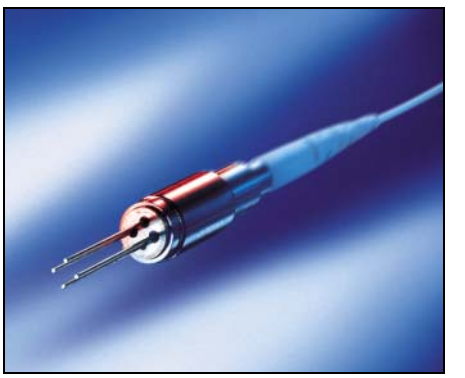
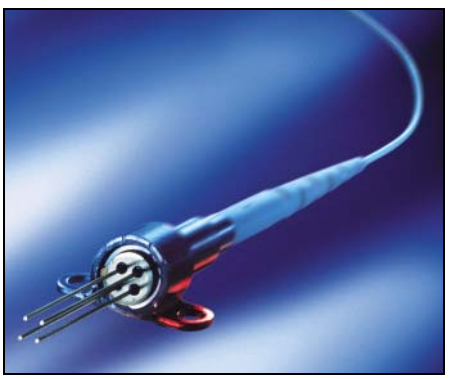
Ternary PIN Photodiode

SRD00224x
SRD00225x

Features

- InGaAs/InP PIN photodiode
- Designed for applications in fiber-optics communication systems
- Sensitive receiver for 2nd and 3rd optical window (1300 nm and 1550 nm)
- Suitable for bit rates up to 2.5 Gbit/s
- For singlemode and multimode applications SONET OC-1...OC-48, SDH STM-1...STM-16
- Low junction and low package capacitance
- Fast switching times
- Low dark current
- Excellent noise immunity
- High reverse current stability from planar structure
- Hermetically sealed TO46 package





Pin Configuration

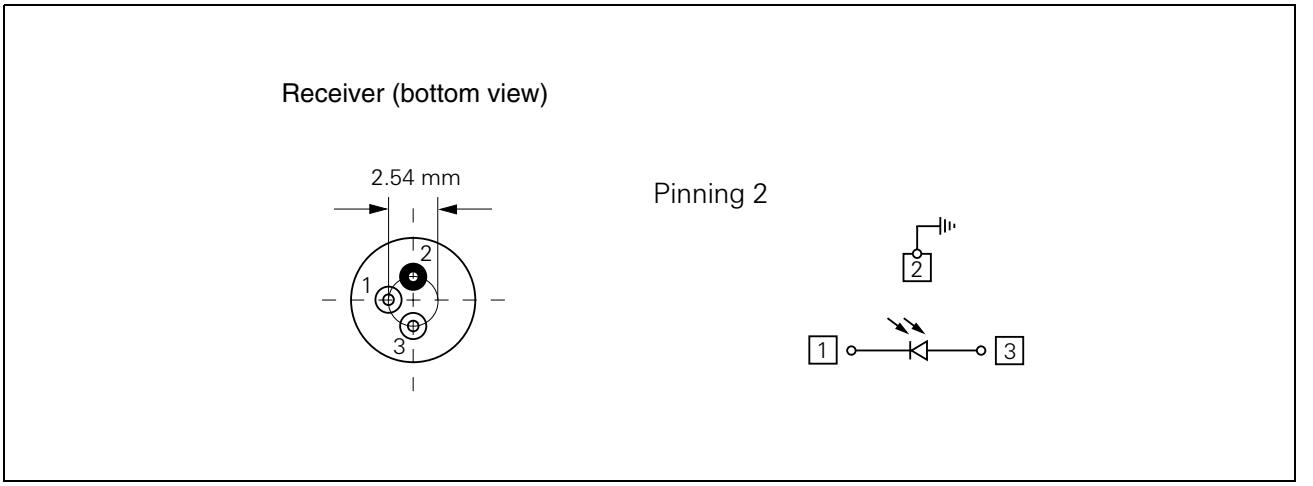


Figure 1 Receiver

Description

The Infineon optical receiver module has been designed for use in optical networks and is suitable for bit rates up to max. 2.5 Gbit/s if used without any TIA.

The optical receiver module uses a high-speed PIN photodetector optional coupled with a hybrid low noise transimpedance amplifier (PIN-TIA). The optical receiver photodiode can be used for 1310 nm or 1550 nm optical communications.

The PIN photodiode is made of InGaAs/InP and has an active diameter of 75 µm. The function of the PIN and PIN-TIA optical receiver module is to detect input optical power, to transduce the incident radiation into current (PIN) and then to convert the current into a voltage (PIN-TIA).

The low input noise current density of the used transimpedance amplifiers in PIN-TIA's provides the optical receiver module, when used with appropriate filtering, with ample sensitivity for realizing minimum input power requirements. Designers of optical receivers can use the module in any application that benefits from integration of the photodiode and TIA into a TO coaxial package. Typical for such applications are receivers for digital crossconnects, digital loop carriers, add/drop-multiplexers and optical network units.

