

## AFBR-2413MZ

### 820-nm Silicon PIN Photodiode Miniature Link Fiber-Optic Receiver



#### Description

The Broadcom<sup>®</sup> AFBR-2413MZ is an 820-nm Silicon PIN Photodiode component with metal port, an extension of Broadcom's Miniature Link product series. According to the intensity of the incident light, the AFBR-2413MZ generates an analog photocurrent. In typical applications, the AFBR-2413MZ is operated in reverse biasing and is installed in series with a resistor, where the voltage tapping is taken. By increasing the reverse voltage, the switching times decrease and the AFBR-2413MZ can be used for transmission speeds up to 10 Mbaud.

The AFBR-2413MZ is compliant with popular "industry-standard" ST<sup>1</sup> connectors, and it is designed for use with 62.5/125- $\mu$ m and 200- $\mu$ m fibers.

#### Features

- High linearity
- RoHS compliant
- Manufactured in an ISO 9001 certified facility
- Compatible with 62.5/125- $\mu$ m multimode fiber (MMF) and 200- $\mu$ m Plastic-Clad Silica Fiber
- Low current consumption and low power dissipation
- Operating temperature  $-40^{\circ}\text{C}$  to  $+85^{\circ}\text{C}$

#### Applications

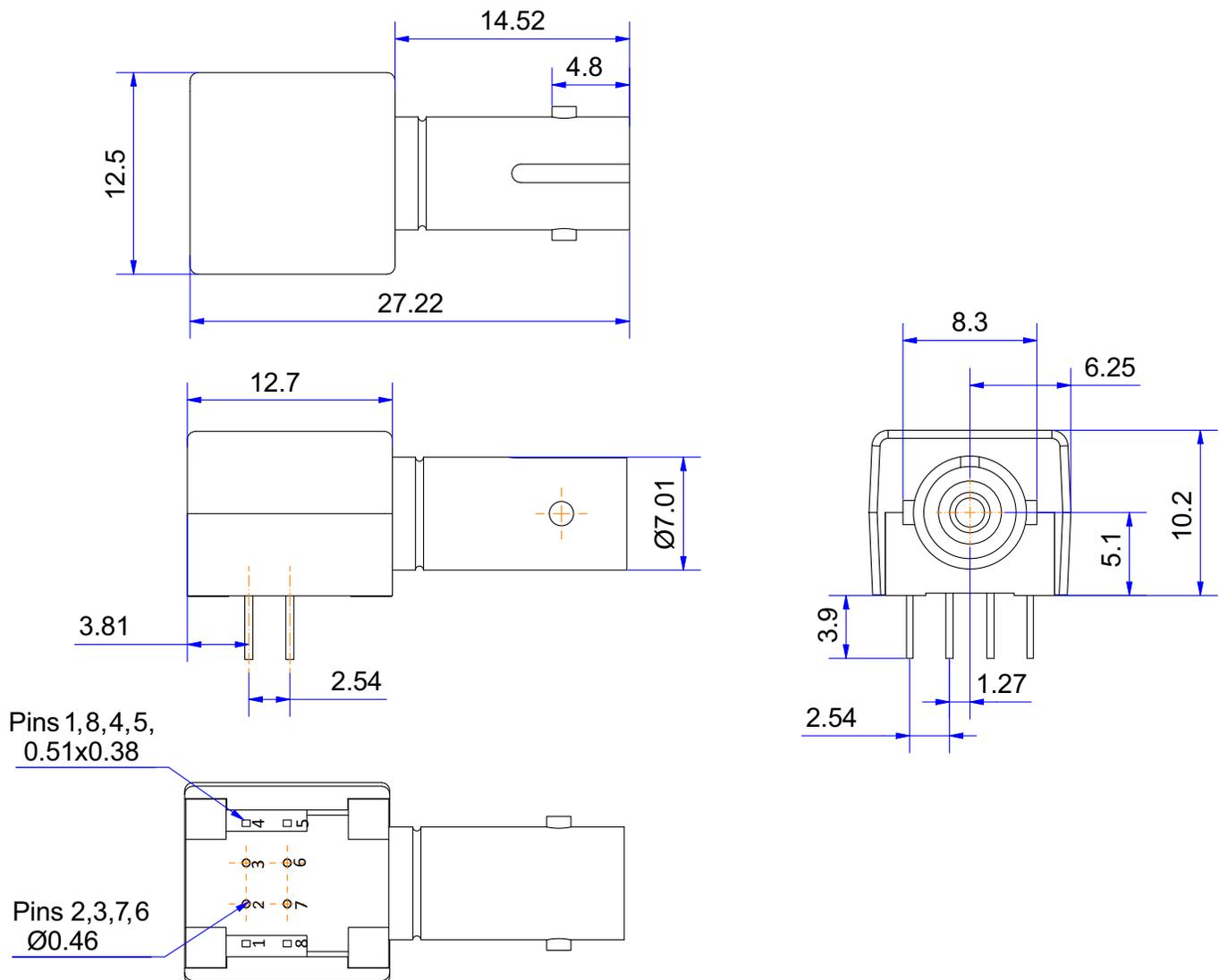
- Power electronics
- Optical networks
- HVDC

