



CORNERSTONE Device Dimensions for 220 nm SOI Platform

Rib waveguide etch depth = 120 nm

Grating etch depth = 70 nm



Changes from previous version

- Standard single mode waveguide width for $\lambda = 1.55 \mu\text{m}$ increased to 450 nm.
- 1x2 rib MMI length for $\lambda = 1.55 \mu\text{m}$ increased to 32.7 μm .
- Grating coupler design for $\lambda = 1.31 \mu\text{m}$ modified.
- Rib and strip waveguide crossing designs added for both $\lambda = 1.31 \mu\text{m}$ and $\lambda = 1.55 \mu\text{m}$.





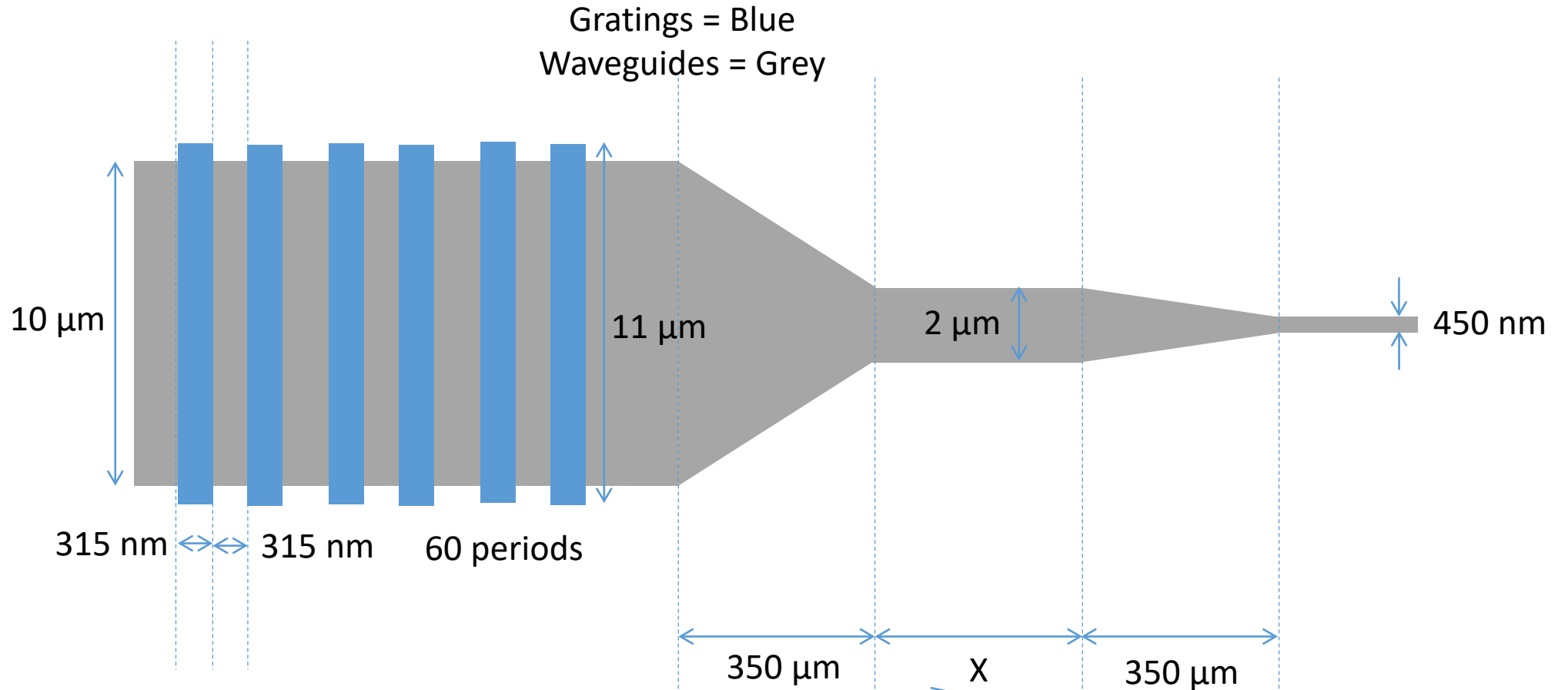
TE mode
 $\lambda = 1550 \text{ nm}$

Rib waveguide etch depth = 120 nm
Grating etch depth = 70 nm

TE single mode waveguides and bends

Property	Wavelength = 1550 nm
<u>Rib waveguides</u>	
Maximum single mode waveguide width (nm)	450
Minimum bend radius (width = 450 nm) (μm)	25
<u>Strip waveguides</u>	
Maximum single mode waveguide width (nm)	450
Minimum bend radius (width = 450 nm) (μm)	5

