



RedChip Waveguides

WAVEGUIDE CHIP TECHNOLOGY

AVAILABLE AS AN OEM/DIY COMPONENT
FOR YOUR SWIR OPTICAL AND PHOTONICS NEEDS

We manufacture **RedChip ZBLAN Waveguide Chips** as raw components for ...

- Laser manufacturers
- Laser development research
- Extreme photonics hobbyists

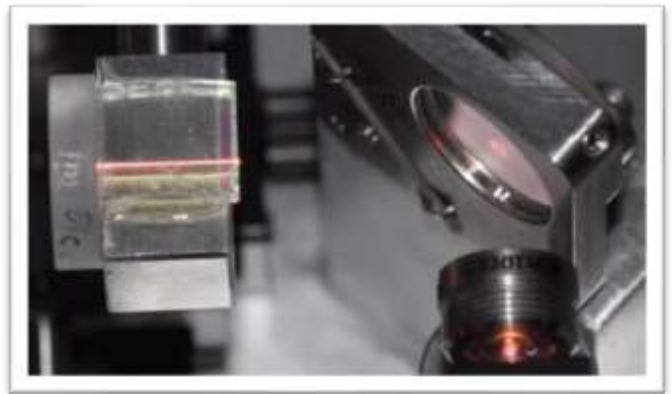
...who want to design and build compact, economic lasers with ...

- CW, pulsed or mode-locked modalities
- Rare-earth-transition based wavelengths from 1-3 μm
- Single mode TEM₀₀ beam profiles
- Near perfect beam quality ($M^2 < 1.1$)
- Powers to 100's mW

RedChip ZBLAN Waveguide Chips are suitable for compact SWIR laser development applications.



Single ZBLAN:Ho 20 μm waveguide



STANDARD REDCHIP WAVEGUIDES

Standard parts	Description
RWC-1000-#	Proprietary Ytterbium-based waveguide chip. Suitable for the 1000-1060nm band. Coatings optional.
RWC-1500-#	Proprietary Erbium-based waveguide chip. Suitable for the 1510-1580nm band. Coatings optional.
RWC-1800-#	Proprietary Thulium-based waveguide chip. Suitable for the 1730-1975nm band. Uncoated only.
RWC-2000-#	Proprietary Holmium-based waveguide chip. Suitable for the 2000-2080nm band. Uncoated only.
RWC-2900-#	Proprietary Holmium-based waveguide chip. Suitable for the 2850-2920nm band. Coatings optional.
Waveguides per chip	Up to 80
Minimum waveguide pitch	Waveguides must typically be separated by at least 400 μm

CUSTOM **REDCHIP** WAVEGUIDE SPECIFICATIONS

Specification	Description
Substrate Material	All 'chips' are based on a proprietary ZBLAN formulation
Dopants	Typical dopants include Yb, Er, Tm, and Ho, providing several SWIR and MIR lasing transitions to choose from
Dimensions	All chips are min ~2mm thick for structural robustness. Maximum chip area is ~45 mm x ~15 mm Minimum chip area is ~1 mm x ~15 mm
Optical Coatings	Chips are available as coated or uncoated, depending on the specific request.
Waveguide geometry	Cladding can be written anywhere within a ~400 μm to ~200 μm depth from the chip surface. Cores can be written down to 10 μm \pm 2.5 μm .
Waveguides per chip	Up to 80
Minimum waveguide pitch	Waveguides must typically be separated by at least 400 μm

The **RedChip** series of lasers are built around a unique combination of specialty ZBLAN glass and laser-inscribed waveguides. As an alternative to a full laser module, **RedChip** Photonics offers the same high-performance technology used in **RedChip** laser modules in a chip-as-component form.

RedChip Waveguide Chips are depressed-cladding waveguides in rare-earth-doped ZBLAN glass. These allow for guiding light through a gain medium, or "gain-guiding," for confinement of light in an amplifying environment. Applications are typically for the development of compact laser devices at wavelengths between 1-3 μm .

We can either provide 'standard' configurations for those looking for proven geometries and compositions or explore custom variants to suit specialty needs.



15 ZBLAN:Er 20 μm waveguides



22 ZBLAN:Ho 30 μm waveguides

Please contact our **RedChip** waveguide writing experts at info@redchipphotonics.com to discuss how our capabilities can be applied to your needs.



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