Messrs.　ALMAR ENTERPRISES CO., LTD

ALUMINUM ELECTROLYTIC CAPACITORS SPECIFICATION SHEET

RoHS Compliance

CUSTOMER PART No.		
Rubycon PART No.	35 TLV 220 M 8X10.5	
DRAWING No.	RER-218944	ISSUE No.1
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Aluminum electrolytic capacitor Specification Sheet

35 TLV 220 M 8X10.5

Drawing No. : RER-218944

Issue No. : 1

1.Scope

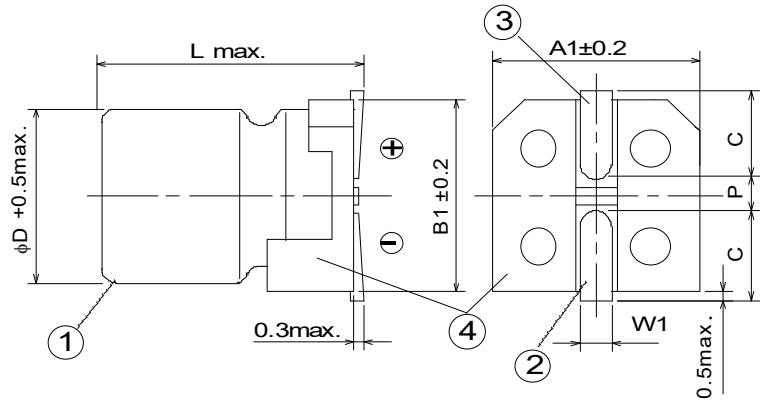
This specification covers polarized aluminum electrolytic capacitors with non-solid electrolyte for use in electronic equipments.

Style:CE 32 (SMD - Vertical Mount Type)

2.Numbering System

Rated Voltage	Series	Nominal Capacitance	Capacitance Tolerance	Option	Case Size
35	TLV	220	M	_	8X10.5

3.Diagram of dimensions Unit : mm



Dimensions					
φD	L	A1, B1	P	C	W1
8	10.5	8.3	3.1	2.9	0.8～1.1

①	Case	Aluminum	Plastic laminated
②	Cathode terminal	Copper clad steel wire	Tin-Bismuth alloys plated
③	Anode terminal		
④	Terminal base board	Heat resisting plastic	

A safety vent shall be provided.

4.Marking

Unless otherwise specified, capacitor shall be clearly marked the following items on its body.

(1)Series Code	TL	(Series TLV)
(2)Voltage Code	V	(Rated Volage 35V)
(3)Nominal Capacitance	220	(Nominal Capacitance 220μF)
(4)Polarity	(Negative Polarity Marking is Black)	
(5)Lot Number		

5.Electrical Performance

Table-1

Operating Temperature Range		-55 ～105	(℃)
Nominal Capacitance	20℃, 120Hz	220	(μF)
Capacitance Tolerance		-20 ～ 20	(%)
Rated Voltage		35	(V.DC)
Surge Voltage		44	(V.DC)
Leakage Current	20℃, 2min	77	(μA max.)
Dissipation Factor (tanδ)	20℃, 120Hz	0.12	(max.)
Rated Ripple Current	105℃, 100kHz	600	(mAr.m.s.)
Impedance Ratio 120Hz	Z-25℃/Z20℃	2	(max.)
	Z-40℃/Z20℃	3	(max.)
	Z-55℃/Z20℃	3	(max.)
Impedance	20℃, 100kHz	0.16	(Ωmax.)

6. PERFORMANCE

Table－2

1	Load Life Test	<Condition> Capacitor under the test shall be applied the rated voltage continuously through 1000Ω series protective resistor at following temperature and time. After the test and returned in standard condition for 1 to 2 hours, and the capacitor shall meet following requirements. Temperature: 105 ±2℃ Time: $5000\ ^{+72}_{0}$ h <Criteria>

Leakage Current	Not more than the specified value
Capacitance Change	Within ±30% of the initial value
Dissipation Factor	Not more than 300% of the specified value
Appearance	Notable changes shall not be found.

