X-CON®

SPECIFICATION
for
Reference

Date：

Product Description：Conductive Polymer Aluminum Solid Capacitors (Multi-layer Type)

MPL □□□

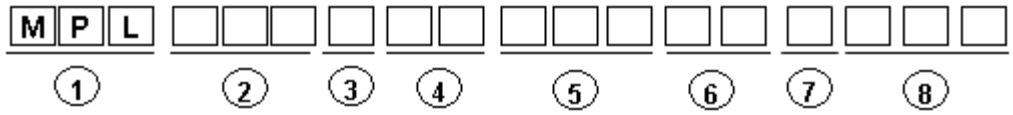
Contents

1. Scope

These specifications are applied to Polymer Aluminum Electrolytic Capacitor for electronic equipment use.

Please contact us beforehand when you use it besides this use.

2. Part Number Description



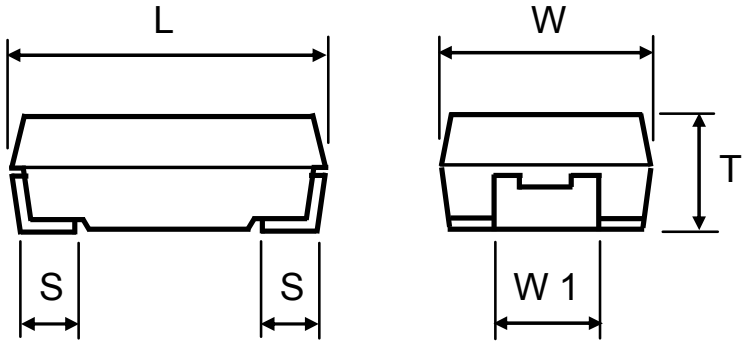
①Series	: MPL
②Capacitance	: See 3.3
③Capacitance Tolerance	: See 3.4
④Rated Voltage	: See 3.2
⑤Dimensions	: See 3.1
⑥Packing	: See 3.5
⑦Brand	: See 3.6
⑧Individual Specification Code	: Individual Specification Code

3. Descriptions

3.1 Dimensions

(mm)

Case Code	L	W	T	W1	S
G19	7.3±0.3	4.3±0.2	1.9±0.1	2.4±0.2	1.3±0.2
G28	7.3±0.3	4.3±0.2	2.8±0.3	2.4±0.2	1.3±0.2
G42	7.3±0.3	4.3±0.3	4.2±0.3	2.4±0.2	1.3±0.2



3.2 Rated Voltage

Code	0D	0G	0J	1A	1B	1C
Voltage	2V	4V	6.3V	10V	12.5V	16V

3.3 Capacitance

These code are shown by three figures, the 1st and the second figure show the significant digit of the nominal capacitance, and the third figure shows the number of "0" following the significant digit.