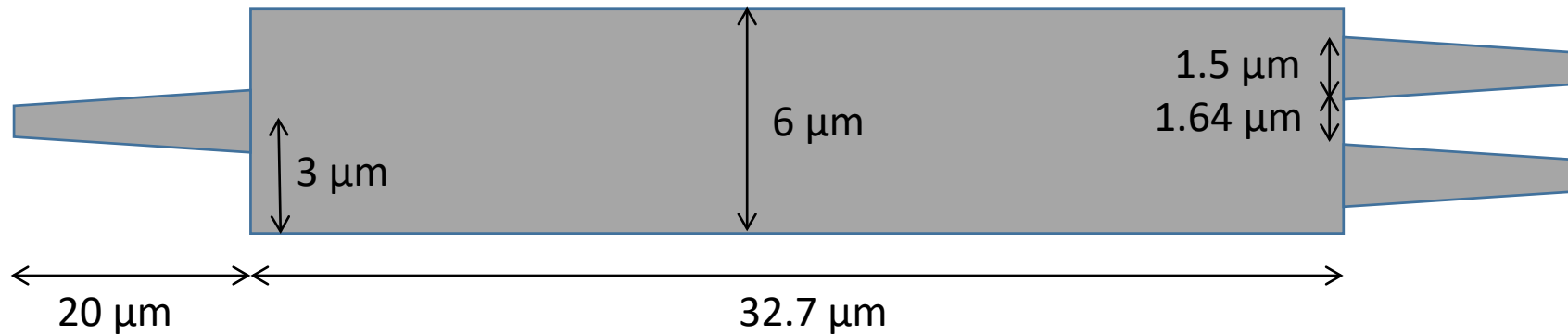
TE grating coupler (etch depth = 70 nm)



