

PowerLED module coupled to 1mm POF

Description:

In order to maximize optical power in a 1mm standard POF, a 40mil LED chip (powerLED chip) is butt coupled to the POF endface. Coupling efficiency is not an issue, if the application doesn't lack electrical power.

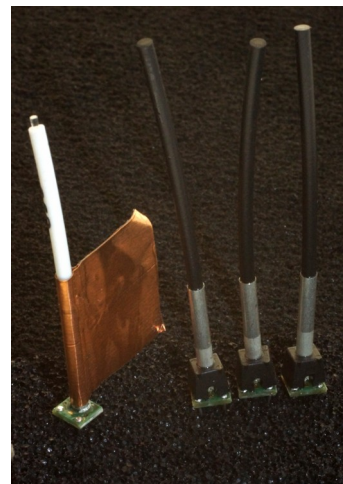
Unfortunately this type of fiber chip coupling generates rather high thermal loss. The design at hand consists of a 40mil die on a massive silver submount that is thermally well connected by soldering to a 20mm copper ferrule. This design allows efficient heat dissipation up to 100mA LED current at least. Operation at up to 350mA LED current is feasible, if a copper foil or other heat dissipation means are attached around the ferrule (see photo right).

Typically the 1mm standard POF comes with a 2.2mm cable jacket. The setup allows the use of 2.0mm bare fiber, too. The fiber coupled optical power figures as given below increase by about 2dB.

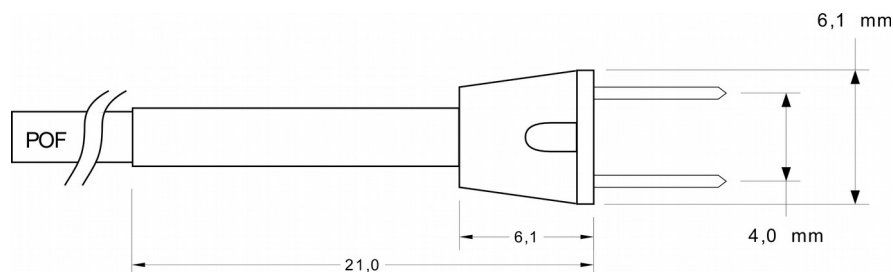
The polished POF endface emits the light in a light cone with a divergence of $\pm 29^\circ$ to the optical axis. The typical fiber length is 5cm, but customer specific length modifications are possible.

Electrically the POF module is connected by a 4mm pitch two pin connector.

Customer specific LED dice can be mounted in the package, if the die edge length doesn't exceed 1000 μ m.



Mechanical dimensions:



Applications:

POF coupled PowerLED modules are useful in a wide variety of applications:

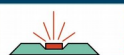
- Illumination,
- Fiber optic POF sensor system that require a high power budget,
- Power over fiber applications for sensor systems in harsh environment.

Technical specifications for some selected PowerLED to POF coupled modules:

	green	amber	red	hyper-red
peak wavelength [nm]	520	590	630	650
typical optical output power @100mA [dBm]	8.0	4.5	8.5	10.5
typical optical output power @200mA [dBm]*	10.5	7	11.0	13.0
typical optical output power @350mA [dBm]*	12.5	9.1	13.0	15.0

* please see text above

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