Mask fabrication procedure

Outline

1: Contact with customers and design format.

2: Mask inspection and confirmation.

3: Laser writer: conversion procedure

4: Laser writer: mask fabrication procedure

5. HMx – develop, etch, clean.

6. Laser writer: intensity correction

7. Machine capabilities, performances and limits

8. Trouble shooting

Contact with customers and design format

1. Send an email to the customer with the Excel file attached.
2. Ask the customer:
    1. to fill ALL the file fields:
    2. to send the mask dimension and its CD in order to send a quote.
    3. To send the file design at *.GDS format
    4. Add the following: other design formats are acceptable and will be charged separately.
3. After receiving the mask dimension and its CD, send a quote using "***Stand. Doc***" of the software ("CRM").
4. Select the correct quote option: BGU / Academy / Industry

    for instance: Soreq is an academic institute.

    TAU can send an industrial request (David Schreiber)

Contact with customers and design format

יש מלא את כל השדות בקובץ EXCEL המצורף.

לצורך הוצאת הצעת מחיר, אנא שלח/י את גודל המסכה ו CD מבוקש.

Contact with customers and design format - Quote

5. select the required CD (>3; 2<CD<3; 1.5<CD<2)

   - for 2µ use: 1.5<CD<2.
   - For 1µm consult with Erez.

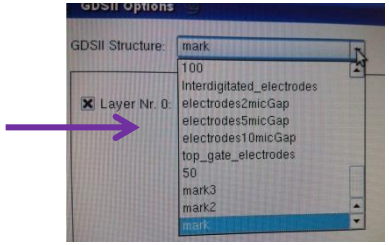
6. Any correspondence with customers should include Erez, Iehudit and:

   Rotem for BGU clients; Elina for academic and industrial clients.

Laser writer - Structure

Structure

Select the structure according to the EXCEL file.

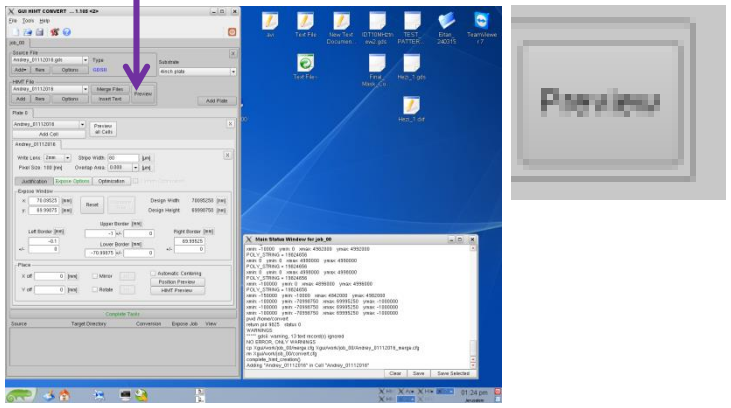


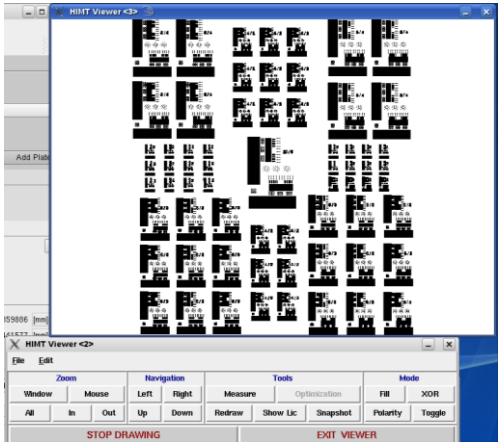
Laser writer

Check and verify:

- ***Preview*** option
- Mask size = "***design width***"

Preview





Design width

Section 3: laser writer conversion procedure

Left PC - Turn laser ON

- √ Tools – laser control – *laser on*
- √ Verify by the green light indicator.

Right PC

- √ Copy file from USB disk to HOME (GDS folder)
- √ Activate “X” convert
- √ new- (no name):
- √ “ADD” - Source file
- √ “Create to default”.

verify “NO warnings NO errors”.

- √ Preview
- √ Select *“Substrate”*
- √ Strip width: 2” lens: 80µ 4”: 160 µ
- √ Overlap: P.56
- √ Automatic centering
- √ If mirror: at x
- √ Clear / dark
- √ *Complete task* (name – researcher & date)
- √ Verify *“offline”* - complete expose
- √ *Finish*

Section 4: laser writer mask fabrication procedure

Expose map

For one design: field: 1; 1

√ **Load design**: click on *"online"* (right and then left click); folder one before the last one.

Insert mask to the machine

√ *To center*

√ *Focus*

Icon of mask (top screen)

√ *Set (0,0)*

√ *Focus*

√ (Mark: *Laser shutdown*)

√ Mark: *Auto unload*

√ *Expose*

Section 5: HMx: Mask development, etch and clean

- Development
  - √ *Start*
  - √ "Development 28s"
  - √ Substrate: 4/5 inch Combi
  - √ *OK*
    - When the process ends, inspect the mask.
    - Take 3 images of the smallest CD, end 3 images of the mask with x5 magnification.

    (after development use the microscope green light)
- Same procedure for *ETCH 40s*
- Same procedure for *CLEAN MASK*

Section 6: laser writer: Intensity correction

Before writing, execute "**Intensity correction"**

	20/12/16	
2"		
4"	1200	

Intensity correction

Remove filter

- Gray wire to the right (red point facing down) ;
  black wire to the left
- **Tool:** Laser ON (green)
- **Service**: intensity correction (pneumatic focus)
- OK…
- Click on "measure mode"
- Start beam
- Start OZI
- Tab "Radmac correction": verify parameters:
- Load intensity: 4095. *"load intensity"*
- Start correction
- When ok: stop OZI ; fine correction
- Stop OZI ; End beam
- Close window
- **Control panel**: Lens Up ; unload
- Take wire off
- For 2" lens – place back the filter

Section 8: Trouble shooting

Convertion (see Mask inspection and confirmation)
Network (click on V and drives)
Drivers address
Intensity correction (cables not inserted correctly)
Stage (intstage)
Passwords
Vendor (email) Costa, Benny, Yogev