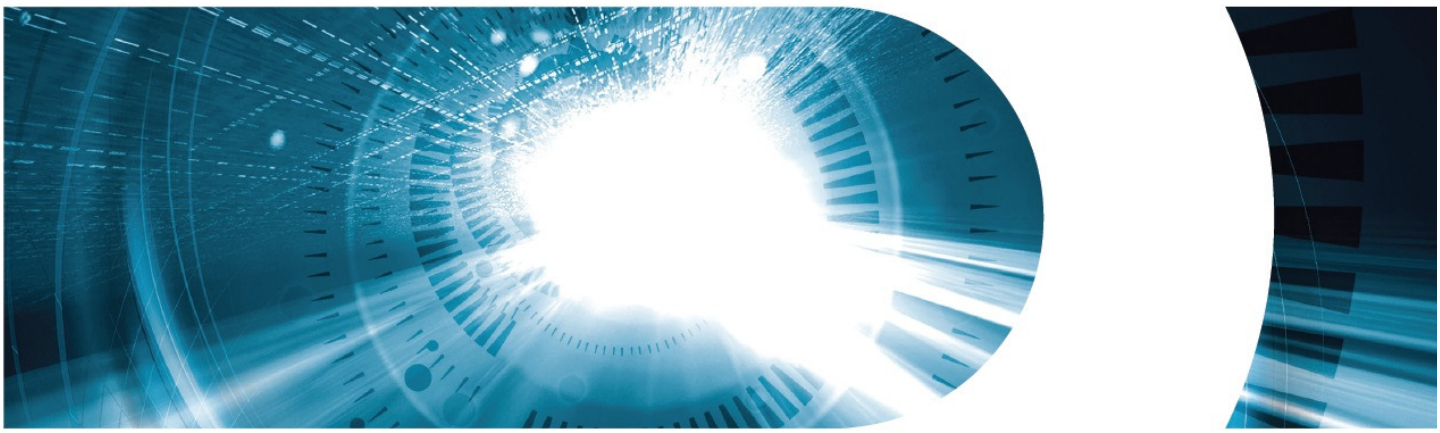
3SP Group



KeyFeatures

- High reliability
- High output power
- Very high coupling efficiency
- Insensitivity to thermal stress (Epoxy free)
- Insensitivity to mechanical vibrations (fused solution)
- Large choice of double-clad fiber
- Any double clad geometrical shape
- Er, Yb or Tm doping
- Passive DCF for Combo (spliced your own DCF)
- Low cost solution

Applications

- High Power Fiber Lasers
- High Power Sources
- Amplifiers
- Lab & Research

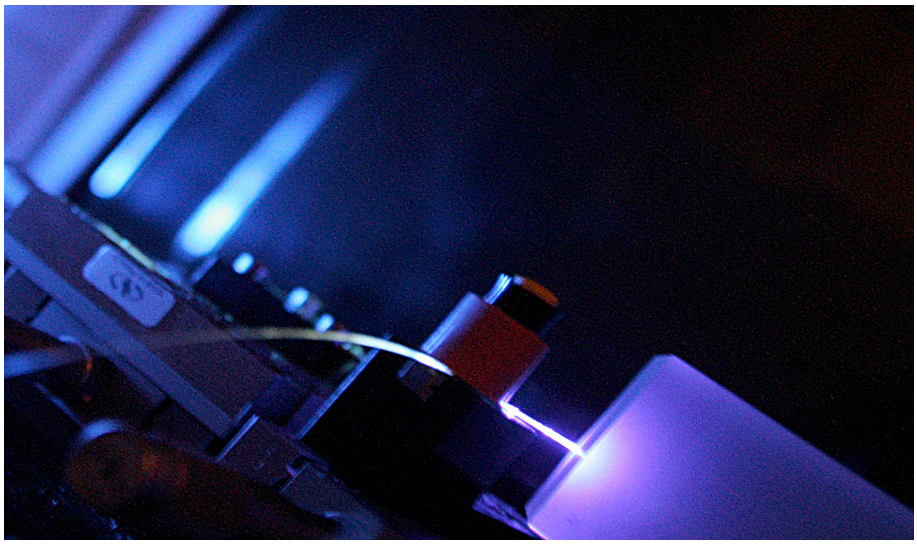
YOUR APPLICATION

Double Clad Fiber Injection Components

Our Double Clad Fiber Injection: The perfect components to produce high performances and reliable fiber laser and CATV amplifiers.

