

# 1 Profiles & Layout

1.1

1.2

1.3

# 2 Process Procedures

2.1

2.2

2.3

# 3 Calculations

a) Film Thickness

Layer	Theoretical calculation (nm)	Experimental (nm)	% Error	Linewidths (photoresist) (nm)	Linewidths (after PR Strip) (nm)	% Overetch
Field Oxide	505.8	477.2	5.65	?	3000	?
Polysilicon	?	?	?	?	?	?
Gate Oxide	80.1	86.5	7.40	3628	4000	?
Intermed Oxide	386.3	320	17.2	?	?	?
Aluminum	?	?	?	2088	2520	?

b) Sheet Resistance

# 4 Questions

1. The lab uses positive photoresist. The lithography machine uses a light that has g line wavelength. The I and G lines refer to the wavelength of the light coming off the light bulb that reacts with photoresist. G line is roughly xx wavelength and I line is xx wavelength.

# 5 Appendix

Film thickness calculation for oxide:

$$X_{ox} = \frac{0.5B}{B/A} \left[ \sqrt{1 + \frac{4}{B} \left(\frac{B}{A}\right)^2 (t + \tau)} - 1 \right] \quad (1)$$

$$\tau = \frac{X_i^2}{B} + \frac{X_i}{B/A} \quad (2)$$

where

$$B/A = D_o e^{\frac{-E_a}{kT}} \text{ (Use table 3.1 [1] to find } E_a \text{ and } D_o)$$

$$B = D_o e^{\frac{-E_a}{kT}} \text{ (Use table 3.1 [1] to find } E_a \text{ and } D_o)$$

$t$  = Time of oxide growth

$\tau$  = Time of initial oxide growth already present

$X_i$  = length of initial oxide growth