2	Shelf Life Test	<Condition> Capacitor shall be stored at following temperature and time with no voltage applied . After the test and returned in standard condition for 1 to 2 hours and the capacitor shall meet following requirements. (If any doubt arises on the judgment, the capacitors shall be subjected to voltage treatment specified in JIS C 5141,5.2.) Temperature: 105 ±2℃ Time: $1000\ ^{+48}_{0}$ h <Criteria>

Leakage Current	Not more than the specified value
Capacitance Change	Within ±25% of the initial value
Dissipation Factor	Not more than 200% of the specified value
Appearance	Notable changes shall not be found

3	Rated Ripple Current	(1) The rated ripple current is the maximum A.C. current at 100kHz and can be applied at maximum operating temperature. (2) The combined value of D.C. voltage and the peak A.C. voltage shall not exceed the rated voltage and shall not be reverse voltage. <Frequency Coefficient>

Frequency (Hz) / Capacitance(μF)	120	1k	10k	100k≦
220	0.6	0.85	0.95	1

<Temperature Coefficient >

Ambient Temperature(℃)	105	85	65≧
Coefficient	1.0	1.7	2.1

◇Temperature coefficient shows a limit of ripple current exceeding the rated ripple current that can be passed through a capacitor at each temperature when the life expectancy of a capacitor becomes to be nearly equal with the lifetime at the rated maximum operating temperature.

7. Reflow soldering condition

7-1 Capacitors shall be proof the following reflow soldering condition.

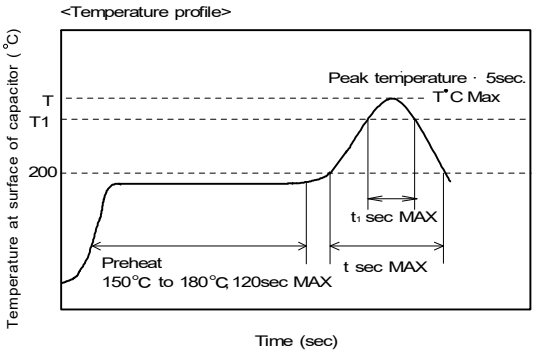
(1) Temperature at surface of capacitor shall not exceed T℃. (Temperature measurement point is top of case.)

(2) Period that temperature at surface of capacitor becomes more than 200℃ and T1℃ shall not exceed t and t1 seconds, respectively.

(3) Holding time in the peak temperature shall be within 5 seconds.

(4) Preheat shall be made at 150℃ to ℃ and for maximum 120 seconds.

(5) Reflow soldering process shall be maximum 2 cycles.



φDxL	T℃	T1℃	t (sec.)	t1 (sec.)
8X10.5	245	230	70	30

7-2 Notes

(1) Reflow soldering condition (reflow time, temperature) depends on following points.

· Kind of reflow oven · Kind of PW-board

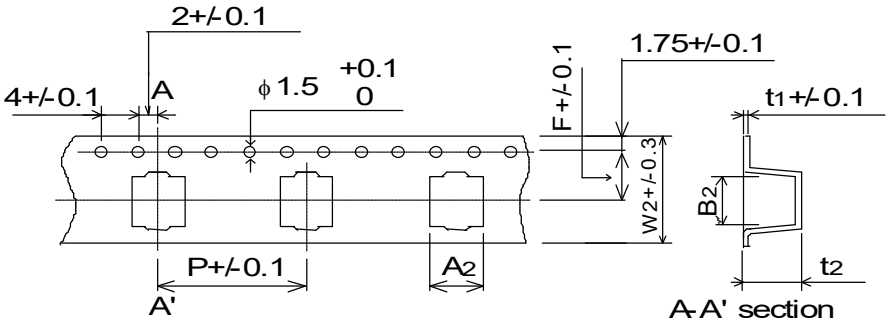
· Mounting condition (part size, PW-board size etc.) of parts on the PW-board

Please confirm your reflow profile.

(2) The thermocouple (Type CA φ0.1mm dia) shall be fixed to the surface of capacitor by adhesives.