Code	Capacitance
476	47μF
107	100μF
227	220μF
477	470μF

3.4 Capacitance Tolerance

Code	Tolerance
M	±20%

3.5 Packing

Code	Specification
TR	Tape & Reel

3.6 Brand

Code	Brand
X	X-CON

4. Part Number and Minimum Packaging Quantity

4.1 Part Numbers and Standards

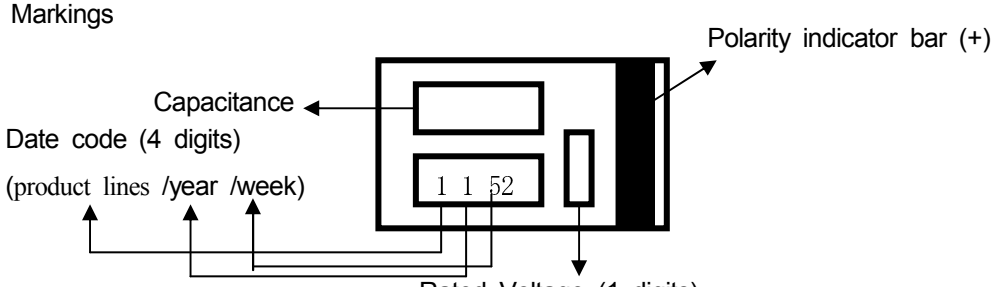
Part Number	Rated Voltage (V.DC)	Cap. (μF)	Cap Tol. (%)	Case Size	ESR (mΩ) 100KHz/ +25℃	Leakage Current (μA)	Ripple Current (Arms) 100KHz
MPL107M0DG19TRX□□□	2	100	±20	G19	16	8.0	2.0
MPL157M0DG19TRX□□□	2	150	±20	G19	9	12.0	3.0
MPL227M0DG19TRX□□□	2	220	±20	G19	9	17.6	3.0
MPL337M0DG28TRX□□□	2	330	±20	G28	7	26.4	3.5
MPL477M0DG28TRX□□□	2	470	±20	G28	6	37.6	3.5
MPL686M0GG19TRX□□□	4	68	±20	G19	20	10.8	1.9
MPL826M0GG19TRX□□□	4	82	±20	G19	16	13.1	2.1
MPL157M0GG19TRX□□□	4	150	±20	G19	16	24.0	2.1
MPL187M0GG28TRX□□□	4	180	±20	G28	12	28.8	2.5
MPL227M0GG28TRX□□□	4	220	±20	G28	10	35.2	3.0
MPL337M0GG42TRX□□□	4	330	±20	G42	8	52.8	3.3
MPL106M0JG19TRX□□□	6.3	10	±20	G19	55	2.5	1.0
MPL226M0JG19TRX□□□	6.3	22	±20	G19	45	5.5	1.0
MPL336M0JG19TRX□□□	6.3	33	±20	G19	25	8.3	1.8
MPL476M0JG19TRX□□□	6.3	47	±20	G19	25	11.8	1.8
MPL686M0JG19TRX□□□	6.3	68	±20	G19	15	17.1	2.0
MPL107M0JG19TRX□□□	6.3	100	±20	G19	15	25.2	2.0
MPL157M0JG28TRX□□□	6.3	150	±20	G28	10	37.8	3.0
MPL227M0JG42TRX□□□	6.3	220	±20	G42	10	55.4	3.0

Part Number	Rated Voltage (V.DC)	Cap. (μF)	Cap Tol. (%)	Case Size	ESR (mΩ) 100KHz/ +25℃	Leakage Current (μA)	Ripple Current (Arms) 100KHz
MPL106M1AG19TRX□□□	10	10	±20	G19	55	4.0	1.0
MPL226M1AG19TRX□□□	10	22	±20	G19	28	8.8	1.6
MPL336M1AG19TRX□□□	10	33	±20	G19	25	13.2	1.8
MPL686M1AG28TRX□□□	10	68	±20	G28	15	27.2	2.0
MPL107M1AG42TRX□□□	10	100	±20	G42	10	40.0	3.0
MPL157M1AG42TRX□□□	10	150	±20	G42	10	60.0	3.0
MPL106M1BG19TRX□□□	12.5	10	±20	G19	55	12.5	1.0
MPL156M1BG19TRX□□□	12.5	15	±20	G19	45	18.7	1.0
MPL226M1BG19TRX□□□	12.5	22	±20	G19	30	27.5	1.6
MPL336M1BG28TRX□□□	12.5	33	±20	G28	25	41.2	1.8
MPL476M1BG28TRX□□□	12.5	47	±20	G28	20	58.7	2.0
MPL566M1BG42TRX□□□	12.5	56	±20	G42	20	70.0	2.0
MPL107M1BG42TRX□□□	12.5	100	±20	G42	12	125.0	2.5
MPL685M1CG19TRX□□□	16	6.8	±20	G19	70	10.8	1.0
MPL106M1CG19TRX□□□	16	10	±20	G19	60	16.0	1.0
MPL156M1CG19TRX□□□	16	15	±20	G19	40	24.0	1.0
MPL226M1CG28TRX□□□	16	22	±20	G28	30	35.2	1.6