Last but not least the fast switching times, low dark currents and the packaging in a compact and hermetically sealed TO46 make the optical receivers usable in many other fiber optic receiver applications. One application is the use in a Compact realization of a transceiver in one module like the so called BIDI® (**Figure 2**).

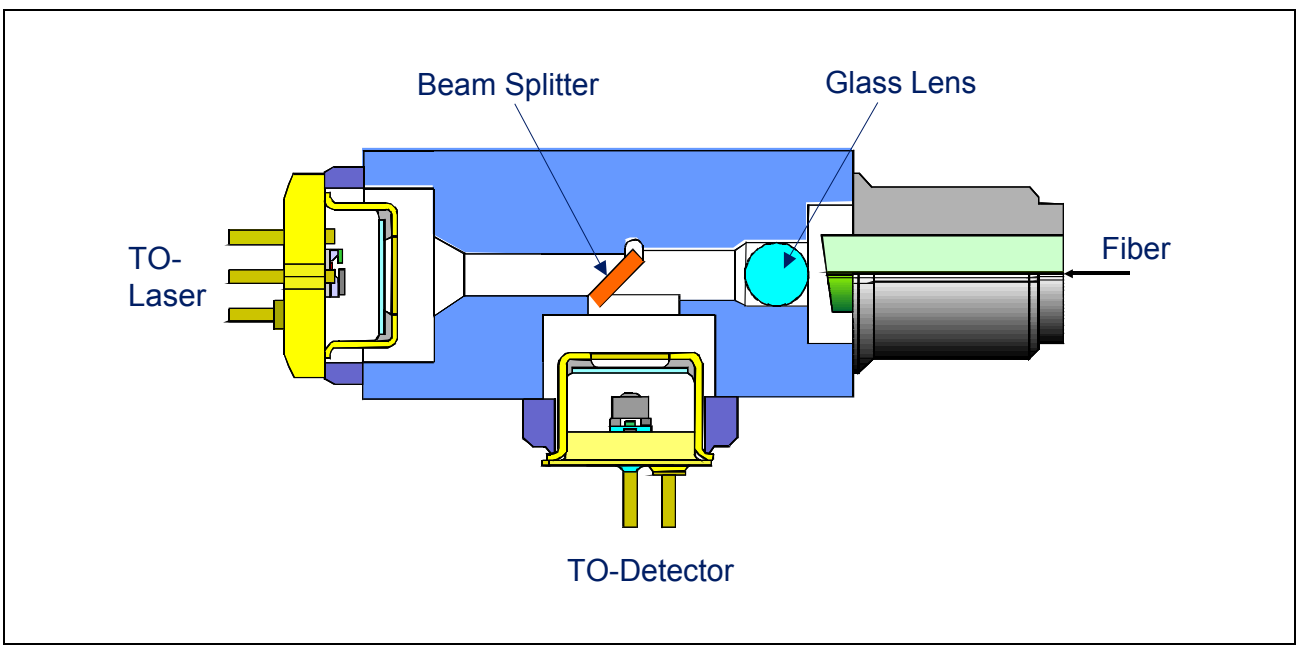


Figure 2 Compact Realization of the Transceiver in One Module

Technical Data

All data refer to the full operating temperature range unless otherwise specified.

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
Receiver Diode				
Reverse Voltage	V_R		20	V
Forward Current	I_F		10	mA
Optical power into the optical port	P_{port}		1	mW

Receiver Diode Electro-Optical Characteristics

Parameter	Symbol	Limit Values			Unit
		min.	typ.	max.	
Spectral sensitivity V_R = –2 V, P_{opt} = 1 µW	S_{1310nm} S_{1550nm}	0.8	0.9		A/W
Change in Spectral Sensitivity in Operating Temperature Range	ΔS			0.2	%/K
Dark current V_R = 5 V, P_{opt} = 0 mW	$I_{D\ 25°C}$			5	nA
	$I_{D\ 85°C}$			50	
Total Capacitance V_R = 3 V, f = 1 MHz, V_{RF} = 30 mV	C		0.8	1	pF
Rise and fall time (10%...90%) V_R = 5 V, P_{opt} = (0.1...1) mW, 50 Ω	t_r, t_f		200	300	ps
Cut Off Frequency λ = 1310 nm, V_R = 5 V, 50 Ω	f_{3dB}	1			GHz
Return Loss λ = 1310 nm	RL			–27	dB

End of Life Time Characteristics

Parameter	Symbol	Limit Values		Unit
		min.	max.	
Detector Dark Current, V_R = 2 V, $T = T_{max}$	I_R		400	nA

