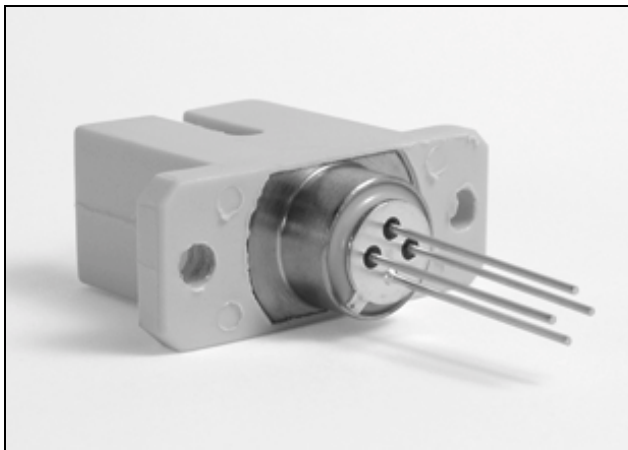


December 2003



### Ordering Information

ZL60402TBD	TO-56 with lens
ZL60402TDD	ST type connector
ZL60402TED	SC type connector
ZL60402TFD	FC type connector

**-40°C to +85°C**

### Description

The Fabry-Perot Laser Diode Receptacle type series is designed for use with SC, FC and ST type fiber connectors as source in telecom and datacom applications.

The ZL60402 is a 1310 nm MQW (Multiple Quantum Well) Fabry-Perot laser diode, integrated with a monitor diode.

The hermetically sealed package includes a ball lens for improved coupling efficiency.

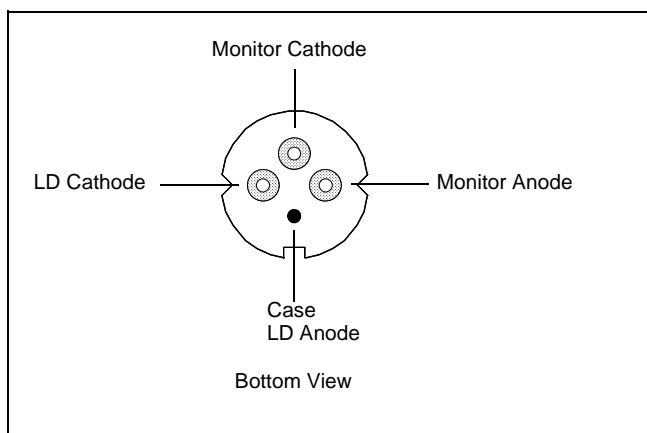
### Features

- Uncooled 1300 nm Fabry-Perot Laser Diode
- Wide operating temperature range -40°C to +85°C
- High reliability
- Built-in monitor diode
- 2.5 Gbps
- Ball lens or receptacle type of packaging

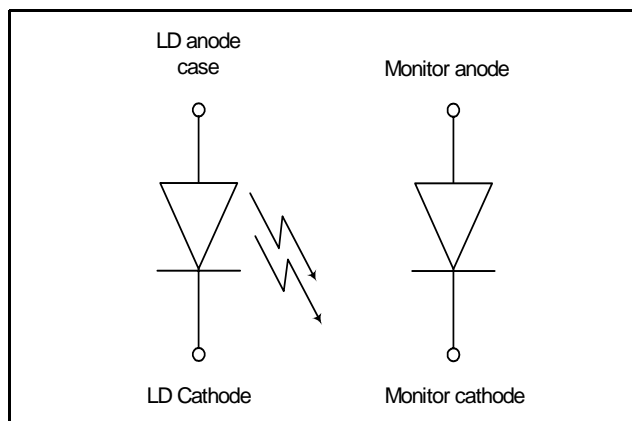
www.DataSheet4U.com

### Applications

- Telecommunications applications, SONET OC-48, SDH STM-16
- Optical communications systems



