

General Description

OIA160 serie is based on 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 for industrial environment with high resolution CMOS technology, in order to work in fieldbus at standard 16 Mbps; the receiver speed can go up to 25 Mbps.

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

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

The main advantage of this digital optical receiver compared to the market products is the robustness against mechanical stresses, electrostatic discharges and electromagnetic environment. The robustness is obtained having a monolithic chip inside (analog and digital parts are on the same chip) and because the device is protected with two packages: a first metal TO and a second enclosure, suitable in plastic or metal, that guarantee the best compatibility with optical fibers connectors.

Applications

Optical Fiber Datacom

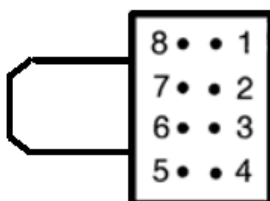
Industrial LAN and FIELD BUS

Optical Barriers

Optical Receivers, Light Sensors

Home and Building Automation

General Applications for Light Detection



Features

- Monolithic chip
- POF or HCS fibers
- Wide Dynamic Range
- Matching with different wavelengths
- Data Rate up to 25Mbps
- Working also in DC mode and low frequency
- High robustness
- TTL output
- 100% manufactured in Europe
- Available in plastic or metal case

Pin Functions

No.	Name	Function
1	N.C.	Not connected
2	VCC	5 V Power Supply
3	N.C.	Not connected
4	N.C.	Not connected
5	N.C.	Not connected
6	OUT	Output
7	GND	Ground
8	N.C.	Not connected

Ordering information

OIA160-SMA-P	Optical Receiver Based on CMOS PhotoASIC with TTL Output in SMA Plastic Case
OIA160-SMA-M	Optical Receiver Based on CMOS PhotoASIC with TTL Output in SMA Metal Case
OIA160-SMA-MZ	Optical Receiver Based on CMOS PhotoASIC with TTL Output in SMA Metal Case Zn diecast package

ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Min	Max	Unit
T _A	Operating Temperature Range	-40	85	°C
T _S	Storage Temperature	-40	100	°C
T _{Sol}	Lead Temperature (solder) 10s		260	°C
V _C	Supply Voltage	4.5	5.5	V
P _D	Power Dissipation @ T _A =25°C		250	mW
MSL	Moisture Sensitive level	1		

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°C, λ = 650 nm unless otherwise noted.

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
I _{ON}	Supply Current			35	45	mA
S	Optical Sensitivity ⁽¹⁾	At λ=660nm		-20	-19	dBm
λ ₅₀	Spectral sensitivity range	At 50%	500		950	nm
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⁾			16	25	Mbps
PWD	Pulse Width Distortion		-25		25	ns
BER	Bir Error Rate				10 ⁻⁹	
V _{OH}	Output voltage high		2.4			V
V _{OL}	Output voltage low				0.4	V

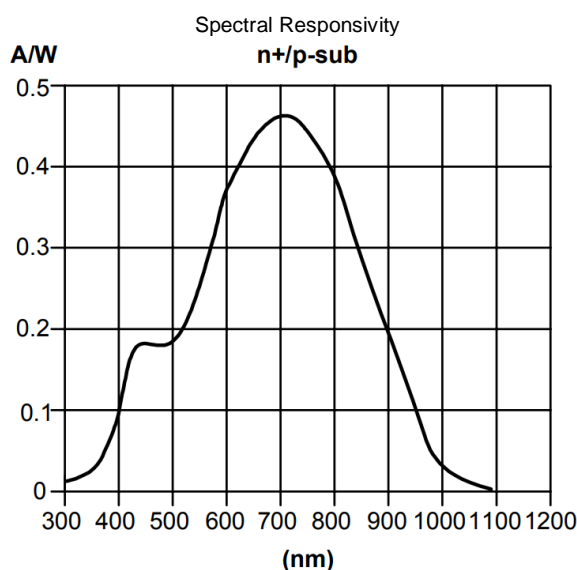
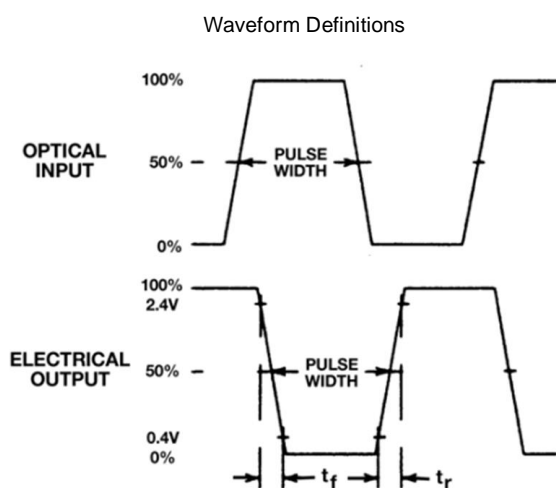
⁽¹⁾ Using a Plastic Optical Fiber (POF) with 1 mm diameter

