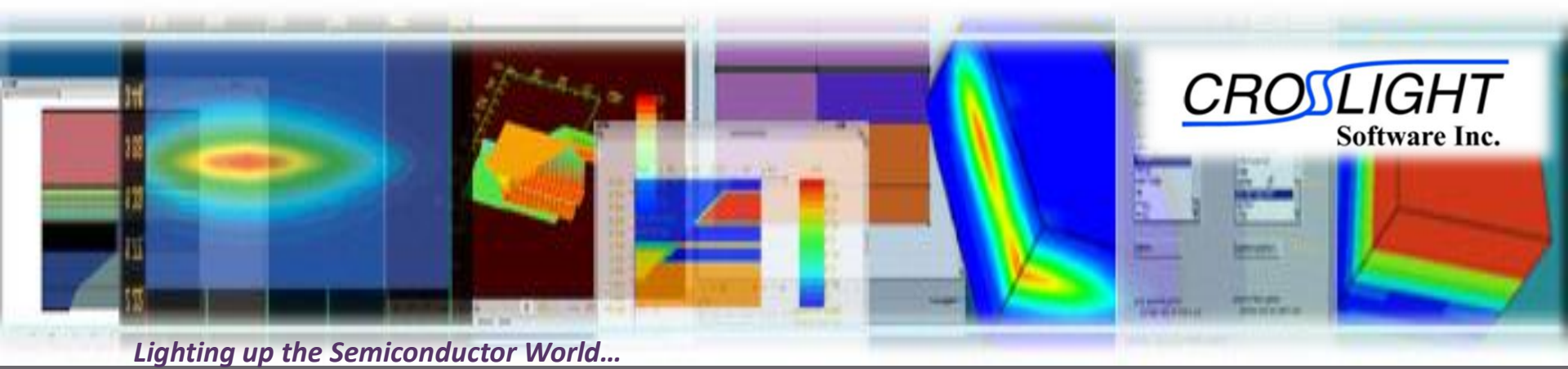


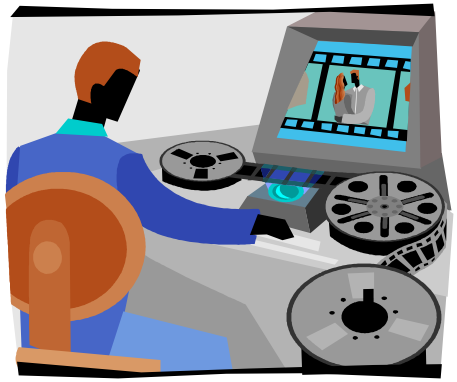
Lighting up the Semiconductor World…

3D Simulation Made Easy with New MaskEditor

About Crosslight

- A leading TCAD provider since 1993
- Complete product portfolio for semiconductor device simulation
- Innovative simulation tools to ensure a fast and seamlessly transfer from process to device simulation
- Ultra efficient 3D structure combined with powerful and easy to use 3D editor to provide class leading 3D simulation experience
- “Café-time Simulator”. Windows based, user friendly graphic user interface makes simulation more enjoyable.

MaskEditor



What's MaskEditor?

A powerful 3D mask editing tool for 3D simulation

What are the Applications?

