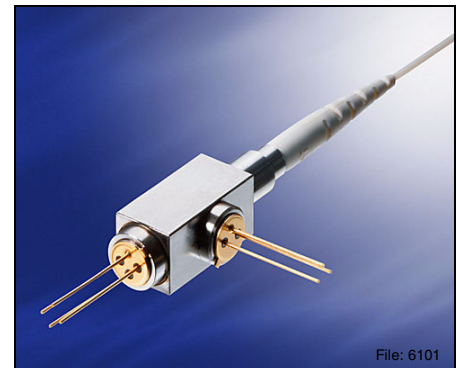


Medium Power BIDI®
Bi-Directional Optical Component
1310 nm Tx / 1310 nm Rx

V23875-S2110-x100

Preliminary Data

The V23875-S2110-x100 is a bi-directional optical component designed for full-duplex communication over a single fiber. The single fiber concept saves overall system costs by eliminating one fiber, allowing for doubling of capacity without installing new fibers, and simplifying fiber management.



Features

- Integrated WDM filter for single wavelength Tx/Rx operation at 1310/1310 nm
- 1310 nm FP laser diode transmitter suitable for data rates up to 1.25 Gbit/s
- 1310 nm PIN diode receiver
- -40°C to +85°C operating temperature range
- Single-mode fiber pigtail with different connector options
- Class 3B laser product
- Hermetically sealed Tx and Rx sub-components for high reliability

Applications

- Access Networks, e.g. media converters for Fiber-In-The-Loop (FITL), Point-to-Point (P2P), and Passive Optical Networks (PON)
- Inter-system communication between Servers, Switches, Routers, Add-Drop-Multiplexers, Cross Connects, etc. in Central Offices, Data Storage Networks, High Speed Server Farms, etc.
- Digital Video and Closed Circuit Television (CCTV) applications for Transport, Traffic, and Security

BIDI® is a registered trademark of Infineon Technologies.
Symbolic picture only – the actual pin layout may be different.

