

# CD110 Series

## Aluminum Electrolytic Capacitors

Item Name	Rating	Case size
CD1101E222M	25V2200uF	D13X21L

### 1. Operating Temp. Range

-40+105°C

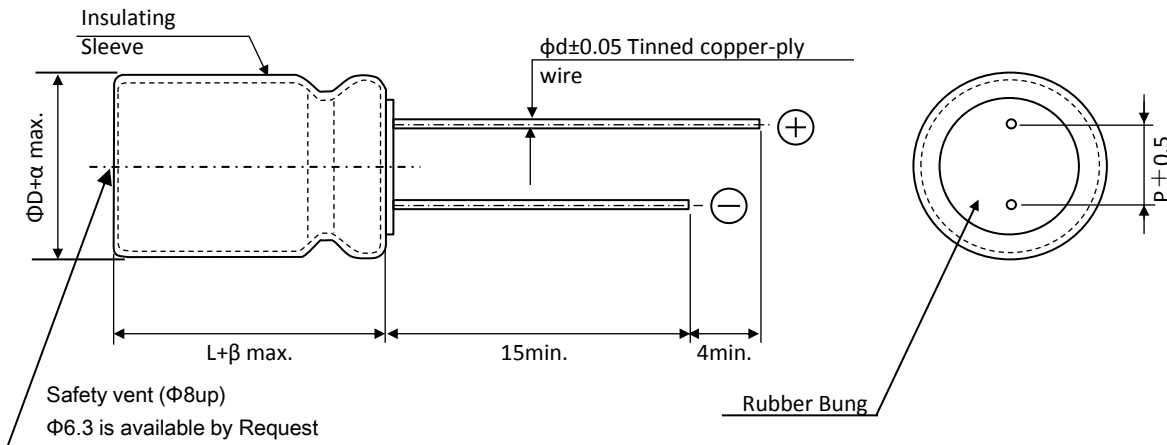
### 2. Electrical Characteristics

See Table 1.

**【Table 1】**

Rated Voltage VDC	Surge Voltage VDC	Nominal Static Capacitance (μF)	Tolerance on Capacitance (%) 20°C 120Hz	Dissipation Factor (tanδ) max 20°C 120Hz	Leakage Current 2min. 20°C (μA)	Permissible Ripple Current (mA rms) 105°C 120Hz	Impedance (Ω) 100KHz 20°C
25	32	2200	±20%	0.20	550	1,370	/

### 3. Dimensions



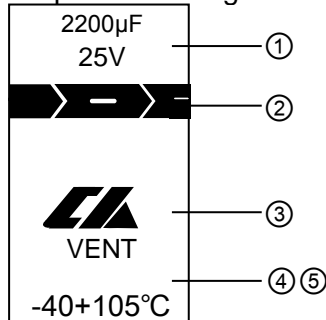
Unit(mm)

$\Phi D$	$\alpha$	L	$\beta$	$\Phi d$	P
13	0.5	21.0	2.0	0.6	5.0

### 4. Marking

Following items are printed with white colour on black colour sleeve

Example of Marking



- ① Rated Voltage & Nominal Capacitance
- ② Polarity (negative)
- ③ Trade Mark of CH
- ④ Product Series
- ⑤ Operating Temp. Range

