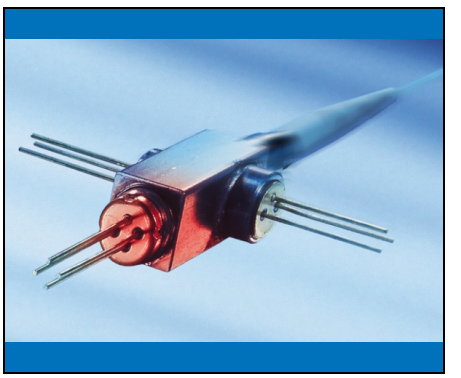
High Power Triport-BIDI® V23875-T3261-C110
Optical Triplexer Component
1310 nm Tx / 1490 nm Digital Rx with 622 Mbit/s, 3.3 V TIA / 1555 nm Analog Video Rx

Preliminary Data



The V23875-T3261-C110 is an optical triplexer component designed for full-duplex digital communication over a single fiber with an additional analog video receiver. 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/Rx_1/Rx_2 operation at 1310/1490/1555 nm
- 1310 nm FP laser diode transmitter suitable for data rates up to 1.25 Gbit/s
- 1490 nm PIN diode digital receiver with integrated 622 Mbit/s, 3.3 V TIA
- 1555 nm PIN diode analog video 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)