**Figure 1 - PIN Diagram**



**Figure 2 - Functional Schematic**

**Electrical and Optical Characteristics ( $T_C = 25^\circ\text{C}$ )**

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Threshold Current	$I_{th}$	CW		10	15	mA
Operating Voltage	$V_{op}$	CW, $I_f = I_{th} + 20\text{ mA}$		1.3	1.5	V
Optical Output Power	$P_f$	CW, $I_f = I_{th} + 20\text{ mA}$		0.6		mW
Wavelength	$\lambda$	CW, $I_{th} + 20\text{ mA}$	1290	1310	1330	nm
Spectral Width	$\Delta\lambda$	CW, $I_{th} + 20\text{ mA}$		1	3	nm
Rise and Fall Times	$t_r, t_f$	$I_f = I_{th} + 20\text{ mA}$ , 20-80%			150	ps
Tracking Error	$\Delta P_f / P_f$	APC, $0 - +70^\circ\text{C}$ $-40^\circ\text{C} - +85^\circ\text{C}$	-1.5 -2.5		1.5 2.5	dB
Monitor Current	$I_D$	CW, $I_{th} + 20\text{ mA}$ , $V_{RD} = 1\text{ V}$	100			$\mu\text{A}$
Monitor Dark Current	$I_D$	$V_{RD} = 5\text{ V}$			1	$\mu\text{A}$
Monitor Capacitance	$C_D$	$V_{RD} = 5\text{ V}$ , $f = 1\text{ MHz}$		10	15	pF

**Absolute Maximum Ratings**

Parameter	Symbol	Rating	Unit
LD Reverse Voltage	$V_{RL}$	2	V
PD Reverse Voltage	$V_{RD}$	20	V
PD Forward Current	$I_f$	2.0	mA
Operating Temperature	$T_{op}$	$-40 - +85$	$^\circ\text{C}$
Storage Temperature	$T_{stg}$	$-40 - +85$	$^\circ\text{C}$