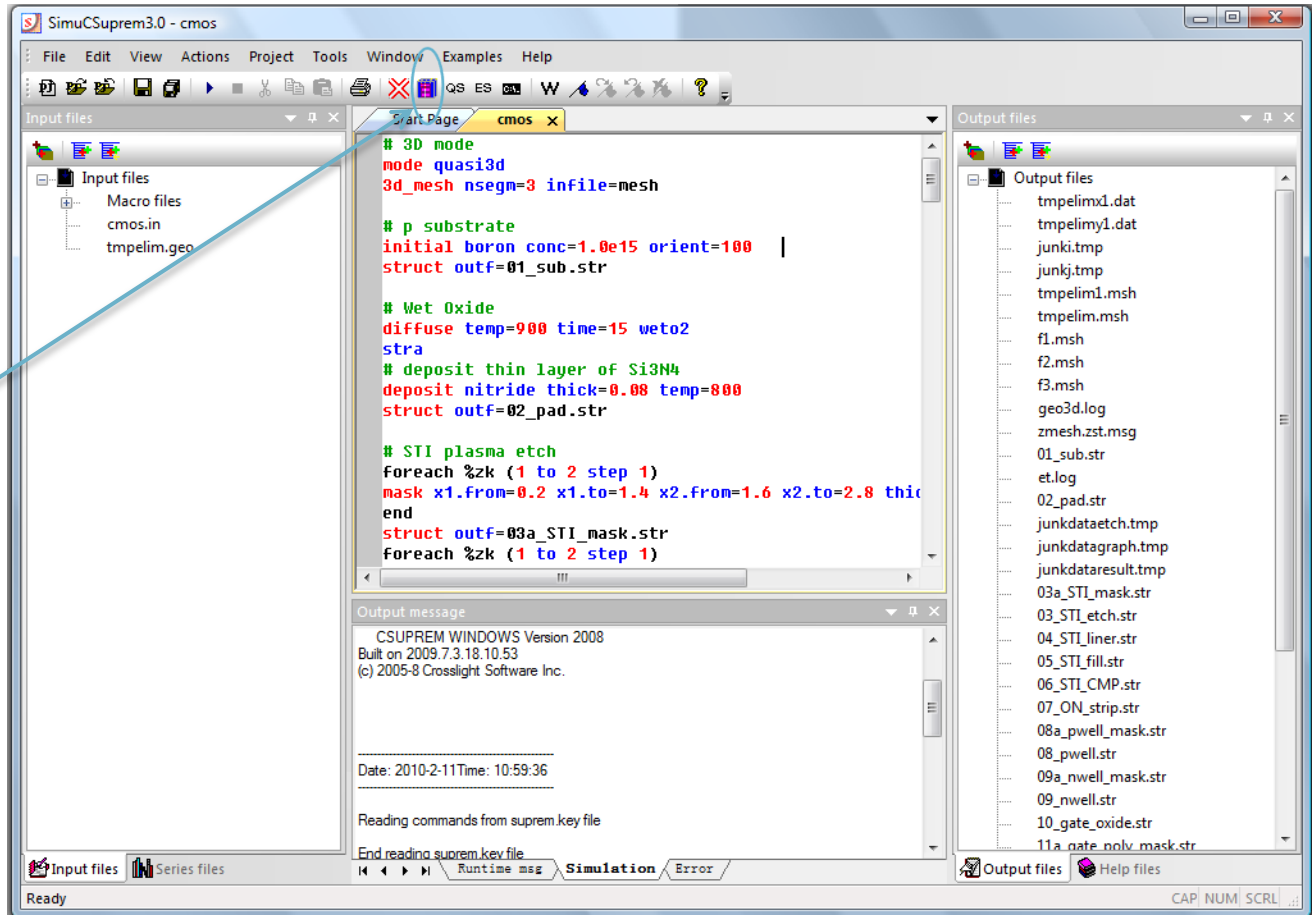
•MaskEditor is a general purpose layout tool
•Works seamlessly with CSuprem to create 3D structure for virtually all types of semiconductor devices, like MOSFET, BJT, LED, etc.

What are the Basic Functions of MaskEditor?

•Creates device layout files in GDSII format from scratch.
•Auto cutting and generate masks needed for 3D Csuprem process simulation.

Where is MaskEditor?

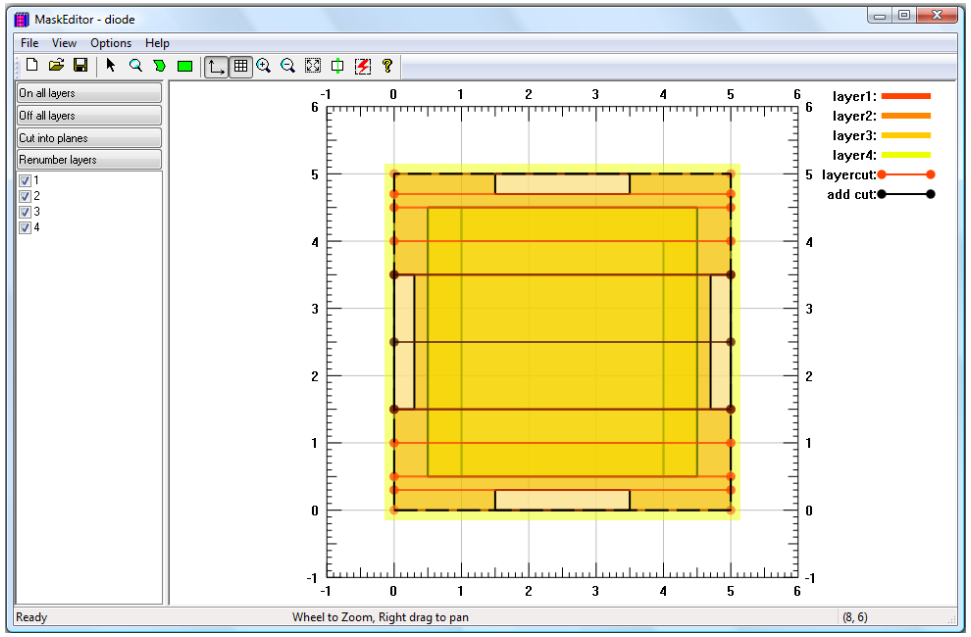
Did you see me here?

