



在使用时、请依照品名规格、在规格书指定的范围内使用。

如超出规格书以及本注意事项所规定的范围以外使用时、有可能会造成短路、开路、冒烟、着火等情况。因此、一定要确认在额定的范围内使用。

对于规格书上没提到的项目、不明确的内容、请务必联系我们。

此外、使用于可能影响到人身安全的仪器、设备时、请务必联系我们。

For use of any type of capacitor, you are recommended to obtain individual specification in advance and use it within the limits specified thereby.

Use beyond such limits may lead to failures like short/open circuiting, smorking or even combustion.

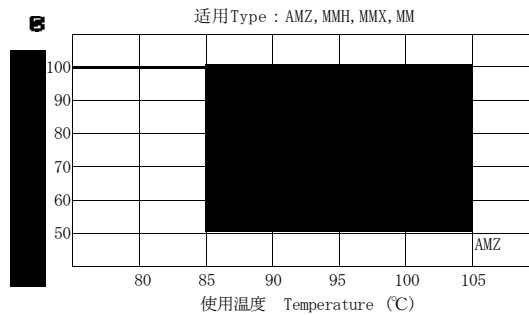
For characteristics not clear or unlisted in our specification, please feel free to come to us.

Especially for life-affecting equipment, you are requested to ask for our council.

根据温度变化适当调整电压 / Voltage Derating versus Temperature

●电容器在高温下使用时、由于热劣化、会缩短电容器的寿命。所以、如在高温下使用时、根据下图所示、适当调低所使用的电压。

★When using capacitors at temperature higher than the normally specified maximum temperature, it is necessary to reduce the working voltage as shown in the figures below.



交流电路中的使用 / Capacitors for Use in AC Circuit

(1) 额定DC产品在交流电路中使用

●使用商用频率 (50、60Hz) 时、在如下的电压以下使用。

注意：请勿在电源的初级端使用。

●当在DC中有偏流时、该波形的峰值 (峰值电压Vo-p) 在如下的电压以下使用。

(1) Permissible AC Voltage versus DC Rated Voltage

★When using a capacitor specified by DC rated voltage at commercial power frequency (50Hz,60Hz), the permissible AC voltage is shown in the table below.

CAUTION: The capacitor of DC rating should not be used at the primary side of power supplies.

★If DC bias contained, Vo-p should not exceed the DC voltage.

商用频率的允许交流电压(Vrms) / Permissible AC voltage rated (Vrms)

直流额定电压 (V. dc) DC rated voltage (V. dc)	AHS	AMZ	ANR	MMC	MMX	MMT	APS	MPE	MMB (A)
35									25
50	40	40				30			
63						40			40
100	70	75		63		63	70		
250		125		125	125	125	125	125	
400		200		200	200		200	200	
450				200	200			200	
630				250	250			250	
800								250	
1000			300	400				400	
1250				500				400	
1600								500	

(2) 允许电流

1) 正弦波

●在正弦波下使用时、根据所示频率、在对应允许电流特性的允许电流值以下使用。

超出允许值使用后、由于电容器自身发热会造成劣化、损伤的危险。

(2) Permissible Current

1) Sine Wave

★Capacitors should be used within the limits of permissible current (Arms) shown in the table for permissible current versus frequency.

If used in excess of permissible value, the capacitor may be deteriorated and damaged by its self-heating.



2) 正弦波以外

- 正弦波以外使用时、其有效值电流会在频率的允许电流特性范围内、而且峰值电流根据所示电容器的允许峰值电流值以下使用。
- 在超出规定条件下急剧的充放电时、会直接导致电容器的特性发生变化或被破坏、请不要如此使用。实际使用时、在确认电流波形、电容器的温度上升等之后、联系我们。

(3) 使用温度范围

- 电容器的使用温度范围指：电容器的表面温度（环境温度）+（自身发热的温度温上升）+（来自其他热源的温度上升）。
- 如在交流或高频电路中使用、会根据流向电容器电流、产生自热、而自热过大会存在电容器劣化、热破坏的危险性。在使用时、请确认在如表的自身温度上默认值和使用温度范围之内。

2) Non-Sine Wave

- ★When in use for non-sine wave, its effective current should be kept below the permissible current against frequency and, also, its peak current be below the capacitor's permissible peak current.
- ★Charging and discharging under conditions in excess of specifications should be avoided because it may lead to deterioration of performance capability and even to destruction of the capacitor. In application, you are recommended to ascertain current waves, capacitor heat generation, etc. and then consult with NISSEI.

