

PMLCAP®使用注意事项

使用PMLCAP®时请注意以下各点。

此外，本商品目录所记载的内容，可能会在没有预先通知的情况下发生变更，敬请谅解。

1. 施加电压

1) 额定电压

电容器上施加的电压必需低于直流电压与交流电压峰值之和。

2) 由使用温度决定的额定电压降额

此电容在额定使用温度范围内不需要电压降额使用。

3) 高频使用的场合

电容器在高频使用时，因其自身发热会造成其寿命减少。若在高频中使用电容器，请联系我们。

4) 在特殊波形中使用

在正弦波以外的特殊波形中使用，有效值各不相同。详情请在确认电流波形后咨询我们。

2. 关于静电容量允许差的保证

PMLCAP®有着随着周围环境条件的变化而变化的情况。自然放置状态也会随着吸湿而容量发生变化。考虑这样的电容容量变化而出货，静电容量允许差的保证为截止电解电容防湿袋开启时。个别的换取时，不受这个限制。

3. 允许电流

1) 对应频率的允许电流

请预先向我们咨询。

2) 允许峰值电流值（脉冲电流）

在正弦波以外的特殊波形中使用，有效值各不相同。详情请在确认电流波形后，咨询我们。

4. 自身温度的上升

请确保其自身温度的上升在10°C以内。

CAUTION FOR PROPER USE OF PMLCAP®

Upon using PMLCAP®, please pay attention to the points listed below.

Catalog may be subject to change without notice.

1. APPLIED VOLTAGE

1) Rated voltage

As for applied voltage to capacitors, sum of DC voltage and peak AC voltage should not exceed their own DC rated voltage.

2) Voltage derating

Within category temperature range, capacitors can be used without voltage derating.

3) Use in high frequency

Using capacitors at high frequency will be shortened its life due to the generation of heat. Please consult us in this case.

4) Use in special wave-form

If you want to use capacitors with a special wave-form other than a sine wave, please inquire to us for details after identifying the wave-form with which the capacitor is required to be used, because the effective value varies with wave-form.

2. GUARANTEE OF CAPACITANCE TOLERANCE

PMLCAP® characteristics may fluctuate by surroundings. Even if left in natural condition, capacitance may fluctuate by humidity. By considering it, the product shall be shipped with special care at factory. But the guarantee of capacitance tolerance shall be applied once before opening the humidity proof bag. It shall not be applied when individual agreement is exchanged.

3. PERMISSIBLE CURRENT

1) Permissible current for frequency

Please contact us in advance.

2) Permissible peak current (pulse current)

If you want to use capacitors with a special wave-form other than a sine wave, please inquire to us for details after identifying the wave-form with which the capacitor is required to be used, because the effective value varies with wave-form.

4. SELF HEAT RISE

Please confirm self heat rise within 10°C.

5. 关于工作温度

请在规格书规定的工作温度范围内使用。在超过规格书规定的温度范围以外使用时，会造成电容器性能劣化、发生故障等。关于工作温度，也请注意配套机器内的发热体(如三级管、电阻等)所散发的热量以及由于纹波电流产生的电容器自身发热。

6. 关于电路板焊接

1) 实装方法

●MU系列、MS系列、MR系列

PMLCAP®MU系列、MS系列、MR系列为回流焊和波峰焊实装，可以兼用。
请不要使用VPS法等实装。

●ST系列

PMLCAP®ST系列只能进行回流焊接。不能用自动焊、浸渍法、VPS法等焊接方法。此外，也请注意回流炉的温度及时间。请按照推荐温度曲线进行焊接。

●LDT系列

PMLCAP®LDT系列只能进行回流焊接。不能用自动焊、VPS法等焊接方法。

2) MSL

以IPC/JEDEC J-STD-020D为基础，
MSL (Moisture Sensitive Level) 为下所述。

贴片尺寸 Chip size	1608	2012	3216	3225	4532	5750	1632	3245
MSL	3	3	3	4	5	5	4	5
Floor life time ^{**} (hours)	168	168	168	96	48	48	72	48

**"Floor life time"是指在30°C60%RH以下的防潮管理场合下。/Floor life time is the case of humidity control under 30°C60%RH.

3) 锡膏焊接 (表面实装品)

适合的锡膏涂敷厚度为0.1~0.2mm。另外，请使用含卤活性剂含量在0.1%以下的锡膏。

4) 临时安装 (表面实装品)

如在临时安装中若使用了双面胶，则本产品不能够再次被使用。

5. OPERATING TEMPERATURE

Use capacitors within the specified temperature range. If used outside the specified temperature range, then the electrical characteristics may deteriorate significantly, leading to failure.