Use waveguide of width X for low loss routing to devices if required

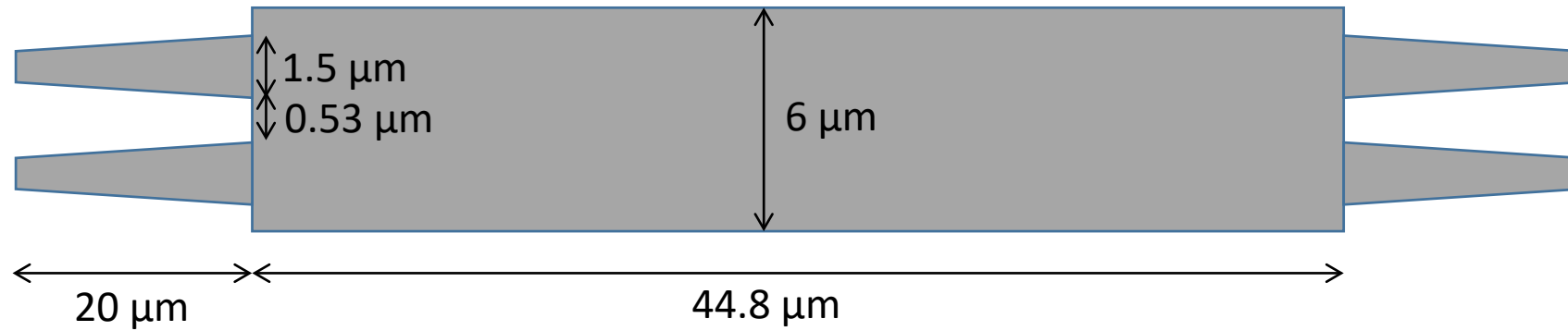
*Add rib protect layer in GDS file

TE 1x2 RIB MMI dimensions



*Add rib protect layer in GDS file

TE 2x2 RIB MMI dimensions

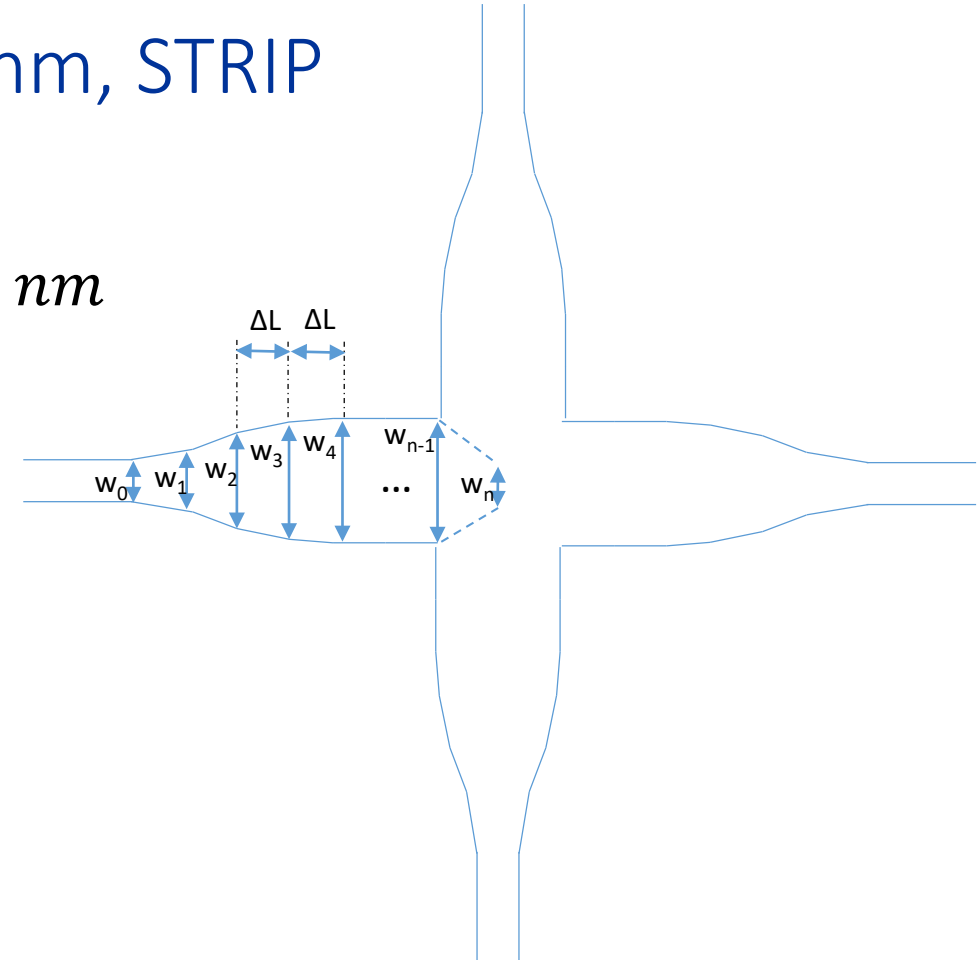


*Add rib protect layer in GDS file

Width point	Width (um)
w0	Waveguide width
w1	0.439
w2	0.6
w3	1.20
w4	1.334
w5	1.370
w6	1.418
W7	1.6
W8	1.589
W9	1.848
W10	1.855
W11	1.85
W12	Waveguide width (doesn't affect)

