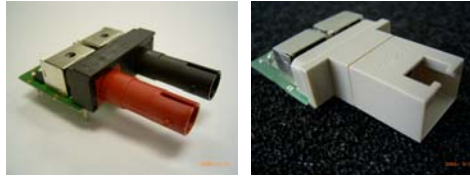


POF Fast Ethernet transceivers

Description:

DieMount offers customer specific development and fabrication of POF Fast Ethernet transceiver modules. Due to the unique fiber-chip coupling technology and a very flexible driver and receiver circuit setup technique the modules show high optical transmission power, high receiver sensitivity and a mechanical design that fits to nearly all optical connector systems and housings.



Transceivers comprising ST, SC, EM-RJ and SMA connectors with standard 1x9 interface have been realized; a SFF transceiver with 2x5 interface is under development. DieMount offers the customer the choice between the following LED/driver and receiver circuits:

LED/driver unit:

| LED | wavelength [nm] | spectral width [nm] | LED drive current average [mA] | optical power in POF [dBm] note 1 | | | rise/fall time [ns] note 2 | Overshoot [%] |
|------------|-----------------|---------------------|--------------------------------|-----------------------------------|------|------|----------------------------|---------------|
| | | | | min. | typ. | max. | | |
| standard | 649 | 20 | 28 | | -3 | | 2.4/2.6 | 12 |
| quality | 653 | 24 | 19 | | -3 | | 2.4/2.2 | 5 |
| high power | 652 | 20 | 19 | +2.5 | | | 2.6/2.7 | 4 |
| blue | 460 | 20 | 15 | | +3 | | 2.3/2.7 | 7 |

Notes:

- 1) The transmitted optical power is measured in a 1m standard POF (NA = 0.5) cable.
- 2) Rise/fall time is a function of peaking. The given figures are valid for an overshoot <25% (see row on the right) as defined in the Industrial Fast Ethernet over POF recommendation given by POF AC.

The high power red and the blue LED are necessary to realize POF data transmission systems with 100m and more transmission distance. If the blue LED is applied the user has to guarantee that there is no thermal stress to the POF higher than 55°C. The POF may lose transparency in the short wavelength range between 600nm and 430nm, thus reducing the power budget of the system operating at 460nm.

Blue LED require a forward voltage of about 4V. If the network module offers standard 3.3V only, a 5V power supply can be included to the transceiver module.

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Receiver unit:

| | high pass characteristics | transmission distance | optical saturation power [dBm@650nm] note 6) | receiver sensitivity [dBm@650nm] note 3), 4), 5) | | |
|------------------|---------------------------|-----------------------|--|--|-----------|------|
| | | | | min. | typ. | max. |
| standard | low | up to 50m | -2 | | -19 (-22) | |
| high sensitivity | low | up to 50m | -8 | | -21 (-24) | |
| medium distance | medium | up to 70m | -2 | | -18 (-21) | |
| far distance | high | up to 120m | -2 | | -17 (-20) | |

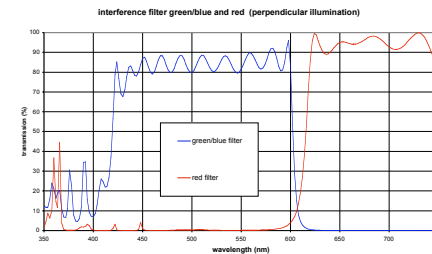
Notes:

- 3) The receiver sensitivity shall be measured with a POF cable length equal to the length given in row 3. Additional attenuation must be introduced by non-dispersing attenuation elements (e.g. connectors).
- 4) The given sensitivity figure gives the necessary optical power to assert the signal detect. Due to the postamp hysteresis, the deassert level for the signal detect is 3dB lower.
- 5) If 460nm wavelength transmitters are applied, the receiver sensitivity figure reduces by 4dB due to the reduced efficiency of silicon PIN-diodes in the short wavelength range.
- 6) If 460nm wavelength transmitters are applied, the optical saturation power figure increases by 4dB due to the reduced efficiency of silicon PIN-diodes in the short wavelength range.

WDM transceivers for one fiber data transmission (simplex systems):

WDM transceiver modules that operate full duplex over a simplex POF cable utilizing two wavelengths at 650nm and 460nm and an integrated POF splitter are available on request.

In order to reduce the crosstalk introduced by connectors in the cable wavelength filters are deposited on top of the PIN-detector.



The figure on the left shows the spectral attenuation of the wavelength filters on the WDM receivers. It was designed for operation with 460nm and 650nm wavelength LED transmitters. The additional cross talk suppression introduced by the filters is 10 to 12dB.

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