4-2 Minimum Packaging Quantity

Case Size	Minimum Packaging Quantity(pcs)
G19	3,000
G28	2,500
G42	2,000

5. Markings



year	code
2011	1
2012	2
2013	3
2014	4
2015	5
2016	6
2017	7
2018	8

Week	1	2	3
Code	01	02	03

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Week	24	25	26
Code	24	25	26

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Week	27	28	29
Code	27	28	29

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Week	50	51	52
Code	50	51	52

Rated Voltage Code (1 digits)

Code	Voltage
d	2
e	2.5
g	4
j	6.3
k	8
A	10
B	12.5
C	16

6. Characteristics

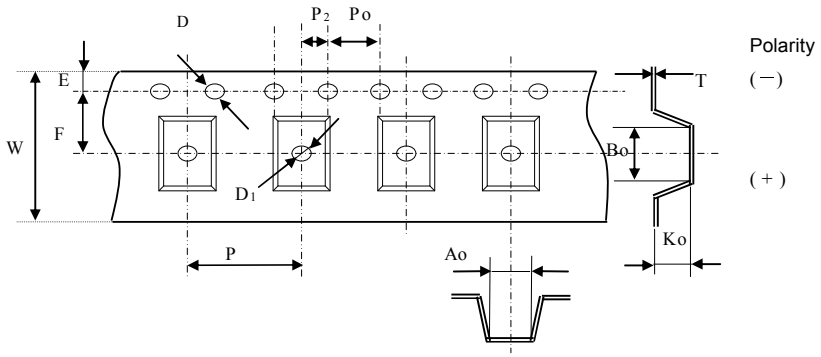
No	Item	Characteristics	Test Conditions
1	Operating temperature range	-40℃～+105℃	
2	Leakage Current	≦0.04CV for W.V.:2V～10V ≦0.1CV for W.V.:12.5V～16V	Series resistor: 1000 ohm Applied voltage: Rated Voltage Measuring after 2 minutes of application Please conduct pre-conditioning below, if you have a doubt. Pre-conditioning: ・Temperature: room temp. ・Applied voltage :Rated Voltage ・Series resistor:1000 ohm ・Charge time:30 min.
3	Capacitance tolerance	(See No.4.1)	Measuring frequency: 120Hz ±10% Measuring circuit: Equivalent series circuit Measuring voltage: +1Vr.m.s. Measuring temperature: 25 ℃
4	Dissipation Factor	≦0.06	
5	ESR	(See No.4.1)	Measuring frequency: 100kHz ±10% Measuring voltage: no more than +1Vr.m.s. Measuring temperature: 25 ℃
6	Allowable Ripple Current	(See No.4.1)	Measuring frequency: 100kHz ±10% Part temperature: +20 to +105 ℃

