

Fiber Optic Receiver 650nm 50MBit/s

1 General

This 50MBit/s fiber optic receiver is designed to meet data transmission requirements for factory, office and home applications. A large area photodiode, a fast TIA and a digital output stage are integrated into a single device, eliminating the need for additional signal recovery circuitry. The receiver is especially suited for applications with 1mm plastic optical fiber.

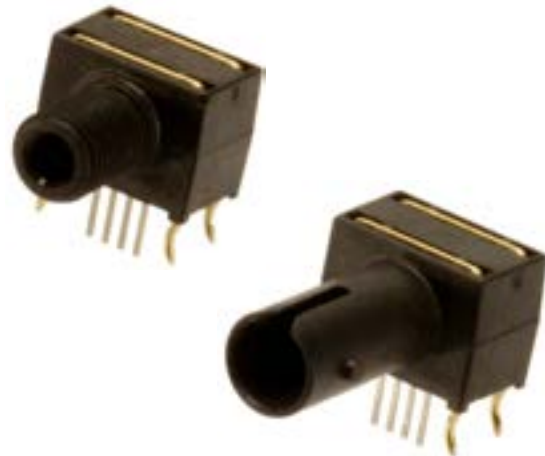
2 Applications

Due to the high data rate of 50MBit/s, the good optical and mechanical features, this receiver may be used in many applications:

- Optical networks
- Industrial electronic
- Power electronic

3 Ordering Information

Style	Part Number
F-SMA	905EM650SM402
F-ST	905EM650ST402



Pic. 1 Fiber optic receiver

4 Features

- 650nm optical receiver
- DC to 50MBit/s data rate
- Digital output stage
- Conductive plastic receptacle
- F-SMA port
- F-ST port
- Qualified for PCF and plastic fiber
- Wave soldering compatible

5 Technical Drawing

Case

PCB hole pattern

View: Component Side
 Drill diameters:
 PIN 1,2,3,4 = 0.7mm
 Fixing Pins = 1.0mm

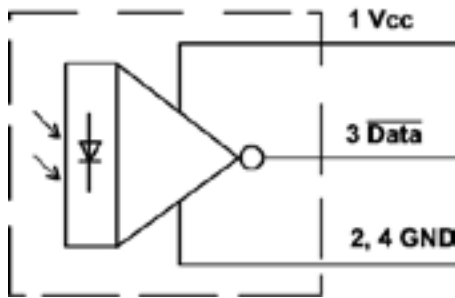
Pinout

PIN Nr.	Funktion
1	Vcc
2	GND
3	DOUT
4	GND

Pic 2 Case drawing

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6 Schematic

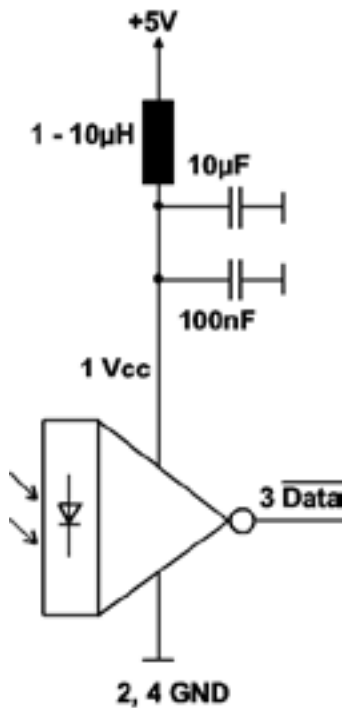


Pic. 3 Schematic

8 PCB Layout

The receptacle is made of **conductive** plastic. During PCB placement and routing avoid unwanted signal **shorts** by the housing. The fixing pins are electrical connected to the housing. Small Stand-Offs at receptacle bottom side allows routing of signal traces on PCB component side. The stand-off area (see Pic. 5 red marking) should keep clean from signal traces.

7 Circuit example



Pic. 4 Recommended power decoupling

Note:

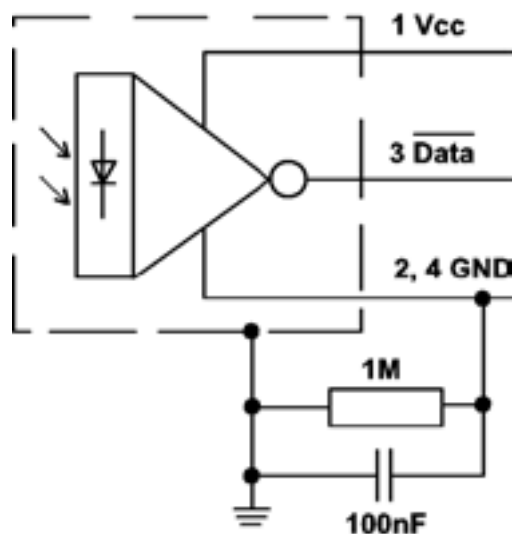
- Avoid unwanted signals on the voltage supply.
- Place an 100nF decoupling capacitor as close as possible to the receiver.
- Keep PCB traces as short as possible.
- Protect the receiver against dirt.



