



DESCRIPTION

The IF-E100 is a high-speed red VCSEL (vertical cavity surface emitting laser) housed in a “connector-less” style plastic fiber optic package. The output spectrum of the IF-E100 is produced by a GaAlAs die that peaks at a wavelength of 670 nm, one of the optimal transmission windows of PMMA plastic optical fiber. The device package features an internal micro-lens and a precision-molded PBT housing to ensure efficient optical coupling into standard 1000 μ m core plastic fiber cable.

APPLICATION HIGHLIGHTS

The fast transition times of the IF-E100 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 μ m core plastic fiber. The low electrical threshold and very fast bandwidth of this device make plastic optical fiber a design choice previously unavailable.

APPLICATIONS

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

FEATURES

- ◆ No Optical Design Required
- ◆ Mates with Eska Mega® 1000 μ m 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

($T_A = 25^\circ\text{C}$)

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) $t \leq 5$ s 240°C

Reverse Voltage (V_R) 5 V

Power Dissipation
(P_{TOT}) $T_A = 25^\circ\text{C}$ 100 mW

De-rate Above 25°C 1.75 mW/ $^\circ\text{C}$

CHARACTERISTICS ($T_A = 25^\circ\text{C}$)

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	Φ_{min}	1000 0	– –	– –	μW dBm
Switching Times (10% to 90% and 90% to 10%) ($R_L = 47 \Omega$, I_F = prebiased above threshold)	t_r, t_f	–	–	1	ns
Operating Current	I_F	–	7.0	10.0	mA
Forward Voltage ($I_F = 20$ mA)	V_f	2.0	2.1	2.2	V
Threshold Current	I_{TH}	1.5	3.0	4.0	mA
Threshold Voltage	V_{TH}	2.0	2.1	2.4	V
Slope Efficiency	η	.2	.3	.45	$\frac{\text{mW}}{\text{mA}}$