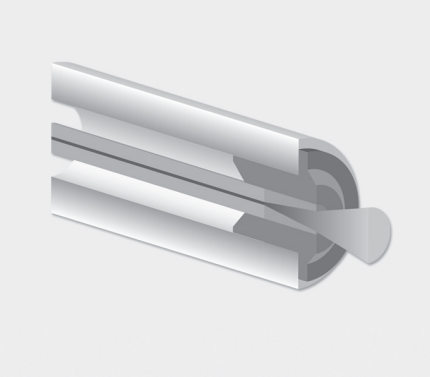
DIAMOND
Fiber Optic Components

PSf

OPTICAL INTERFACE

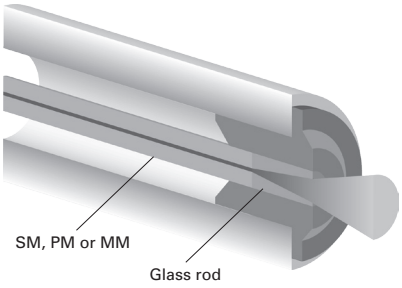
PSf, PSf-PM



DIAMOND proposes PSf technology for high power free space applications. This technology (splicing a glass endcap to a fiber) is applicable to virtually all connectors and is used to reduce burning problems on the fiber for free space application using high power optical beams.

Particle(s) burning at the glass-air interface are the first cause of failure for high power connectors. This occurs at around 0.3 MW/cm2 power density for particles with 1um diameter.

The PSf technology reduces the power density at the glass-air interface by splicing a rod of pure silica on the fiber (SM, PM or MM).



STANDARDS

The PSf technology can be used in the following mechanical interfaces

- E-2000™ IEC 61754-15
- F-3000™ IEC 61754-28
- DMI, Mini-AVIM Diamond standard
- FSMA IEC 61754-22, Tungsten carbide – Nickel Silver composite Ferrule
- Others upon demand (FC, SC, AVIM)

BENEFITS

- Low power density, 60x
- Compact, robust, stable
- Low return loss on APC version
- Large radius polish (“flat polish”)

PERFORMANCES

PSf and PSf-PM Specification			
Measured optical parameters			Test conditions
Coreless length	L	±30um	Design parameter, Index fiber 1.468
Standard spot diameter	D		at 1/e2 or 13.5% at requested λ
Numerical aperture	NA	fiber +/- 10%	at 1/e3 or 5%
Exit angle	alpha	<1°	at 1/e3 or 5%
Extinction Ratio (PSf-PM)	ER	fiber	Similar to IEC 61300-3-40
Eccentricity	e	<5um	from spot center to fiber center
Ferule radius	R	>40mm	
Environment Characteristics			
Operating Temperature	-40 to +85	°C	
Non-Operating Temperature	-40 to +85	°C	

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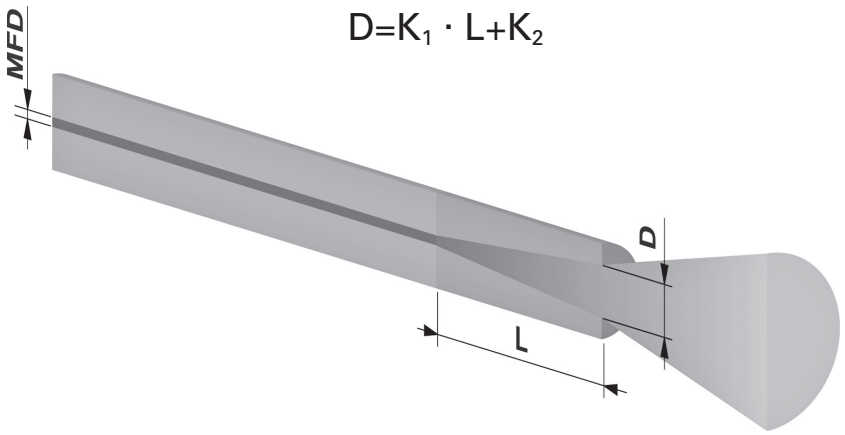
MODELIZATION

There is a relation between L and D, but it can vary with fiber type and manufacturer.

We do carry a set of data on various fiber from far field measurements and use this on known fibers to calculate the spot diameter if the coreless length is given or the coreless length if the spot diameter is given.
For unknown fiber, a test is necessary to establish a relation in the following format:



HOW TO ORDER

Connector name followed by: **PSf-CLxxx-yyyy-AAzzz-P-X**

CLxxx	The following coreless fibers (CL) can be used for the endcap: CL125, CL200 and CL400.
Yyyy	The length of the endcap in microns in the range 200um<L<3000um
AAzzz	The fiber type and Mode Field Diameter (AA={SM, PM, MM} zzz={009 per SM9, 02.5 per SM 350nm MFD=2.5um, 200 per MM 200um core}
P	The polishing, PC 0° or APC 8°,
X	Optional, for any special features not contemplated here and documented

The length of the coreless can be defined by the customer.

The parameters cited in the performance table will be measured systematically.

Example:

DMI PSf-CL125-400-.-PC →	which corresponds to a DMI with a PSf made with a 125um outside diameter coreless fiber and 400um long and PC polished. The original fiber (SM, PM or MM) is not mentioned here.
F-SMA PSf-CL400-800-MM050-PC →	which corresponds to as FSMA with a PSf made with a 400um outside diameter coreless fiber and 800um long and PC polished. The original fiber is a Multimode 50um core fiber.
E-2000™ PSf-PM-CL125-350-PM980-APC	which corresponds to an E-2000™ with a PSf-PM made with a 125um outside diameter coreless fiber and 350um long and APC polished. The original fiber is a PM fiber for 980nm.

OPTIONS

- Antireflection or reflective coating
- Ultra high resistant, very high accuracy and thermal conductive Tungsten carbide-Nickel Silver composite 2.5mm ferrule PC or APC