Laser Marking

Most of Passive Plus products are identified by laser marking technology. Generally, it can be visually observed. Under normal storage and application, the marking will not disappear.

Passive Plus applies different kinds of laser marking methods on different sizes of capacitors. See the tables below for detail.

Capacitor Series	1111C/1111P	2225C/2225P	3838C/3838P
Example			
Meaning	**102**:1000pF	**222**:2200pF **3A**: capacitor identification code	**561**:560pF **39**: Capacitor identification code

Capacitor Series	6040C	7676C
Example		
Meaning	Capacitance: **560pF** Tolerance:**±5%** WVDC: **3KV** (3000V) **39**: Capacitor identification code	Capacitance: **100pF** Tolerance: **±5%** WVDC: **8KV** (8000V) **3P**: Capacitor identification code

Marking shown for illustration purposes only. Actual marking may differ.

Storage

• Keep storage facility temperatures from +5ºC to +35ºC, humidity from 45% to 70% RH.

• The storage atmosphere must be free of gas containing sulfur and chlorine. Avoid exposing the product to saline moisture. If the product is exposed to such atmospheres, the terminations will oxidize and solderability will be affected.

Circuit Design

Once application and assembly environments have been checked, the capacitor may be used in conformance with the rating and performance, provided in both the catalog and the specifications. Exceeding the specifications listed may result in inferior performance. It may also cause a short, open or smoking to occur, etc.

Capacitors should be used in conformance with the operating temperature provided in both the catalog and the specifications using caution not to exceed the maximum temperature. If the maximum temperature set forth in both the catalog and specifications is exceeded, the capacitor's insulation resistance may deteriorate. Power may suddenly surge and short-circuit may occur. The capacitor has a loss and may self-heat due to equivalent series resistance when alternating electric current is passed through. As this effect becomes especially pronounced in high frequency circuits, please exercise caution. When using the capacitor in a (self-heating) circuit, please make sure the surface of the capacitor remains under the maximum temperature for usage. Also, please make certain temperature rise remains below 20°C.

Please keep voltage under the Rated Voltage, which is applied to the capacitor. Also, please make certain the Peak Voltage remains below the Rated Voltage when AC or voltage is super-imposed to the DC voltage. In the situation where AC or pulse voltage is employed, ensure average peak voltage does not exceed the Rated Voltage. Exceeding the Rated Voltage provided in both the catalog and specifications may lead to defect with standing voltage. In worse case situations, it may cause the capacitor to smoke or flame.

Handling

Chip capacitors should be handled with care to avoid contamination or damage. The use of vacuum pick-up or plastic tweezers is recommended for manual placement. Tape and reeled packages are suitable for automatic pick and placement machines.

Flux

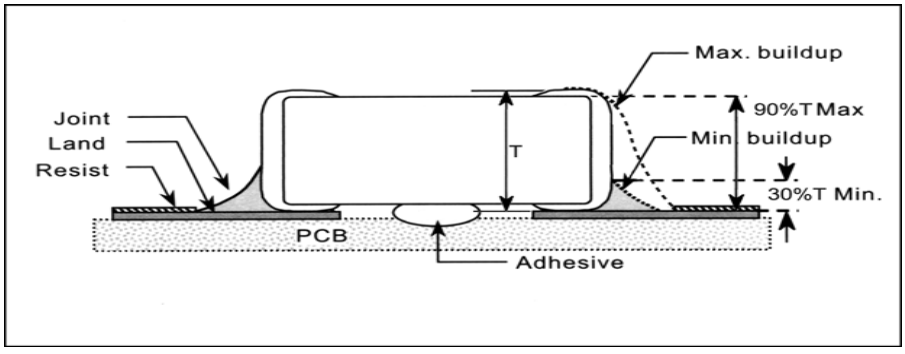
• An excessive amount of flux or too rapid temperature rise causes solvent burst, and solder can generate a large quantity of gas. The gas spreads small solder particles which can cause a solder balling effect or bridging problem.
• Flux containing too high a percentage of halide may cause corrosion of termination unless sufficiently cleaned.
• Use rosin-type flux, and do not use a highly acidic flux (halide content less than 0.2 wt%).
• The water-soluble flux causes deteriorated insulation resistance between outer termination unless sufficiently cleaned.

Component Spacing

For wave soldering components, the spacing must be sufficiently far apart to prevent bridging or shadowing. This is not so important for the reflow process, but sufficient space for rework should be considered. The suggested spacing for reflow soldering and wave soldering is 0.5mm and 1.0mm, respectively.

Solder Fillet

Too much solder amount may increase solder stress and cause cracking risks. Insufficient solder amount may PCB. When soldering, confirm that the solder is 30%T to reduce adhesive strength and cause parts to fall off 90%T.



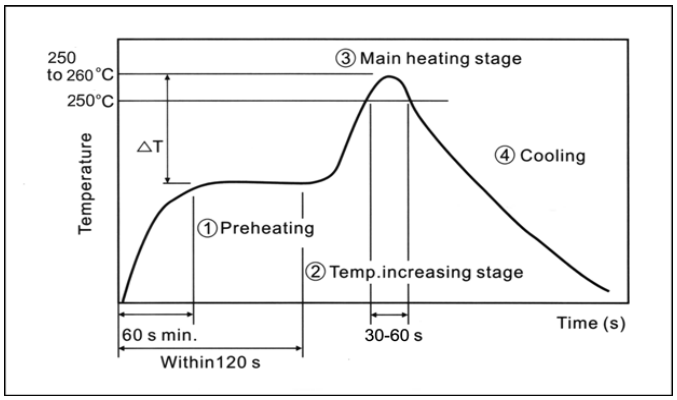
Resin Mold

If a large amount of resin is used for molding the chip, cracks may occur due to contraction stress during curing. To avoid such cracks, use a low shrinkage resin. The insulation resistance of the chip will degrade due to moisture absorption. Use a low moisture absorption resin. Check carefully that the resin does not generate a decomposition gas or reaction gas during the curing process or during normal storage. Such gases may crack the chip capacitor or damage the device itself.

Reflow Soldering For Chip Capacitors

When sudden heat is applied to the elements, the mechanical strength of the components decrease because change can cause deformity of components inside. In order to avoid mechanical damage in the elements, preheating should be requested for both of components and the PCB board. Preheating conditions are given in the table below, It is requested to keep the temperature gap between the soldering and the elements surface (ΔT) as small as possible.

When elements are submerged in solvent after mounting, be sure to maintain the temperature gas (ΔT) between the element and solvent within the range shown in the table below.



Chip Capacitor Size	0402/0603/0505/0805/1111	2225/3838
Preheating	ΔT≤190°C	ΔT≤150°C