$\lambda = 1550 \text{ nm}$, STRIP

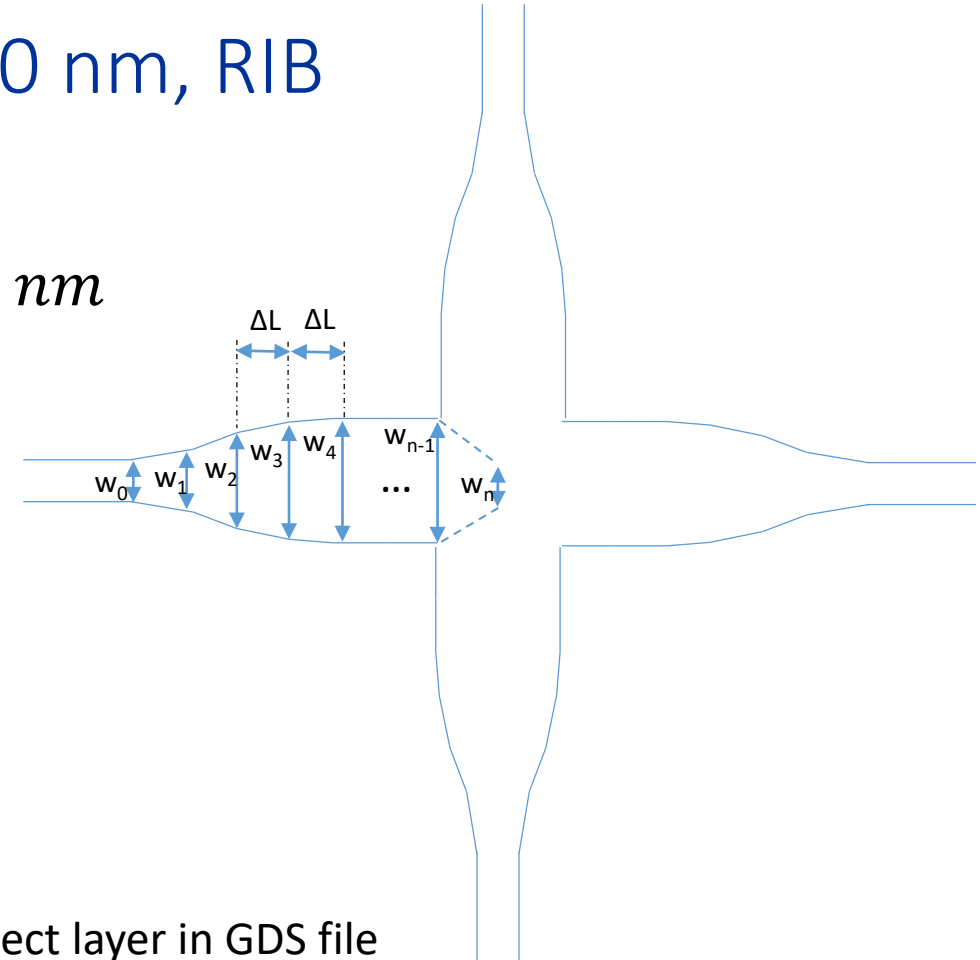
$\Delta L = 0.385 \text{ nm}$



Width point	Width (um)
w0	Waveguide width
w1	0.8
w2	0.905
w3	1.4
w4	1.345
w5	1.316
w6	1.308
W7	1.4
W8	1.45
W9	1.65
W10	1.7
W11	1.8
W12	Waveguide width (doesn't affect)