Based on patented technologies, 3SP Group injection components are **suitable to inject high power laser diode and signal into several types of Double Clad Single Mode Fibers**. Especially designed to withstand high powers, the injector will become your perfect component in order to produce your fiber lasers, high power sources and amplifiers at **the lower cost and the highest level of reliability and performances**.

3SP Group offers several combinations to fit your needs. **A large choice of input, output and pump fibers is available.** Most of the DCF (Double Clad Fibers) available on the market today might be spliced with 3SP Group injection components.



For moreInfo

Please contact us at:
North America: **514.748.4848**
888.922.1044
Europe & Asia: **+33 (0) 2 96 04 20 00**
or via e-mail at **salesmanlight@3spgroup.com**

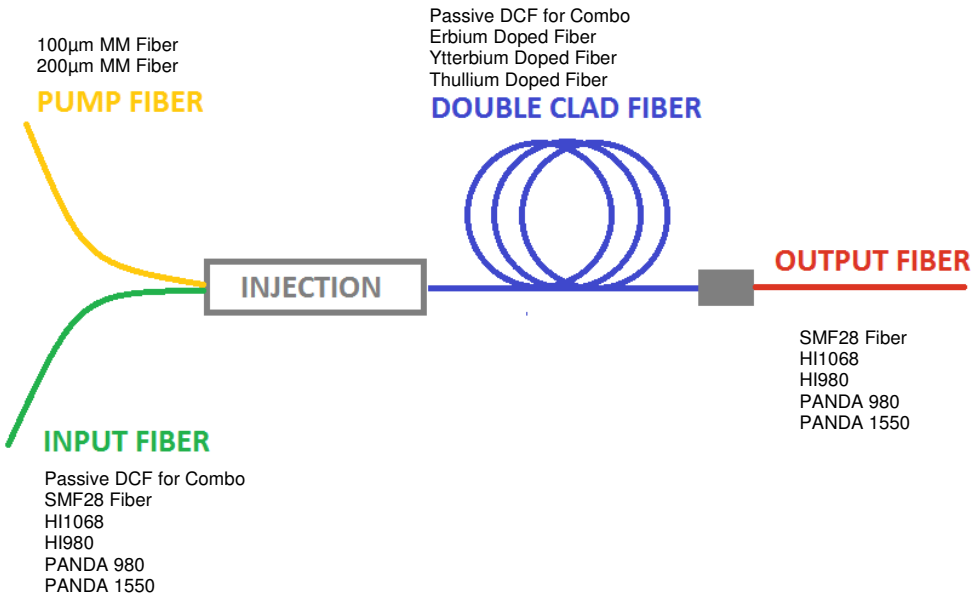
Product Line

Double Clad Single Mode Fiber Injection Components

GENERAL SPECIFICATIONS
STANDARD CONFIGURATIONS

The 3SP GROUP injection components are constituted by one pump injection.
The input and output fiber type might be chosen over the input and output fibers specifications.
The pump fiber type might be chosen over the pump fibers specifications
The Double Clad fiber type might be chosen over the Double Clad Fibers specifications

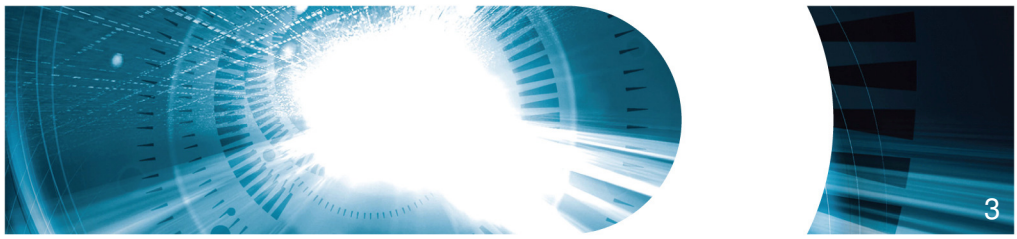
Parameter	Value	Comment
Number of Injection	1	
Multimode Efficiency	> 98 %	Injection transmission efficiency 85% for Passive DCF
Splicing Insertion Loss @1310nm	< 0.2dB	
Package Length/Diameter	55mm / 3.0mm	
Standard Fiber Length (In/Out)	1.0m / 1.0m	
Operating Temperature	-35℃ to +65℃	
Storage Temperature	-40℃ to +80℃	



