

Fiber optic receiver 650nm 156MBit/s

1 General

This 156MBit/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 PECL 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 156MBit/s, the good optical and mechanical features, this receiver may be used in many applications:

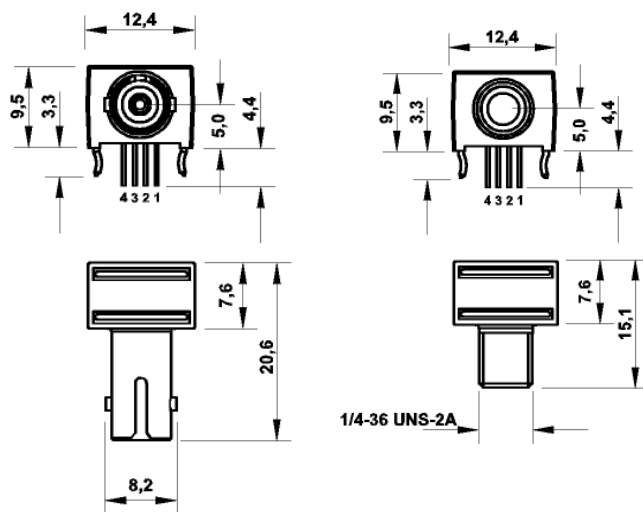
- Optical networks
- Industrial electronic
- Power electronic

3 Ordering Information

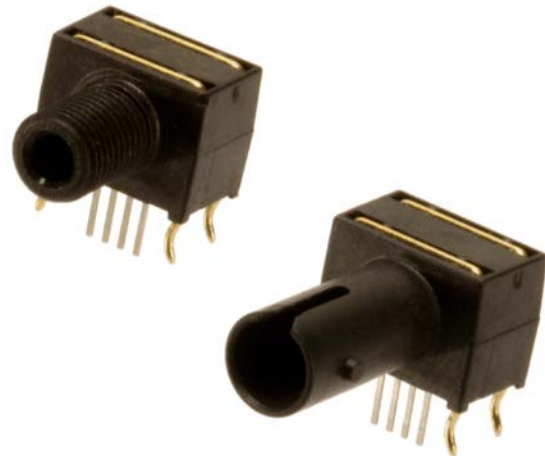
Style	Part Number
F-SMA	905EM650SM403
F-ST	905EM650ST403

5 Technical Drawing

Case



Pic 2 Case drawing



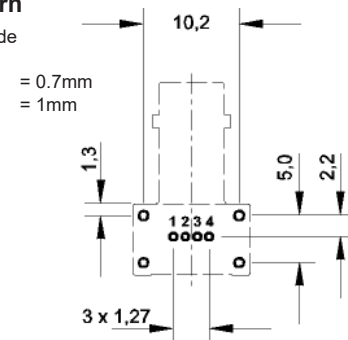
Pic. 1 Fiber optic receiver

4 Features

- 650nm optical receiver
- -22dBm input sensitivity
- 4MBit/s to 50MBit/s data rate
- PECL output stage
- conductive plastic receptacle
- F-SMA port
- F-ST port
- Qualified for PCF and plastic fiber
- wave soldering compatible

PCB hole pattern

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

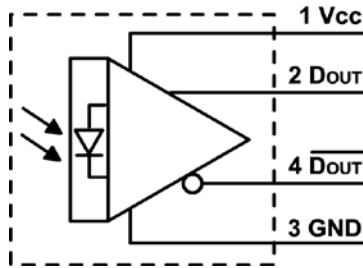


Pinout

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

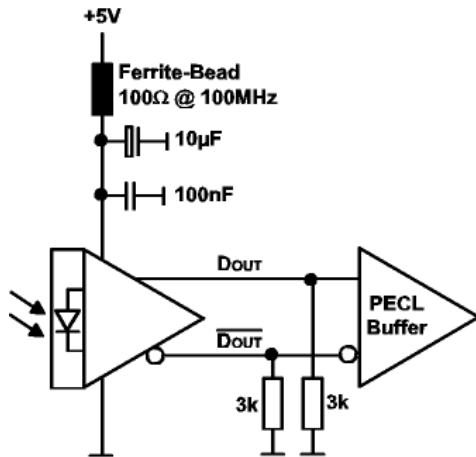
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6 Schematic



Pic. 3 Schematic

7 Circuit example

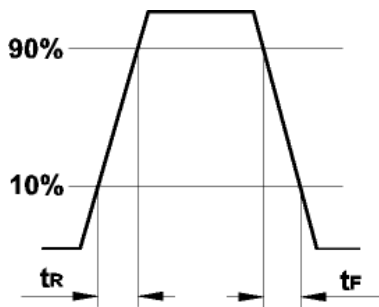


Pic. 4 circuit example

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.
- Unlike normal PECL output, receiver output cannot be terminated with 50Ω (see output current under maximum ratings [10]).
- Protect the receiver against dirt.

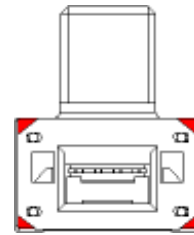
8 Timing definition



Pic. 7 Timing

9 PCB Layout

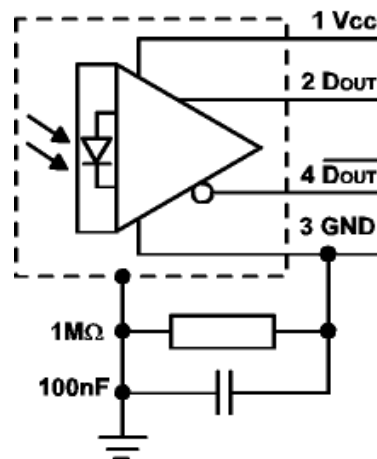
The receptacle is made of **conductive** plastic. During PCB placement and routing avoid unwanted signal **shorts** by the housing. The fixing pins are electrical connected to the housing. Small Stand-Offs at receptacle bottom side allows routing of signal traces on PCB component side. The stand-off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



Pic. 5 Bottom side stand-off area

10 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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11 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
Max. output current	I_{OUT}	8	mA
Output voltage	V_{OUT}	-0.5 to $V_{CC} + 0.5$	V
Supply voltage	V_{CC}	-0.5 to 7	V
Power dissipation	P_{MAX}	250 derate 1.7mW / °C from 25°C	mW
Operating temperature	T_{opr}	-20 to +70	°C
Storage temperature	T_{stg}	-40 to +85	°C
Solder temperature	T_{Solder}	230°C for 5 sec.	°C

11 Technical Data _____

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Supply voltage	V_{CC}		4.75	5	5.25	V
Data rate	f_D	Bi-Phase NRZ	4	-	156	MBit/s
Current consumption	I_{CC}	$R_{LOAD} = 3k\Omega$	-	-	40	mA
Output level H	V_{OH}	$I_{OH} = -1mA$	3.9	-	4.3	V
Output level L	V_{OL}	$I_{OL} = -0,5\mu A$	2.9	-	3.4	V
Min. opt. input power	P_{INmin}	$\lambda = 650nm$	-	-	-22	dBm
Max. opt. input power	P_{INmax}	$\lambda = 650nm$	-2	-	-	dBm
Switching times	t_r	$C_{Load} = 3pF$	-	-	3	ns
	t_f	$R_{LOAD} = 3k\Omega$	-	-	3	ns
Pulse width distortion	PWD		-3		3	ns
Jitter	t_j				3	ns

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