1. ST is a registered trademark of AT&T Lightguide Cable Connectors.

# Regulatory Compliance Table/Mechanical Dimensions and Module Drawing

Regulatory Compliance Feature	Test Method	Performance
Electrostatic Discharge (ESD) to the Electrical Pins	JEDEC JESD22-A114	HBM Class 1B
RoHS Compliance	—	Reference to RoHS Directive 2011/65EU Annex II and RoHS RL (EU) 2015-863
Moisture Sensitivity Level (MSL)	J-STD-020D	MSL 1 (Unlimited floor life time)

## Mechanical Dimensions

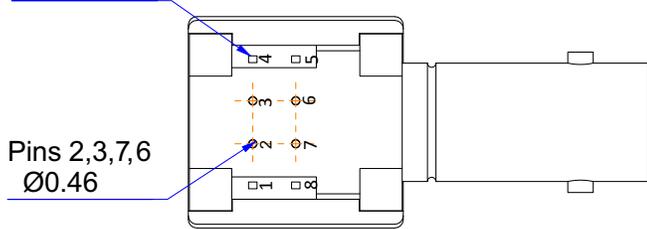


**NOTE:** Dimensions are in millimeters (mm).

## Pin Description

### Bottom View

Pins 1,8,4,5,  
0.51x0.38

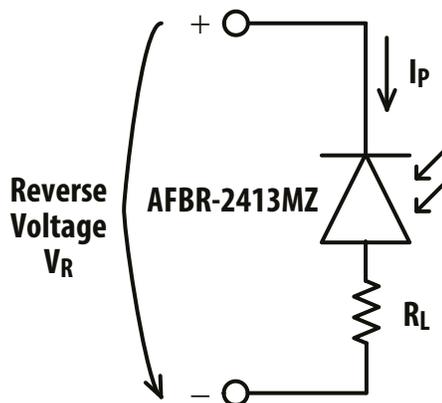


Pins 2,3,7,6  
Ø0.46

Pin	Function	Notes
1	N.C.	a
2	Cathode	
3	CASE (may be connected to GND or Cathode)	b
4	N.C.	a
5	N.C.	a
6	Anode	
7	CASE (may be connected to GND or Cathode)	b
8	N.C.	a

- Pins 1, 4, 5, and 8 are connected together internally.
- If the application requires the anode to be connected to GND, CASE should not be connected to GND but to the cathode (or remain floating). Otherwise, an internal capacitance exists between the anode and the cathode.

## Recommended Application Circuit



## Absolute Maximum Ratings

Stresses in excess of the absolute maximum ratings can cause catastrophic damage to the device. Limits apply to each parameter in isolation, all other parameters having values within the recommended operation conditions. It should not be assumed that limiting values of more than one parameter can be applied to the products at the same time. Exposure to the absolute maximum ratings for extended periods can adversely affect device reliability.

Parameter	Symbol	Min.	Max.	Units	Notes
Storage Temperature	$T_S$	-40	+85	°C	
Reverse Voltage (Breakdown Voltage)	$V_R$	30	—	V	
Lead Soldering Temperature	$T_{\text{sold}}$	—	260	°C	MSL1
Lead Soldering Time	$t_{\text{sold}}$	—	10	s	

## Recommended Operating Conditions

Parameter	Symbol	Min.	Typ.	Max.	Units	Notes
Ambient Operating Temperature	$T_A$	-40	—	+85	°C	a

a. Electrical and optical specifications of the product are guaranteed across recommended ambient operating temperature range only.

## Receiver Optical/Electrical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Units	Notes
Operating Wavelength	$\lambda_O$	800	—	870	nm	
Responsivity ( $\lambda = 850 \text{ nm}$ , $R_L = 50\Omega$ )	$R_{IP}$	0.25	0.35	0.5	A/W	a
Forward Voltage ( $I = 1 \text{ mA}$ )	$V_F$	—	—	1	V	
Dark Current ( $V_R = 10\text{V}$ )	$I_D$	—	—	250	nA	

a. Typical value at 3.3V and 25°C with 200- $\mu\text{m}$  fiber.

Photocurrent measured at an optical input signal of 5 Mbaud with "1010" data pattern.

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