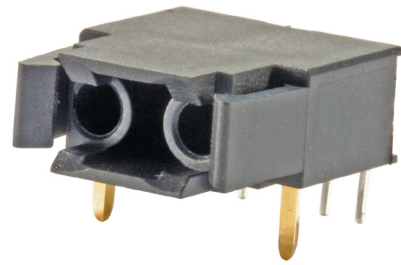


RP-02 Transceiver 5MBit 650nm

1 General

The RP-02 Transceiver is designed to suit applications with low cost 1mm plastic optical fiber. A fast 650nm LED with high optical power output and a 5MBit optical receiver with open collector output makes this transceiver a good choice for fiber optic systems using 1mm plastic optical fiber (POF).



Pic. 1 RP-02

2 Application

Due to the max. data rate of 5MBit/s, the good optical properties and the easy optical fiber termination, the transceiver may be used in many applications:

- Optical networks
- Fast-Ethernet
- Industrial electronics
- Power electronics
- Consumer electronics

5 Features

- 650nm LED
- 150µW fiber coupled power @ 10mA
- 650nm integrated optical receiver
- open-collector output
- 12µW receiver input sensitivity
- 5MBit/s
- suitable for plastic optical fiber (POF) and large core silica fiber (HCS®)
- Plastic case
- reflow-/ wave soldering

3 Order Information

| Style | Part number |
|-------------|---------------|
| 650nm RP-02 | 905R265000003 |

4 Drawings

PCB pattern (component side):
 Pin 1..12 = 0.8mm
 Fixing Pins = 1.2mm

| Pin-No. | Function |
|---------|---------------|
| 1 | VCC receiver |
| 2 | GND receiver |
| 3 | Data receiver |
| 4 | Anode LED |
| 5 | Cathode LED |

Schematic

Pic. 2 Drawing

RP-02 Transceiver 5MBit 650nm

6 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.

6.1 LED _____

| Parameter | Symbol | Value | Unit |
|--|-----------|-------------|------|
| Operating temperature | t_{OP} | -40 ... +85 | °C |
| Storage temperature | t_{STO} | -40 ... 100 | °C |
| Junction temperature | t_J | 100 | °C |
| Solder temperature 2mm from case, $t \leq 5s$ | t_{SOL} | 260 | °C |
| Reverse voltage | V_R | 3 | V |
| Continuous forward current | I_F | 50 | mA |
| Power dissipation | P_{tot} | 120 | mW |
| Thermal resistance | R_{th} | 450 | k/W |

6.2 Optical Receiver _____

| Parameter | Symbol | Value | Unit |
|--|------------|-------------|----------|
| Operating temperature | t_{OP} | -40 ... +85 | °C |
| Storage temperature | t_{STO} | -40 ... 100 | °C |
| Solder temperature 2mm from case, $t \leq 5s$ | t_{SOL} | 260 | °C |
| Operating voltage | V_{CC} | -0.5 ... 15 | V |
| Output current | I_{OUT} | 50 | mA |
| Min. pullup resistance | R_{LOAD} | 330 | Ω |



