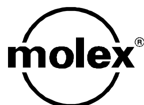


APPLICATION SPECIFICATION

LEAD FREE REFLOW PROFILE FOR SMD'S AND

WAVE SOLDERED

(MODULAR TELEPHONE JACK'S)

1.0 SCOPE

The purpose of this document is to outline the application of the surface mounted and true hole modular telephone jack onto the printed circuit board, using a hot air convection oven or a wave soldering oven.

2.0 PRODUCT DESCRIPTION

Molex Modular Jacks provide a means of accepting the modular plugs according to FFC part 68 and IEC 60603-7. These modular jacks are intended for use with pc boards 1.57mm (0.62") thick. Jacks are available in 8, 6 and 4 circuit sizes. The six circuit can be loaded with 6 or 4 contacts.

3.0 REFERENCE DOCUMENTS

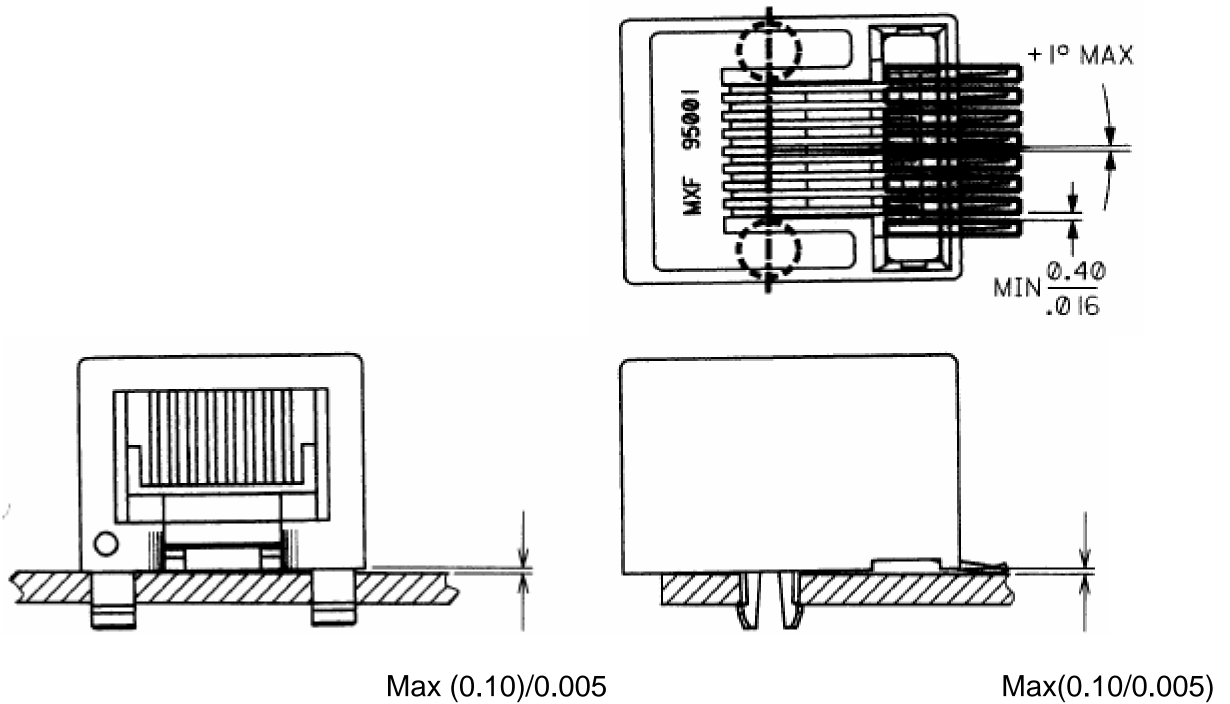
The printed circuit board mounting hole layout and surface mount pattern shall be as shown on the applicable sales drawing.
Panel layout shall be as shown on the applicable sales drawing.

Temperature profile Ref. Spec : Jedec J-STD-020C and Molex SMES-152

4.0 PROCEDURE

4.1 GENERAL REQUIREMENTS

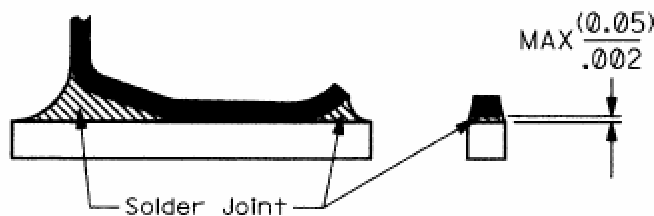
The Jack shall be mounted flush with the surface of the printed circuit board within the limits specified in fig 1.



Max (0.10)/0.005 Max(0.10/0.005)

Fig 1: Part location relative to the board

Surface mount Acceptable solder Joint.



Minimum Solder Joint: Solder covers lead.
Maximum Solder Joint: Solder covers lead and entire pad, but does not overhang. The toe of the lead still discernible.