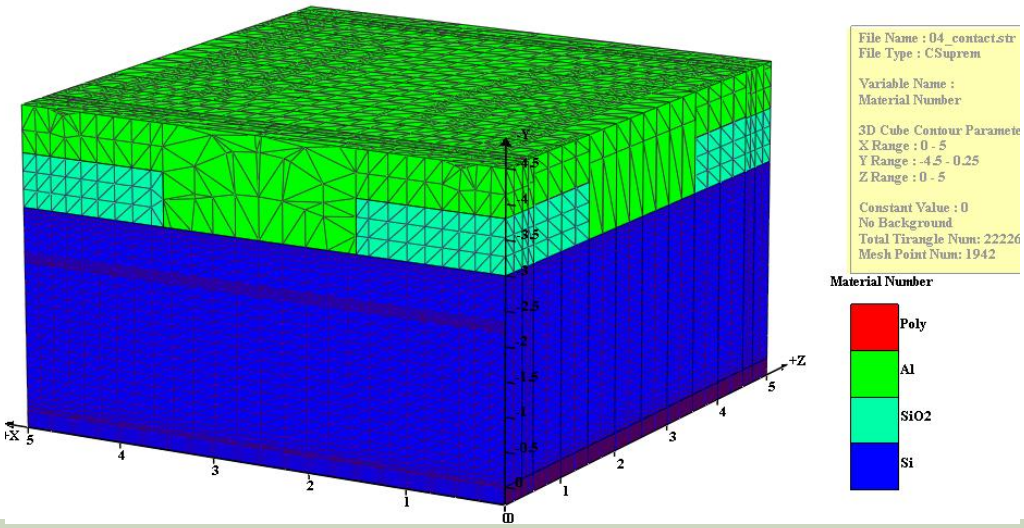


SimuCSuprem

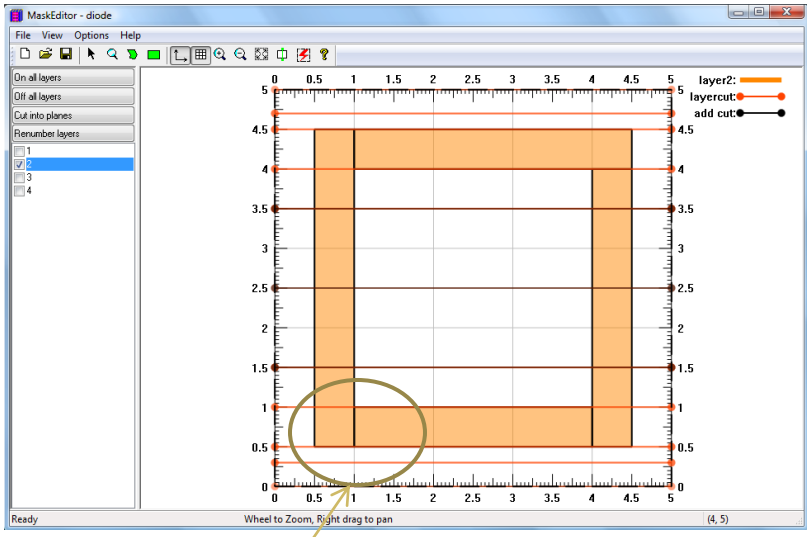
(installation_path)\Bin\MaskEditor

Get to know MaskEditor with a power diode Example





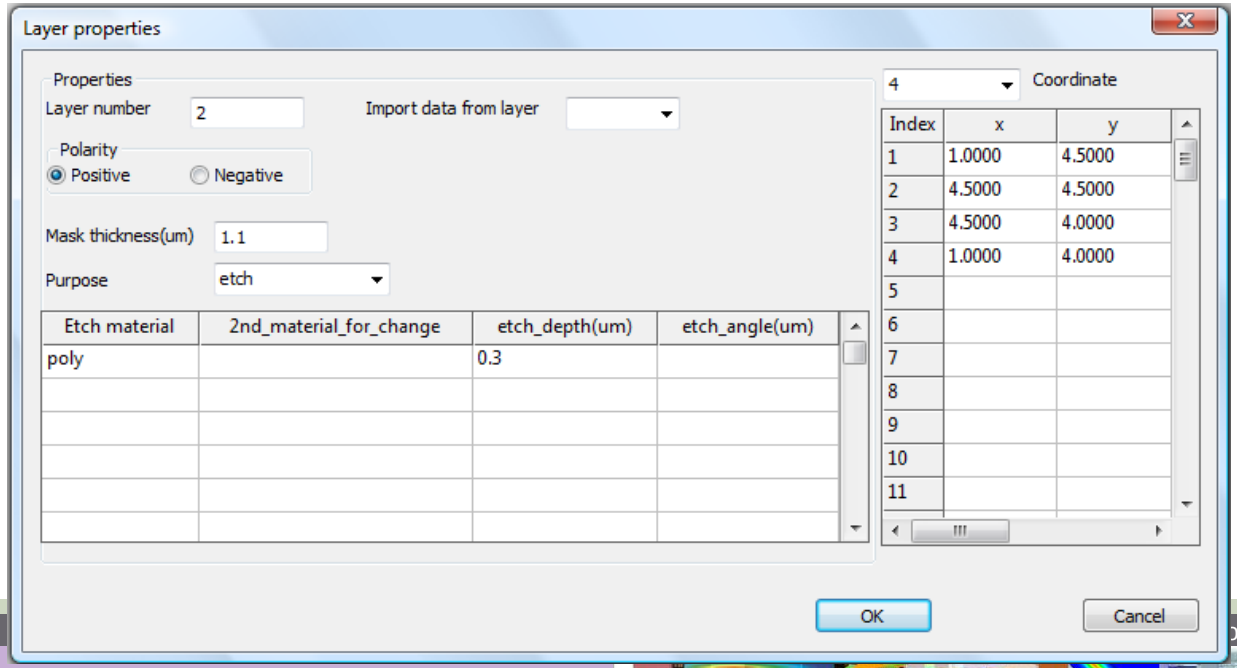
MaskEditor : Create the Layers



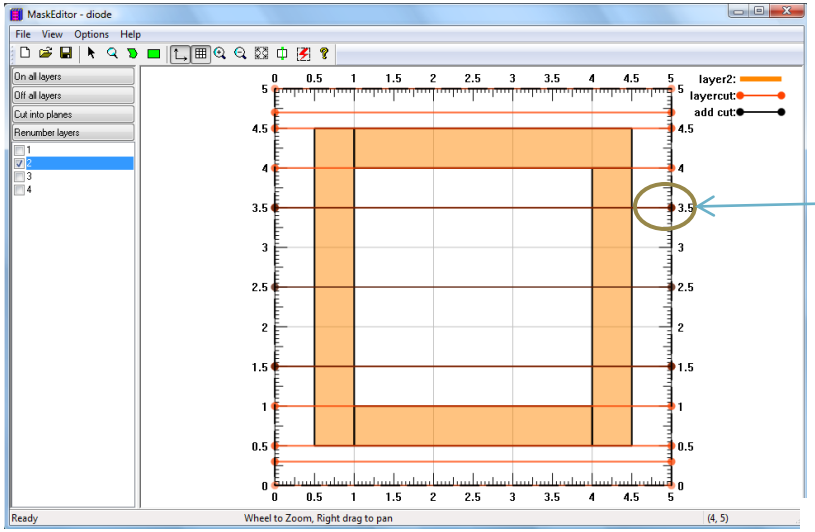
Polysilicon layer

Layer properties for users to define:

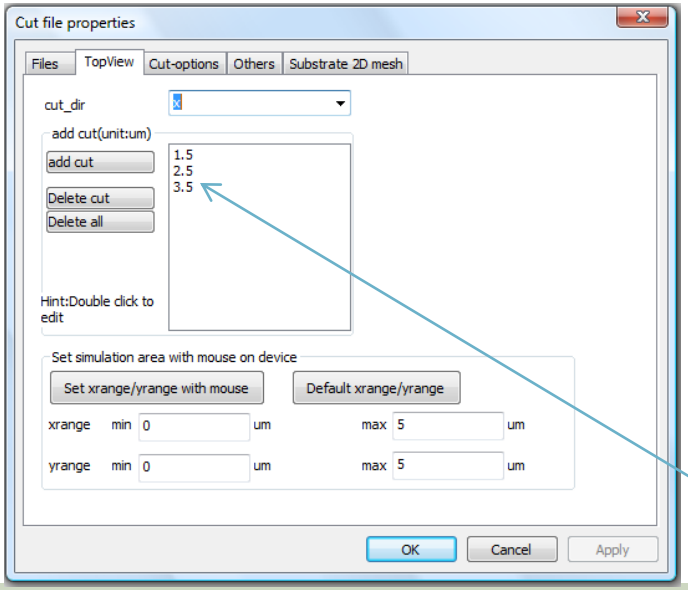
- Name/Layer Number
- Size
- Shape
- Layer purpose (general, etch, refill)
