IF-E101 Plastic Fiber Optic Red VCSEL

Description

The IF-E101 is a high-speed red VCSEL (vertical cavity surface emitting laser) housed in an ST® optic device mount. The output spectrum of the IF-E101 is produced by a GaAlAs die that peaks at a wavelength of 670 nm, near one of the optimal transmission windows of PMMA plastic optical fiber. The internal active device features an internal micro-lens to ensure efficient optical coupling into standard 1000 µm core plastic fiber cable. ST® device mount is a low-profile nickel-plated die-cast zinc component.

Application Highlights

The fast transition times of the IF-E101 make it suitable for very high-speed digital data links. Link distances in excess of 100 meters at data rates of 1 Gbps are possible using the Eska Mega® 1000 µm core plastic fiber. The high launch power and low electrical input make sensor and high speed data possible that were previously unavailable.

Applications

- PC-to-Peripheral Data Links
- Motor Controller Triggering
- Giga-Bit Local Area Networks
- Medical Instruments
- Low-Current Optical Sensors
- Digitized Video
- Electronic Games
- Robotics Communications
- Isolation from Lightning and Voltage Transients

Features

- No Optical Design Required
- Mates with Eska Mega® 1000 µm Core Jacketed Plastic Fiber Cable
- Internal Micro-lens for Efficient Coupling
- Inexpensive Plastic Connector Housing
- Connector-Less Fiber Termination and Connection
- Interference-Free Transmission from Light-Tight Housing
- Low Threshold Current
- Very Fast Transition Times
- Visible Light Output

Maximum Ratings

(T_A = 25°C)

Operating and Storage Temperature Range (T_{OP}, T_{STG}) .....-40° to 85°C

Junction Temperature (T_J) .....85°C

Soldering Temperature (2 mm from case bottom) (T_S) t ≤ 5 s .....240°C

Reverse Voltage (V_R).....3 V

Power Dissipation (P_{TOT}) T_A = 25°C .....100 mW

De-rate Above 25°C .....1.75 mW/°C

Characteristics (T_A=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit
Peak Wavelength	λ_{PEAK}	660	673	680	nm
Spectral Bandwidth (50% of I_{MAX})	$\Delta\lambda$	–	.2	.3	nm
Output Power Coupled into Plastic Fiber (1 mm core diameter). Lens to Fiber Distance ≤0.1 mm, 10 cm polished fiber, I_F=20 mA	Φmin	1000 0	– –	– –	µW dBm
Switching Times (10% to 90% and 90% to 10%) (R_L=47 Ω, I_F=prebiased above threshold)	t_r, t_f	–	–	1	ns
Forward Voltage (I_F=20 mA)	V_f	2.0	2.1	2.2	V
Operating Current	I_F	–	7.0	10.0	mA
Threshold Current	I_{TH}	1.5	3.0	4.0	mA
Threshold Voltage	V_{TH}	2.0	2.1	2.4	V