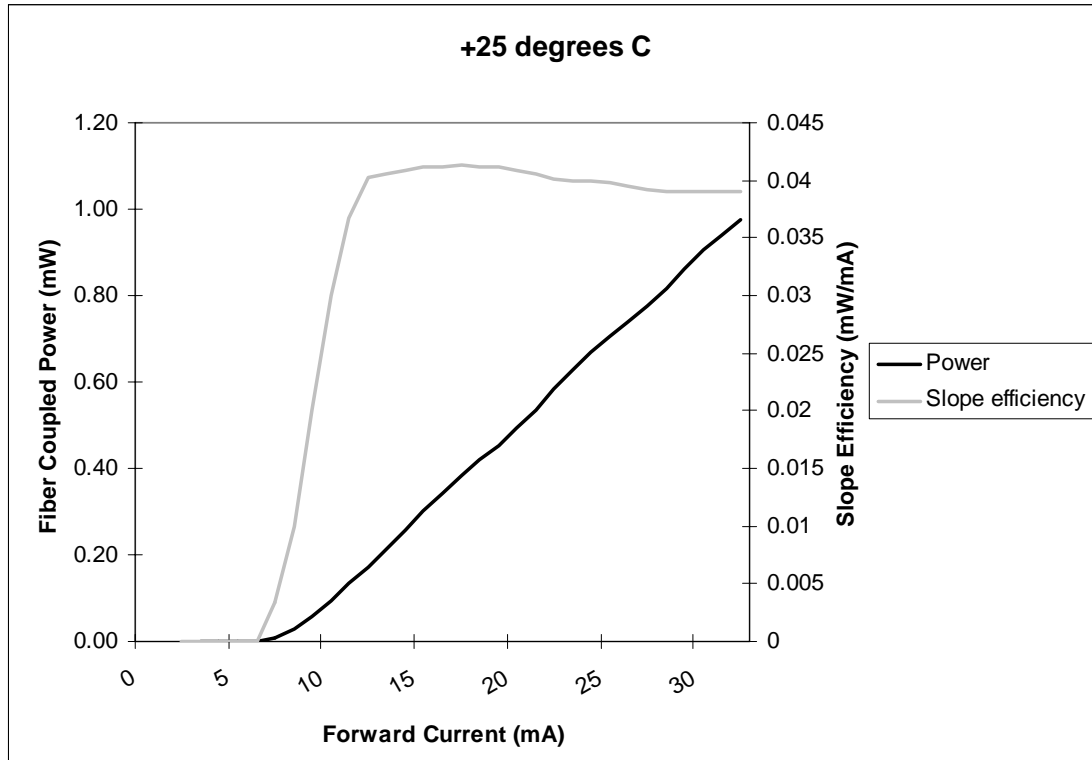


Figure 3 - Typical Fiber Coupled Power and Slope Efficiency at Room Temperature

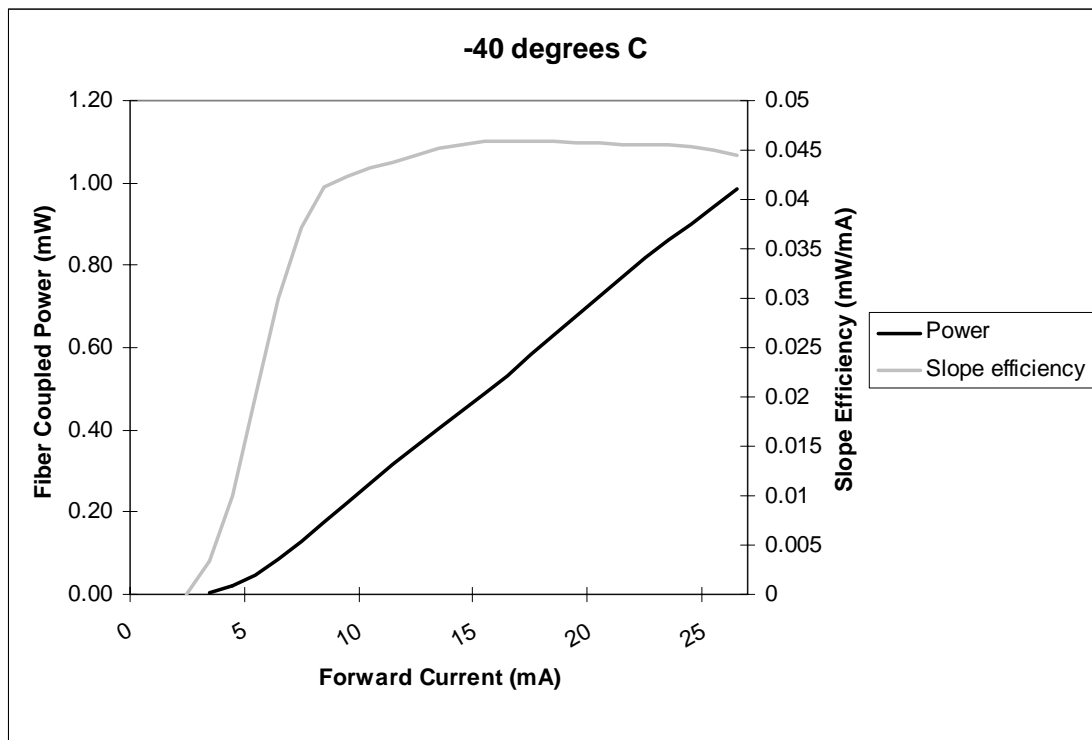
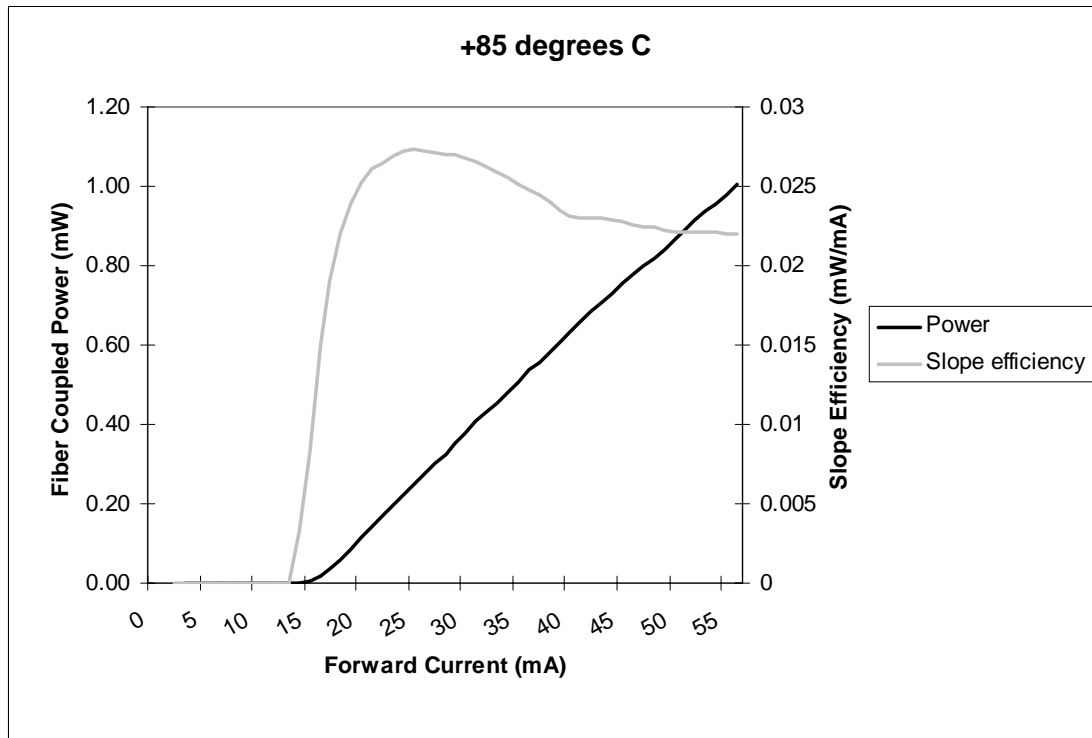
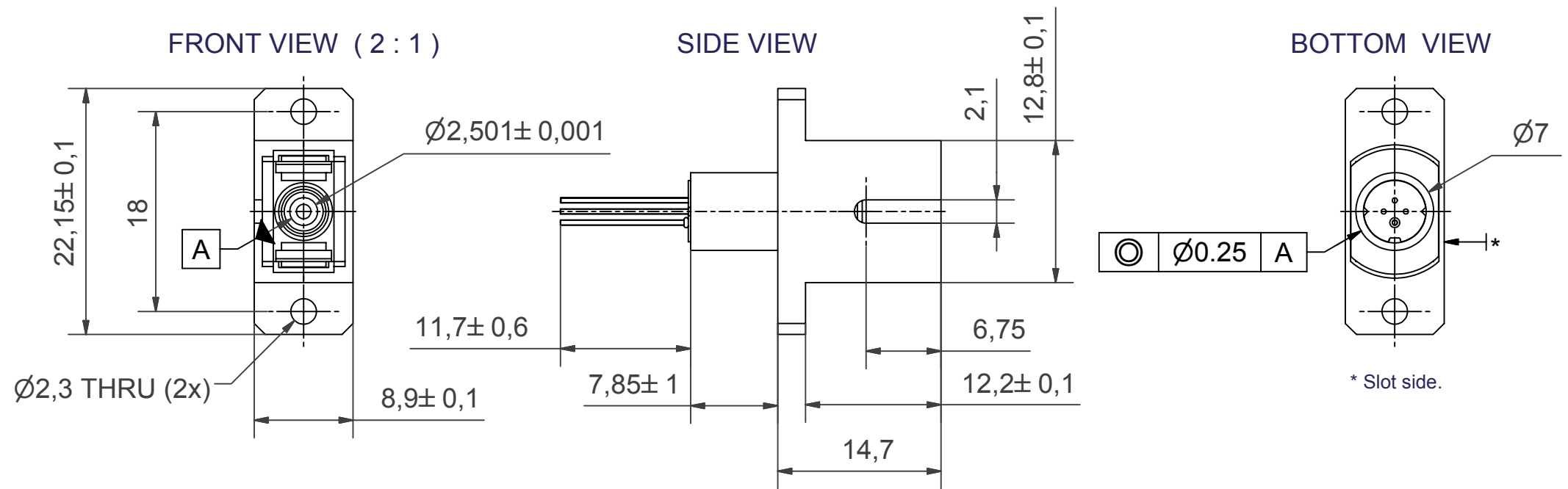