- Etch material
- Material for refill (auto etch and refill)
- Etch depth, angle
- Mask polarity (positive, negative)

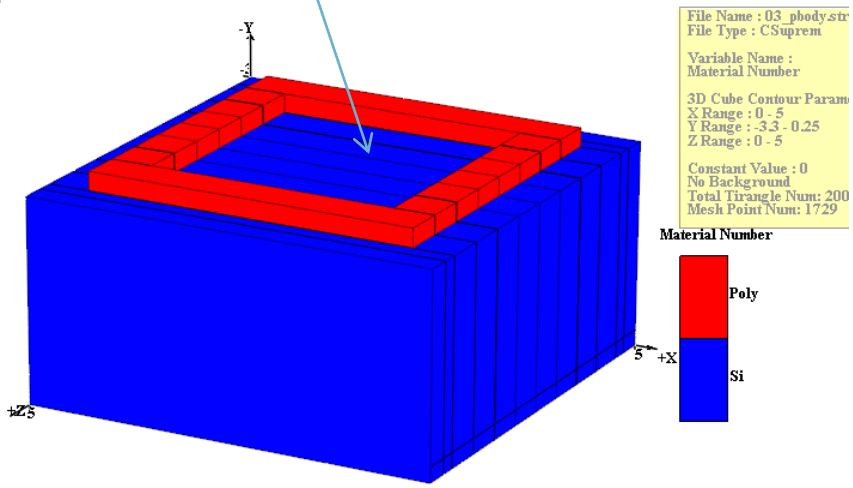


MaskEditor: Cut lines



Cut lines:
MaskEditor automatically cut the layer and generate planes and masks for 3D simulation





User Defined
Additional Cut lines

Automatically Generated Files

.gds file: GDSII files that contain geometric information of the layers, layer GDS no. and layer name, etc.

