

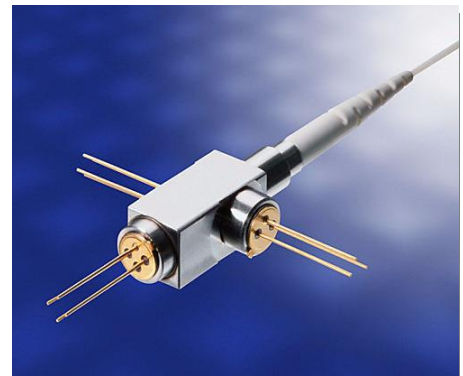
GPON BIDI-VLSC™**High Power Bi-Directional Optical Component with Visible Light Service Channel**

1310nm Tx / 1490nm Digital APD Rx with 2.5 Gbit/s 3.3 V TIA
with integrated Red Light FP Laser 650nm

Preliminary Data

The **V23875-R3080-C500** is an optical component designed for full-duplex digital communication over a single fiber with an additional service channel integrated into BIDI optical unit. Visible light laser transmitter for laser beam positioning in Bi-directional Gigabit optical wireless communications.

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 filters for Tx/Tx/Rx operation at 650/1310/1490nm
- 1310 nm DFB laser diode transmitter suitable for data rates up to 1.25 Gbit/s
- 1490 nm APD digital receiver with integrated 2.5 Gbit/s, 3.3 V TIA
- 650 nm Laser Diode for Optical Wireless Network
- -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

General PON BIDI-VLSC™ Applications

- High-speed indoor Wireless optical infrastructure
- Open-air optical or fibreless optical transmission, LiFi over air

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Symbolic picture only – the actual pin layout may be different.

Technical Data
Absolute Maximum Ratings

Parameter	Symbol	Limit Values		Unit
		Min.	Max.	

Module

Operating case temperature range	T_{case}	-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 1310nm

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}		2	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 1310nm Characteristics

Parameter	Symbol	Limit Values		Unit
		Min.	Max.	
Optical output power, assuming 50% duty cycle	P_{avg}	2		dBm
Bias current	I_{bias}	1	80	mA
Modulation current	I_{mod}	10	80	mA
Emission wavelength center of range $P_F = 2$ dBm	λ_{trans}	1260	1360	nm
Spectral width at $P_F = 2$ dBm	$\Delta\lambda$		1	nm
Side Mode Suppression	SSR	30		dB
Rise time + fall time (10 % - 90 %)	$\Sigma(t_r, t_f)$		800	ps
Forward voltage $P_F = 2$ dBm	V_F		1.8	V
Monitor diode dark current $P_{opt} = 0$ mW, $V_R = -5$ V	I_D		1000	nA
Monitor diode photocurrent $P_{opt} = 2$ dBm, $V_R = -5$ V	I_{mon}	50	1500	μ A
Monitor diode capacitance $V_R = 5$ V, $f = 1$ MHz	C		20	pF
Tracking error $V_R = 5$ V	TE	-1.5	1.5	dB

Technical Data
Receiver 1490nm Characteristics with Preamp

Parameter	Symbol	Limit Values			Unit
		Min.	Typ.	Max.	

DC-Characteristics

Supply voltage	V_{CC}	3.15	3.3	3.45	V
Supply current	I_{CC}			55	mA

AC-Characteristics

Optical sensitivity (BER $\leq 10^{-10}$, PN23, ER ≥ 10 dB), 2.5 Gbit/s, $\lambda = 1480...1500$ nm, V_{APD} bias opt (BER min)	S			-27	dBm
Optical overload	P_{max}	-8			dBm
Small signal transimpedance (differential)	R_T	4	6	9	k Ω
Output resistance (differential)	R_{out}		100		Ω
Rise/fall time (10% - 90%)	t_r, t_f			200	ps

Transmitter 650nm Characteristics

Optical output power	P_o	0.4	1		mW
Threshold Current	I_{th}		40	50	mA
Operating Current $P_o=5$ mW	I_{op}		60	80	mA
Operating Voltage $P_o=5$ mW	V_{op}		2.3	2.6	V
Lasing Wavelength $P_o=5$ mW	λ_m	645	655	660	nm
Reverse Voltage (LD)	V_{rev}			2	V

Technical Data
Module Characteristics
Module Characteristics

Parameter	Symbol	Limit Values			Unit
		Min.	Typ.	Max.	
Internal optical crosstalk at Rx1 Popt = 400 μW	CRT _{I-0}			-34	dB
Isolation at Rx1 λ=1490nm, Popt_ext = 400μW	ISO _{I-1490nm}			-30	dB
Isolation at Rx1 λ=1310nm, Popt_ext = 400μW	ISO _{I-0}			-20	dB
Return loss Popt = 400 μW, λ =1310 nm	RL ₀			-6	dB
Return loss Popt = 400 μW, λ = 1490 nm	RL _I			-20	dB