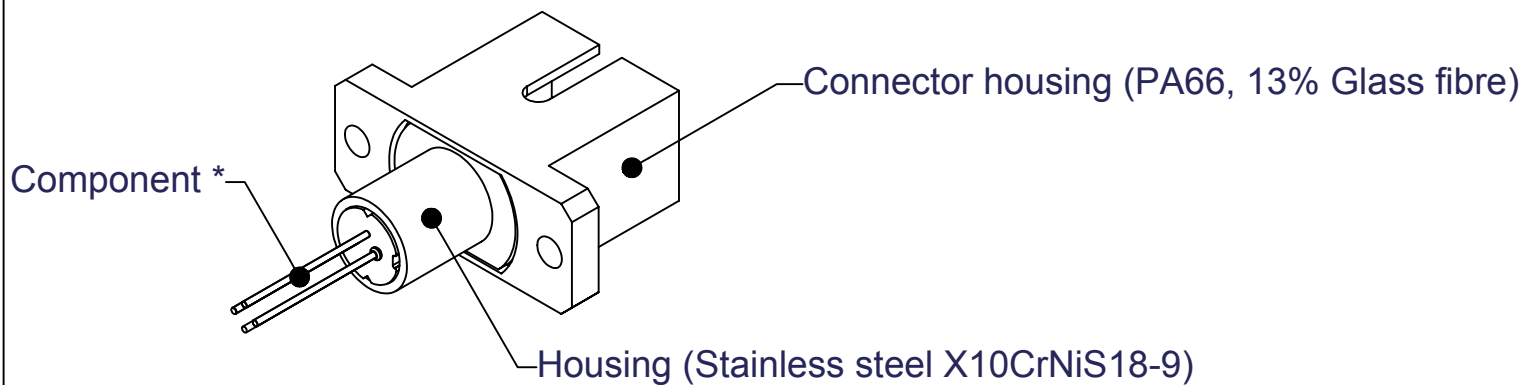
Figure 4 - Typical Fiber Coupled Power and Slope Efficiency at Low Temperature



