µF add 0.02 for every increase of 1000 µF.									
	V_R (V DC)	6.3	10	16	25	35	50	63	100	160 ... 450
	tan δ (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 105 °C; V_R; $I_{AC,R}$ 40 °C; V_R; 1.8 · $I_{AC,R}$ 40 °C; V_R; 2.1 · $I_{AC,R}$	 > 2000 h > 250000 h –				 > 3000 h – > 250000 h					
Requirements	ΔC/C ≤ ±45% of initial value tan δ ≤ 3 times initial specified limit I_{leak} ≤ initial specified limit									
Voltage endurance test 105 °C; V_R	 1000 h				 1000 h					
Post test requirements	ΔC/C ≤ ±30% of initial value tan δ ≤ 2 times initial specified limit I_{leak} ≤ initial specified limit									
Vibration resistance test	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.									
IEC climatic category	To IEC 60068-1: $V_R \leq 250$ V: 40/105/56 (–40 °C/+105 °C/56 days damp heat test) $V_R \geq 350$ V: 25/105/56 (–25 °C/+105 °C/56 days damp heat test)									
Sectional specification	IEC 60384-4									

Dimensional drawings

With stand-off rubber seal
Diameters (mm):
6.3, 10, 12.5, 16, 18, 22, 25



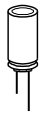
With flat rubber seal
Diameters (mm):
5, 8, 20



Safety vent for diameter ≥6.3 mm.

Dimensions and weights

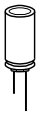
Dimensions (mm)				Approx. weight
d +0.5	l	a ±0.5	b	g
5	11 +1.0	2.0	0.50 ±0.05	0.5
6.3	11 +1.0	2.5	0.50 ±0.05	0.7
8	11.5 +1.5	3.5	0.60 ±0.05	1.0
10	12.5 +1.0	5.0	0.60 ±0.05	1.6
10	16 +1.0	5.0	0.60 ±0.05	1.9
10	20 +2.0	5.0	0.60 ±0.05	2.6
12.5	20 +2.0	5.0	0.60 ±0.05	3.6
12.5	25 +2.0	5.0	0.60 ±0.05	4.5
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	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 – B41851

Other voltage and capacitance ratings are available upon request.

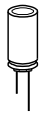
V_R (V DC)	6.3	10	16	25
	Case dimensions d × l (mm)			
C_R (µF)				
47				5 × 11
68				5 × 11
100		5 × 11	5 × 11	6.3 × 11
220		6.3 × 11	6.3 × 11	8 × 11.5
330	6.3 × 11	8 × 11.5	8 × 11.5	8 × 11.5 10 × 12.5
470	8 × 11.5	8 × 11.5	8 × 11.5	10 × 12.5
680	8 × 11.5	10 × 12.5	10 × 12.5	10 × 16
1000	10 × 12.5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



B41851

Standard series – 105 °C

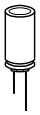
V_R (V DC)	35	50	63	100
	Case dimensions d × l (mm)			
C_R (µF)				
0.10				5 × 11
0.22				5 × 11
0.33				5 × 11
0.47				5 × 11
0.68				5 × 11
1.0		5 × 11		5 × 11
2.2		5 × 11		5 × 11
3.3		5 × 11		5 × 11
4.7		5 × 11		5 × 11
10		5 × 11	5 × 11	6.3 × 11
22		5 × 11	5 × 11	8 × 11.5
33	5 × 11	6.3 × 11	6.3 × 11	8 × 11.5 10 × 12.5
47	5 × 11	6.3 × 11	6.3 × 11	10 × 12.5
68	6.3 × 11	6.3 × 11	8 × 11.5	10 × 16
100	6.3 × 11	8 × 11.5	8 × 11.5	10 × 20
220	8 × 11.5	10 × 12.5	10 × 16	12.5 × 25
330	10 × 12.5	10 × 16	10 × 20	16 × 25
470	10 × 16	10 × 20	12.5 × 20	16 × 31.5
680	10 × 20	12.5 × 20	16 × 20	18 × 40
1000	12.5 × 20	12.5 × 25	16 × 25	18 × 40
1500	16 × 20	16 × 25	18 × 31.5	
2200	16 × 25	16 × 31.5 18 × 35	18 × 35	
3300	16 × 31.5	18 × 35	20 × 40	
4700	18 × 35	20 × 40	25 × 40	
6800	18 × 40			



Overview of available types – B43851

Other voltage and capacitance ratings are available upon request.

