

## Fiber Optic Components

50 Mbps 650 nm LED

*HFE7000-210*

### FEATURES

- Super bright LED for optical fiber communication
- Integrated lens provides maximum coupling into plastic fibers
- High power output at 650 nm
- High speed (50 Mbps)
- High reliability
- Designed to meet SERCOS requirements



### WARNING

#### PERSONAL INJURY

DO NOT USE these products as safety or emergency stop devices, or in any other application where failure of the product could result in personal injury.

**Failure to comply with these instructions could result in death or serious injury.**



### WARNING

#### MISUSE OF DOCUMENTATION

- The information presented in this product sheet is for reference only. Do not use this document as a product installation guide.
- Complete installation, operation, and maintenance information is provided with each product.

**Failure to comply with these instructions could result in death or serious injury.**

### NOTICE

Stress greater than those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. This is a stress rating only and functional operation of the device at these or any other conditions above those indicated in the operational section of this specification is not implied. Exposure to absolute maximum rating conditions for extended periods of time may affect reliability.



HFE7000-210

### DESCRIPTION

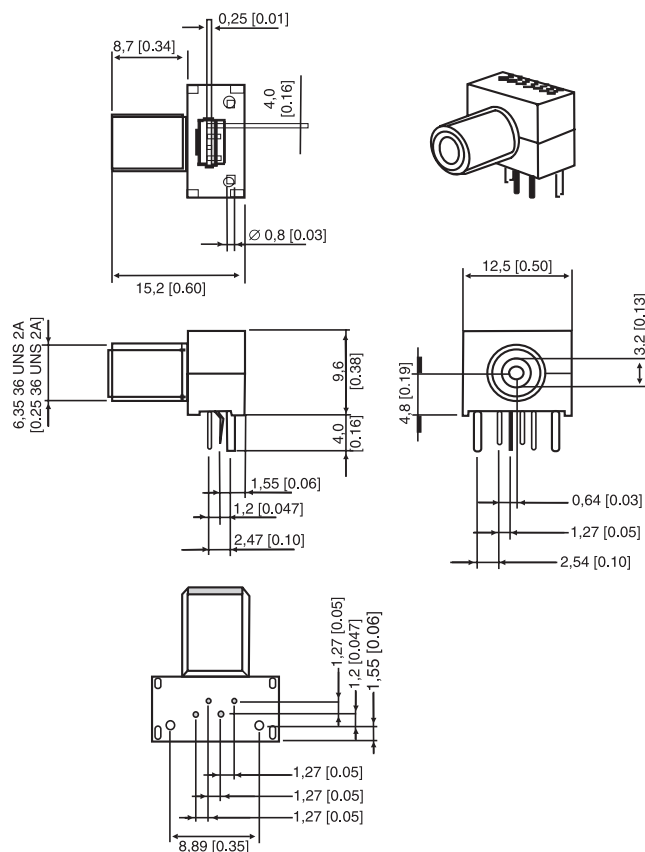
The HFE7000-210 is a 50 Mbps LED designed to meet the data transmission requirements needed in factory and office automation. The 650 nm wavelength provides operation for the low attenuation area of PMMA (Polymethylmethacrylat) fibers. The plastic SMA housing delivers a cost-effective module that can be easily mounted on a PCB. The HFE7000-210 is designed to work with Honeywell's high-speed receivers, HFD7000-XXX and HFD7500-XXX.

### APPLICATIONS

Designed for data transmission in factory automation and office settings. The HFE7000-210 delivers high speed and short distance links.

### FIGURE 1. PACKAGE INFORMATION

Outline dimensions mm [in] (for reference only)



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### ABSOLUTE MAXIMUM RATINGS ( $T_A = 25\text{ }^{\circ}\text{C}$ [77 $^{\circ}\text{F}$ ])

Parameter	Symbol	Rating
Forward current	$I_f$	40 mA
Reverse voltage	$V_R$	5 V
Power dissipation <sup>1</sup>	$P_{Max}$	250 mW
Soldering temperature	$T_{Sold}$	230 $^{\circ}\text{C}$ [446 $^{\circ}\text{F}$ ] for 5 sec
Operating temperature	$T_{Op}$	0 $^{\circ}\text{C}$ to 70 $^{\circ}\text{C}$ [32 $^{\circ}\text{F}$ to 338 $^{\circ}\text{F}$ ]
Storage temperature	$T_{Stor}$	-40 $^{\circ}\text{C}$ to 85 $^{\circ}\text{C}$ [-40 $^{\circ}\text{F}$ to 185 $^{\circ}\text{F}$ ]

<sup>1</sup> Derate power dissipation at a rate of 1.7 mW/ $^{\circ}\text{C}$  above  $T_A = 25\text{ }^{\circ}\text{C}$  [77  $^{\circ}\text{F}$ ].