(3) Operating temperature range

- ★The operating temperature of a capacitor is defined with ambient temperature + self-heating temperature rise + temperature rise due to thermal radiation from other heat sources. When using capacitors in AC due to the flowing current. In case of high self-heating, a capacitor shall be placed at risk for thermal breakdown or deterioration of the capacitor.
- So, when using capacitors, please make sure that you requirements are within the limit of self-heating temperature rise and of operating temperature range.

电容器种类 Type of capacitor	自身温度上升 Self temperature rise	品种 Type codes	电容器种类 Type of capacitor	自身温度上升 Self temperature rise	品种 Type codes
聚酯薄膜电容器 Polyester capacitor	15°C以内 Within 10°C	AMZ	金属化聚酯薄膜电容器 Metallized polyester capacitor	15°C以内 Within 10°C	MMC, MMX MMD, MML MMT (A), MTF (A)
聚丙烯薄膜电容器 Polypropylene c	10°C以内 Within 10°C	APS (A)	金属化聚丙烯薄膜电容器 Metallized polypropylene capacitor	10°C以内 Within 10°C	MPE
聚苯硫醚薄膜电容器 Polyphenylene sulfide capacitor	15°C以内 Within 10°C	AHS	金属化聚苯硫醚薄膜电容器 Metallized polyphenylene sulfide capacitor	15°C以内 Within 10°C	CHA

(4) 翁鸣声的产生

- 电容器在交流电路中使用、不同极间的库仑力的作用、导体薄膜会产生机械震动、有时就会产生翁鸣声。而电容器的电气特性没有问题、请确认使用上是否存在其他问题。

(4) Mechanical Resonance

- ★Using under AC voltage results in the possibility of micro mechanical 誘 vibration of dielectric film driven by coulomb force producing thereby 誘 beat sounds (hum). Extensive test results have shown that this mechanical vibration in no way affects the electrical performance of the capacitor. However, it is highly recommended to check by yourself if this phenomenon could be the claim in the market or not.

定时等苛刻条件电路中的使用 / Capacitance Stability

- 电容器在其不同的环境使用条件下、会发生特性变化。即使在一般的使用状况下也会由于空气中的湿气渗透、会引起若干容量变化。这容量变化因为导电体的不同而有所不同、在定时等电路中请使用聚丙烯薄膜作为导电体的APS, MPE型以及使用硫化聚苯硫醚薄膜为导电体的AHS, CHA型产品。

- ★Although film capacitors are highly stable in terms of maintaining capacitance value, in certain critical applications such as RC time constant circuits, extra care in capacitor selection is recommended. Since the greatest cause of capacitance drift is moisture ingress, in critical applications, NISSEI recommends that capacitor types using polypropylene (such as APS, MPE), polyphenylene sulfide (AHS, CHA) as the dielectric film to be used in place of straight polyester film types.



焊接作业 / Soldering resistance

(1) 有引线电容器的焊接

1) 利用电烙铁和焊接槽焊接电容器时、会从电容器引线或外表面热传递至电容器内部。为此，请严格遵照以下基准作业。当采用浸焊两次焊接方法时，第二次焊接需等到电容器自身温度返回到常温后方可再作业。（自然放置约30分钟）

2) 当混有贴片元件焊接时，条件有所不同，请与我们联系。

(1) Soldering for leaded components

1) Because soldering allows for the thermal conduction through the capacitor lead wires into the capacitor itself, extreme care should always be taken in maintaining the proper soldering parameters. The figures below give examples of recommended time/temperature soldering profiles for use with plastic film capacitors. When dipped twice in the solder bath, the second dipping must be after the capacitor surface temperature comes down to the room temperature (around 30 minutes by natural cooling).