⁽²⁾ 20 Mbps = 10 MHz

AC SWITCHING CHARACTERISTICS

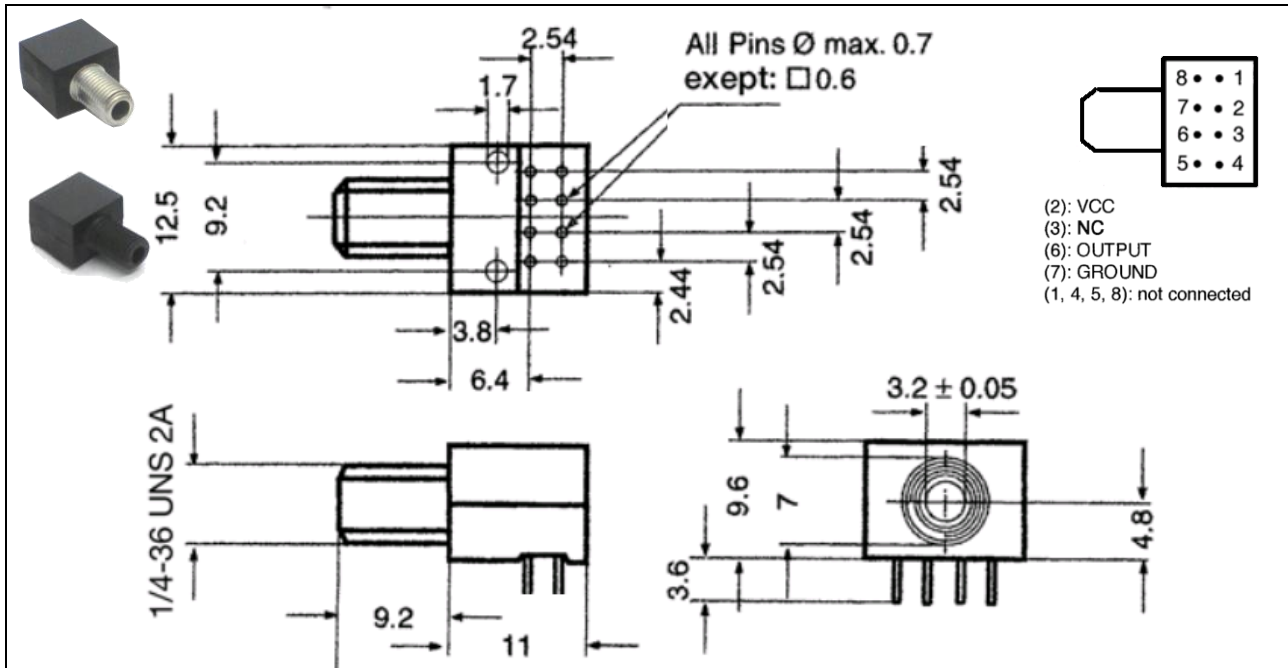
T_A=25°C, λ = 650 nm unless otherwise noted.

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
t _R	Rise Time	10 % - 90 % RI=2.5 kΩ CI=10pF		6	10	ns
t _F	Fall Time	10 % - 90 % RI=2.5 kΩ CI=10pF		8	10	ns



MECHANICAL CHARACTERISTICS AND DIMENSIONS

Units=mm Plastic and die cast metal versions



Units=mm Metal version