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

Pin Configuration

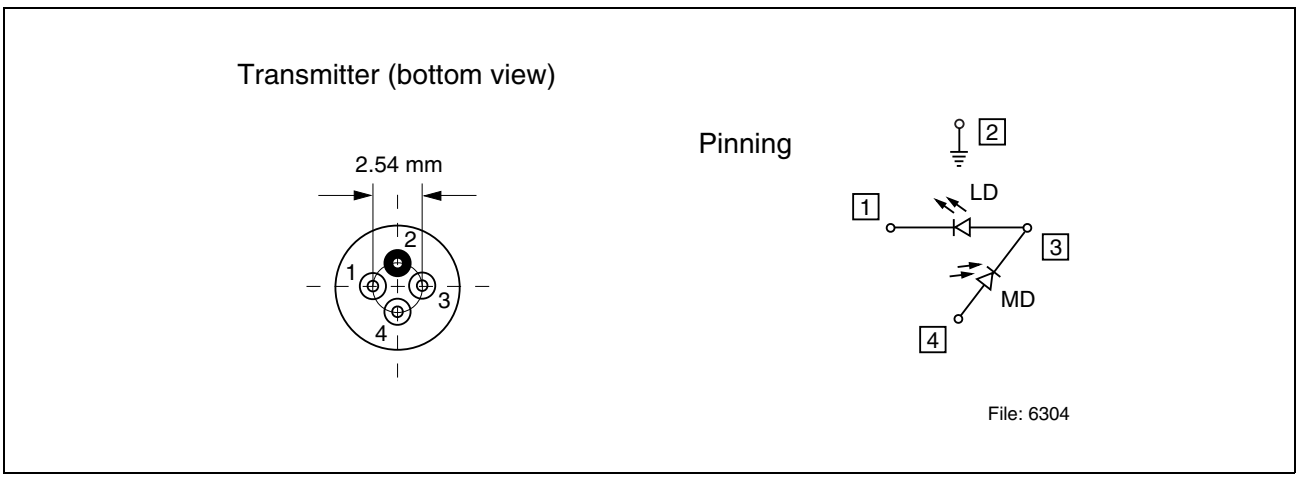


Figure 1 Transmitter

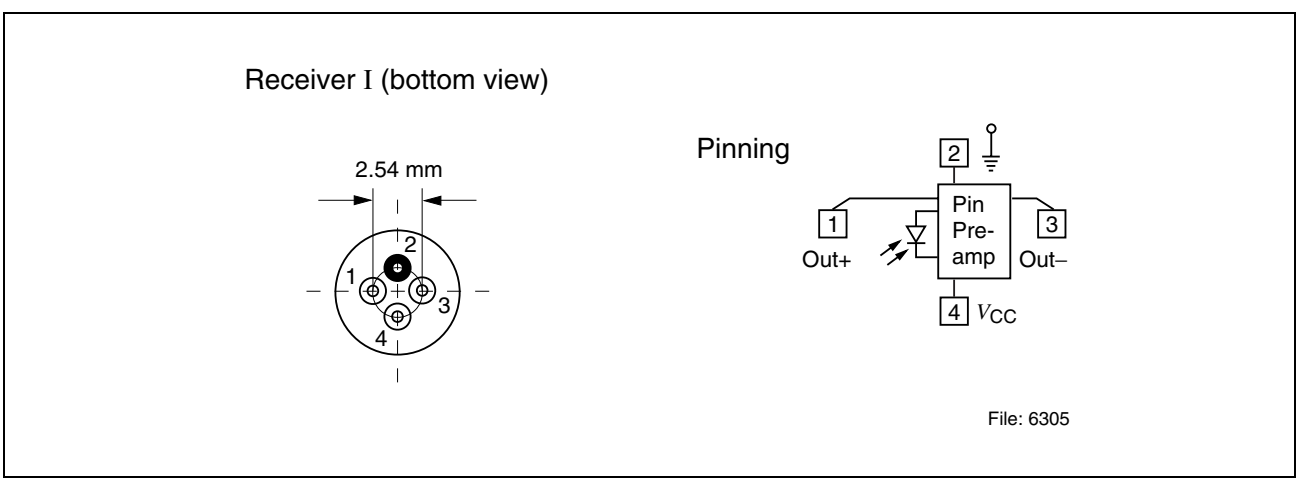


Figure 2 Receiver I

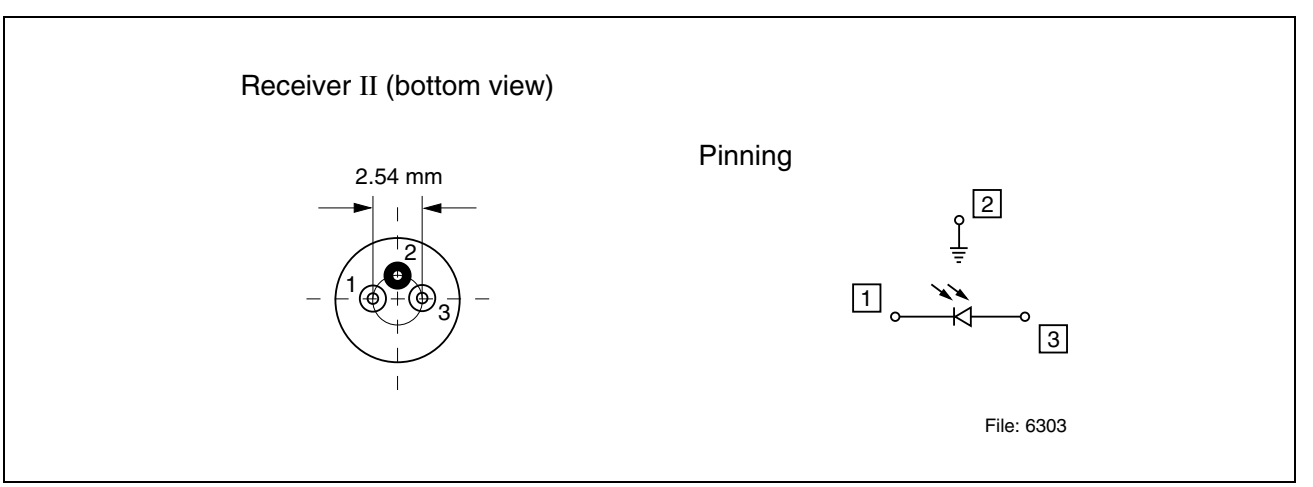


Figure 3 Receiver II

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}		3	mW

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	Limit Values		Unit
		min.	max.	
Optical output power, assuming 50% duty cycle	P_{max}	0		dBm
Maximum forward current	I_{max}		120	mA
Emission wavelength center of range P_F = 1 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}	5	45	mA
Radiant power at I_{th}	P_{th}		50	µW
Slope efficiency (0.1 to 1 mW)	η	35	150	mW/A
Forward voltage P_F = 1 mW	V_F		1.5	V
Differential series resistance	R_S		8	Ω

Monitor Diode Electro-Optical Characteristics

Parameter	Symbol	Limit Values		Unit
		min.	max.	
Dark current P_{opt} = 0 mW, UR = –5 V	I_R		500	nA
Photocurrent P_{opt} = 1 mW, UR = –5 V	I_P	100	1500	µA
Capacitance V_R = 5 V, f = 1 MHz	C_5		15	pF
Tracking error V_R = 5 V	TE	–1.5	1.5	dB

