



## Aluminum electrolytic capacitors

### SMD capacitors

**Series/Type:** B41161  
**Date:** May 2009

The following products presented in this data sheet are being withdrawn.

Ordering Code	Substitute Product	Date of Withdrawal	Deadline Last Orders	Last Shipments
B41161*		2013-02-22	2013-09-30	2014-03-31

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## SMD

### General-purpose grade capacitors

#### Applications

- General-purpose applications in the entertainment industry

#### Features

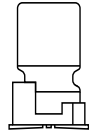
- RoHS-compatible
- Load life of 1000 h at 125 °C
- Suitable for reflow soldering, see chapter "SMD capacitors - Mounting instructions"

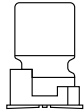
#### Construction

- Surface mounting device
- Minus pole marking on the case

#### Delivery mode

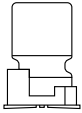
- Taped and reeled  
Refer to chapter "SMD capacitors - Taping and packing" for further details.





# Specifications and characteristics in brief

Rated voltage $V_R$	10 ... 50 V DC					
Operating temperature range	−40 °C ... +125 °C					
Rated capacitance $C_R$ (20 °C, 120 Hz)	10 ... 330 μF					
Capacitance tolerance	±20% △ M					
Load life (125 °C, $V_R$ )	1000 h	Requirements: $\Delta C/C \leq \pm 30\%$ of initial value $\tan \delta \leq 3$ times initial specified value $I_{leak} \leq$ initial specified limit				
Leakage current $I_{leak}$ (20 °C, after 2 minutes)	$I_{leak} \leq 0.01 \mu A \cdot \left( \frac{C_R}{\mu F} \cdot \frac{V_R}{V} \right)$ or 3 μA, whichever is greater					
Low temperature stability (impedance ratio) (120 Hz)	$V_R$ (V DC)	10	16	25	35	50
	$\frac{Z(-25^\circ C)}{Z(+20^\circ C)}$	8	8	4	3	3
	$\frac{Z(-40^\circ C)}{Z(+20^\circ C)}$	14	12	10	8	8
Shelf life (125 °C)	500 h	Requirements: $\Delta C/C \leq \pm 20\%$ of initial value $\tan \delta \leq 2$ times initial specified value $I_{leak} \leq$ initial specified limit				
	After test: $V_R$ to be applied for 30 minutes, 24 to 48 hours before measurement.					
Frequency multiplier for rated ripple current	50 Hz	120 Hz	300 Hz	1 kHz	≥10 kHz	
	0.35	0.50	0.64	0.83	1.00	



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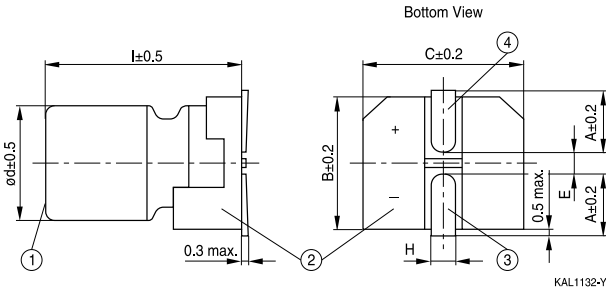
**Standard series – 125 °C**

**SMD**

## Dimensional drawings

**d x l (mm)**

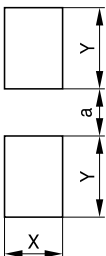
**8 × 10 ... 10 × 10:**



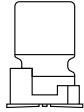
①	Case
②	Terminal base board
③	Minus pole
④	Plus pole

Case dimensions d x l (mm)	8 × 10	10 × 10
A	2.9	3.2
B	8.3	10.3
C	8.3	10.3
E	3.1	4.5
L	10	10
H	0.8 ... 1.1	

## Layout recommendation



d x l (mm)	X	Y	a
8.0 × 10.0	2.5	3.5	3.0
10.0 × 10.0	2.5	4.0	4.0



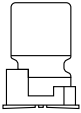
## Overview of available types

$V_R$ (V DC)	10	16	25	35	50
	Case dimensions $d \times l$ (mm)				
$C_R$ ( $\mu F$ )					
33					8 × 10
47				8 × 10	10 × 10
100		8 × 10	8 × 10	10 × 10	
220	8 × 10	10 × 10			
330	10 × 10				

Other voltage and capacitance ratings are available upon request.