3SP Group

Product Line

Double Clad Single Mode Fiber Injection Components



GENERAL SPECIFICATIONS
DOUBLE CLAD FIBER SPECIFICATIONS

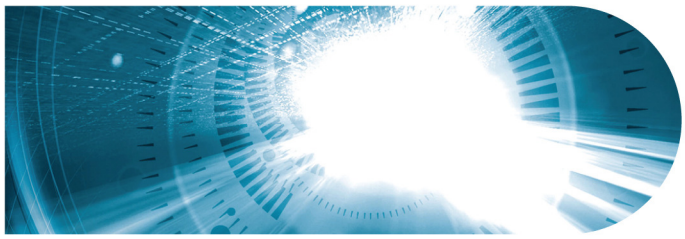
DCF Type / Parameter	Ytterbium Doped 100µm DCF	Ytterbium Doped 200µm DCF	Erbium Ytterbium Doped DCF	Erbium Ytterbium Doped DCF	Erbium Ytterbium Doped DCF	Erbium PM Doped DCF	Passive Single Mode DCF	Passive Single Mode PM DCF
SM Numerical Aperture	0.15	0.11	0.15	0.15	0.14	0.14	0.2	0.11
Core Diameter	5.6µm	8.0µm	6.0µm	12.0µm	17.0µm	13.0µm	8.0µm	8.3µm
Multimode Section	Hexagonal	D-Shape	Hexagonal	Hexagonal	Hexagonal	Hexagonal	Circular	Circular
Multimode Size	130µm	200x220µm	130µm	130µm	200µm	130µm	130µm	130µm
MM Numerical Aperture	0.48	0.48	0.48	0.48	0.45	0.45	0.45	0.48
Signal Attenuation @915nm	0.55 dB/m	0.35 dB/m	0.7 dB/m	0.7 dB/m	0.7 dB/m	0.7 dB/m	-	-
Signal Attenuation @1536nm	-	-	20 dB/m	45 dB/m	45 dB/m	45 dB/m	-	-
Power Rating	Up to 30W	Up to 100W	500mW	Up to 2W	Up to 40W	Up to 20W	Up to 10W	Up to 25W
Ordering Code	**YB06**	**YB08**	**EY06**	**EY12**	**EY17**	**ER13**	**PS80**	**PS83**

INPUT AND OUTPUT FIBER **SPECIFICATIONS**

Fiber Type / Parameter	CORNING ® SMF-28™	CORNING® PureMode™ HI 1060	CORNING® Panda PM980	CORNING® Panda PM1550	Corractive SCF-UN-17/200
Numerical Aperture	0.14	0.14	0.14	0.15	0.18
Core Diameter	8.3µm	6.0µm	6.6µm	10.5µm	17.0µm
Cut Off	≤ 1260 nm	920 ± 50nm	910 ± 40nm	1370 ± 70nm	
Mode Field Diameter @980nm	-	5.2 ± 0.5µm	6.6 ± 0.5µm	-	
Mode Field Diameter @1060nm	-	6.2 ± 0.5µm	-	-	
Mode Field Diameter @1310nm	9.2 ± 0.4µm	-	-	-	
Mode Field Diameter @1550nm	10.4 ± 0.8µm	9.9 ± 0.5µm	6.3 ± 0.3µm	4.2 ± 0.5µm	
Signal Attenuation @980nm	-	< 2.1 dB/km	< 2.5 dB/km	< 2.5 dB/km	
Signal Attenuation @1060nm	-	< 1.5 dB/km	-	-	
Signal Attenuation @1310nm	< 0.4 dB/km	-	-	-	
Signal Attenuation @1550nm	< 0.3 dB/km	-	-	-	
Ordering Code	**S**	**H**	**F**	**P**	**C**

Product Line

Double Clad Single Mode Fiber Injection Components



GENERAL SPECIFICATIONS
PUMP FIBER SPECIFICATIONS

Parameter / Fiber Type	OFS F10017	OFS BF05859 F01LCH105 N0F02	OFS	NUFERN
Cladding Type	Fluorinated depressed cladding			
Core Diameter	105µm	105µm	200µm	130µm
Clad Diameter	125µm	125µm	260µm	150µm
Numerical Aperture	0.15	0.22	0.22	0.46
Ordering Code	**1**	**2**	**3**	**4**

PART NUMBERING:

