



# Silicon Photonic ICs Prototyping & Low Volume Production

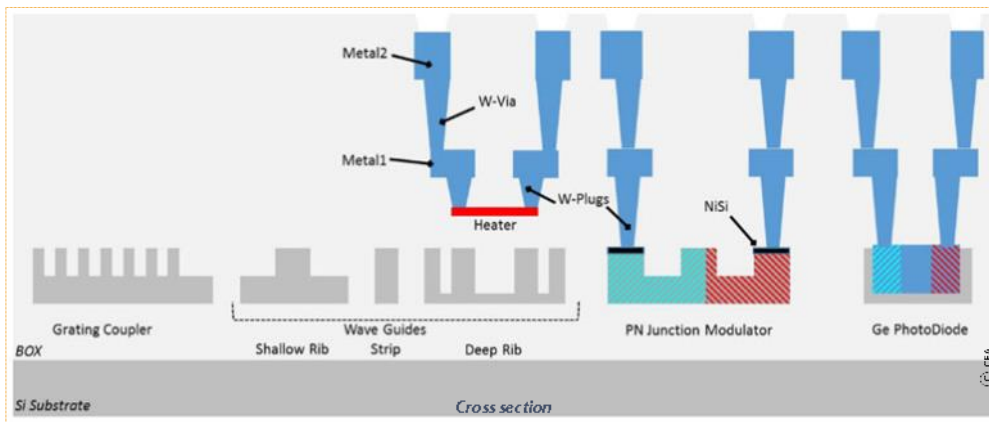
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In addition to ICs and MEMS, **Circuits Multi Projets®/Multi-Project Circuits® (CMP)** is offering the Si310-PHMP2M technology from CEA-LETI in the frame of IRT Nanoelec for MPW prototyping and low volume production of Silicon Photonic ICs.

**New technology and New prices for larger areas**

**Si310-PHMP2M 1600€/mm<sup>2</sup>\***



## Advanced structure

- ⇒ 200mm SOI substrate with HR BOX 800nm and Si 310nm
- ⇒ **Multilevel patterning**
- ⇒ **Silicided** modulator contacts
- ⇒ **2 metal layers** (MET1 and Alucap)

## High performance building blocks

- ⇒ PCells and Black boxes
- ⇒ Devices operating in the O-Band

## Integration of more functions

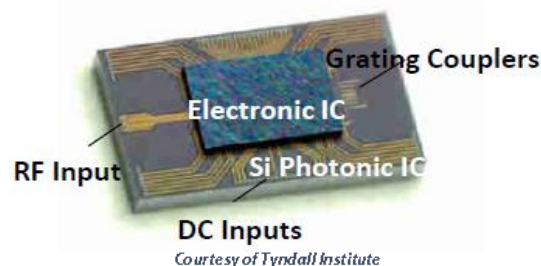
- ⇒ Passive components
  - \* Shallow, deep rib and strip WG
  - \* **1 & 2D** grating couplers
- ⇒ Active components
  - \* High speed **Photodetector**
  - \* High speed **Modulators**

**PDKs** for Cadence, Mentor Graphics & Phoenix Software design platforms.

## Platform Compatible with Open 3D Post-processes

### Available options

- ⇒ Optical edge coupler
- ⇒ Under Bump Metallization
- ⇒ Bumps &  $\mu$ -Bumps deposition



Courtesy of Tyndall Institute



## Multi-Project Circuits®

CMP is a service organization in ICs, Photonics & MEMS for prototyping and low volume production. Circuits are fabricated for Universities, Research Laboratories and Industrial companies.

### CAD, design kits and support

CMP distributes design kits for the MEMS technologies and for most of the CAD tools. Some specific support is given to CMP customers for MEMS design.

### Packaging

**Standard packaging**  
Ceramic: CQFP, DIL, LCC, JLCC, PGA, SOIC, QFN...  
Plastic: BGA, QFN, QFP, PLCC, SOIC, TSSOP

**MEMS packaging**  
Optical resin/Chip On Board (COB)/Thermal solutions/Metallic package/Hermetic package.

**Advanced packaging**  
OPEN 3D post-process, Si Interposer, Wafer-level bumping, Flip Chip and stacked chip.

\*Prices depending on process options and die area. Consult CMP website. Prices may change without notice.

Contact us

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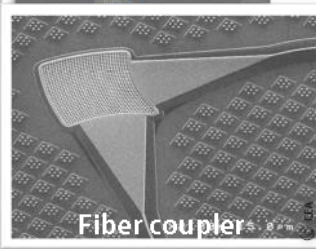
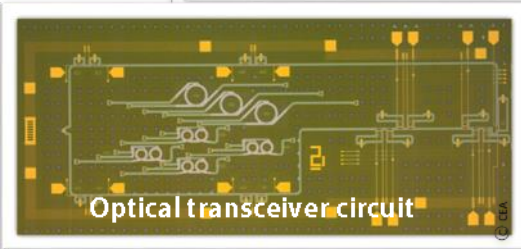
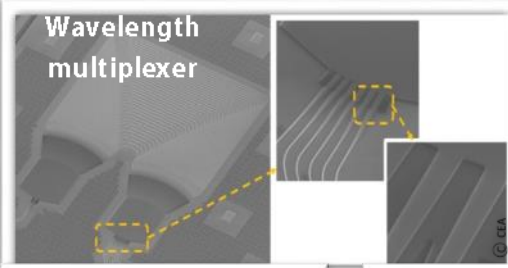
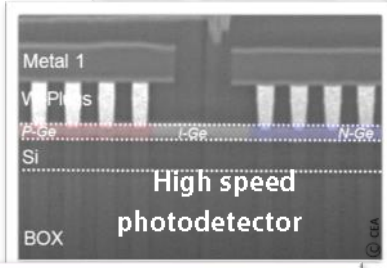


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# Silicon Photonic ICs

## Si310-PHMP2M library contents & indicative performances



Devices	Types of cell	Specifications	Values
MMI 1x2, 1x4, 2x2	Black Box	Loss Output balance	<0.5 dB +/- 5%
Transitions	Black Box	Loss	<0.03 dB
Fiber grating coupler 1D	Black Box	Insertion loss Central wavelength 1dB bandwidth	<3 dB 1310nm 27nm
Fiber grating coupler 2D	Black Box	Insertion loss Peak wavelength 1dB bandwidth	<5 dB 1310nm 25nm
Waveguide	Parametric	Strip Rib Single mode Rib Multi mode DeepRib	Loss <4 dB/cm <2 dB/cm <0.2 dB/cm <4 dB/cm
90° Bend Waveguide	Parametric	Loss	<0.015 dB/90° (R≥5μm)
Directional Coupler	Parametric	Loss	<0.05 dB
Racetrack Resonator	Parametric	Loss Extinction Rate Quality Factor	< 0.5 dB >15 dB >10000
Ge Photodiode PiN longitudinal	Parametric	OE bandwidth @ -1V Responsivity @1310nm, 1V Dark current @ -1V, 20°C	> 35 GHz > 0.75 A/W < 50 nA
Mach Zehnder Modulator (3mm long)	Parametric	OE bandwidth @ -2V Loss Junction Vpi Lpi @ -2V	> 40 GHz < 0.8 dB/mm < 2 V.cm
Ring Racetrack Modulator	Parametric	OE bandwidth @ -2V Insertion loss Vpi Lpi @ -2V	> 15 GHz < 0.5dB < 2.5 V.cm

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