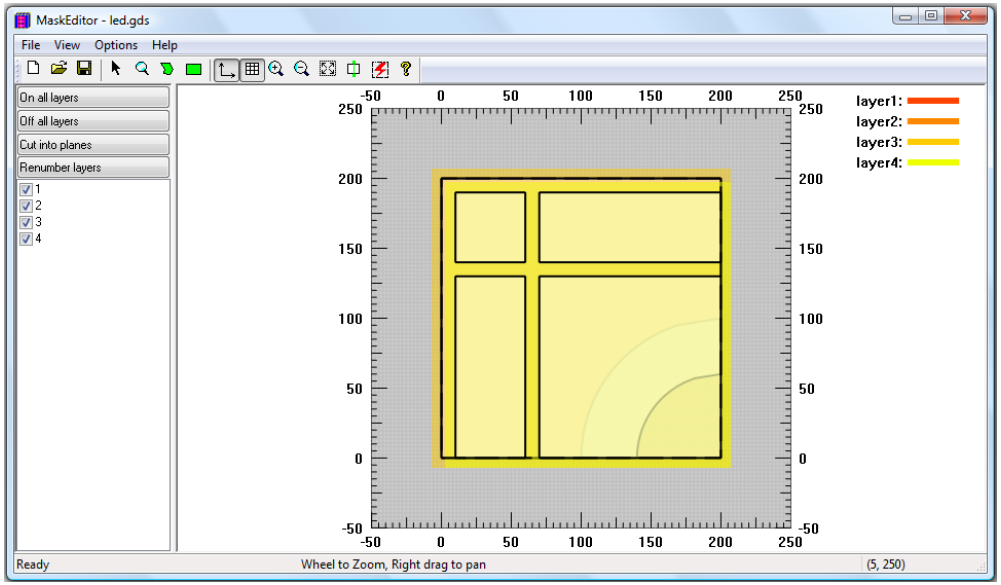
.cut file: works together with .gds file to create the cutting options from the GDS layout. This include the polarity of photoresist, etch depth, photoresist remove, etc.

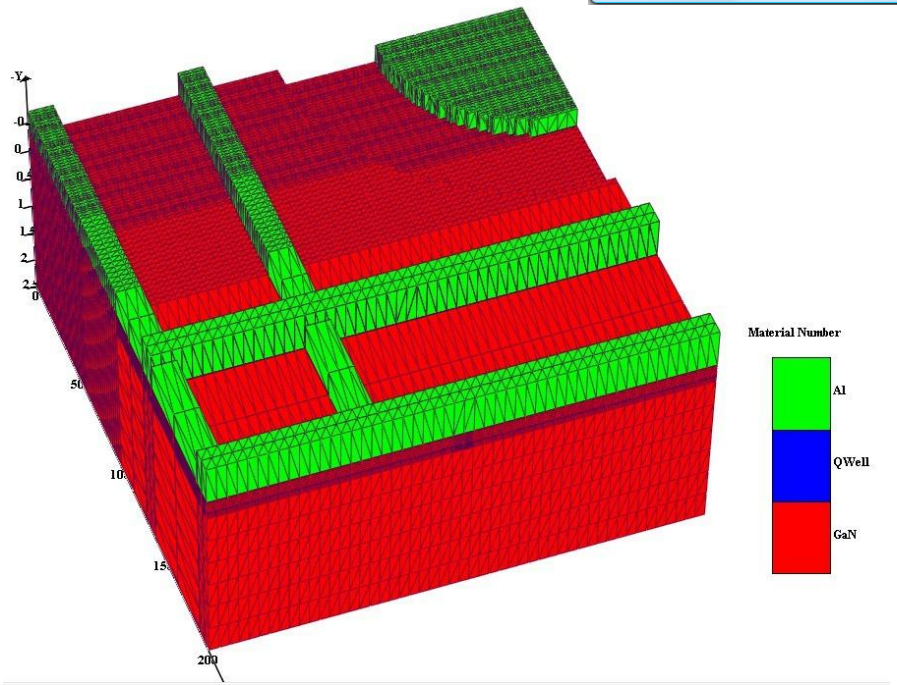
.zst file: generated by generate_mask.exe, take .cut file and .gds file as input, determines the cut locations.

.msk file: generated by generate_mask.exe, take .cut file and .gds file as input, defines the mask and etch information for each layer. It is used by the Csuprem as an input file for masks.

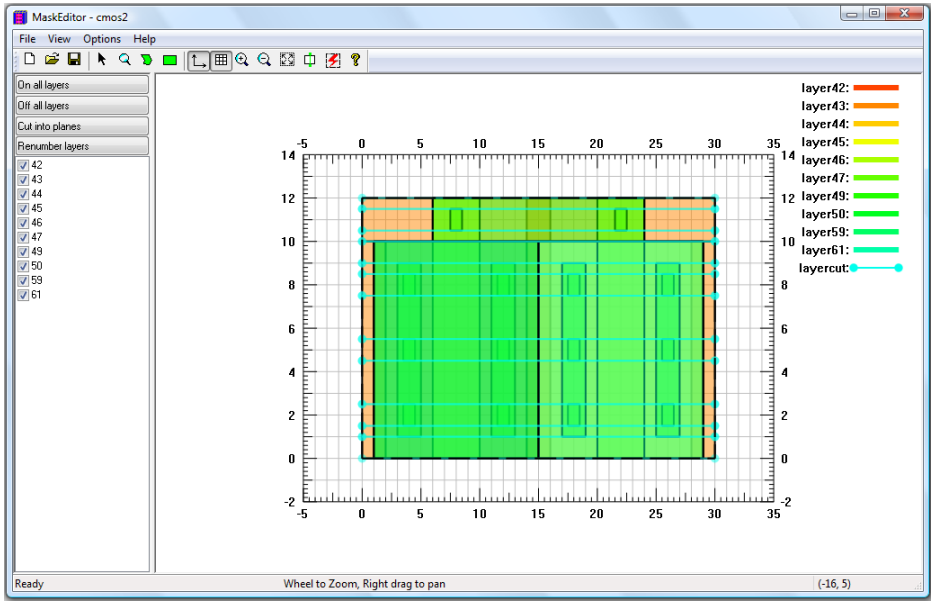
.grid file: defined by substrate 2D mesh in the cut property of Maskeditor, these files are created as the 2D initial mesh files, used for stacking to form the 3D structure.