Receiver I Characteristics with Preamp

Parameter	Symbol	Limit Values			Unit
		min.	typ.	max.	
DC-Characteristics					
Supply voltage	V_{CC}	3	3.3	3.6	V
Supply current	I_{CC}		26		mA
AC-Characteristics					
Optical sensitivity (BER $\leq 10^{-10}$, PN23, ER $\geq$ 10 dB) λ = 1480...1500 nm	S		–30		dBm
Linear bandwidth (–3 dB)	BW		550		MHz
Optical overload (average)	P_{max}		1		dBm
Transimpedance (differential)	R_T		70		kΩ
Output resistance	R_{out}	48	60	72	Ω

Receiver II Diode Electro-Optical Characteristics

Parameter	Symbol	Limit Values			Unit
		min.	typ.	max.	
Spectral responsivity V_R = –5 V, P_{opt} = 1 µW λ = 1550...1560 nm	S	0.7			A/W
Dark current V_R = –5 V, P_{opt} = 0 mW	I_D			50	nA
Total capacitance V_R = –5 V, f = 1 MHz, P_{opt} = 0 mW	C			1	pF
Rise and fall time	t_r; t_f			500	ps
Linearity opt. carrier P_{cf1} = –3 dBm and P_{cf2} = –3 dBm; modulated with f_1 = 400 MHz; f_2 = 450 MHz with modulation index of min. 0.6	IM			–70	dBc

Module Electro-Optical Characteristics

Parameter	Symbol	Limit Values		Unit
		min.	max.	
Internal optical crosstalk at Rx_1 P_{opt} = 100 µW	CRT_{I-0}		–47	dB
Internal optical crosstalk at Rx_2 P_{opt} = 100 µW	CRT_{II-0}		–47	
Optical isolation at Rx_1 against P_{opt} = 100 µW, λ = 1550...1560 nm	ISO_{I-II}		–30	
Optical isolation at Rx_2 against P_{opt} = 100 µW, λ = 1480...1500 nm	ISO_{II-I}		–30	
Optical isolation at Rx_1 against P_{opt} = 100 µW, λ = 1260...1360 nm	$ISO_{I-\lambda}$		–30	
Optical isolation at Rx_2 against P_{opt} = 100 µW, λ = 1260...1360 nm	$ISO_{II-\lambda}$		–30	
Return loss P_{opt} = 100 µW, λ = 1480...1500 nm	RL_I		–20	
Return loss P_{opt} = 100 µW, λ = 1550...1560 nm	RL_{II}		–20	

Other specifications on request.

Fiber Data

The mechanical fiber characteristics are described in the following table.

Fiber Characteristics

Parameter	Limit 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 Triport BIDI®
V23875-T3261-C110
Serial no.
Date code

Documentation

$I_{F,\,25°C}$, $I_{F,\,85°C}$, $I_{th,\,25°C}$, $I_{th,\,85°C}$, $\eta_{25°C}$, $\eta_{85°C}$.

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

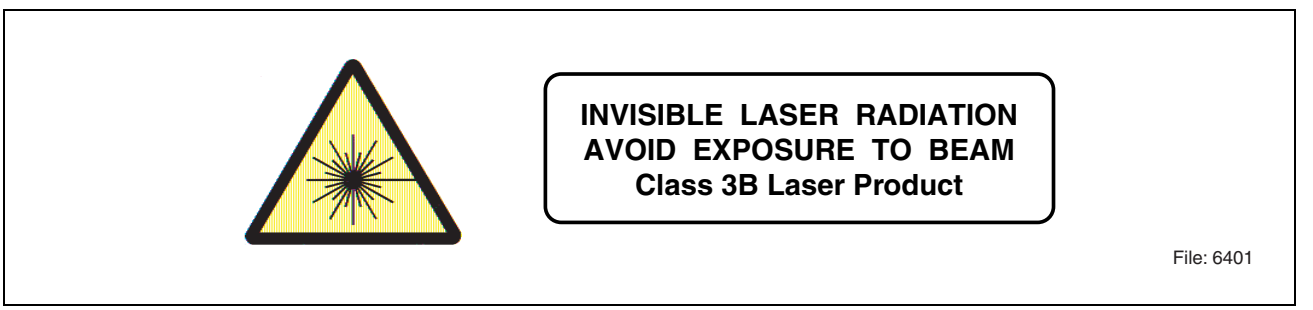


Figure 4 Required Labels

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

Figure 5 Required Label

Laser Data

Wavelength (25°C)	1260...1360 nm
Maximum total output power	< 50 mW
Beam divergence ($1/e^2$)	10°