$\lambda = 1550 \text{ nm}$, RIB

$\Delta L = 0.385 \text{ nm}$



*Add rib protect layer in GDS file



TE mode
 $\lambda = 1310 \text{ nm}$

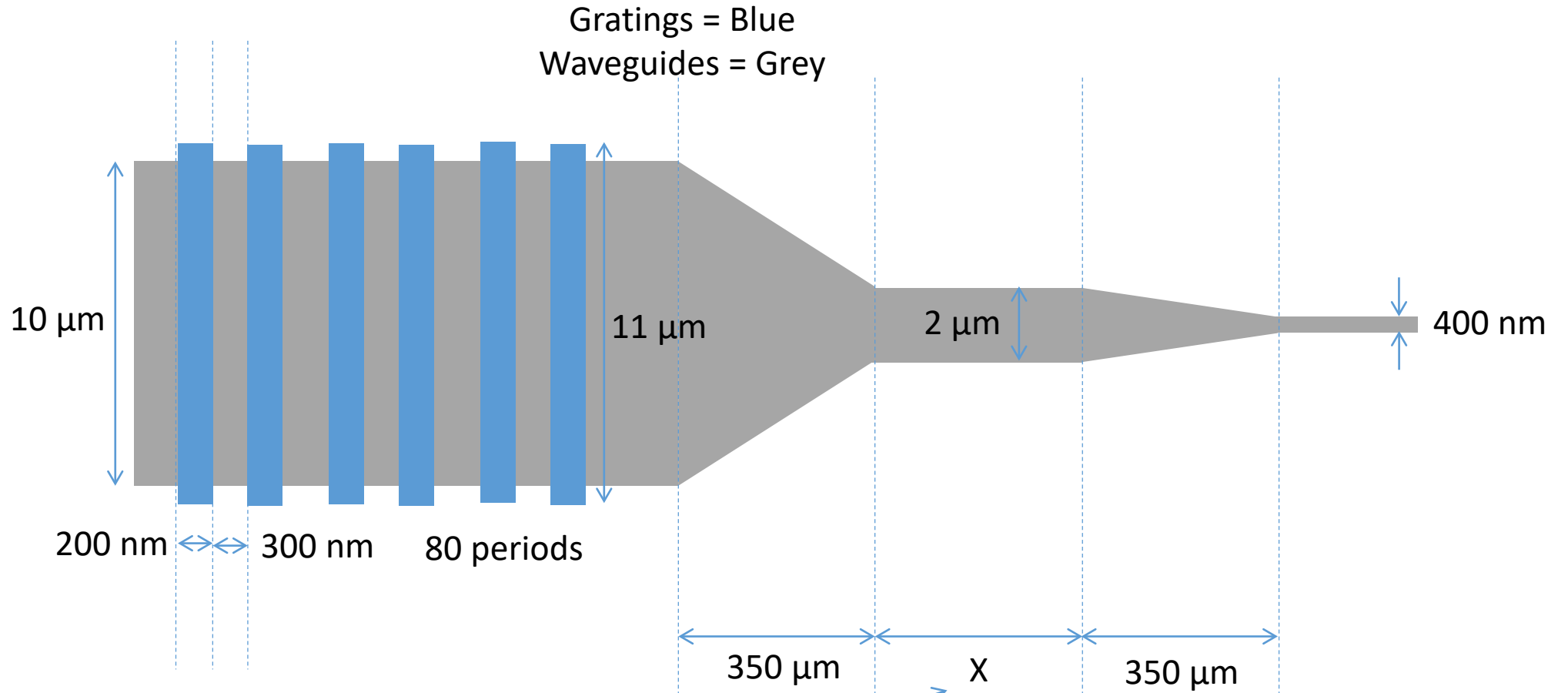
Rib waveguide etch depth = 120 nm
Grating etch depth = 70 nm



TE single mode waveguides and bends

Property	Wavelength = 1310 nm
<u>Rib waveguides</u>	
Maximum single mode waveguide width (nm)	400
Minimum bend radius (width = 400 nm) (μm)	25
<u>Strip waveguides</u>	
Maximum single mode waveguide width (nm)	400
Minimum bend radius (width = 400 nm) (μm)	5

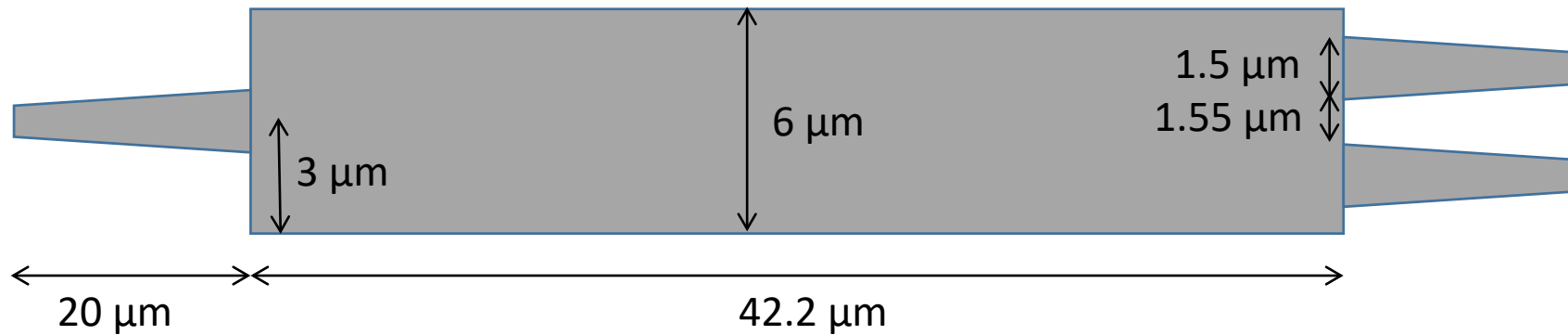
TE grating coupler (etch depth = 70 nm)