4.2 ASSEMBLY INSTRUCTIONS

Paste printing
The solder paste shall be applied using the appropriate stencil or screen and the stencil or screen shall be carefully removed to avoid smearing or the paste printed. The print paste geometry shall be verified to the PC Board footprint dimensional requirements.

Placement of parts
The parts shall be placed on the solder print paste using suitable tools to prevent contamination and assure alignment.

Convection Air reflow
The jacks are soldered according to the following process (or equivalent)

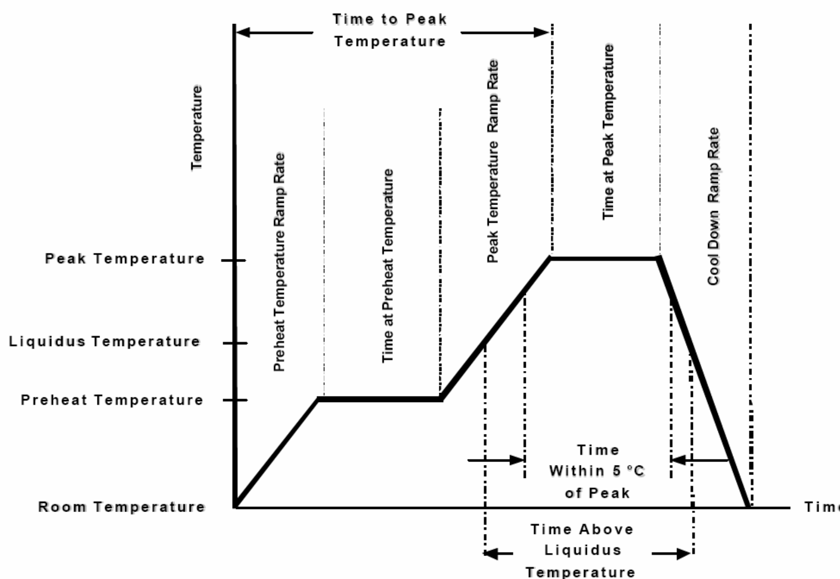


Fig 2 : Reflow profile

DESCRIPTION	REQUIRMENT
Average preheat ramp rate	3 °C /second maximum
Preheat temperature	150 °Cminimum; 200 °Cmaximum
Preheat time	60 to 180 seconds
Ramp to peak	3°C/second maximum
Time over Liquidus (217 °C)	60 to 150 seconds
Peak Temperature	260°C +0/-5°C
Time within 5°C of peak	20 to 40 seconds
Ramp – Cool Down	6 °C/second maximum
Time 25 °C to Peak	8 minutes maximum

Table 1: Reflow profile

4.3 ASSEMBLY INSTRUCTIONS FOR TRUE HOLE MOUNTED JACKS.

Flux Application.
A uniform coating of flux is essential to successful Soldering. When spray fluxing, the uniformity of the coating can be visually checked by running a piece of cardboard over the spray fluxer or by processing a board sized piece of tempered glass through the spray and then through the preheat section.

Placement of parts
The parts shall be placed on the print circuit board using suitable tools to prevent contamination and assure alignment.

Wave soldering
The jacks are soldered according to the following process (or equivalent)

Operating Parameters	
Amount of flux applied by spary	Single wave: 500 – 800 µg/in² (78-124 µg/cm²) of solids Dual wave: 600 – 1000 µg/in² (93-155 µg/cm²) of solids
Topside Preheat Temperature	105ºC -120ºC
Bottom Side Preheat Temperature	About 35ºC higher then top side
Maximum Ramp Rate of Topside Temperature (to avoid component damage)	2 ºC/Second Maximum
Conveyor Angle	4 ºC – 7 ºC (6 ºC Typical)
Conveyor speed	0.9 -1.8M./Min
Contact Time in the Solder (includes Chip Wave and Primary Wave)	1.5 -3.5 Seconds (2.5-3 Seconds most common)
Solder Pot Temperature	255ºC - 265ºC

These are general guidelines, however depending upon your equipment, components, and circuit boards, your optimal setting may be different. In order to optimize your process, it is recommended to perform a design experiment, optimizing the most important variables (amount of flux applied, conveyor speed, topside preheat temperature, solder pot temperature and board orientation)

4.4 REMOVAL INSTRUCTIONS

Mask off any surrounding components using kapton tape. This will contain the reflow and stop smaller devices from being removed from the PCB.

Pre heat the PCB to 60°**C** . Heat connector soldered to the board using a hot air tool, with manual temperature control (or similar equipment) – temperature 380°**C**

To help remove assembly from the board, use flux (Alpha EF-6000) onto solder tails and then uniformly heat assembly. Ensure heat is applied to the tails if they pass through the boards.

After heating gently remove assembly from the board using pliers. Ensure solder on all pin is molten before removing the part – Do not apply excessive force when removing the part (as this will result in damage to the PCB. Heating time may vary depending on Pcb layers/grounding etc.

Clean board using flux and braid combined with soldering iron, after this process use cleaner to finally remove all residue.