**Figure 5 - Typical Fiber Coupled Power and Slope Efficiency at High Temperature**



ISOMETRIC VIEW



NOTES:-

1. All dimensions in mm.
2. General tol. ISO-2768-mK.

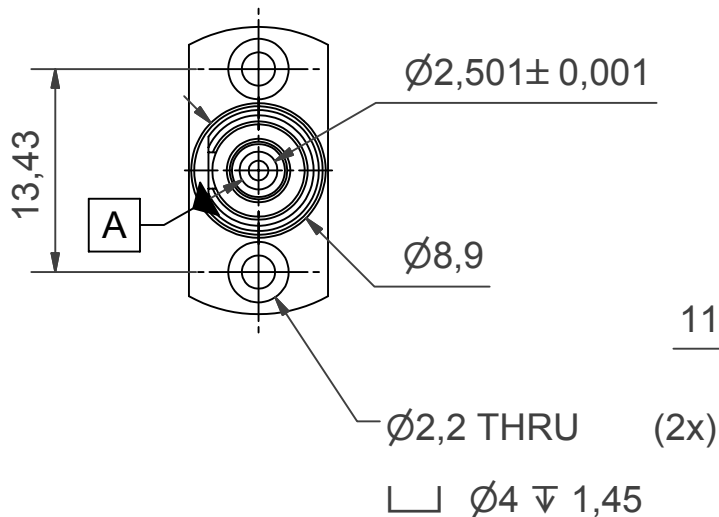
\* For details of the component, see separate data sheet and/or package drawing.

Projection

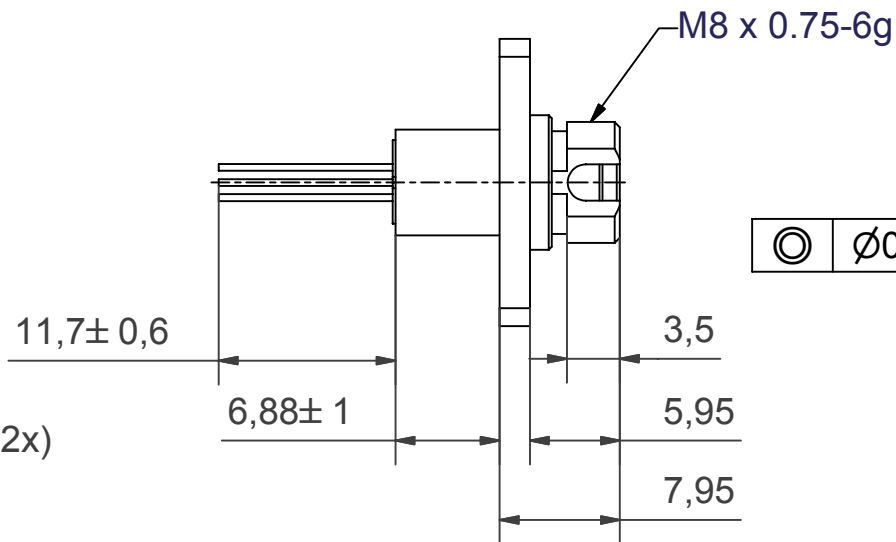
© Zarlink Semiconductor 2002. All rights reserved.					Package code <b>TE</b>	
ISSUE	1				Previous package codes	Drawing type
ACN	101512rev 1					TO-56 Package Outline in SC Connector housing
DATE	17-NOV-03					Title
APPRD.	PD\US					<b>101512</b>