### ELECTRO-OPTICAL CHARACTERISTICS ( $T_A = 25\text{ }^{\circ}\text{C}$ [77 $^{\circ}\text{F}$ ])

Parameters	Test Condition	Symbol	Min.	Typ.	Max.	Unit
Data rate	Driven by recommended circuit	$f_D$	dc		50	Mbps
Forward voltage	$I_f = 20\text{ mA}$	$V_f$		1.9	2.3	V
Reverse current	$V_r = 5\text{ V}$	$I_r$			10	$\mu\text{A}$
Output power	$I_f = 10\text{ mA}$	$P_o$	-10			dBm
	$I_f = 20\text{ mA}$	$P_o$	-7			dBm
Peak wavelength	$I_f = 20\text{ mA}$	$\lambda_p$		650		nm
Spectral halfwidth <sup>1</sup>	$I_f = 20\text{ mA}$	$\Delta\lambda$		20		nm
Rise time <sup>2</sup>	$I_f = 20\text{ mA}$	$t_r$			8	ns
Fall time <sup>2</sup>	$I_f = 20\text{ mA}$	$t_f$			8	ns

<sup>1</sup> Output from a 1.0 m [39.37 in] long, 1.0 mm [0.04 in] diameter plastic fiber (GH4001 made by Mitsubishi Rayon). Measured with recommended drive circuit.

<sup>2</sup> Time required for change in the output as shown below. Measured with recommended drive circuit (Figure 7).

FIGURE 2. TYPICAL OUTPUT WAVEFORM

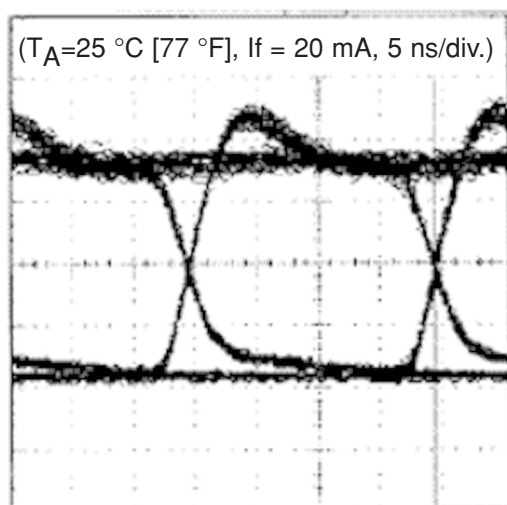
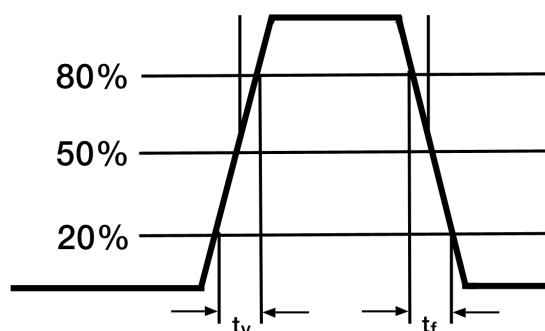


FIGURE 3. RISE/FALL TIME



### ORDER GUIDE

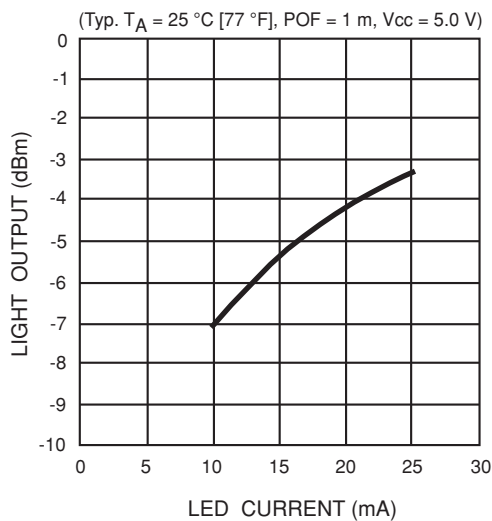
Catalog Listing	Description
HFE7000-210	650 nm LED in plastic SMA housing