### 5. MULTIPLIER FOR RIPPLE CURRENT

#### ①. Frequency Coefficient

Freq.(Hz) / Cap(μF)	50Hz	120Hz	300Hz	1KHz	10KHz
2200	0.85	1	1.1	1.13	1.15

#### ②. Temperature Coefficient

Ambient Temperature(°C)	40	60	70	85	105
Coefficient	2.4	2.1	1.78	1.65	1

## 6. Characteristics

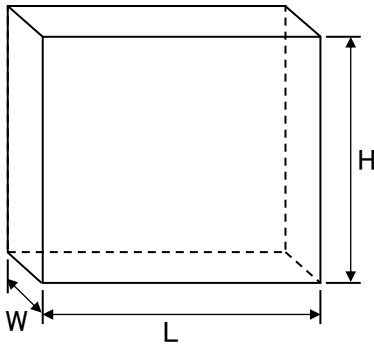
No.	Item	Performance	Test Method																							
1	Leakage Current	$I \leq 550\mu A$	Protection Resistor: 1000±10Ω Applied Volt: Rated Voltage Measuring time: 2 minutes																							
2	Static Capacitance	±20%	Measured Frequency: 120Hz±20% Measured Voltage: ≤ 0.5Vrms, 1.5 ~ 2.0VDC																							
3	Dissipation Factor (tanδ)	0.20 and Under	Same as condition of Capacitors																							
4	Load Life	<table border="1"> <tr> <td>Leakage Current</td> <td>≤ the value specified in Table 1</td> </tr> <tr> <td>Cap. Change</td> <td>≤ ±20% of initial value</td> </tr> <tr> <td>Dissipation Factor</td> <td>≤ 200% of value specified in Table 1</td> </tr> <tr> <td>Appearance</td> <td>No remarkable abnormality</td> </tr> </table>	Leakage Current	≤ the value specified in Table 1	Cap. Change	≤ ±20% of initial value	Dissipation Factor	≤ 200% of value specified in Table 1	Appearance	No remarkable abnormality	Test condition: 105±2°C 120Hz Applied voltage: Rated voltage Applied Ripple Current: 1370mArms Test Time 2000 +72, -0 hours															
Leakage Current	≤ the value specified in Table 1																									
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5	Shelf Life	<table border="1"> <tr> <td>Leakage Current</td> <td>≤ the value specified in Table 1</td> </tr> <tr> <td>Cap. Change</td> <td>≤ ±20% of initial value</td> </tr> <tr> <td>Dissipation Factor</td> <td>≤ 200% of value specified in Table 1</td> </tr> <tr> <td>Appearance</td> <td>No remarkable abnormality</td> </tr> </table>	Leakage Current	≤ the value specified in Table 1	Cap. Change	≤ ±20% of initial value	Dissipation Factor	≤ 200% of value specified in Table 1	Appearance	No remarkable abnormality	Test Temp. : 105±2°C No voltage applied Test Time 1000 hours +24, -0 hours															
Leakage Current	≤ the value specified in Table 1																									
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6	Terminal Strength	<table border="1"> <tr> <td>Tensile Strength</td> <td>45N {4.5kg}</td> </tr> <tr> <td>Bending Strength</td> <td>25N {2.5kg}</td> </tr> </table>	Tensile Strength	45N {4.5kg}	Bending Strength	25N {2.5kg}	Keeping time Tensile: 1 ~ 5 sec Bending: 30±5 sec																			
Tensile Strength	45N {4.5kg}																									
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7	Impedance Ratio	<table border="1"> <tr> <td>Z(-25°C) / Z(+20°C)</td> <td>2</td> </tr> <tr> <td>Z(-40°C) / Z(+20°C)</td> <td>4</td> </tr> </table>	Z(-25°C) / Z(+20°C)	2	Z(-40°C) / Z(+20°C)	4																				
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8	Temperature Characteristics	<table border="1"> <thead> <tr> <th>Stage</th> <th>Item</th> <th>Performance</th> </tr> </thead> <tbody> <tr> <td>2,3</td> <td>Impedance Ratio</td> <td>less than the value mentioned in 6-7</td> </tr> <tr> <td>5</td> <td>Cap. Change</td> <td>≤ ±25% against value in stage 4</td> </tr> </tbody> </table> <p>After the capacitor is held at temperature of each stage and reaches temperature stability, measure performance.</p>	Stage	Item	Performance	2,3	Impedance Ratio	less than the value mentioned in 6-7	5	Cap. Change	≤ ±25% against value in stage 4	<table border="1"> <thead> <tr> <th>Stage</th> <th>Test Temp(°C)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>20±2</td> </tr> <tr> <td>2</td> <td>-25±3;</td> </tr> <tr> <td>3</td> <td>-40±3;</td> </tr> <tr> <td>4</td> <td>20±2</td> </tr> <tr> <td>5</td> <td>105±2</td> </tr> <tr> <td>6</td> <td>20±2</td> </tr> </tbody> </table>	Stage	Test Temp(°C)	1	20±2	2	-25±3;	3	-40±3;	4	20±2	5	105±2	6	20±2
Stage	Item	Performance																								
2,3	Impedance Ratio	less than the value mentioned in 6-7																								
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9	Surge Voltage	<table border="1"> <thead> <tr> <th>Item</th> <th>Performance</th> </tr> </thead> <tbody> <tr> <td>Leakage Current</td> <td>≤ the initial specified value</td> </tr> <tr> <td>Cap. Change</td> <td>≤ ±15% against value before test</td> </tr> <tr> <td>Dissipation Factor</td> <td>≤ the initial specified value</td> </tr> <tr> <td>Appearance</td> <td>No remarkable abnormality</td> </tr> </tbody> </table>	Item	Performance	Leakage Current	≤ the initial specified value	Cap. Change	≤ ±15% against value before test	Dissipation Factor	≤ the initial specified value	Appearance	No remarkable abnormality	Test Temp.: 15 ~ 35°C Test volt.: Surge Volt. Specified in 2 Voltage apply 1,000 times of charge for 30±5 sec, under frequency of 6±0.5 sec, and discharge for 5min 30sec.													
Item	Performance																									
Leakage Current	≤ the initial specified value																									
Cap. Change	≤ ±15% against value before test																									
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10	Vibration Resistance	<table border="1"> <tr> <td>Capacitance</td> <td>Stability required</td> </tr> <tr> <td>Cap. Change</td> <td>≤ ±5% of the initial specified value</td> </tr> <tr> <td>Appearance</td> <td>No remarkable abnormality</td> </tr> </table>	Capacitance	Stability required	Cap. Change	≤ ±5% of the initial specified value	Appearance	No remarkable abnormality	Frequency: 10 ~ 55Hz Width of vibration: 1.5mm Direction and duration: X,Y and Z directions, each for 2 hours																	
Capacitance	Stability required																									
Cap. Change	≤ ±5% of the initial specified value																									
Appearance	No remarkable abnormality																									
11	Solderbility	3/4 area of surrounding directions of surface should be covered with new solder.	Solder: Sn-Ag, Sn-Cu Type Soldering Temp: 240±5°C Dipping degree: 2 ~ 2.5mm Flux: Ethanol solution (JIS K8101) or Isopropylalchol (JIS K8839) solution of Rosin (JIS K5902)																							
12	Resistance to Soldering	<table border="1"> <tr> <td>Leakage Current</td> <td>≤ the initial specified value</td> </tr> <tr> <td>Cap. Change</td> <td>≤ ±15% against value before test</td> </tr> <tr> <td>Dissipation Factor</td> <td>≤ the initial specified value</td> </tr> <tr> <td>Appearance</td> <td>No remarkable abnormality</td> </tr> </table>	Leakage Current	≤ the initial specified value	Cap. Change	≤ ±15% against value before test	Dissipation Factor	≤ the initial specified value	Appearance	No remarkable abnormality	Soldering Temp. 280±5°C Soldering Time . 10±1sec.															
Leakage Current	≤ the initial specified value																									
Cap. Change	≤ ±15% against value before test																									
Dissipation Factor	≤ the initial specified value																									
Appearance	No remarkable abnormality																									