Pin Configuration

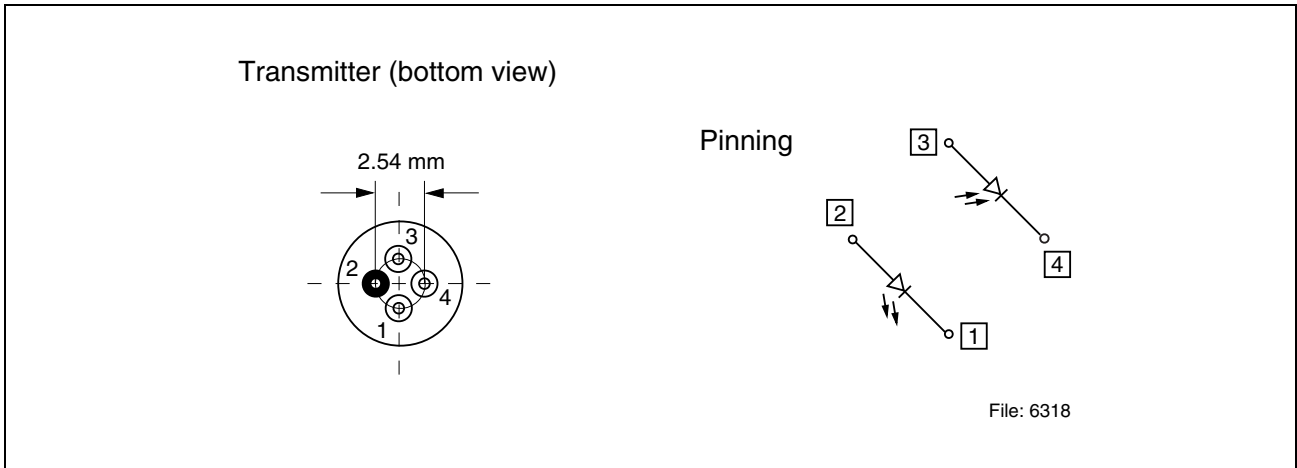


Figure 1 Transmitter

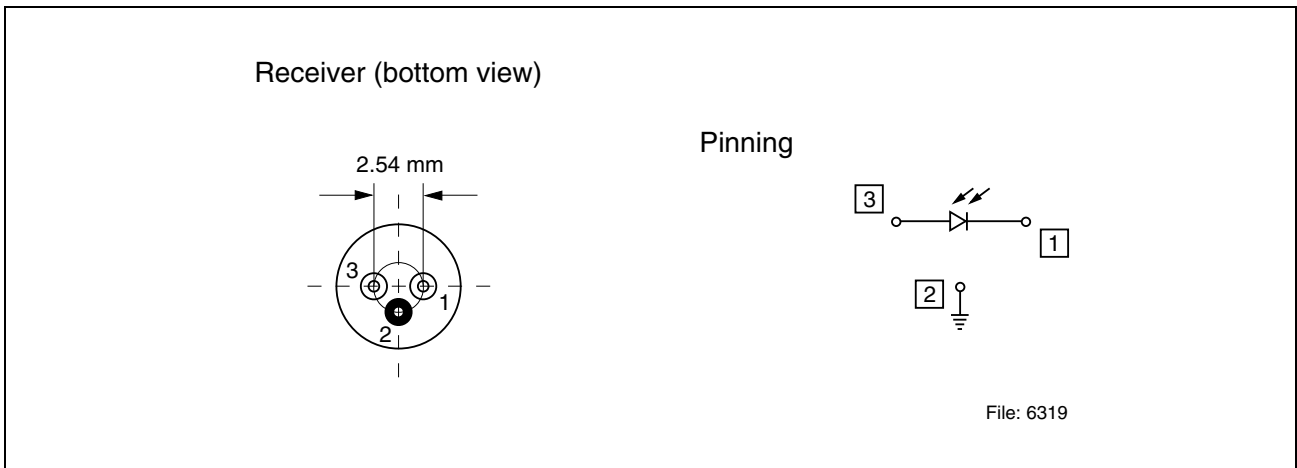


Figure 2 Receiver

Technical Data
Absolute Maximum Ratings

Parameter	Symbol	Limit Values		Unit
		min.	max.	

Module

Operating temperature range at case	T_C	-40	85	°C
Storage temperature range	T_{stg}	-40	85	°C
Soldering temperature ($t_{max} = 10$ s, 2 mm distance from bottom edge of case)	T_S		260	°C

Laser Diode

Direct forward current	$I_{F\ max}$		120	mA
Reverse voltage	V_R		2	V

Monitor Diode

Reverse voltage	V_R		10	V
Forward current	I_F		2	mA

Receiver Diode

Reverse voltage	V_R		10	V
Forward current	I_F		2	mA
Optical power into the optical port	P_{port}		1.5	mW

Technical Data

The electro-optical characteristics described in the following tables are only valid for use within the specified temperature range from -40°C up to 85°C unless otherwise specified.

Transmitter Electro-Optical Characteristics

Parameter	Symbol	Values		Unit
		min.	max.	
Optical output power, assuming 50% duty cycle	P_{avg}	-3		dBm
Maximum optical output power under modulation	P_{peak}	0		dBm
Maximum forward current	I_{max}		120	mA
Emission wavelength center of range $P_{\text{F}} = 0.5 \text{ mW}$	λ_{trans}	1260	1360	nm
Spectral width	$\Delta\lambda$		5	nm
Rise time (10% - 90%)	t_{r}		500	ps
Fall time (10% - 90%)	t_{f}		500	ps
Threshold current	I_{th}	1	45	mA
Radiant power at I_{th}	P_{th}		50	μW
Slope efficiency (0.1 to 0.5 mW)	η	20	100	mW/A
Forward voltage $P_{\text{F}} = 0.5 \text{ mW}$	V_{F}		1.5	V
Differential series resistance	R_{S}		12	Ω

Monitor Diode Electro-Optical Characteristics

Parameter	Symbol	Values		Unit
		min.	max.	
Dark current $P_{\text{opt}} = 0 \text{ mW}$, $V_{\text{R}} = -5 \text{ V}$	I_{R}		500	nA
Photocurrent $P_{\text{opt}} = 0.5 \text{ mW}$, $V_{\text{R}} = -5 \text{ V}$	I_{P}	100	1500	μA
Capacitance $V_{\text{R}} = 5 \text{ V}$, $f = 1 \text{ MHz}$	C_{S}		10	pF
Tracking error $V_{\text{R}} = 5 \text{ V}$	TE	-1.5	1.5	dB