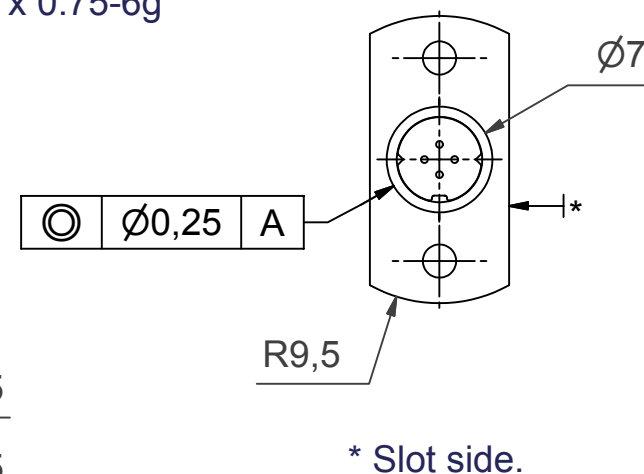
FRONT VIEW ( 2 : 1 )



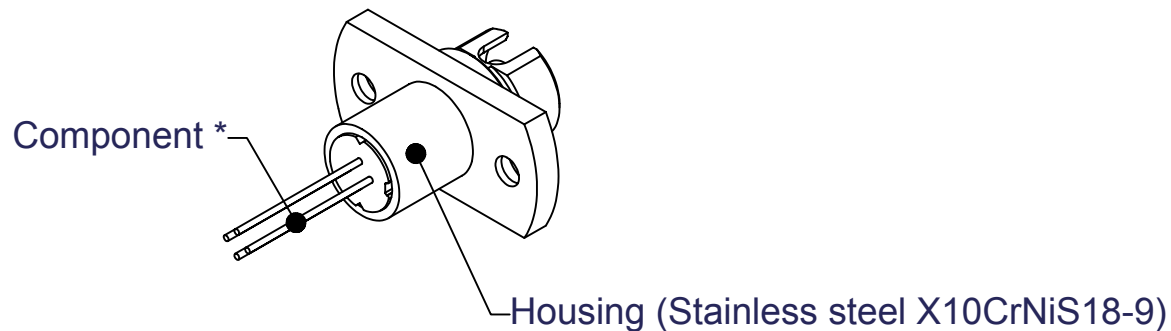
SIDE VIEW



BOTTOM VIEW



ISOMETRIC VIEW



NOTES:-

1. All dimensions in mm.
2. General tol. ISO-2768-mK.

\* For details of the component, see separate data sheet and/or package drawing.

Projection

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ISSUE	1			
ACN	101513 rev1			
DATE	17-NOV-03			
APPRD.	PD\US			