ML-INJ-1-DDDD-XX-I-O-P-YY

DCF Fiber :
YB06
YB08
EY06
EY12
EY17
ER13
PS80
PS83

Input Fiber :
S
H
F
P
C

Output Fiber :
0:None
S
H
F
P
C

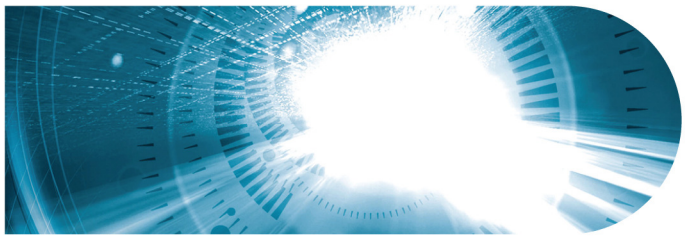
Pump Fiber :
1
2
3
4

XX : DCF Fiber Length in meter
YY : Input, Output and Pump fiber length in meter

3SP Group

Product Line

Double Clad Single Mode Fiber Injection Components



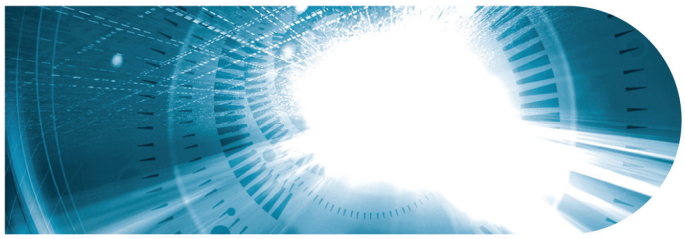
SPECIFICATIONS
1.0µm STANDARD CAVITIES

3SP GROUP PART NUMBER Parameter	5039	5040	5046	5908
Signal Input Fiber Type	Corning Hi1060 Core diameter 5.3µm 0.14NA			
Signal Input Power (Pin)	from -30dBm to 0dBm to achieve high gain from 20dBm to 33dBm to high power (saturated gain regime)			
Signal Input Fiber Length	1.2m-1.4m			
Multimode Pump Fiber Type	OFS MM-105/125µm 0.22NA			
Signal Pump Wavelength	915-940-980nm			
Max power in Multimode Pump Fiber	10W	10W	10W	10W
Active Double Clad Fiber Type	FIBERCORE DC Yb SD 6/130 0.13/0.46NA			
DCF Coil Diameter (mm)	100-195	100-195	100-195	100-195
Typical DCF Length	13	20	11	3.5-5.5
Output Fiber Type	Corning Hi1060 Core diameter 5.3µm 0.14NA			
Max Signal Insertion Loss (@1310nm)	<1.5dB	<1.5dB	<1.0dB	<1.0dB
Typical Output Power @1064nm and Pin= ??	5W	10W	5W	1W
Packaging	Alu package 13mm*80mm*8mm			
Operating temperature	From -35°C to +65°C			
Storage temperature	From -40°C to +85°C			
Humidity	From 5% to 95%			
Note	Injection directly on doped fiber			