2) In the case of soldering conditions shall differ from the normal conditions. Please contact NISSEI for assistance.

1. 使用电烙铁 When use wirh soldering iron

聚酯薄膜电容器 Polyester film capacitors	电烙铁头部温度 350℃以下、焊接时间 5秒以内 Iron tip temperature: Less than 350℃、Soldering time: Within 5 seconds
聚丙烯薄膜电容器 Polypropylene film capacitor	电烙铁头部温度 350℃以下、焊接时间 3秒以内 Iron tip temperature: Less than 350℃、Soldering time: Within 3 seconds

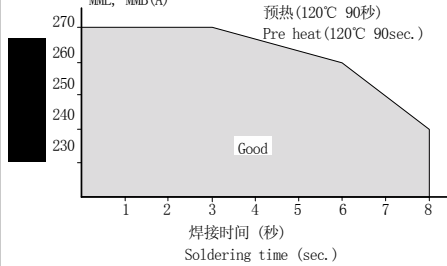
2. 使用焊接槽 For the use in solder bath

适用型号 / Type

AMZ, AHS, NSM, AMR

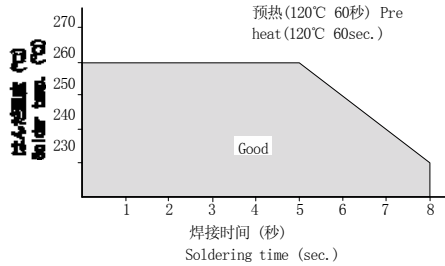
MMC, MMX, MMD

MLL, MMB(A)



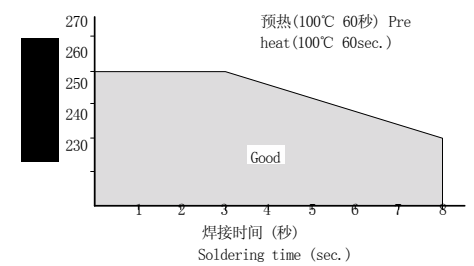
适用型号 / Type

MMT, MTF, MPE



适用型号 / Type

APS, AMF



(1) C H A 型产品焊接

1) 再流焊（不超过右图范围）

①在165℃或以下温度预热、加热时间在70秒内。

②超出230℃区间、加热时间在30秒内。

③最高温度必须低于260℃。

④规定温度均指电容的表面温度。

2) 射流焊（不超过右图范围）

①在150℃或以下温度预热、加热时间在70秒内。

②焊接区间的时间在5秒以下。

③最高温度必须低于250℃。

3) 电烙铁焊接

①不要用电烙铁直接接触电容器。

②把焊料融化在电路板上、电容器适合融合的方法进行焊接。

③焊料和电容器引线一融合，烙铁必须马上移开。

④烙铁尖温度和焊接时间限制在270℃和4秒、最少量的焊料量进行焊接。

⑤避免使用已焊接过的电容器。

(1) Soldering for CHA type capacitor

1) Reflow soldering (Don't exceed the range of the reflow conditions specified right.)

①Preheating shall be 165℃ or less., soldering time shall be within 70 seconds.

②Do not apply soldering longer than 30 sec in the section where the temperature exceeds 230℃.

③Absolute maximum temperature shall be 260℃ or less.

④The specified temperatures are the surface temperature of the capacitors.

2) Flow soldering (Don't exceed the range of the reflow conditions specified right.)

①Preheating shall be 165℃ or less., soldering time shall be within 70 seconds.

②Do not apply soldering longer than 5 sec in the section where the temperature 250℃.

③Absolute maximum temperature shall be 250℃ or less.