No.	Item		Characteristics	Test Conditions
7	Solderability		More than 95% of each terminal face is covered by new solder	Eutectic solder: H60A Flux: Ethanol solution of 25% rosin Solder temperature: 235 ±5 ℃ Immersing time: 5 ±0.5s
8	Moisture resistance under no bias	Leakage Current	≦0.3CV	Test temperature: 60±2℃ Relative humidity: 90~95%RH Test time: 500+24, -0h
		Capacitance Change	-20% and +50% of initial value	
		Dissipation Factor	≦0.12	
		Appearance	No defects or abnormalities	
9	Moisture resistance under load	Leakage Current	≦0.04CV for W.V. 2V～10V ≦0.1CV for W.V. 12.5V～16V	Test temperature: 60±2℃ Relative humidity: 90~95%RH Test time: 1000+48, -0h Applied voltage: Rated Voltage
		Capacitance Change	-20% and +50% of initial value	
		Dissipation Factor	≦0.12	
		Appearance	No defects or abnormalities	
10	Shelf life	Leakage Current	≦0.04CV for W.V. 2V～10V ≦0.1CV for W.V. 12.5V～16V	Test temperature: 105±2℃ Test time: 1000+48, -0h
		Capacitance Change	±10% of initial measured value	
		Dissipation Factor	≦0.06	
		Appearance	No defects or abnormalities	
11	Endurance	Leakage Current	≦0.04CV for W.V. 2V～10V ≦0.1CV for W.V. 12.5V～16V	Test temperature: 105±2℃ Test time: 1000+48, -0h Applied voltage: Rated Voltage
		Capacitance Change	±10% of initial measured value	
		Dissipation Factor	≦0.06	
		Appearance	No defects or abnormalities	
12	Surge	Leakage Current	≦0.04CV for W.V. 2V～10V ≦0.1CV for W.V.12.5V～16V	Temperature: +85℃ for W.V. 2V~10V Room temp. for W.V. 12.5V～16V Applied voltage: Rated voltage x1.25 for W.V. 2V～10V Current Limiting resistance: 33 ohm(in series) for W.V. 2V～10V 1k ohm(in series) for W.V. 12.5V～16V Discharge resistance: 33 ohm(in series) for W.V. 2V～10V 1k ohm(in series) for W.V. 12.5V～16V Charge on/off: 30 sec. each, 1000 times
		Capacitance Change	±10% of initial measured value	
		Dissipation Factor	≦0.06	
		Appearance	No defects or abnormalities	

The measurement condition in No.2 to 4 applies to No.8 to 12.

7. Packaging

7.1 Carrier Tape Configuration and Dimension



Case Code "G19" (mm)

	W	P	A0	B0	K0	Cumulative Pitch
Dimension	12.00	8.00	4.60	7.60	2.16	40.00

	D	E	P0	T	P2
Dimension	1.50	1.75	4.00	0.229	2.00

Case Code "G28" (mm)

	W	P	A0	B0	K0	Cumulative Pitch
Dimension	12.00	8.00	4.60	7.60	3.10	40.00

	D	E	P0	T	P2
Dimension	1.50	1.75	4.00	0.267	2.00

Case Code "G42" (mm)

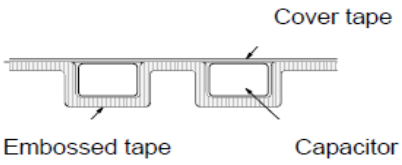
	W	P	A0	B0	K0	Cumulative Pitch
Dimension	12.00	8.00	4.45	7.58	4.55	40.00

	D	E	P0	T	P2
Dimension	1.50	1.75	4.00	0.279	2.00

7.2 Tape Packaging

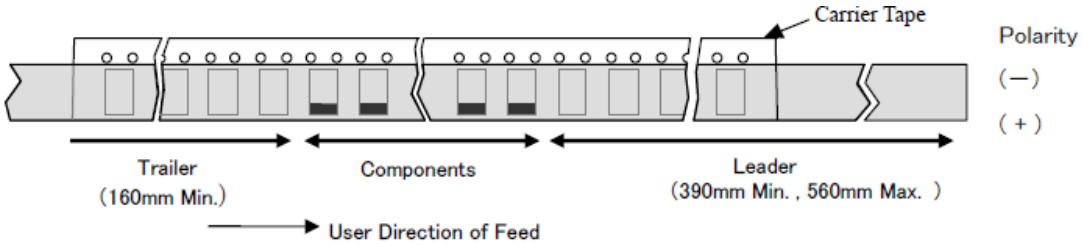
Capacitors will be inserted in embossed carrier tape that will be sealed with cover tape as described below.

No more than half of a sprocket hole will be covered by cover tape.