The temperature referred to here includes the ambient temperature including heat produced by heat generating devices (power transistors, resistors, etc.), self heating due to ripple current.

6. SOLDERING

1) Soldering method

●MU series, MS series, MR series

MU series, MS series and MR series shall be used in reflow soldering and flow soldering method. Do not use in VPS soldering method.

●ST series

ST series shall be used in only reflow method. Do not use in flow, dipping and VPS soldering method. Please confirm your reflow conditions (reflow time, temperature). Soldering conditions should be according as recommended reflow temperature profile.

●LDT series

LDT series shall be used in only flow method. Do not use in reflow and VPS soldering method.

2) MSL

Moisture Sensitive Level (MSL) which is based on IPC/JEDEC J-STD-020D is showed in the following table.

3) Solder paste (Chip type)

A recommended thickness of solder paste is between 0.1mm to 0.2mm. The content of halogen in the soldering flux should be 0.1 wt% or less.

4) Tentative mounting (Chip type)

This product can not be used again when the double-stick tape is used for tentative mounting.

5) 关于电烙铁的使用

如果要用手工焊接, 请按照下述条件实施。

项 目 Items	条 件 Conditions
烙铁温度 Temperature	350°C以下 350°C Max
焊锡焊接时间 Time	4秒以内 4 seconds Max
电烙铁功率 Power	30W以下 30W Max
其他 Other	无预热 No preheat

- 使用电烙铁焊接时, 焊接次数不能超过一次。
- 焊接后的用电烙铁修复焊接, 也请遵循上述条件。
- 请不要用电烙铁接触电容器本体。不然有可能导致电容器绝缘性降低等特性劣化。
- 从基板上取下的电容器不能再重复使用。
- 上述条件以外的焊接, 请联系我公司。

5) Using soldering iron

However, please refer to the following conditions if soldering by iron is necessary.

- Soldering under above conditions should not be repeated for a same part.
- Please keep above conditions when reworking is need after reflow soldering.
- Do not hit the tip of soldering iron to the capacitor directly.
- Do not reuse the capacitor.
- Please contact us in advance if your condition is different with above.

7. 关于清洗

电容器焊接后, 对电路板进行清洗时, 受清洗液以及超声波的影响, 有可能会导导致电容器的性能劣化, 请预先咨询我们。

7. CLEANING SOLVENTS

Please contact us in advance when cleaning of the PC board after soldering is necessary. If used improper cleaning agent and/or ultrasonic, the capacitor may be damaged.

8. 保管条件

- ①MU系列·MS系列·MR系列·ST系列: 保管条件与使用期限为, 铝防潮袋未开封的状态、常温常湿(5~30°C、70%RH以下)的条件下, 出货后一年以内。
防潮袋开封后, 与干燥后的硅胶一起放在拉锁封闭状态的防潮袋中保管时, 储存期限为开封后一个月以内(气温5°C~30°C、相对湿度: 70%RH以下)。但是, 当周围环境的湿度保持在5%RH以下时可以作为未开封状态看待。
- ②LDT系列: 保管条件与使用期限为常温常湿(5~30°C、70%RH以下)的条件下, 出货后一年以内。

8. STORAGE CONDITION

- ①MU series/MS series/MR series/ST series: Please store capacitors under the normal temperature (5~30°C) and normal humidity(70%RH or less) without operating of moisture-proof bag.
Storage time limit (the state that a zipper of a moisture-proof bag was closed with dry silica gel) is within 1 month from opening of moisture proof bag (Temperature: 5 to 30°C, Relative humidity: 70% or less). But, when the humidity of the ambient environment keeps below 5%RH, it's possible to treat as the unopened position of moisture proof bag.
- ②LDT series: Please store capacitors under the normal temperature (5~30°C) and normal humidity(70%RH or less) .

9. 使用环境的限制

电容器不能使用在以下环境

- ①直接与水、盐水以及油接触, 或者发生结露的环境。
- ②充满有害气体(硫化氢、亚硫酸、盐酸、氨、溴等)的环境。
- ③含有臭氧、紫外线或者放射线的环境。

9. CONDITION OF USE

The following environment should be avoided when using capacitors.

- ①Damp conditions such as water, saltwater spray, or oil spray or fumes. High humidity or humidity condensation situations.
- ②Hazardous gas/fumes (hydrogen sulfide, sulfurous acid, nitrous acid, chlorine, ammonia, bromine, etc.)
- ③Exposure to ozone, ultraviolet rays or radiation

10. 废弃处理

在废弃电容器时, 请交给专业的工业废弃物处理工厂, 由其代为处理。

10. DISPOSAL

In case of rejecting capacitors, please seek for professionals who deal with the industrial wastes management.