8.Taping Specifications

8-1. Carrier Tape

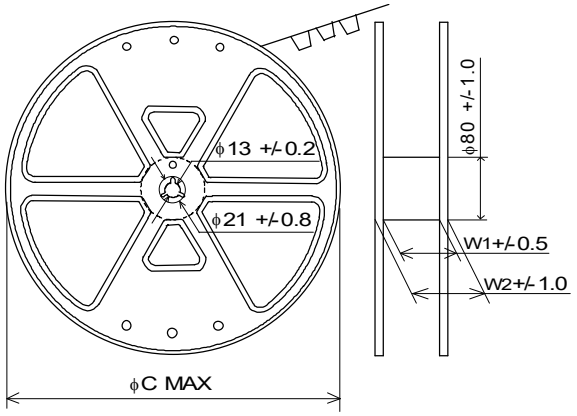


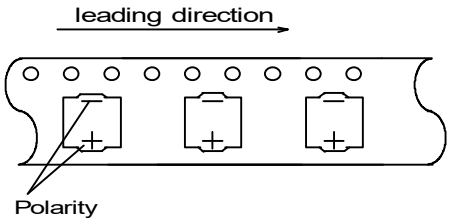
(mm)

φDxL	W2	A2	B2	P	t2	F	t1
8X10.5	24	8.7	8.7	16	11	11.5	0.4

8-2. Reel size

Plastic reel





(mm)

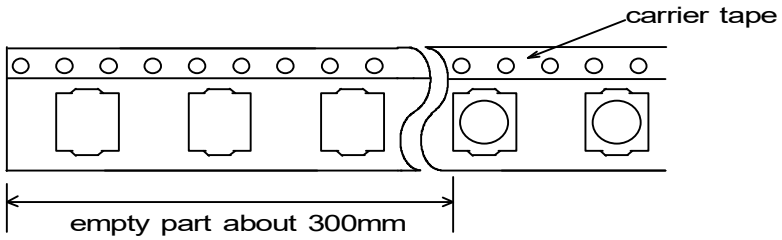
φDxL	W1	W2	φC
8X10.5	25.5	29.5	382

8-3. Quantity

φDXL	One reel
8X10.5	500 pcs

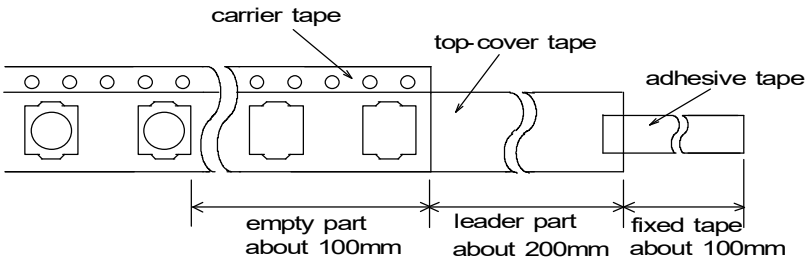
8-4. Packing form of the carrier tape

(a) Carrier tape after the last component.



Carrier tape shall be inserted into reel without cover tape directly.

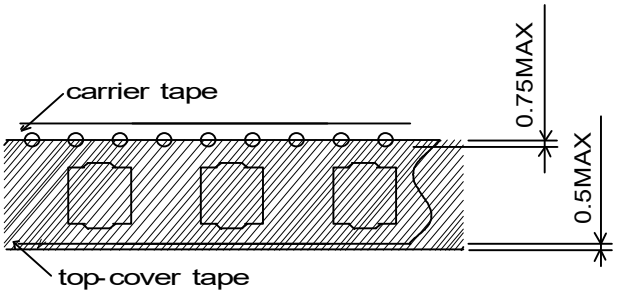
(b) Leader tape before the first component.



8-5. Deviation between carrier tape and top-cover tape

Deviation between carrier tape and top-cover tape shall not exceed 0.5mm.