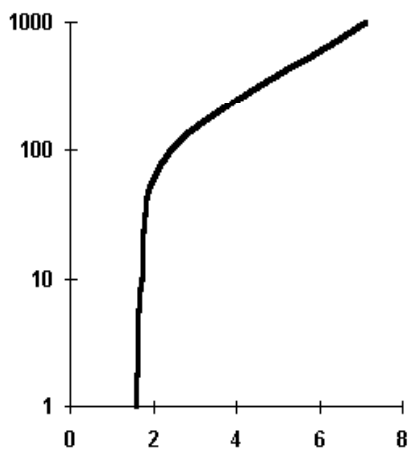
RP-02 Transceiver 5MBit 650nm

7 Technical Data LED _____

| Parameter | Symbol | Condition | Value | Unit |
|-----------------------------------|-----------------|-----------------------------|----------------------|---------------|
| Wavelength | λ | - | 650 | nm |
| Spectral bandwidth | $\Delta\lambda$ | - | 20 | nm |
| Rise / Fall time | t_R t_F | $I_F=50\text{mA}$ | 14 (<20) 16 (<24) | ns ns |
| Capacitance | | $V_R=0\text{V}$ | 52 | pF |
| Forward voltage | V_F | $I_F=50\text{mA}$ | 2.0 (<2.6) | V |
| Fiber coupled power | P_{Out} | 1mm POF @ $I_F=10\text{mA}$ | 150 (<100) | μW |
| Temperature coefficient P_{OUT} | TC_P | - | -0.4 | %/K |
| Temperature coefficient V_F | TC_V | - | -1.8 | mV/K |
| Temperature coefficient λ | TC_λ | - | 0.16 | nm/K |

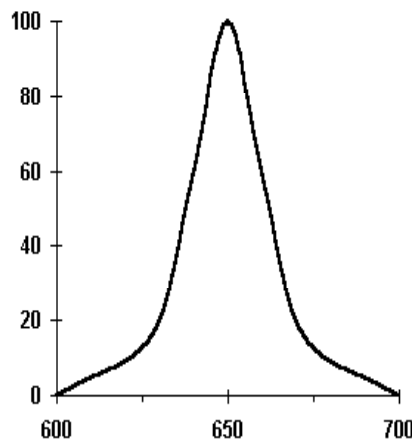
8 LED typical performance curves _____

Forward current $I_F=f(V_F)$
 single pulse, duration = 20 μs



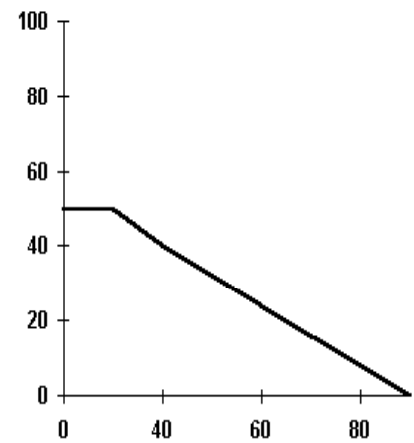
Pic. 3

Relative spectral emission $I_{REL}=f(\lambda)$



Pic. 4

Maximum forward current $I_F=f(T_A)$



Pic. 5

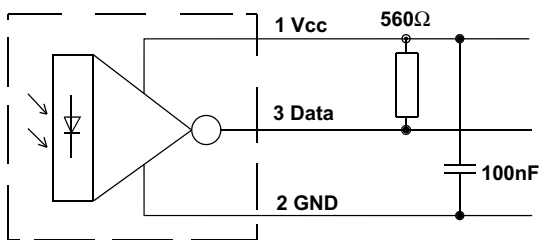


RP-02 Transceiver 5MBit 650nm

9 Technical Data Receiver _____

| Parameter | Symbol | Condition | Min. | Typ. | Max. | Unit |
|-----------------------------|--------------------------------------|----------------------------------|------|------|------------|---------------|
| Supply voltage | V _{CC} | | 4 | - | 15 | V |
| Current consumption | I _{CC} | V _{CC} = 5V | 1.5 | 3.5 | 6.5 | mA |
| Spectral bandwidth | $\Delta\lambda$ | | 600 | | 780 | nm |
| Max. sensitivity Wavelength | $\lambda_{S\text{MAX}}$ | | | 700 | | nm |
| Propagation delay | t_{PHL} t_{PLH} | R _{Load} = 560 Ω | | | 120 270 | ns ns |
| Data rate | f _D | | DC | | 5 | MBit/s |
| Output current | I _{OUT} | | | | 50 | mA |
| Min. opt. input power | P _{IN} | λ = 660nm | 6 | 10 | 12 | μW |
| Pullup resistance | R _{LOAD} | V _{CC} = 5V | 330 | 560 | - | V |
| Output voltage low | V _{OL} | R _{LOAD} = 330 Ω | 0.2 | | 0.6 | V |

10 Typical Application _____



Pic. 6 typ. application

Note:

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

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