V_R (V DC)	160	200	250	350	400	450
	Case dimensions d × l (mm)					
C_R (µF)						
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					



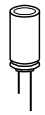
Technical data and ordering codes – B41851

C_R 120 Hz 20 °C µF	Case dimensions d × l mm	ESR_{max} 120 Hz 20 °C Ω	$I_{AC,R}$ 120 Hz 105 °C mA	$I_{AC,max}$ 120 Hz 85 °C mA	Ordering code (composition see below)
V_R = 6.3 V DC					
330	6.3 × 11	1.4	195	275	B41851A2337M***
470	8 × 11.5	1.0	265	370	B41851B2477M***
680	8 × 11.5	0.68	295	413	B41851F2687M***
1000	10 × 12.5	0.46	455	635	B41851A2108M***
1500	10 × 16	0.31	525	735	B41851F2158M***
2200	10 × 20	0.23	710	995	B41851A2228M***
3300	10 × 20	0.16	840	1175	B41851A2338M***
4700	12.5 × 25	0.12	1120	1570	B41851A2478M***
V_R = 10 V DC					
100	5 × 11	4.0	105	150	B41851A3107M***
220	6.3 × 11	1.8	175	245	B41851A3227M***
330	8 × 11.5	1.2	220	310	B41851B3337M***
470	8 × 11.5	0.85	280	390	B41851A3477M***
680	10 × 12.5	0.59	330	460	B41851A3687M***
1000	10 × 12.5	0.40	460	645	B41851A3108M***
1500	10 × 20	0.27	510	715	B41851A3158M***
2200	10 × 20	0.20	760	1065	B41851A3228M***
3300	12.5 × 25	0.14	1085	1520	B41851A3338M***
4700	16 × 20	0.11	1190	1665	B41851A3478M***
6800	16 × 25	0.08	1575	2205	B41851F3688M***
10000	18 × 31.5	0.07	1820	2250	B41851F3109M***

Composition of ordering code

*** = Version

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



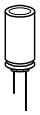
Technical data and ordering codes – B41851

C_R 120 Hz 20 °C µF	Case dimensions d × l mm	ESR_{max} 120 Hz 20 °C Ω	$I_{AC,R}$ 120 Hz 105 °C mA	$I_{AC,max}$ 120 Hz 85 °C mA	Ordering code (composition see below)
V_R = 16 V DC					
100	5 × 11	3.3	115	160	B41851A4107M***
220	6.3 × 11	1.5	190	265	B41851F4227M***
330	8 × 11.5	1.0	265	370	B41851B4337M***
470	8 × 11.5	0.71	315	440	B41851K4477M***
680	10 × 12.5	0.49	390	545	B41851F4687M***
1000	10 × 16	0.33	560	785	B41851A4108M***
1500	10 × 20	0.22	650	910	B41851F4158M***
2200	12.5 × 20	0.17	920	1290	B41851F4228M***
3300	12.5 × 25	0.12	1170	1640	B41851F4338M***
3300	16 × 25	0.12	1260	1765	B41851A4338M***
4700	16 × 25	0.09	1500	2100	B41851A4478M***
6800	16 × 31.5	0.07	1600	2240	B41851F4688M***
10000	18 × 35	0.06	1950	2730	B41851F4109M***
V_R = 25 V DC					
47	5 × 11	5.6	83	116	B41851A5476M***
68	5 × 11	3.9	90	126	B41851F5686M***
100	6.3 × 11	2.7	140	195	B41851A5107M***
220	8 × 11.5	1.2	240	335	B41851B5227M***
330	8 × 11.5	0.80	310	435	B41851F5337M***
330	10 × 12.5	0.80	320	450	B41851A5337M***
470	10 × 12.5	0.56	380	530	B41851F5477M***
680	10 × 16	0.39	440	615	B41851F5687M***

Composition of ordering code

*** = Version

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



Technical data and ordering codes – B41851

C_R 120 Hz 20 °C µF	Case dimensions d × l mm	ESR_{max} 120 Hz 20 °C Ω	$I_{AC,R}$ 120 Hz 105 °C mA	$I_{AC,max}$ 120 Hz 85 °C mA	Ordering code (composition see below)
V_R = 25 V DC					
1000	10 × 20	0.27	680	950	B41851A5108M***
1500	12.5 × 20	0.18	770	1080	B41851F5158M***
2200	12.5 × 25	0.14	1090	1525	B41851F5228M***
3300	16 × 25	0.10	1400	1960	B41851A5338M***
4700	16 × 31.5	0.08	1700	2380	B41851A5478M***
6800	18 × 35	0.06	1850	2590	B41851F5688M***
10000	20 × 40	0.06	2050	2870	B41851F5109M***
V_R = 35 V DC					
33	5 × 11	7.0	75	105	B41851A7336M***
47	5 × 11	4.9	93	130	B41851A7476M***
68	6.3 × 11	3.4	110	155	B41851A7686M***
100	6.3 × 11	2.3	150	210	B41851F7107M***
220	8 × 11.5	1.1	270	380	B41851F7227M***
330	10 × 12.5	0.70	350	490	B41851A7337M***
470	10 × 16	0.49	460	645	B41851A7477M***
680	10 × 20	0.34	590	825	B41851A7687M***
1000	12.5 × 20	0.23	810	1135	B41851F7108M***
1500	16 × 20	0.15	980	1370	B41851F7158M***
2200	16 × 25	0.12	1260	1765	B41851F7228M***
3300	16 × 31.5	0.09	1500	2100	B41851F7338M***
4700	18 × 35	0.07	1780	2490	B41851K7478M***
6800	18 × 40	0.06	2000	2800	B41851K7688M***

Composition of ordering code

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