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

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

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 & μ-Bumps deposition

Integration of more functions

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

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## Silicon Photonic ICs

### Si310-PHMP2M library contents & indicative performances

### Devices

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

### 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: COFP, 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.

### Contact us

Lyubomir KERACHEV
lyubomir.kerachev@mycmp.fr

46, Avenue Félix Viallet
38000 Grenoble, France
Ph.: +33 4 76 57 46 17
Fax: +33 4 76 47 38 14
cmp@mycmp.fr
http://mycmp.fr