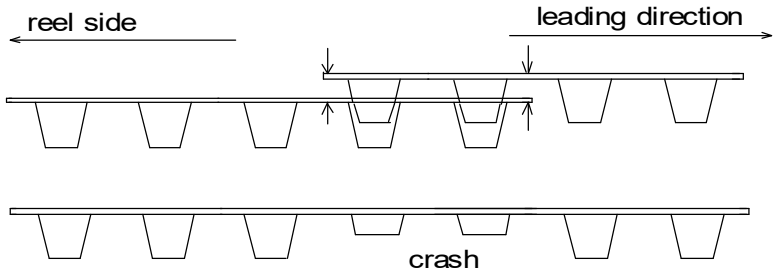
Top-cover tape whose cover the feeding hole shall not exceed 0.75mm.



8-6. Connection of the carrier tape

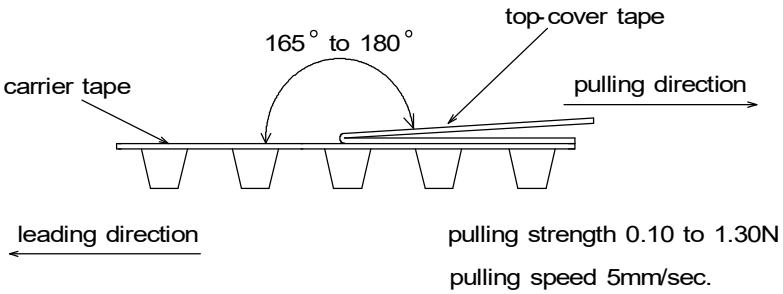
(a) Two pieces of embossed part of the each carrier tape shall be piled up without packing the capacitor in it and crashed by jigs.

About connected part, carrier tape of the reel side shall be below one of leader side.



(b) Number of connection per reel shall be within three places.

8-7. Adhesion test



8-8. Carrier tape shall be reeled whose embossed part is inside. (Top-cover tape shall be outside.)

Notes on use of aluminum electrolytic capacitors

(1) Charge and discharge

Do not use for the circuit that repeats quick charge or discharge.

(2) External stress

Do not apply excessive force of pushing, pulling bending, and/or twisting to the main body, lead wire and terminals.

(3) Heat resistance at soldering process

Please pay attention to the temperature and the time of resin curing oven and reflow oven.

(4) Insulation and PC board mounting

Case and cathode terminal are not insulated.

(5) Adhesives and coating materials

Do not use the adhesives and coating materials that contain halogenated organic solvents or chloroprene as polymer.

(6) Storage

Keep at a normal temperature and humidity. During a long storage time, leakage current will be increased. To prevent heat rise or any trouble that high leakage current possibly causes, voltage treatment is recommended for the capacitors that have been stored for a long time.

(Storage Condition)

- Do not store Aluminum Electrolytic Capacitors in hot and/or humid atmosphere. Recommended storage condition is 5℃-35℃ in temperature and not higher than 75% in relative humidity.
- Do not store Aluminum Electrolytic Capacitors in a condition where spray of water, saltwater or oil is expected.
- Do not store Aluminum Electrolytic Capacitors in an environment full of hazardous gas (e.g. hydrogen sulfide, sulfurous acid gas, nitrous acid, chlorine gas, ammonia, bromine gas, methyl bromide).
- Do not store Aluminum Electrolytic Capacitors under exposure to ozone, ultraviolet rays or radiation.
- Do not store Aluminum Electrolytic Capacitors under exposure to acid or alkaline environment.

(7) Fumigation and halogenated flame retardant

It may cause corrosion of internal electrodes, aluminum cases and terminal surface when the following conditions exist.

- Fumigation of wooden pallets before shipment to disinfect vermin.
- Existence of components or parts that contain halogenated flame retardant agent (bromine etc.) together with capacitors.
- When halogenated detergents of antiseptics for preventing infection of epidemic diseases contact directly to capacitors.

(8) PC board cleaning after soldering

Please consult us when cleaning is subjected.

*Guide to application except the above are described in our catalog and JEITA RCR-2367D (including any amendments).

JEITA RCR-2367D : "Safety application guide for fixed aluminum electrolytic capacitors for use in electronic equipment."

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