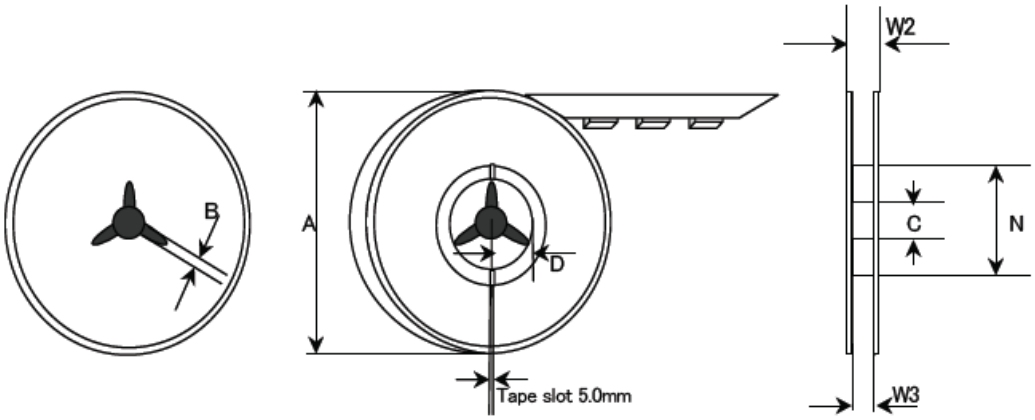
7.3 Taping Leader

Tape has a leader and a trailer as described below.



7.4 Reel Configuration and Dimension

Tape with capacitors is wound in a reel as described below.



(mm)

Reel size	Tape width	A	B	C	D	N	W2	W3
Φ330	12	330.0MAX	2.0±0.18	13.0±0.2	11.9±0.1	100.0±1.0	17.5±1.0	13.5±1.5

8. Caution for Use

Caution

⚠ 8.1 Limitation of the use

Please contact us before using our products for the applications listed below which require especially high reliability for the prevention of defects which might directly cause damage to the third party's life, body or property.

①Aircraft equipment ②Aerospace equipment ③Undersea equipment ④Power plant control equipment ⑤Medical equipment ⑥Transportation equipment (vehicles, trains, ships, etc.) ⑦Traffic signal equipment ⑧Disaster prevention / crime prevention equipment ⑨Data-processing equipment ⑩Application of similar complexity and / or reliability requirements to the applications listed in the above.

⚠ Caution

8.2 Storage Condition

＜1＞Term of warranty for this product is two years after packaging in a moisture-proof bag, under the conditions below with sealed packaging.

Recommended storage environment: Room temperature: 5-30 degree

Humidity: no more than 60%RH

＜2＞Polymer aluminum electrolytic capacitors should be stored in a dry atmosphere, avoiding direct sunlight and condensation. If capacitors are kept at a higher humidity, the following problems may occur:

①Leakage current will increase at the beginning of use and damage the circuit.

②Moisture absorbed in a resin will evaporate and expand with heat of mounting and damage the mold resin.

＜3＞Please confirm a dry state with a humidity indicator card after open immediately.

If 20% indication was in a pink state after opened, it is recommended to bake under the conditions below as countermeasures against the problems ① and ② in <2> above respectively.

＜4＞The capacitors should be kept dry using desiccators or any other methods after unsealing the moisture-proof packaging. If more than two weeks has passed under the recommended storage environment specified above after unsealing the packaging, it is recommended to apply voltage and to bake under the conditions below, as countermeasures against the problems ① and ② in <2> above respectively.

①Recommended voltage conditions:

Applied voltage: rated voltage

Time: 30 minutes

Temperature: room temperature

Current limiting resistance: 1000Ω(series connection)

②Recommended baking conditions:

Temperature: 60(+0, -5) degree C

Time: 168 hours

＜5＞This product meets MSL-3.