Package Outlines

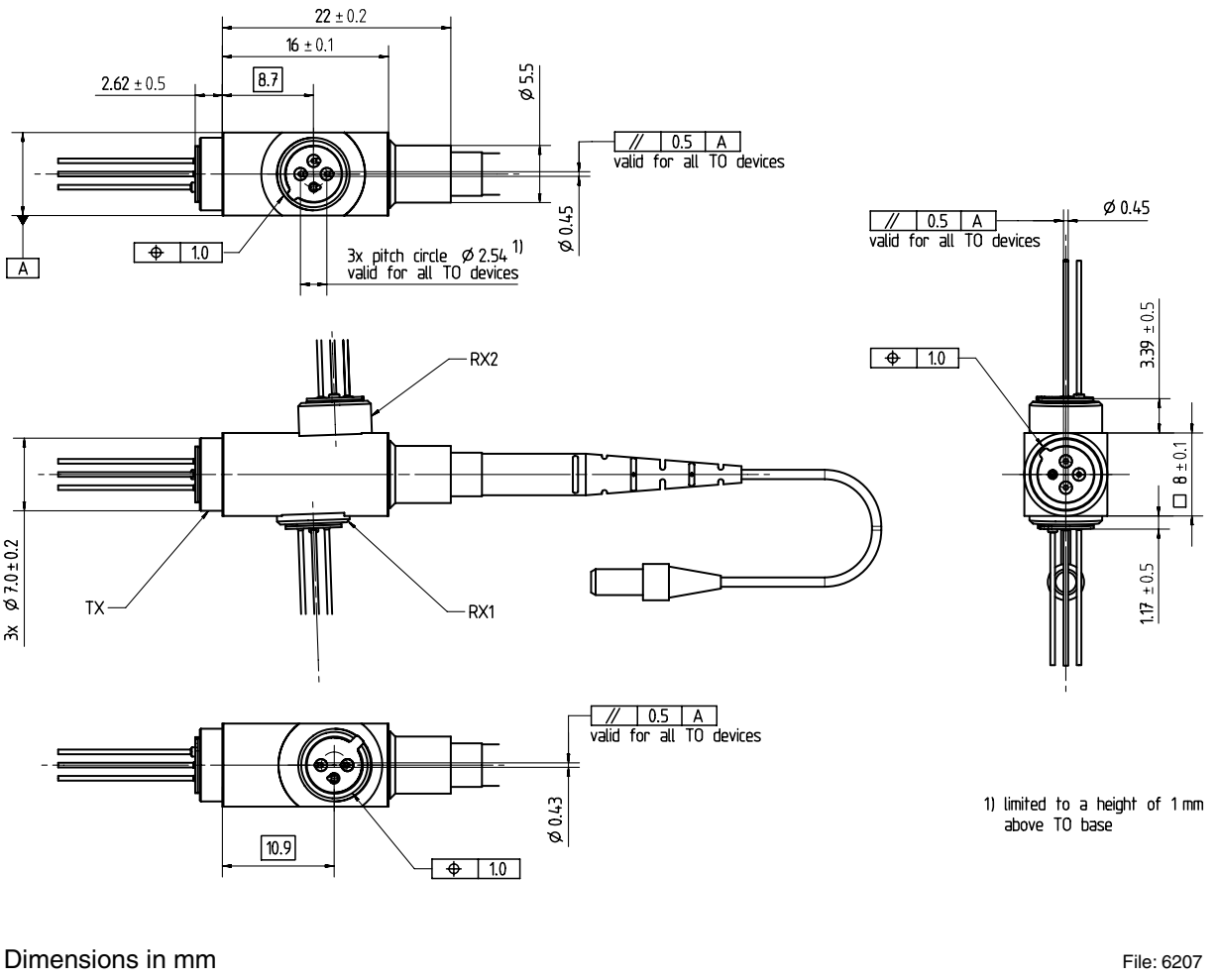


Figure 6

Connector Option

Model	Type
V23875-T3261-C110	SM SC/APC 8°

V23875-T3261-C110

Revision History: 2003-03-04 DS0

Previous Version:

Page	Subjects (major changes since last revision)

For questions on technology, delivery and prices please contact the Infineon Technologies Offices in Germany or the Infineon Technologies Companies and Representatives worldwide: see our webpage at http://www.infineon.com.

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St.-Martin-Strasse 53,
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