## Technical data and ordering codes

$V_R$	$C_R$ 120 Hz 20 °C $\mu F$	Case dimensions $d \times l$ mm	$\tan \delta_{max}$ 120 Hz 20 °C	$I_{AC,R}$ 100 kHz 125 °C mA	Ordering code
10	220 330	8 × 10 10 × 10	0.32 0.32	93 118	B41161A3227M000 B41161A3337M000
16	100 220	8 × 10 10 × 10	0.24 0.24	89 113	B41161A4107M000 B41161A4227M000
25	100	8 × 10	0.21	84	B41161A5107M000
35	47 100	8 × 10 10 × 10	0.18 0.18	79 101	B41161A7476M000 B41161A7107M000
50	33 47	8 × 10 10 × 10	0.18 0.18	74 94	B41161A6336M000 B41161A6476M000



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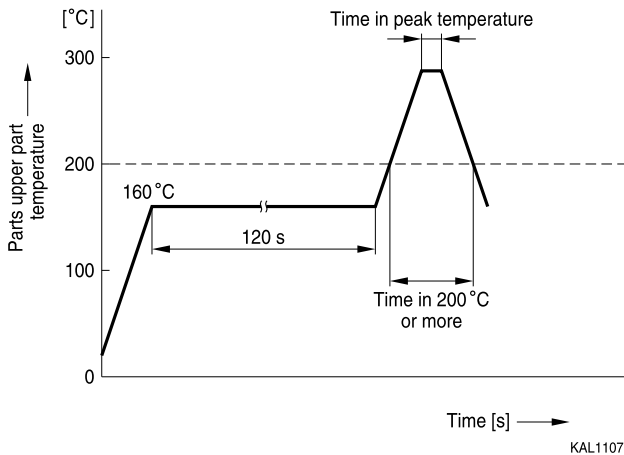
## Mounting instructions

### Soldering

#### Recommended conditions

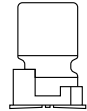
For reflow, use thermal conduction systems such as infrared radiation (IR) or hot blast. Vapor heat transfer systems (VPS) are not recommended.

- Observe proper soldering conditions (temperature, time, etc.).
- Do not exceed the specified limits.
- Temperature measuring method: Measure temperature in assuming quantitative production, by sticking the thermo-couple to the capacitor upper part with epoxy adhesives.
- Consult us for additional reflow restrictions.



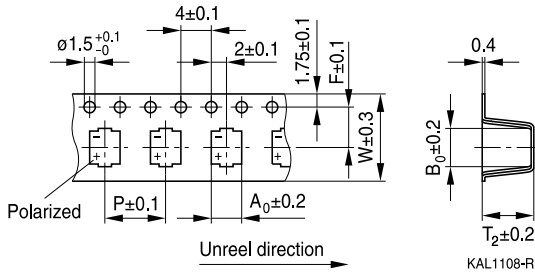
#### Lead-free reflow

d (mm)	4 ... 6.3	8 ... 10
Peak temperature	250 °C	235 °C
Time in peak temperature	5 s	5 s
Time in 200 °C or more	60 s	60 s
Time of reflow	1 time	1 time



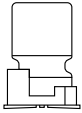
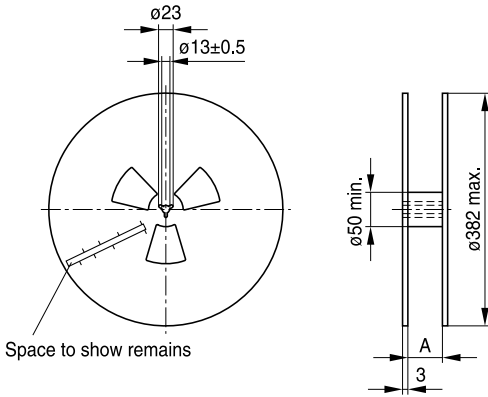
## Taping and packing

### Taping of SMD capacitors



Case dimensions $d \times l$ (mm)	4 × 5.4	4 × 5.8	5 × 5.4	5 × 5.8	6.3 × 5.4
W	12.0	12.0	12.0	12.0	16.0
P	8.0	8.0	12.0	12.0	12.0
F	5.5	5.5	5.5	5.5	7.5
$A_0$	5.0	5.0	6.0	6.0	7.0
$B_0$	5.0	5.0	6.0	6.0	7.0
$T_2$	5.8	6.3	5.8	6.3	5.8

