Diode Bar Smile Corrector

PowerPhotonic
Enhancing Beam Performance

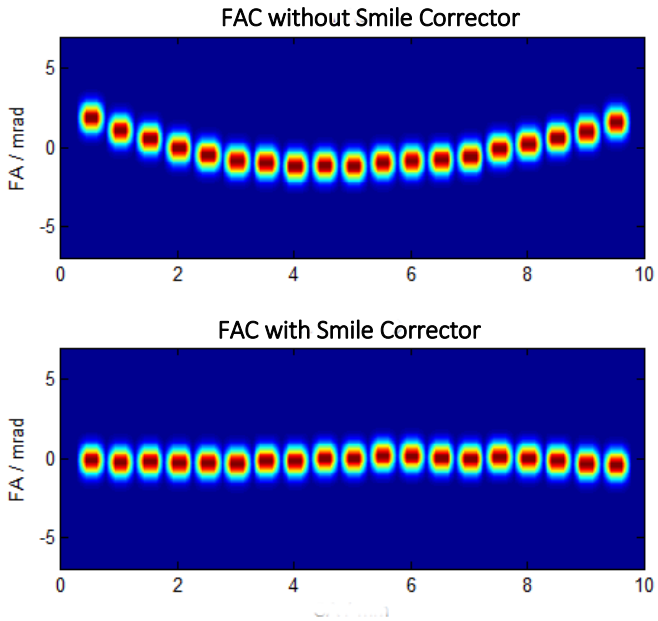
Overview

PowerPhotonic provides a range of smile correctors for laser diode bar and stack applications. These innovative products remove the effects of "smile" error on the collimated beam. Standard products have parabolic smile correction, but can be specified with custom pointing error correction for each emitter.

The "smile" effect, caused by CTE mismatch during solder bonding, prevents the fast axis collimation (FAC) lens being correctly positioned for all points along the bar, resulting in beams with variable pointing direction. This increases overall fast-axis divergence, and can have a severely detrimental impact on VBG locking efficiency and locking range.

The smile correction value is marked on the optic for easy identification for select on test in production.

The PowerPhotonic Smile Correctors remove the impact of these degradations resulting in a dramatic improvement in laser performance.



Key Features

- Single optic that can reduces smile to a level that no longer affects system performance
- Monolithic design
- Fixed or custom variants possible
- Transmission >99%
- UV-fused Silica

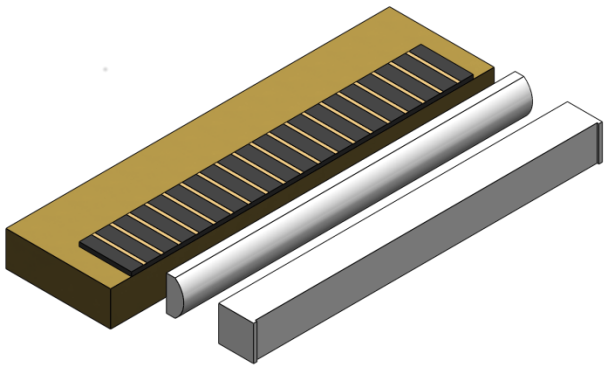
Target Applications

- Laser diode bars and laser diode stacks
- Solid-state laser pumping
- Wavelength-locked diode lasers
- Fibre direct-diode

Benefits

- Reduces residual smile to less than 0.2mrad r.m.s.
- Decreases fast-axis divergence
- Increases fibre-coupled power
- Increases VBG locking efficiency and locking range
- Small number of select on test variants can effectively remove a wide range of smile errors
- Increases assembly yield in wavelength-locked and high brightness products

How they are Used

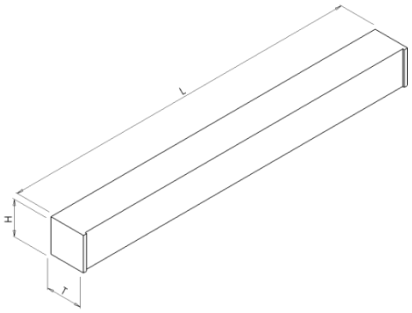


Standard Product Selection

Part Number	Smile P-V (mrad)	SA Clear Aperture (mm)	Pitch P (mm)	Length L (mm)	Height H (mm)	Thickness T (mm)	# Emitters
PP-SMC-S5-C950-V1-AR5	0.50	9.50	0.50	12.0	1.50	1.00	19
PP-SMC-S10-C950-V1-AR5	1.00	9.50	0.50	12.0	1.50	1.00	19
PP-SMC-S15-C950-V1-AR5	1.50	9.50	0.50	12.0	1.50	1.00	19
PP-SMC-S20-C950-V1-AR5	2.00	9.50	0.50	12.0	1.50	1.00	19
PP-SMC-S25-C950-V1-AR5	2.50	9.50	0.50	12.0	1.50	1.00	19
PP-SMC-S30-C950-V1-AR5	3.00	9.50	0.50	12.0	1.50	1.00	19
PP-SMC-Sxx-Cxxx-Vx-ARx	Custom	Custom	Custom	Custom	Custom	Custom	Custom

AR5 optical coating: Broadband 785-1030nm R<0.5%, other coatings on request
Smile P-V: Peak to valley error across diode bar
SA: Slow axis
All custom parameters can be customer specified

L: Length [+/-0.10mm)
H: Height (+/- 0.05mm)
T: Thickness (+/- 0.02mm)



Customization Program

Due to the unique nature of the PowerPhotonic manufacturing process, our standard products can be easily modified to meet specific requirements. Please contact the PowerPhotonic for additional information.

Options

- Length, Height, Thickness
- Slow Axis Clear aperture
- AR Coatings
- Custom systematic smile correction per bar or custom smile correction per emitter

About Us

PowerPhotonic is a global leader in precision laser machined micro-optics products. Our business was founded with the objective of providing unsurpassed excellence in all aspects of design and manufacture of micro-optics for optical and laser applications. Our world-class design skills are supported by an innovative and flexible manufacturing process that allows the company to design both a broad range of state-of-the art standard micro-optics products and uniquely, to offer a low cost and rapid fabrication service for creating completely freeform optical surfaces

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