Receiver Diode Electro-Optical Characteristics

Parameter	Symbol	Values		Unit
		min.	max.	
Spectral sensitivity $V_R = 5 \text{ V}, P_{\text{opt, avg}} = 100 \text{ } \mu\text{W}$	$S_{1310 \text{ nm}}$	0.3		A/W
Rise and fall time (10% - 90%) $V_R = 5 \text{ V}, P_{\text{opt}} = 0.1 \dots 1 \text{ mW}, 50 \text{ } \Omega$	$t_r; t_f$		500	ps
Total capacitance $V_R = 5 \text{ V}, f = 1 \text{ MHz}, V_{\text{RF}} = 30 \text{ mV}$	C		1	pF
Dark current $V_R = 5 \text{ V}, P_{\text{opt}} = 0 \text{ mW}$	I_D		50	nA

Module Electro-Optical Characteristics

Parameter	Symbol	Values		Unit
		min.	max.	
Internal optical crosstalk at Rx $P_{\text{opt}} = 100 \text{ } \mu\text{W}$	$\text{CRT}_{\text{I-0}}$		-22	dB
Return loss $P_{\text{opt}} = 100 \text{ } \mu\text{W}, \lambda = 1310 \text{ nm}$	RL_{I}		-6	dB

Fiber Data

The mechanical fiber characteristics are described in the following table.

Fiber Characteristics

Parameter	Values			Unit
	min.	typ.	max.	
Mode field diameter	8	9	10	μm
Cladding diameter	123	125	127	μm
Mode field/cladding concentricity error			1	μm
Cladding non-circularity			2	%
Mode field non-circularity			6	%
Jacket diameter	0.8		1	mm
Bending radius	30			mm
Tensile strength fiber case	5			N
Length	900		1100	mm

Quality / Reliability / Package

The product fulfills the generic requirements according to Telcordia GR-468-CORE.

Labeling

 Infineon

 V23875-S2110-x100

 Serial no.

 Date code

Documentation
 $I_{th, 25^{\circ}C}$, $I_{th, 85^{\circ}C}$, $\eta_{25^{\circ}C}$, $\eta_{85^{\circ}C}$, $\lambda_{25^{\circ}C}$, $I_{mon, 25^{\circ}C}$

Eye Safety

Ensure to avoid exposure of human eyes to high power laser diode emitted laser beams. Especially do not look directly into the laser diode or the collimated laser beam when the diode is activated.

Class 3B Laser Product According to IEC 60825-1

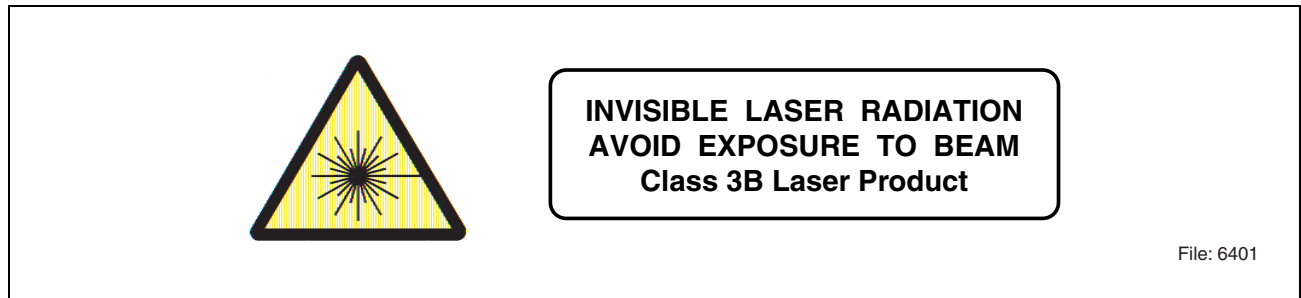


Figure 3 Required Labels

Class IIIb Laser Product According to FDA Regulations Complies with 21 CFR 1040.10 and 1040.11



Figure 4 Required Label

Laser Data

Wavelength	1260...1360 nm
Maximum total output power	< 50 mW
Beam divergence (1/e ²)	10°