## 6-2. Characteristics

No.	Item	Performance	Test Method								
13	Resistance to Humidity	<table border="1"> <tr> <td>Leakage Current</td> <td>≤ Initial specified value</td> </tr> <tr> <td>Cap. Change</td> <td>≤ ±15% of initial value</td> </tr> <tr> <td>Dissipation Factor</td> <td>≤ Initial specified value</td> </tr> <tr> <td>Appearance</td> <td>No remarkable abnormality</td> </tr> </table>	Leakage Current	≤ Initial specified value	Cap. Change	≤ ±15% of initial value	Dissipation Factor	≤ Initial specified value	Appearance	No remarkable abnormality	Test Temp. : 40±2°C Humidity 90 ~ 95% Test Time : 500 ± 8 hours After the above condition, restored to normal temp, and then measured.
Leakage Current	≤ Initial specified value										
Cap. Change	≤ ±15% of initial value										
Dissipation Factor	≤ Initial specified value										
Appearance	No remarkable abnormality										
14	Pressure valve moment characteristics	Pressure valve open safely. There must be nothing ignition or scattering from product.	DC method: Apply an reverse current of 1A to impress the reverse voltage until pressure valve open.								

## 7. Packing method

Packaging shape, size, quantity



Component size	<b>D13X21L</b>
Quantity per case	<b>PCS</b>
Symbol of box	Y-2
L	480
H	320
W	320

## 8 Related Standards: JIS C 5141

### 9 Marking on packing box

- ① Item name
- ② Series name
- ③ Rated Voltage
- ④ Nominal Static Capacitance
- ⑤ Case size
- ⑥ Lot No.
- ⑦ Quantity

## 10 Soldering

10-1 Soldering by soldering iron

Temperature of iron top : 270~350°C

Operating time : within 3 sec.

10-2 Flow soldering.

Preheat : PCB surface temperature 120°C±5°C

Solder temp.: 260°C±5°C

Solder dipping time: 2~4sec.

## 11 Cleaning of PC board after soldering

Some solvents is acceptable but make sure following condition:

Solvent:

IPA or Alcoholic agent like Pinealpha ST-100S, Cleanthrough 750H, 750L, 710M, 750K, or Technocare FRW-14 ~ 17

- ① Cleaning should be made by ultrasonic within 5min, at the temperature less then 60°C.
- ② Control of pollution is necessary.
- ③ Keep away from cleaning agent. Please do not store in air-tight container.  
Dry it by hot air, keep the temperature of air less than maximum operating temp.

单击下面可查看定价，库存，交付和生命周期等信息

[>>KINGTOP\(勤拓\)](#)