Use waveguide of width X for low loss routing to devices if required

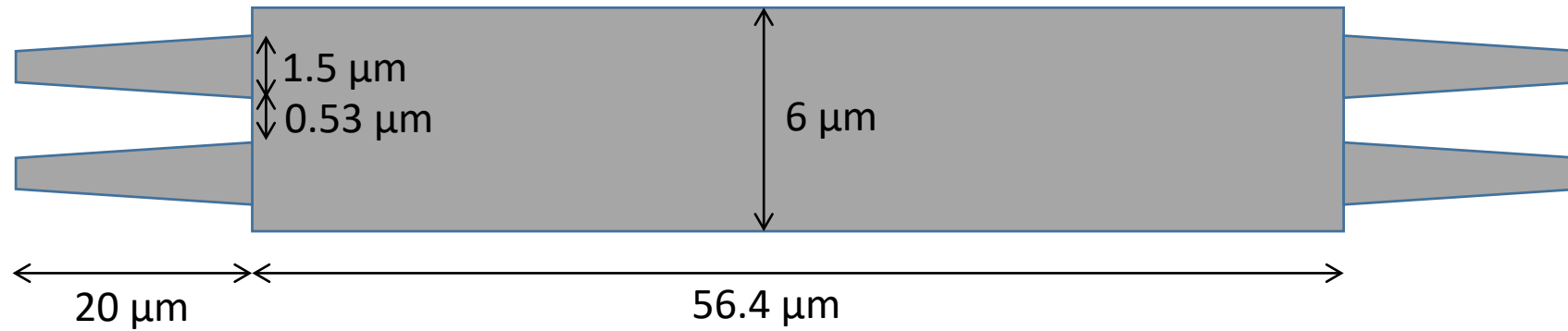
*Add rib protect layer in GDS file

TE 1x2 RIB MMI dimensions



*Add rib protect layer in GDS file

TE 2x2 RIB MMI dimensions

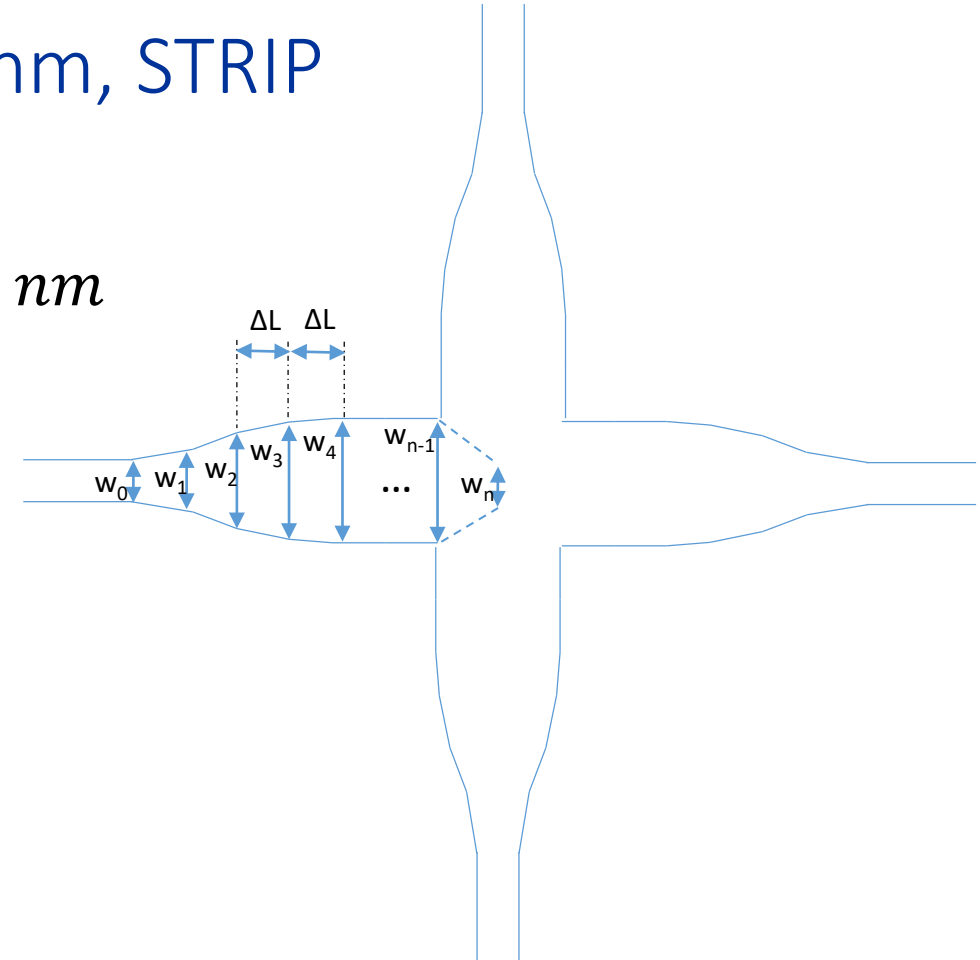


*Add rib protect layer in GDS file

Width point	Width (um)
w0	Waveguide width
w1	0.6
w2	1.2
w3	1.168
w4	1.168
w5	1.307
w6	1.428
w7	1.7
w8	1.85
w9	2.0