Pic. 5 Bottom side stand-off area

9 EMI-coupling

Electromagnetic shielding without direct coupling the housing to system ground can be achieved by using the circuitry in picture 5. Component values may vary for specific applications.



Pic. 6 EMI-coupling

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10 Maximum ratings _____

Stresses beyond those listed under 'Maximum Ratings' may cause permanent damage to the device. Listed values are stress limits only and functional operation of the device at these conditions is not recommended. Exposure to maximum rating conditions for extended periods may affect the device reliability.

Parameter	Symbol	Value	Unit
Storage temperature	T_{Stg}	-40 to +85	°C
Operating temperature	T_{Opr}	-10 to +70	°C
Soldering temperature, at least 2mm away from package surface, $t \leq 5s$	T_{Sol}	230	°C
Power supply	V_{CC}	-0.5 to 7	V
Output current	I_{OH}	10	mA
Power dissipation	P	250	mW

11 Technical data _____

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Data rate	f_D		DC		50	Mbps
Supply voltage	V_{CC}		4.75	-	5.25	V
Current consumption	I_{CC}	without light input	-	-	32	mA
Pulse width distortion	Δ_T		-6	-	6	ns
Minimum overload	P_{INmax}	*1 *2	-5	-	-	dBm
Minimum receiver input power	P_{INmin}	*1 *2	-	-	-17.5	dBm
Rise time	t_R	*2	-	-	7	ns
Fall time	t_F					
Output voltage	V_{OH}	$I_{OH} = 20\mu A$	2	-		V

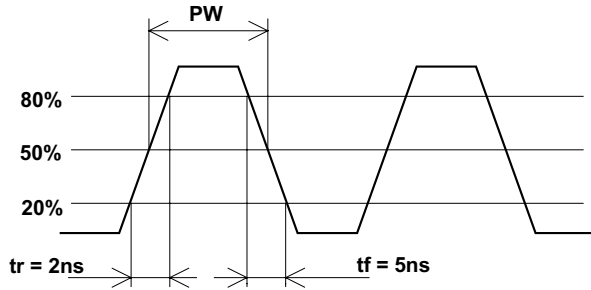
*1: Output power at the end of 1-meter plastic fiber type 903IP00101001

*2: The rise and fall time were determined with the following curve forms. Measured with a FET-Probe-Head with a capacity < 3pF.



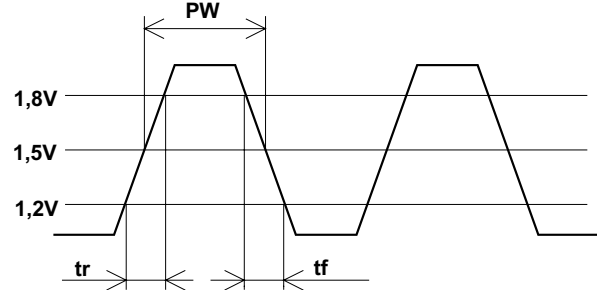
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8 Input light impulse _____

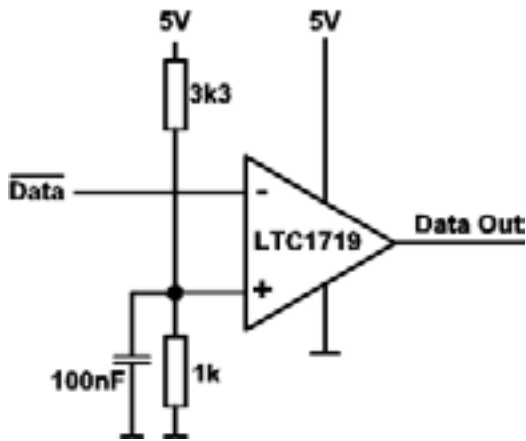


Pic. 7 signal curve

9 Output _____



13 CMOS/TTL application _____



If CMOS/TTL output is required the external circuit shown below is recommended.

Pic. 8 CMOS/TTL Interface

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