

Photolithography

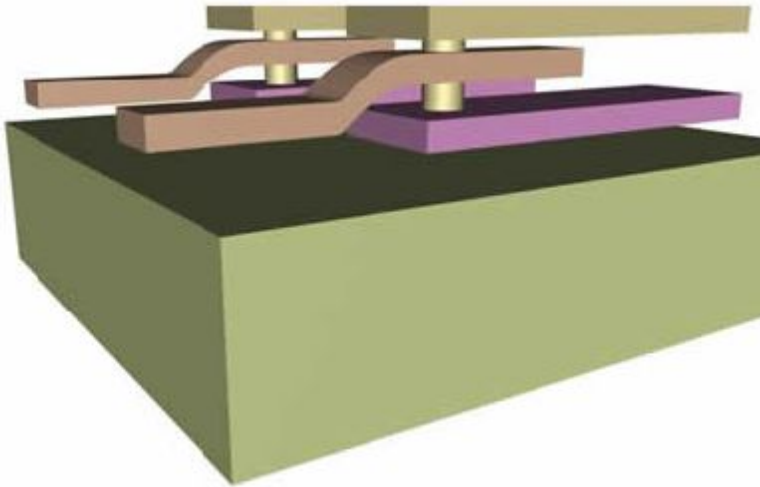
Microsystems fabrication uses several thin film layers to build devices. These layers typically consist of thin films of metal, bulk silicon, silicon dioxide or nitride, or polysilicon.

The zoom in graphic illustrates the layers of a IC circuits linkage assembly.

Each layer is a different component of that device, each layer requires a different pattern.

Photolithography is the process step used to define and transfer a pattern to its respective layer.

The photolithography process occurs several times during the fabrication of a microsystems device as layers build upon layers.



In the construction of microsystems, photolithography is used at any point in the process where a pattern needs to be defined on a layer. This occurs several times during the fabrication of a microsystems device as layers build upon layers.

Each thin film layer required a pattern; therefore, each layer required photolithography.

Each layer within a microsystem has a unique pattern.

The initial process used to transfer this pattern into a layer is photolithography.

The photolithography process transfers the pattern of a mask or reticle (depending on the method of exposure) to a photosensitive layer (resist).

In the construction of microsystem devices a subsequent process step, usually etch or liftoff, transfers the pattern from the photosensitive layer into an underlying layer.

These steps are illustrated in the graphic below.

This thin film to be patterned is in blue, photoresist in red. The pattern in the mask is first transferred in the photoresist (left) then an etch process transfers that pattern into the underlying layer.