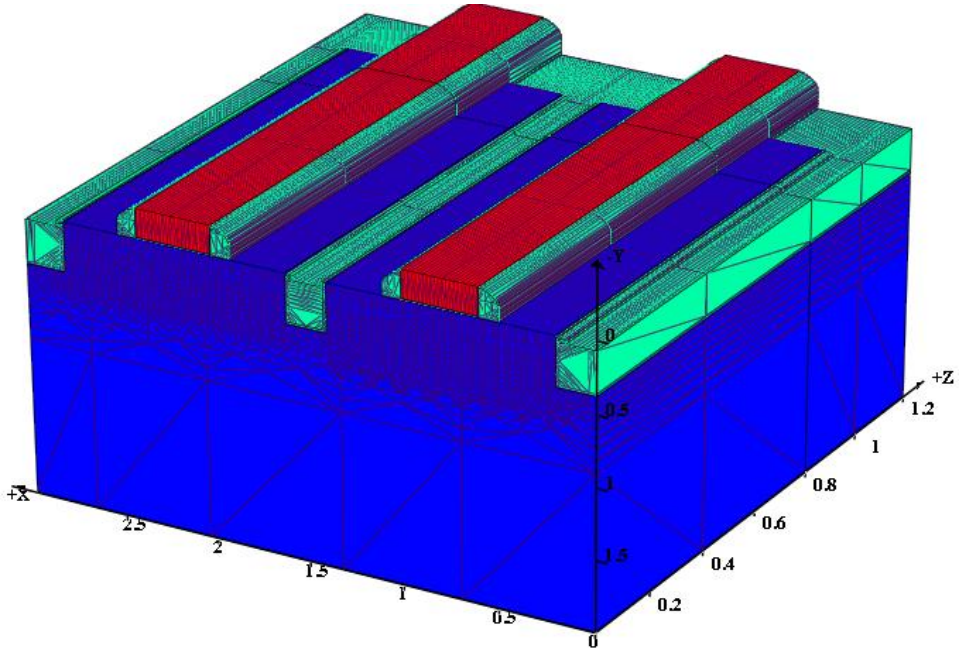
LED Example


MaskEditor - led.gds
File View Options Help
On all layers
Off all layers
Cut into planes
Renumber layers
1
2
3
4
layer1:
layer2:
layer3:
layer4:
Ready
Wheel to Zoom, Right drag to pan
(5, 250)