Package Outlines

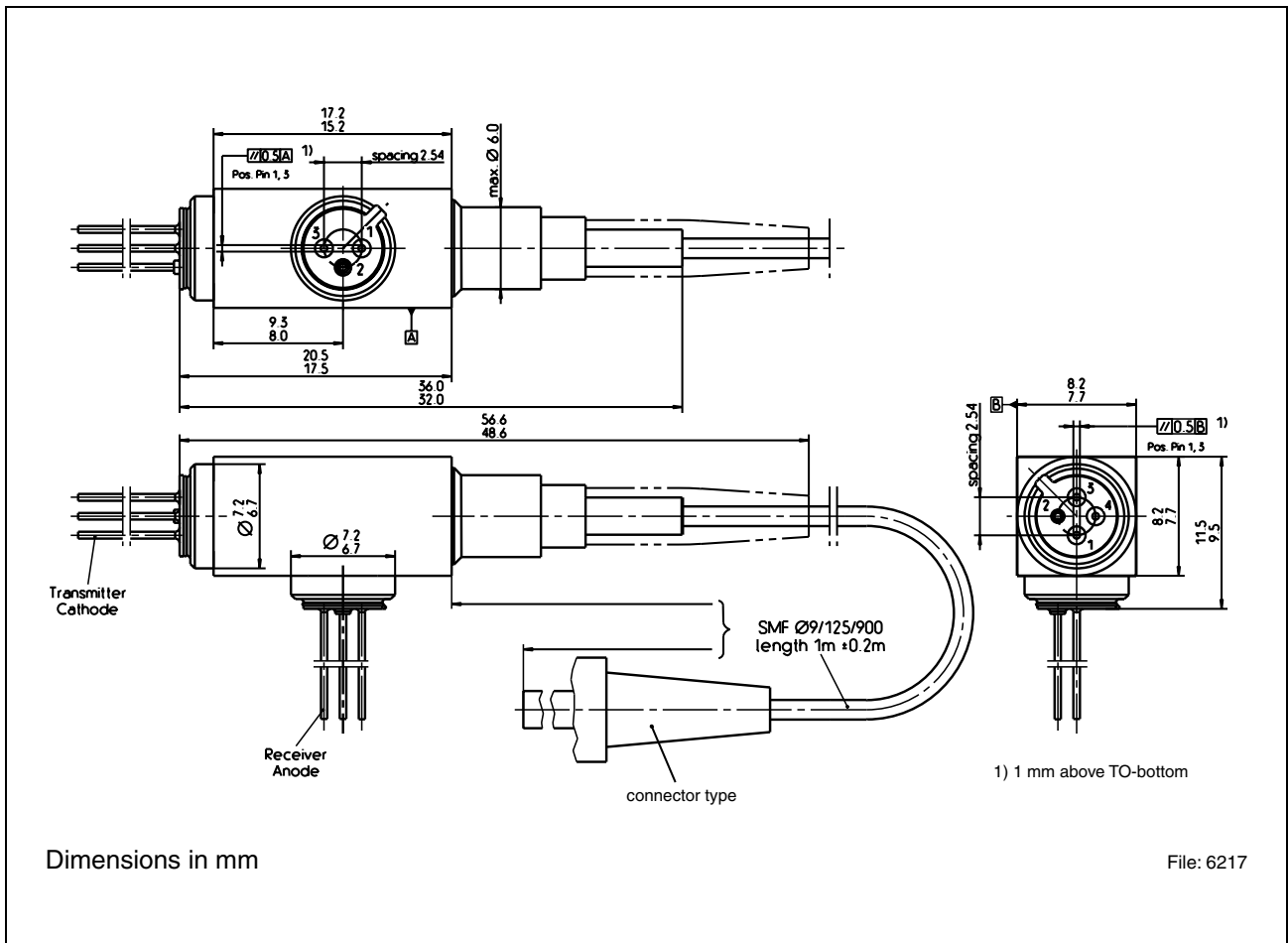


Figure 5

Connector Options

Model	Type
V23875-S2110-B100	SM SC/PC 0°
V23875-S2110-C100	SM SC/APC 8°
V23875-S2110-M100	SM FC/PC 0°

Revision History: 2004-06-07

DS0

Previous Version: none

Page	Subjects (major changes since last revision)

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