3SP Group

Product Line

Double Clad Single Mode Fiber Injection Components

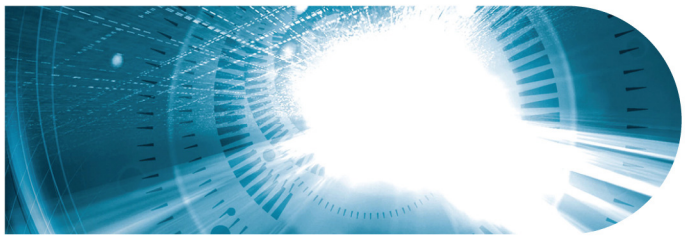


SPECIFICATIONS
1.0µm POLARIZATION MAINTAINING STANDARD CAVITIES

3SP GROUP PART NUMBER Parameter	5042	5909	1*2954	1*3256
Signal Input Fiber Type	Corning PM980 Core diameter 6.6µm 0.10NA			
Signal Input Power (Pin)	from -30dBm to 0dBm to achieve high gain from 20dBm to 33dBm to high power (saturated gain regime			
Signal Input Fiber Length	1.2m-1.4m			
Multimode Pump Fiber Type	OFS MM-105/125µm 0.22NA			
Signal Pump Wavelength	915-940-980nm			
Max power in Multimode Pump Fiber	25W	10W	10W	10W
Active Double Clad Fiber Type	FIBERCORE DC Yb SD 6/130 0.11/0.46NA			
DCF Coil Diameter (mm)	100-195	100-195	100-195	100-195
Typical DCF Length	20	7.5	13	1.5-5.5
Output Fiber Type	Corning PM980 Core diameter 6.6µm 0.10NA			
Max Signal Insertion Loss (@1310nm)	<1.5dB	<1.0dB	<1.0dB	<1.0dB
Typical Output Power @1064nm and Pin= ??	10W	2W	5W	1W
Packaging	Alu package 13mm*80mm*8mm			
Operating temperature	From -35℃ to +65℃			
Storage temperature	From -40℃ to +85℃			
Humidity	From 5% to 95%			
Note	PM - Injection directly on doped fiber			

Product Line

Double Clad Single Mode Fiber Injection Components

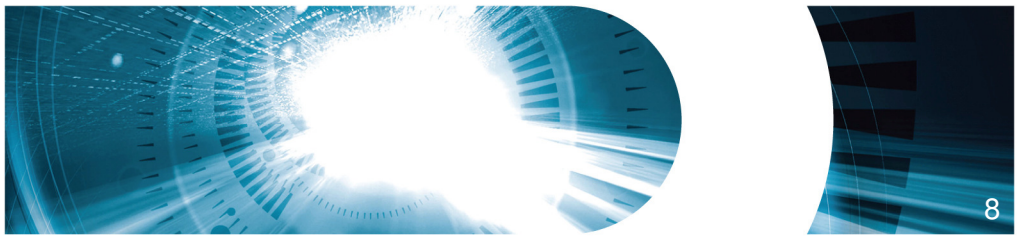


SPECIFICATIONS*
1.5µm STANDARD CAVITIES

3SP GROUP PART NUMBER Parameter	5910	1*2894	1*2983	1*2897
Signal Input Fiber Type	Corning SMF28 Core diameter 8.2µm 0.14NA			
Signal Input Power (Pin)	+15dBm typical			
Signal Input Fiber Length	1.2m-1.4m			
Multimode Pump Fiber Type	OFS MM-105/125µm 0.22NA			
Signal Pump Wavelength	915-940-980nm			
Max power in Multimode Pump Fiber	25W	10W	10W	10W
Active Double Clad Fiber Type	FIBERCORE DC Er/Yb SD 12/130 0.17/0.46NA			
DCF Coil Diameter (mm)	100	104	80	53
Typical DCF Length	7	4	3.5	9
Output Fiber Type	Corning SMF28 Core diameter 8.2µm 0.14NA			
Max Signal Insertion Loss (@1310nm)	<1.0dB	<1.0dB	<1.2dB	<1.0dB
Typical Output Power @1550nm and Pin= ??	7W	1W	2W	0.5W
Packaging	Alu package 13mm*80mm*8mm	Inox Tube ∅3mm – 54mm length		
Operating temperature	From -35°C to +65°C			
Storage temperature	From -40°C to +85°C			
Humidity	From 5% to 95%			
Note	PM - Injection directly on doped fiber	Assembly with passive component		

Product Line

Double Clad Single Mode Fiber Injection Components



SPECIFICATIONS
1.5µm POLARIZATION MAINTAINING STANDARD CAVITIES

3SP GROUP PART NUMBER Parameter	1*3408	1*3254
Signal Input Fiber Type	Fujikura PM1550 Core diameter 9.5µm 0.09NA	
Signal Input Power (Pin)	+15dBm typical	
Signal Input Fiber Length	1.2m-1.4m	
Multimode Pump Fiber Type	OFS MM-105/125µm 0.22NA	
Signal Pump Wavelength	915-940-980nm	
Max power in Multimode Pump Fiber	10W	10W
Active Double Clad Fiber Type	FIBERCORE DC Er/Yb PM 12/1300.18/0.46NA	
DCF Coil Diameter (mm)	95	100-195
Typical DCF Length	5	5.5-7
Output Fiber Type	Fujikura PM1550 Core diameter 9.5µm 0.09NA	
Max Signal Insertion Loss (@1310nm)	<1.5dB	<1.0dB
Typical Output Power @1550nm and Pin= ??	1W	2W
Packaging	Inox Tube ∅3mm – 54mm length	Alu package 13mm*80mm*8mm
Operating temperature	From -35°C to +65°C	
Storage temperature	From -40°C to +85°C	
Humidity	From 5% to 95%	
Note	PM - Injection directly on doped fiber	

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