Fiber Data

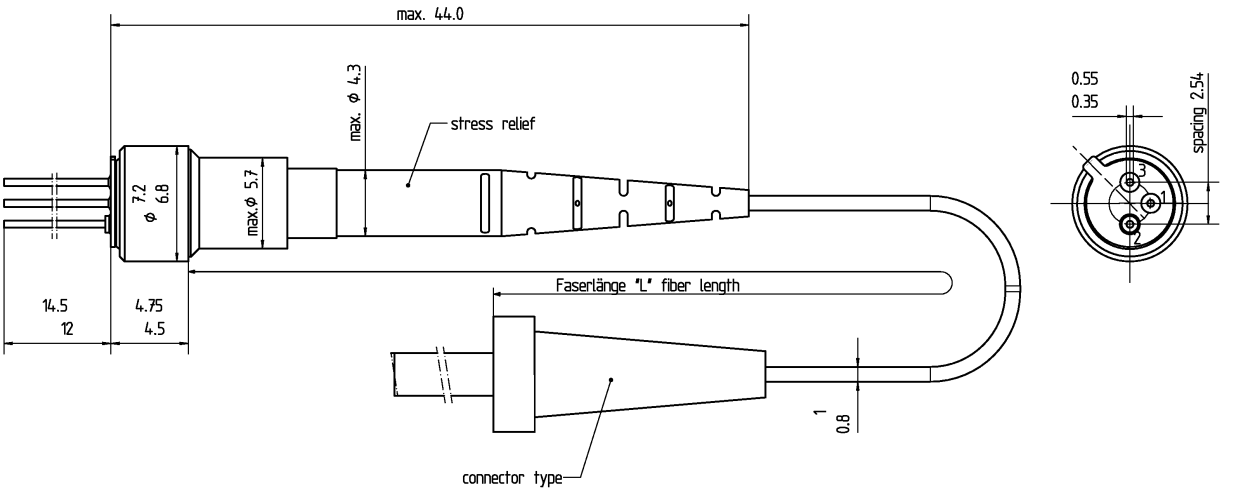
The mechanical fiber characteristics are described in the following table.

Fiber Characteristics

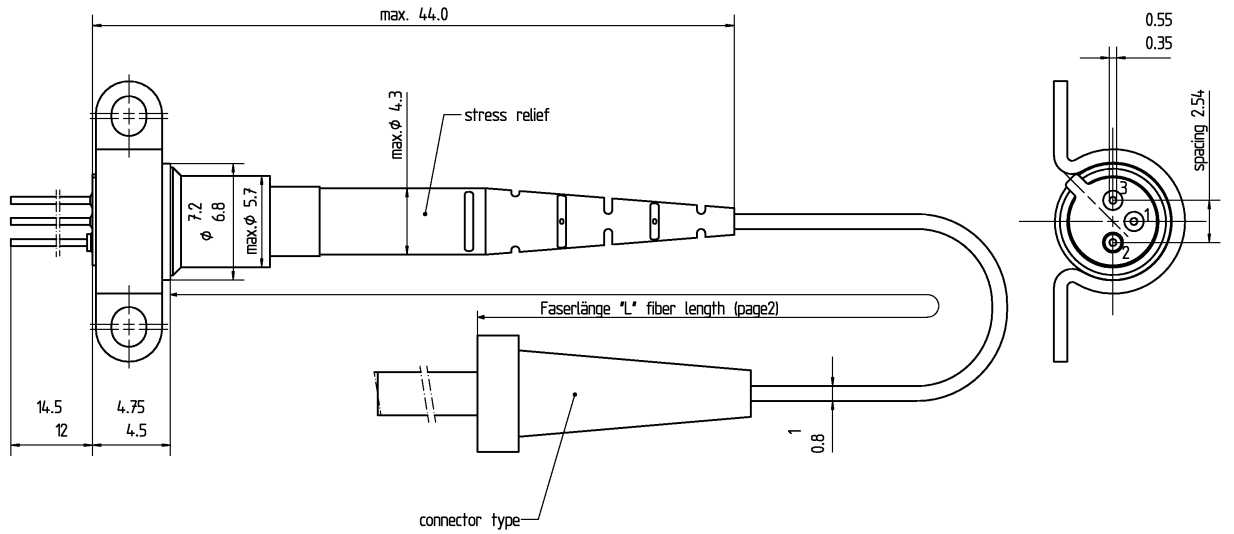
Parameter	Limit Values			Unit
	min.	typ.	max.	
Mode Field Diameter		50		µm
Cladding Diameter	123	125	127	
Mode Field/Cladding Concentricity Error			1	
Cladding Non-circularity			2	%
Mode Field Non-circularity			6	
Cut off Wavelength	1270			nm
Jacket Diameter	0.8		1	mm
Bending Radius	30			
Tensile Strength Fiber Case	5			N
Length	0.8		1.2	m

Package Outlines

SRD00224x



SRD00225x



Dimensions in mm

Figure 3

Flange Options

Type	Flange
SRD00224x	without
SRD00225x	with

Connector Options

Model	Type
SRD00224H SRD00225H	MM FC/PC
SRD00224G SRD00225G	SM FC/PC
SRD00224O SRD00225O	MM SC/PC 0°
SRD00224N SRD00225N	SM SC/PC 0°
SRD00224Q SRD00225Q	MM SC 8° APC
SRD00224P SRD00225P	SM SC 8° APC
SRD00224W SRD00225W	MM without connector
SRD00224Z SRD00225Z	SM without connector
Other connectors on request	

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