Case dimensions $d \times l$ (mm)	6.3 × 5.8	6.3 × 7.7	8 × 6.2	8 × 10	10 × 10
W	16.0	16.0	16.0	24.0	24.0
P	12.0	12.0	12.0	16.0	16.0
F	7.5	7.5	7.5	11.5	11.5
$A_0$	7.0	7.0	8.7	8.7	10.7
$B_0$	7.0	7.0	8.7	8.7	10.7
$T_2$	6.3	8.2	6.8	11.0	11.0

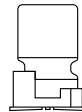

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**Standard series – 125 °C**
**SMD**
**Reel packing**


KAL1110-3

Capacitor dimensions $d \times l$ (mm)	Quantity per reel pcs.
$4 \times l$	2000 pcs.
$5 \times l$ , $6.3 \times l$ , $8 \times 6.2$	1000 pcs.
$8 \times 10$ , $10 \times l$	500 pcs.

$d \times l$ (mm)	$4 \times l$ , $5 \times l$	$6.3 \times l$ , $8 \times 6.2$	$8 \times 10$ , $10 \times l$
A	14	18	26

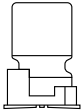




## Cautions and warnings

### General

- 1 Aluminum electrolytic capacitors have a bi-polar structure. This is marked on the body of the capacitor. A capacitor must not be mounted with reversed polarity. The application of an AC or reverse voltage may cause a short circuit or damage the capacitor. Bi-polar capacitors must not be used in AC applications, where the polarity may be reversed in the circuits or is unknown.
- 2 The DC voltage applied to the capacitor terminal must not exceed its rated operating voltage, as this will result in a rapid increase of the leakage current and may damage the capacitor. It is recommended to operate the capacitor at 70 – 80% of its rated voltage to optimize its service life.
- 3 The ripple current applied to the capacitor must be within the permitted range. An excessive ripple current leads to impaired electrical properties and may damage the capacitor. Note that the sum of the peak values of the ripple voltage and the DC operating voltage must not exceed the rated DC voltage.
- 4 Capacitors must be used within their permitted range of operating temperature. Operation at room temperature optimizes their service life.
- 5 Capacitors with case diameter  $\geq 8$  mm are equipped with a safety vent. In capacitors fitted with a lead or soldering lug, the safety vent is usually located at the base of the case. It needs sufficient space around it to operate optimally. The following dimensions are recommended: for case diameter  $d = 8$  to 16 mm, more than 2 mm; for  $d = 18$  to 35 mm, more than 3 mm; and for  $d = 42$  mm or more, more than 5 mm.
- 6 Capacitors should not be mounted with the safety vent face down on the board. Do not locate any wire or copper trace near the safety vent. Do not reverse the voltage, as this may result in excess pressure and the leakage of electrolyte.
- 7 Gas is released through the safety vent when the pressure inside the capacitor is too high. A gaseous liquid around the safety vent does not indicate a leakage of electrolyte.
- 8 The capacitor should be stored under conditions of normal temperature and in a non-acid, non-alkali environment of normal humidity. Exposure to high temperatures, for example under direct sunlight, will reduce its operating life. If the capacitor is stored in an environment containing acids or alkalis, the solderability of the leads may be affected.
- 9 containing acids or alkalis, the solderability of the leads may be affected. The leakage current of an aluminum electrolytic capacitor may increase after a long period of storage. After such storage, the capacitor must be aged by applying the rated operating voltage for 6 – 8 hours before use.
- 10 Manual soldering:
  - a Soldering must be performed within the specified conditions.  
Bit temperature: 350 °C; application time of soldering iron: 3 seconds.
  - b Ensure that the soldering iron does not touch any part of the capacitor body.



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- 11 Do not apply excessive force to the leads and terminals. Do not move the capacitor after soldering it onto the PC board and do not carry the PC board by gripping the capacitor. Observe the following rules to prevent undue stress to the capacitor:
  - a Do not tilt or bend the capacitor after soldering.
  - b Ensure that the terminal spacing matches the corresponding hole spacing on the PC board.
- 12 The aluminum case is not insulated from the cathode. Do not place a conductor under the aluminum capacitors on the PC board as this may cause a short circuit. The case and top of capacitors used in switched mode power supplies have a high-voltage-resistant heat shrink sleeve to ensure safe usage.
- 13 The leads of capacitors with a case diameter exceeding 14 mm cannot be used for fixing.

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