Previous package codes

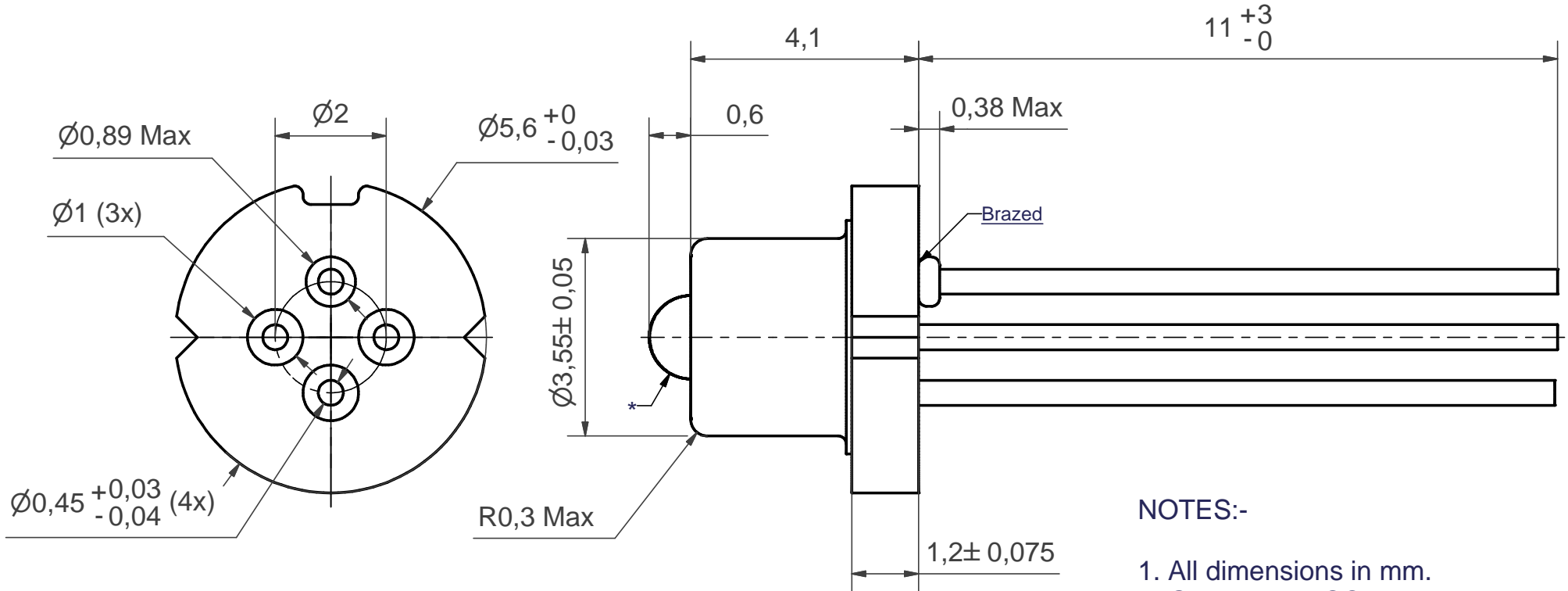
Package code **TF**

Drawing type  
TO-56 Package Outline in FC  
Connector housing

Title  
**101513**

## BOTTOM VIEW ( 10 : 1 )


## SIDE VIEW



NOTES:-

1. All dimensions in mm.
2. General tol. ISO-2768-mK.
3. Coating: Case: Ni 3-7 µm.  
Header: Ni 2-4 µm / Au 0,5 µm.

\* Lens  $\varnothing 1,5 \pm 0,002$

Projection Method 

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ISSUE	1			
ACN	101615 rev1			
DATE	21-NOV-03			
APPRD.	MD/MA			