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

General Data

Quality / Reliability / Package

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

Labeling

EZconn BIDI-VLSC
V23875-R3080-C500
Serial no.
Date code

Documentation / Test Data

$I_F, 25^\circ C$, $I_F, 85^\circ C$, $I_{th}, 25^\circ C$, $I_{th}, 85^\circ C$, $\eta_{25^\circ C}$, $\eta_{85^\circ C}$, $I_{Mon}, 25^\circ C$, $V_{br}, 25^\circ C$

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**

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



INVISIBLE LASER RADIATION
AVOID EXPOSURE TO BEAM
Class 3B Laser Product

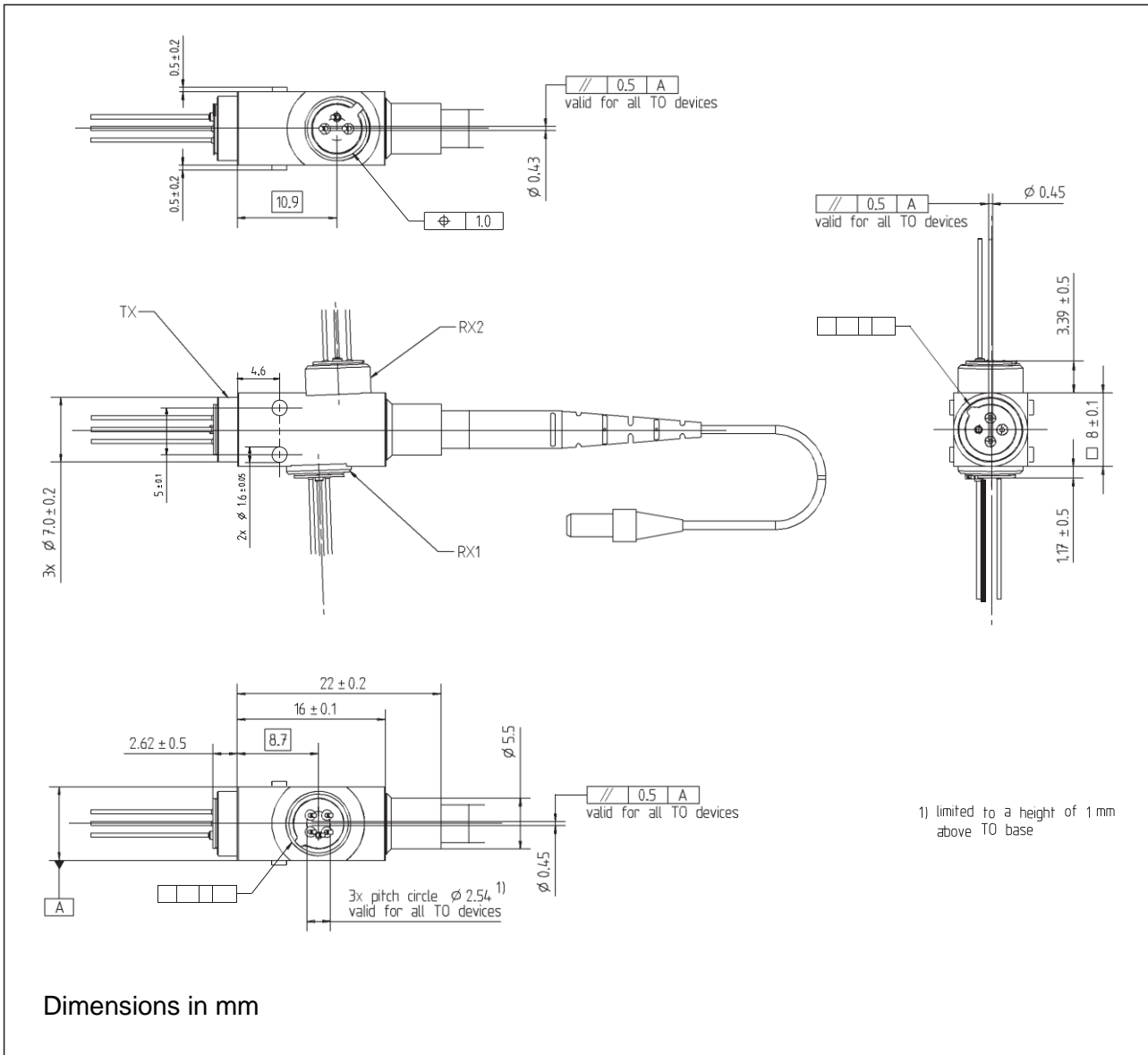


Laser Data

Wavelength	600 ... 1360 nm
Maximum total output power	< 50 mW
Beam divergence (1/e2)	10°

Package Outline

Package Outline



Connector Option

Model	Type
V23875-R3080-C500	SM SC/APC 8°
.....-.....-B.....	SM SC/PC 0°
.....-.....-M.....	SM FC/PC 0°

Revision History**Revision Date: 2014-10-11****Major changes since last revision**

Page	Subject

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