OIA3

Optical Receiver with TTL Output

General Description

New optical receiver based on a photoASIC device made by a CMOS microelectronic silicon photodiode with integrated electronics for standard TTL digital output.

The photoASIC has been developed with high resolution CMOS technology, in order to have higher baudrate (up to 20 Mbps).

The optimization of antireflective coating permits to have very good optical sensitivity with low power of the incoming light.

The main advantage of this innovative digital optical receiver, in comparison to the standard ones, is the higher speed for industrial LAN and FIELDBUS and the robustness against ESD and EMC.

The main technical specifications, like optical sensitivity, voltage and current supply, operating frequency and optical dynamic range, are well improved for this class of optical receivers.

The package is a metal TO-18, covered by metal cup with glass window, the outside diameter is standard 5 mm. The CMOS technology and the metal package permit to have high quality device with very high immunity to ESD and EMC.

Applications

Optical Fiber Datacom

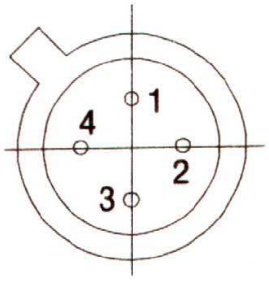
Industrial LAN and FIELD BUS

Optical Barriers

Optical Receivers, Light Sensors

Home and Building Automation

General Applications for Light Detection



BACK VIEW

Features

- **High Optical Sensitivity**
- **Wide Dynamic Range**
- **High Data Rate**
- **High robustness**
- **TTL output**
- **TO-18 Metal-Glass Case Enclosure**

Pin Functions

No.	Name	Function
1	VCC	5 V Power Supply
2		N.C.
3	OUT	Output
4	GND	Ground

Ordering Information

OIA3-0,8S	Optical Receiver Based on CMOS PhotoASIC with TTL Output in TO-18 Metal-Glass Case

ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Min	Max	Unit
T_A	Operating Temperature Range	0	70	℃
T_S	Storage Temperature	-40	100	℃
T_{Sol}	Lead Temperature (solder) 10s		260	℃
V_C	Supply Voltage	4.5	5.5	V
P_D	Power Dissipation @ T_A=25℃		250	mW

Stresses beyond those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated in the operational sections of the specifications is not implied. Exposure to absolute maximum rated conditions for extended periods may affect device reliability.

ELECTRICAL CHARACTERISTICS

T_A=25℃, λ = 650 nm unless otherwise noted.

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
I_{ON}	Supply Current			35	45	mA
S	Optical Sensitivity[1]			-20	-19	dBm
P_{RmaxL}	Max. received power/optical level LOW				-31	dBm
P_{RmaxH}	Max. received power/optical level HIGH				-5	dBm
P_{RminH}	Input required for transition from HIGH to		-19			dBm
ΔP_0	Optical Dynamic Range[1]			15		dB
F	Operating Frequency[2]			20	25	Mbps
PWD	Pulse Width Distortion		-25		25	ns
BER	Bir Error Rate				10^{-9}	

[1] Using a Plastic Optical Fiber (POF) with 1 mm diameter
[2] 20 Mbps = 10 MHz
For best performances a small 100nF capacitor must be soldered between Vcc and GND pins, close to the case (few mm).

AC SWITCHING CHARACTERISTICS

T_A=25℃, λ = 650 nm unless otherwise noted.

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
t_R	Rise Time	10 % - 90 % Rl=2.5 kΩ Cl=10pF			10	ns
t_F	Fall Time	10 % - 90 % Rl=2.5 kΩ Cl=10pF			10	ns

MECHANICAL DIMENSIONS

Units=mm Mechanical tolerance=+/-0.2mm Die positioning tolerance=+/-0.030mm