w10	1.85
w11	Waveguide width (doesn't affect)

$\lambda = 1310 \text{ nm}$, STRIP

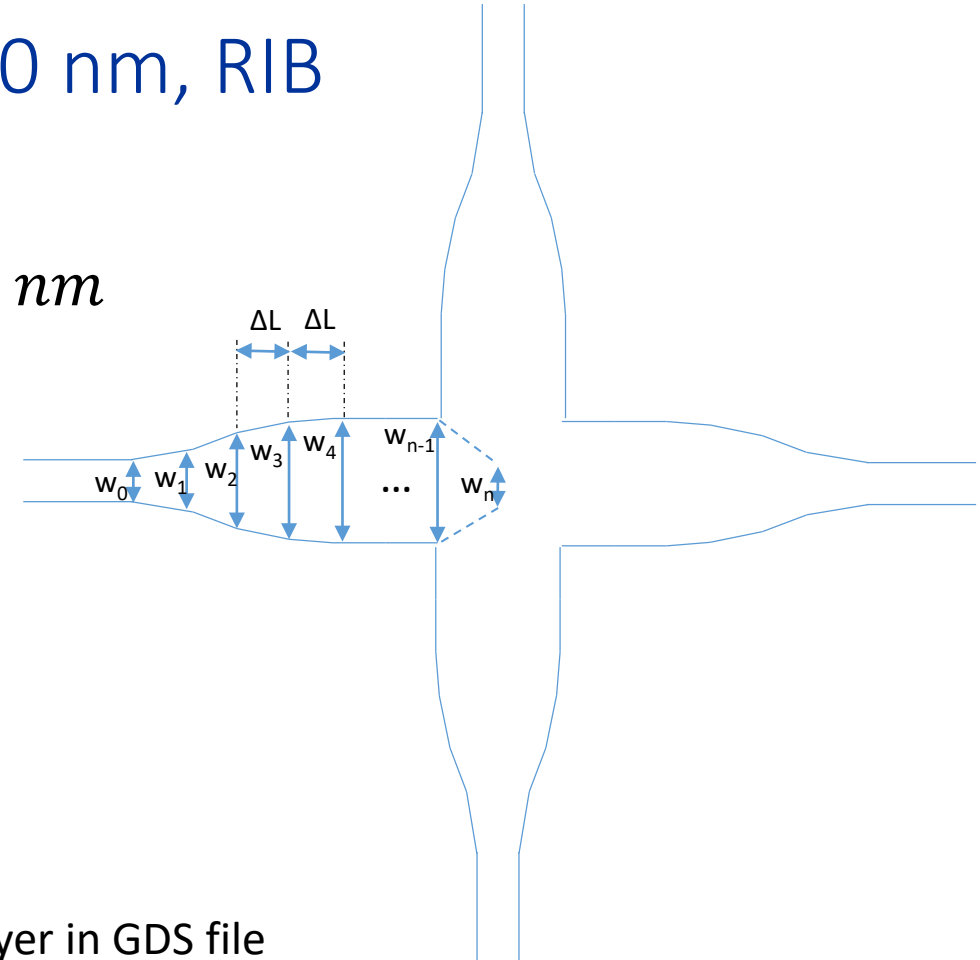
$\Delta L = 0.385 \text{ nm}$



Width point	Width (um)
w0	Waveguide width
w1	0.720
w2	1
w3	1.19
w4	1.206
w5	1.20
w6	1.378
w7	1.457
w8	1.45
w9	1.65
w10	1.7
w11	1.8
w12	Waveguide width (doesn't affect)

$\lambda = 1310 \text{ nm}$, RIB

$\Delta L = 0.385 \text{ nm}$



*Add rib protect layer in GDS file