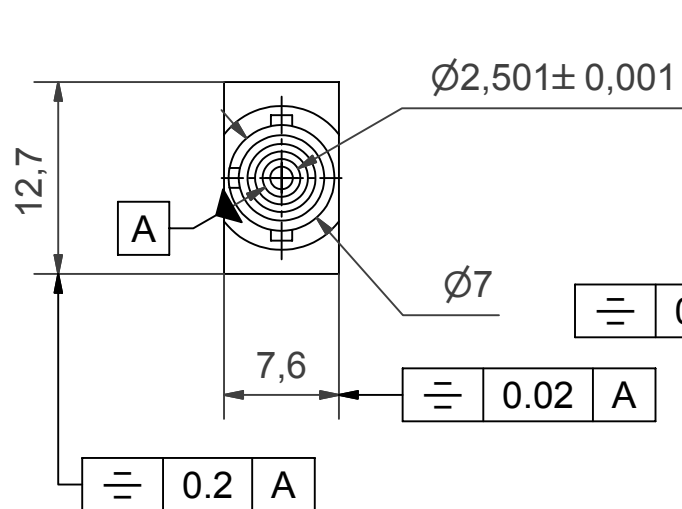
## Previous package codes

Package code	TB
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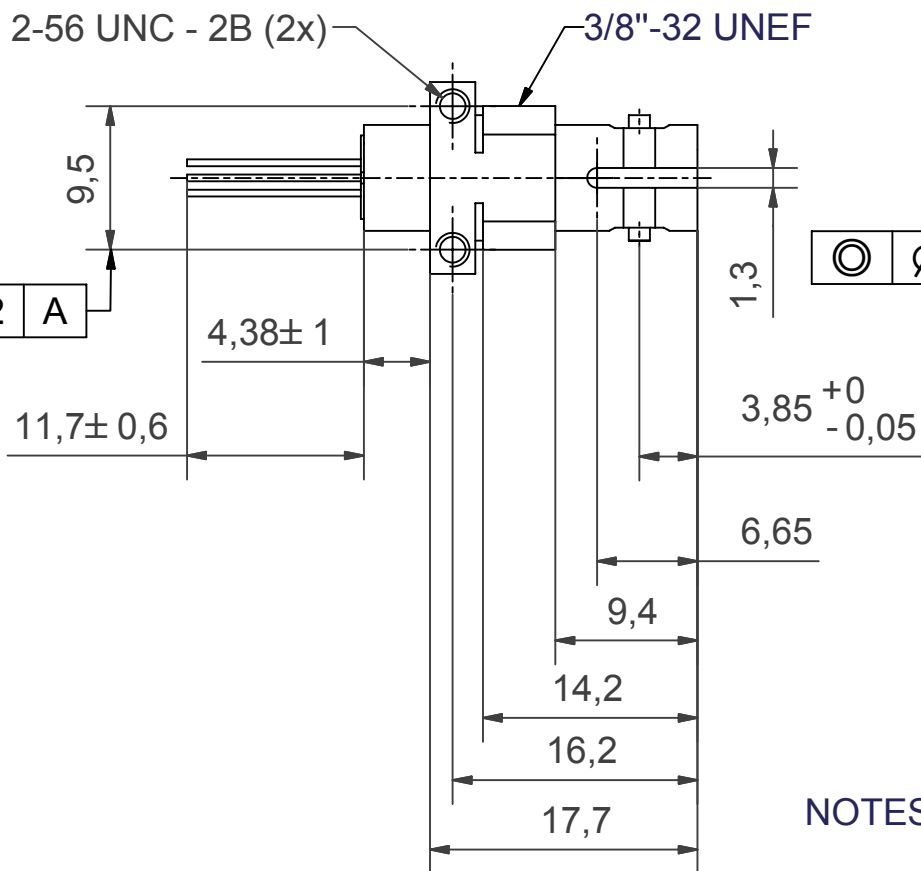
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Title	101615
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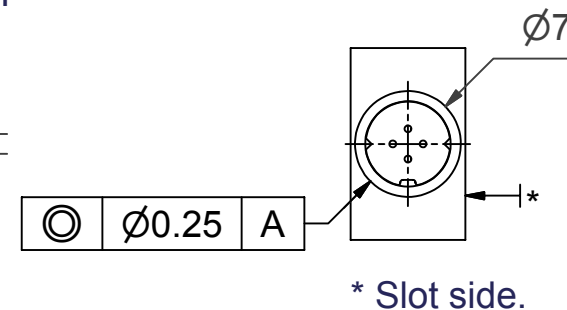
# FRONT VIEW ( 2 : 1 )



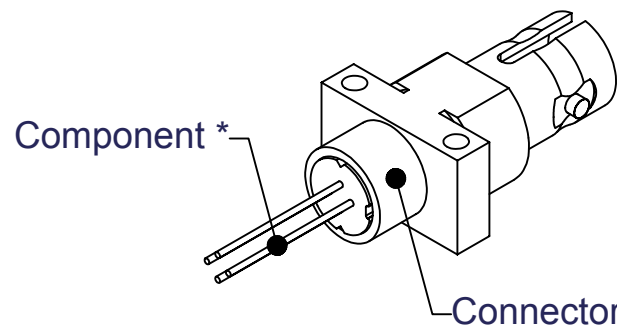
# SIDE VIEW



# BOTTOM VIEW



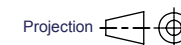
# ISOMETRIC VIEW



# NOTES:-

1. All dimensions in mm.
2. General tol.  $\pm 0,1$  mm.

\* For details of the component, see separate data sheet and/or package drawing.



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ISSUE	1			
ACN	101514 rev1			
DATE	17-NOV-03			
APPRD.	PD\US			



Previous package codes

Package code **TD**

Drawing type  
TO-56 Package Outline in ST  
Connector housing

Title **101514**





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