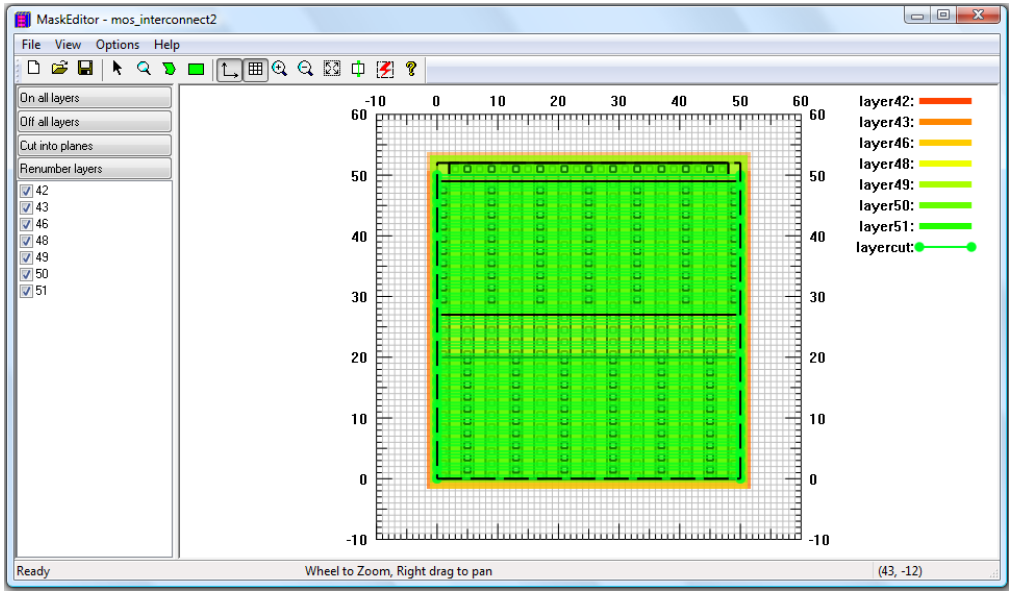

Material Number
Al
QWell
GaN

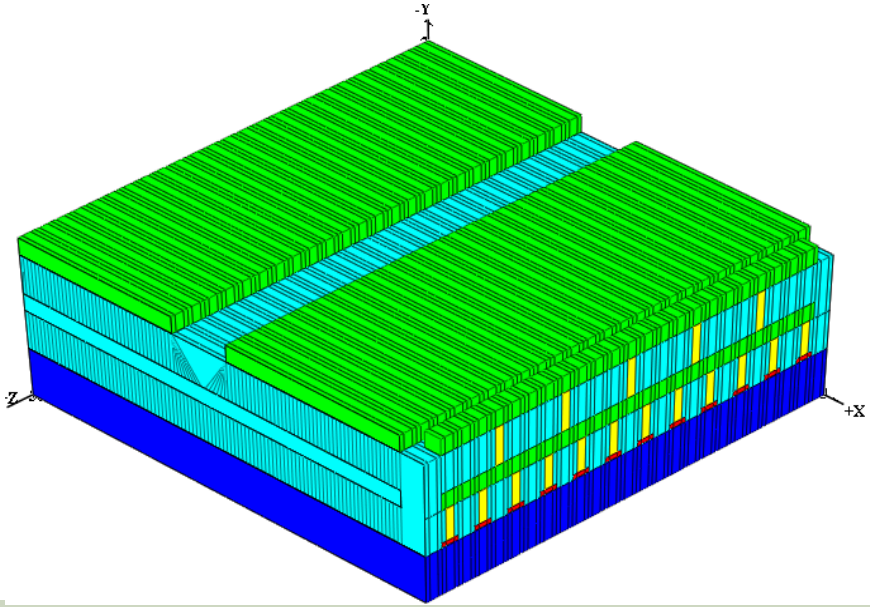
CMOS Process Example



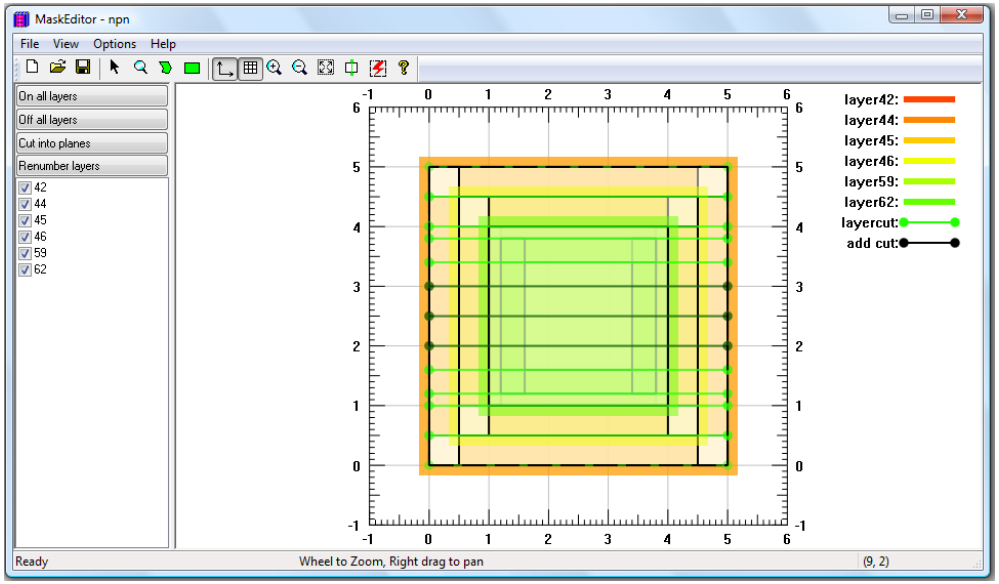


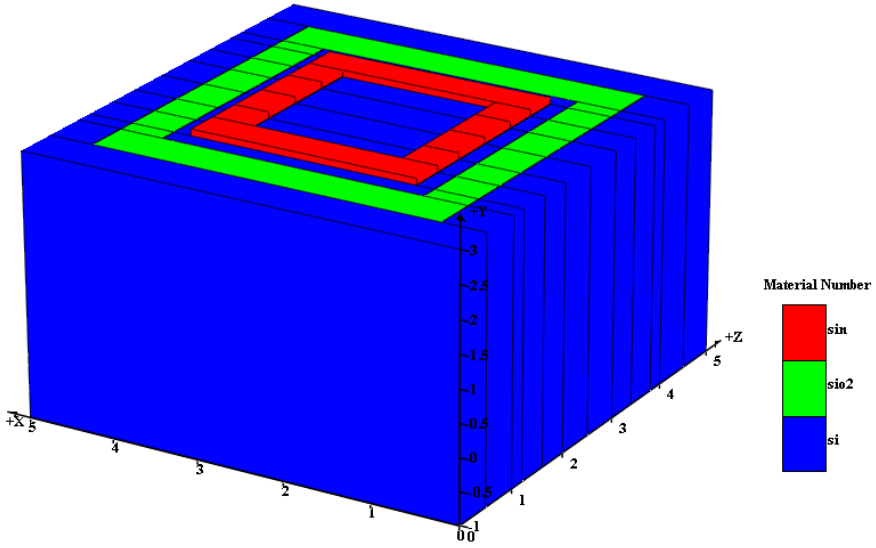
Interconnect Example



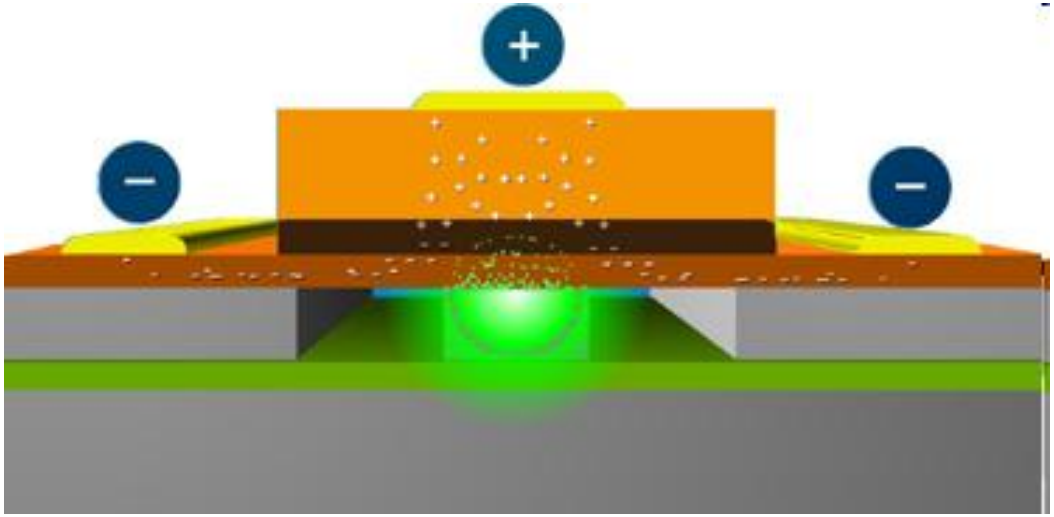


NPN BJT Example





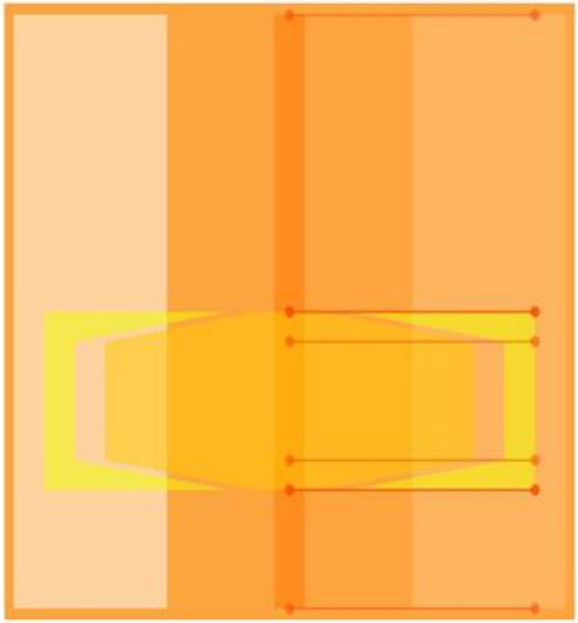
Silicon Hybrid Laser Example

