

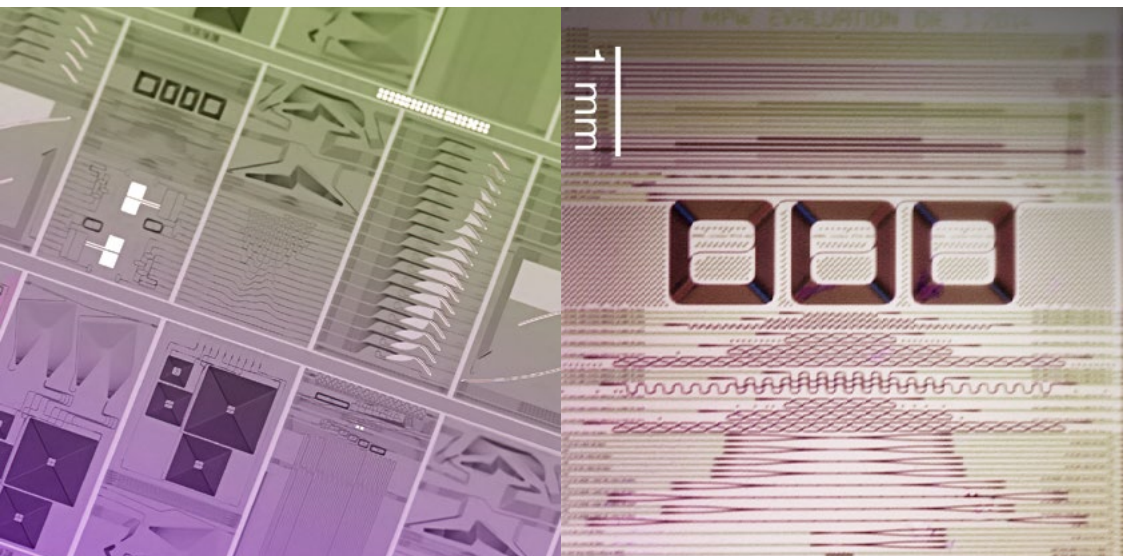
Silicon photonics on 3 μm SOI

Densely integrated 3 μm SOI waveguide circuits

Unique offering for optical communication and sensing applications

One platform from R&D to production

- Customized waveguide circuits for any application
- From discrete devices to complete systems on chip
- Several MPW runs per year, supported by a design kit
- Dedicated runs and customized R&D services
- Ability to ramp-up from prototypes to volume production



Unique technical features

- Ultra-broad wavelength range of 1.2–6 μm
- Wavelength independent single-mode operation
- Small propagation and bending losses in small footprint
- Polarization independent/maintaining options
- Fast and power-efficient thermo-optic switching/tuning

Components and functionalities

- Spot-size converters and efficient I/O coupling
- Passive couplers, splitters, multiplexers and filters
- Monolithic integration of modulators, switches and Ge photodetectors
- Hybrid integration of lasers, amplifiers, modulators and photodetectors
- Horizontal and up-reflecting mirrors
- Micron-scale Euler bends



Examples of measured key performance values

| Component | Property | Value |
|---------------------------------|------------------|-------------|
| SOI rib and strip waveguides | Propagation loss | 0.1 dB/cm |
| Rib-strip converter | Insertion loss | 0.05 dB |
| Horizontal mirror | Insertion loss | 0.08 dB/90° |
| 2×2 MMI based MZI | Insertion loss | 0.3 dB |
| Thermo-optic switching / tuning | Response time | <30 μ s |
| PIN switch | Response time | 70 ns |
| Polarisation splitter | Extinction ratio | >10 dB |

Waveguide bends

| | | |
|---|----------------|--------------|
| Ultra small (R_{eff} 1.3 μ m) | Insertion loss | 0.2 dB/90° |
| Low-loss (R_{eff} 6 μ m) | Insertion loss | <0.03 dB/90° |

Wavelength multiplexers

| | | |
|---------------------------------|------------------|----------|
| Arrayed waveguide grating (AWG) | Insertion loss | 2-3 dB |
| | Extinction ratio | 20-30 dB |
| Echelle grating | Insertion loss | 1-2 dB |
| | Extinction ratio | 20-30 dB |

The logo consists of the letters 'VTT' in a bold, white, sans-serif font, centered within a solid orange square.

Get in touch with us:

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