3) Iron soldering

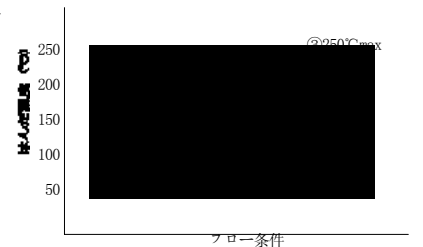
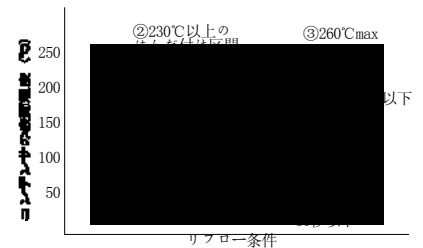
①Do not contact the capacitor element with the iron directly.

②Melt the solder on the PC board and then put the capacitor on it.

③The iron must be taken away as soon as the solder has taken on the capacitor.

④The tip of the soldering iron shall be 270℃ max., 4 sec. max.

⑤Please avoid the reuse of the product which is soldered on PC board once.





溶剂的使用 / Usage of solvent

●清洗目的所使用的溶剂、应使用酒精类（异丙醇酒精），使用后应立即进行干燥。

★When cleaning PC board, the use of alcohol type solvents (isopropyl alcohol, etc.) is recommended. PC boards should be dried quickly after the cleaning process is completed.

电容的使用 / Physical handling of capacitors

- 1) 请注意在电容器表面避免接触电烙铁，镊子，电吹风以及底架锋利等物。有可能造成短路，断路的原因。
- 2) 固定电容时请使用阻燃材料。
- 3) 电容器的保管应在-10~+40℃，相对湿度75%以下的室内、避免温度急剧变化、阳光直射和腐蚀性气体。存放期在一年以上的、请确认电气特性和可焊性之后使用。
- 4) 作为样品的得到电容器，请不要用于销售目的的产品中。

- 1) Do not apply to strongly to the capacitor sharp edges of chassis, air-drivers, tweezers, soldering irons and other tools used in the assembly of electronic circuit. Any strong physical contact with the capacitor could result in severe damage to the termination or dielectric causing either a short or open circuit.
- 2) When physically fixing the capacitors, use the flame retardant materials.
- 3) Storing conditions shall be inside the room at -10~+40℃ with RH 75% or less. Avoid steep temperature changes, atmosphere, direct exposure to the sun beams or corrosive atmosphere capacitors stored more than a year shall be examined for their electric characteristics and solderability before use.
- 4) Capacitors obtained as sample shall not be used in the field.

阻燃性及其他 / Flame resistance (retardant) and others

- 1) MMC、MMX、MMD、MML、MMB (A)（金属化聚酯薄膜）和APS（聚丙烯薄膜）、MPE（金属化聚丙烯薄膜）、AHS（硫化聚苯PPS薄膜）均使用经过UL-94V-0认证的阻燃树脂作为电容器外层封装材料。
- 2) 所有产品的整个生产工序均不使用含溴阻燃材料和蒙特利尔公约所禁用的破坏臭氧层材料。
- 3) 使用这些电容器时、请确认第（8-11页）的注意事项以及规格书等，在规格书的范围内使用。
日本电子机械工业协会公布了EIAJ RCR-2350《电子设备用固定塑料薄膜电容器使用上注意事项指导》（1995年3月制定）技术报告，有助于安全设计。

- 1) Flame retardant resin approved to UL94V-0 is being used as the exterior coating resin in MMC、MMX、MMD、MML、MMB (A) (metallized polyester)、A P S (Polypropylene)、M P E (metallized polypropylene)、A H S (polyphenylene sulfide) series.
- 2) Specific bromic flame retardant and Ozone depleting substances limited by Montreal protocol are not being used in the manufacturing process of pur products.
- 3) When using these capacitors, limits shown in the Instructions for Handling on pages 8 to 14 as well as in the technical specifications shall not be exceeded. If in doubt, please consult us.

Electronic Industries Association of Japan published "Guideline of notabilia for fixed plastic film capacitors for use in electronic equipment"
- EIAJ RCR-2350 (established in March, 1995) as technical reports. We recommended to make use of this publication for your safety designing.