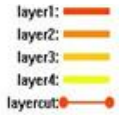


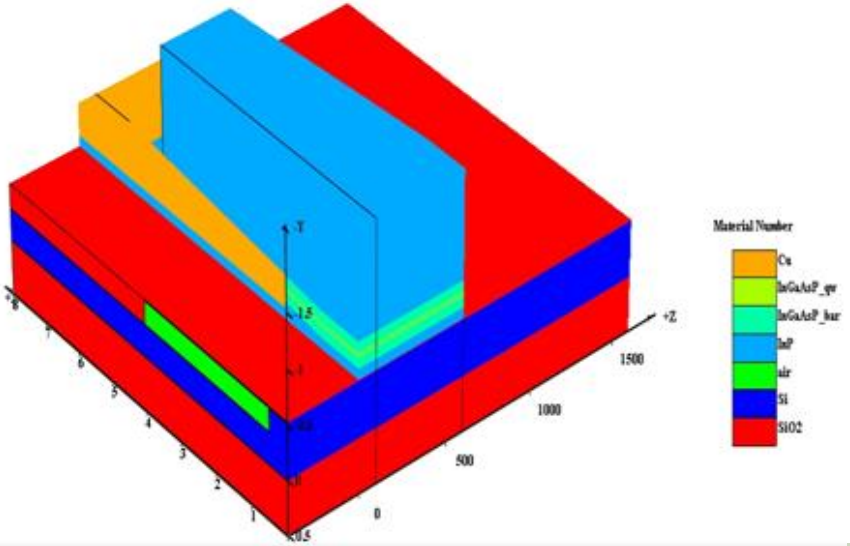
http://techresearch.intel.com/articles/Tera-Scale/1448.htm

Intel and the University of California Santa Barbara (UCSB) announced the demonstration of the world's first electrically driven Hybrid Silicon Laser (2006).

Silicon Hybrid Laser Example





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Software Inc.