# Fiber Optic Components

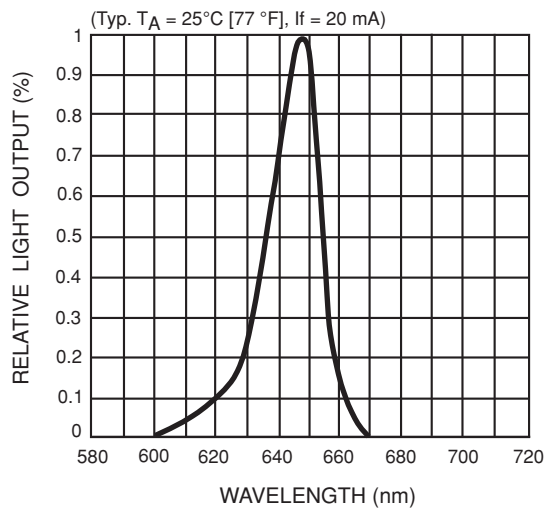
## 50 Mbps 650 nm LED

HFE7000-210

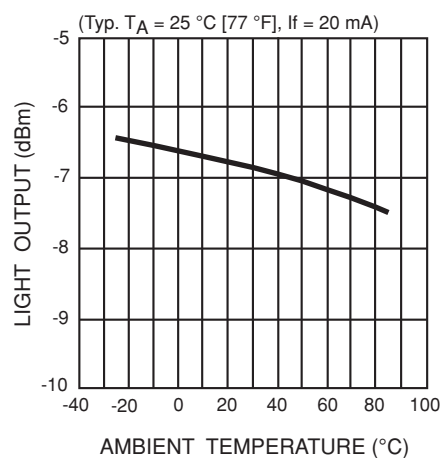
**FIGURE 4. TYPICAL LIGHT OUTPUT VS. LED CURRENT**



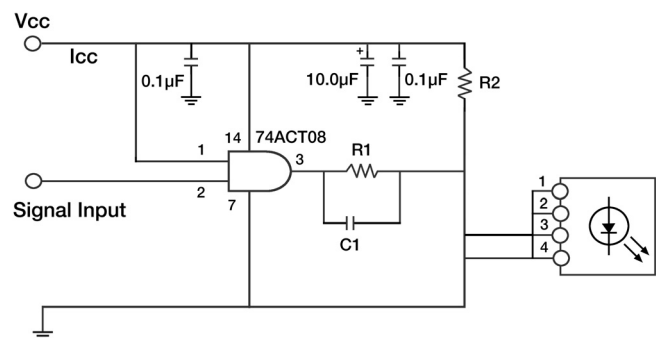
**FIGURE 5. TYPICAL EMISSION SPECTRUM**



**FIGURE 6. TYPICAL LIGHT OUTPUT VS. TEMP.**



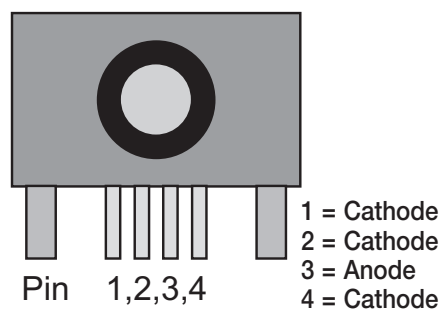
**FIGURE 7. RECOMMENDED DRIVE CIRCUIT**  
( $R_1 = 300\ \Omega$ ,  $R_2 = 750\ \Omega$ ,  $C_1 = 77\text{ pF}$ )



### NOTICE

The inherent design of this component causes it to be sensitive to electrostatic discharge (ESD). To prevent ESD-induced damage and/or degradation to equipment, take normal ESD precautions when handling this product.

**FIGURE 8. PINOUT**



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## WARRANTY/REMEDY

Honeywell warrants goods of its manufacture as being free of defective material and faulty workmanship. Contact your local sales office for warranty information. If warranted goods are returned to Honeywell during that period of coverage, Honeywell will repair or replace without charge those items it finds defective. **The foregoing is Buyer's sole remedy and is in lieu of all other warranties, expressed or implied, including those of merchantability and fitness for a particular purpose.**

While we provide application assistance, personally, through our literature and the Honeywell web site, it is up to the customer to determine the suitability of the product in the application.

Specifications may change at any time without notice. The information we supply is believed to be accurate and reliable as of this printing. However, we assume no responsibility for its use.

## SALES AND SERVICE

Honeywell serves its customers through a world-wide network of sales offices and distributors.

For application assistance, current specifications, pricing, or name of the nearest Authorized Distributor, contact a nearby sales office or call:

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Germany	+49(0)89 3581 3310
UK	+44(0) 1698 481 481
USA & Canada	1-800-537-6945
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