Caution

8.3 Cautions for Use

＜1＞Polarity

Polymer aluminum electrolytic capacitor is polarized. Please not to reverse the polarity when using. If reverse voltage is applied, it may damage the oxide film and the capacitor itself. Please verify the orientation of the capacitor before use in accordance with the drawing of "Markings" in Item 5.

＜2＞Allowable Ripple Current

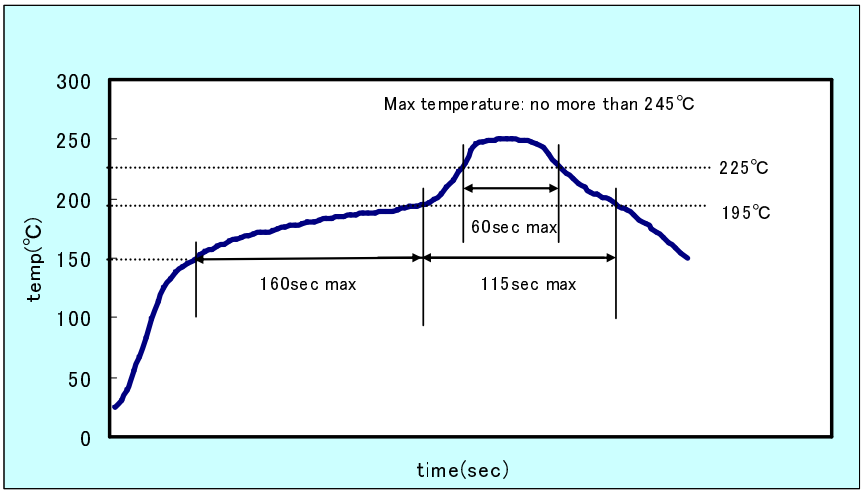
Please not to apply ripple current exceeding the allowable value specified in the standards in Item 4.1. If excessive current is applied, it may generate heat and the heat may damage the capacitor. The sum of DC voltage and the peak AC voltage shall not exceed the rated voltage. The sum of the DC voltage and the peak AC voltage shall not allow a voltage reversal.

＜3＞Reflow Soldering

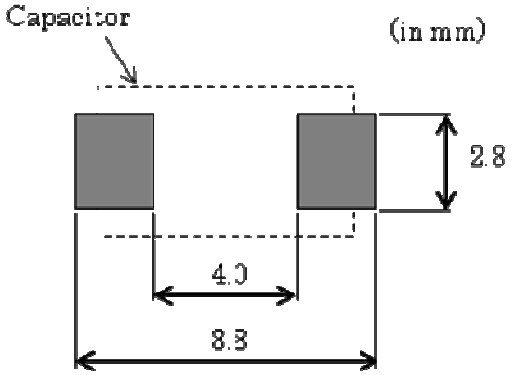
①Please not to apply excessive force to the capacitor during insertion as well as after soldering. The excessive force may result in damage to electrode terminals and/or degradation of electrical performance.

②Resistance testing to reflow soldering was conducted in accordance with the reflow profile described in Figure 1. If this profile is adopted, reflow soldering can be repeated no more than two times.

＜Figure 1.＞ Our Recommended Reflow Profile



③Please refer to figure below for designing land pattern.



＜4＞Export

This capacitor falls into the cargo specified in section 16 in the attachment List No. 1 to Export Trade Control Ordinance, Foreign Exchange and Foreign Trade Control Law when shipped from Japan.

＜5＞Disposal

Polymer aluminum electrolytic capacitors should be disposed of as industrial waste in accordance with laws.

10. Proposal

①When you use, please evaluate in a state mounted by your product.

②Please do not use this product other than the mention contents of this specifications.

③We think that it is not appropriate to mention a contract matter about the business in specifications, a drawing, other technical documentations.

Therefore, we invalidate it when there is a mention about the range of the responsibility of us such as a guarantee of quality, PL, industrial property, the export control in these technical documentations that your company was made.

Please offer these matters separately in the basic contract document etc…