

Fiber Optic Components

HFE4070-500 Series

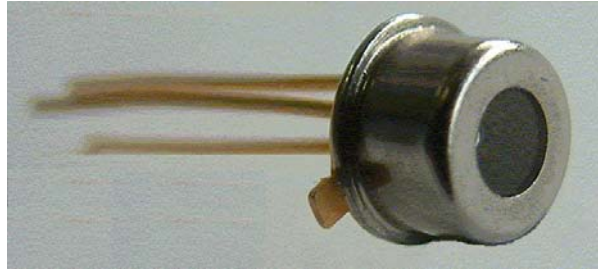
850 nm GaAlAs Light Emitting Diode

Features.

- ❑ Internal lensing for efficient fiber coupling
- ❑ High Electrical Bandwidth
- ❑ Fast response time
- ❑ High Reliability
- ❑ Hermetic Package TO46
- ❑ Suggested replacement for our HFE4070-313

Typical Applications.

- ❑ Data communications
- ❑ CCTV systems
- ❑ Machine tools
- ❑ Controls/drives
- ❑ Packaging, converting and food processing machines
- ❑ Assembly handling and robots
- ❑ Simulators and test equipment



The HFE4070-500 is a high radiance GaAlAs IR LED packaged on a TO-46 header with a metal can, and is optimised for fiber optic applications requiring high power and a fast response time.

Data rates can vary from DC to above 85 MHz depending upon component application. The LED is designed for use in fiber optic communications. As the current varies (typically from 10 to 100 mA) the light intensity increases proportionally.

The peak wavelength is matched for use with Honeywell silicon fiber optic detectors and receivers.

Heatsinking is recommended to maintain the expected long life of this product. If the HFE4070-500 is heatsinked, the package has a typical thermal resistance of less than 150 °C per watt. If not heatsinked, typical thermal resistance is less than 300 °C per watt.

HFE4070-500-XXX is the HFE4070-500 LED packaged in a fiber optic connector that aligns the optical axis of the base component to the axis of the optical fiber. Coupled power can range from 30 µW to 200 µW depending on optical fiber and drive current used.



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 (or catalogue) is for reference only. DO NOT USE this document as product installation information.
- Complete installation, operation and maintenance information is provided in the instructions supplied with each product.

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

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ABSOLUTE MAXIMUM RATINGS

- ❑ Storage temperature..... -65°C to +150°C
- ❑ Case operating temperature..... -55°C to +125°C
- ❑ Lead solder temperature..... 260°C, 10 seconds
- ❑ Continuous forward current..... 100 mA
- ❑ Reverse Voltage..... 1 Volt @ 10 μ A

Stresses 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.

ELECTRO-OPTICAL CHARACTERISTICS (Case T = 25°C)

| PARAMETER | TEST CONDITION | SYMBOL | MIN | TYP | MAX | UNIT |
|---------------------|----------------------------------------------|-----------------|-------|-------|------|---------|
| Forward Voltage | $I_F = 100$ mA | V_F | 1.5 | 1.6 | 2.25 | Volts |
| Reverse Voltage | $I_R = 10$ μ A | B_{VR} | 1.0 | 5.0 | | Volts |
| Series Resistance | DC | R_S | | | 2.0 | Ohms |
| Capacitance | $V_R = 0$ V, $f = 1$ MHz | C | | | 70 | pF |
| Fiber Coupled Power | $I_F = 100$ mA, 50/125 fiber, 0.21 NA | P_{OC} | 20 | 30 | | μ W |
| | | | -17.0 | -15.2 | | dBm |
| Fiber Coupled Power | $I_F = 100$ mA, 100/140 fiber, 0.28 NA | P_{OC} | | 125 | 200 | μ W |
| | | | | -9.0 | -7.0 | dBm |
| Total Optical Power | $I_F = 100$ mA | P_{OUT} | | 3.5 | | mW |
| | | | | 5.4 | | dBm |
| Response Time | 10% – 90%, 1V pre-bias, $I_F = 100$ mA | t_R | | 4 | 10 | ns |
| | | t_F | | 6 | 10 | ns |
| Peak Wavelength | $I_F = 100$ mA | λ_P | 810 | 850 | 885 | nm |
| Spectral Bandwidth | $I_F = 100$ mA | $\Delta\lambda$ | | | 50 | nm |
| Analog Bandwidth | $I_F = 100$ mA | BWE | | 85 | | MHz |

FIBER INTERFACE

Honeywell LEDs are designed to interface with multimode fiber with sizes ranging from 50/125 to 200/230 microns. Honeywell typically performs final tests using 50/125 micron core fiber. All multimode fiber optic cables between 50/125 and 200/230 should operate with similar excellent performance.

CAUTION

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.



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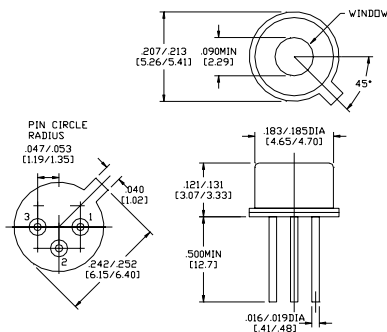
OUTLINE DIMENSIONS and ORDER GUIDE

All dimensions are in inches [mm] (except as noted)

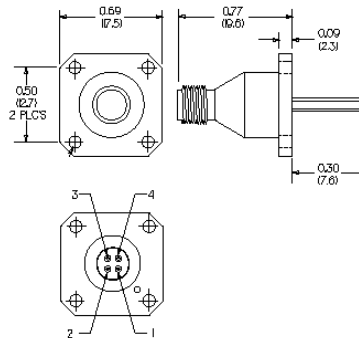
Pinout :

Pin 1: Anode, Pin 2: Cathode, Pin 3: Case (Ground)

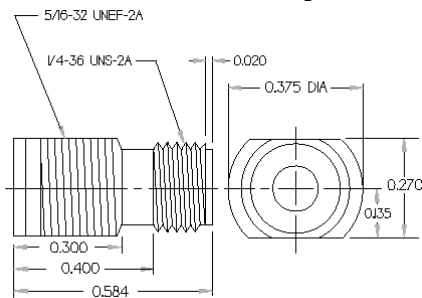
HFE4070-500



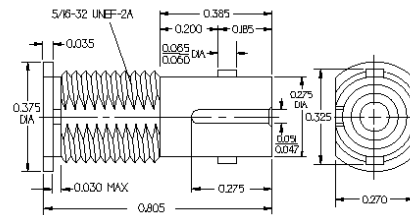
HFE4070-500-ADA SMA 4 hole



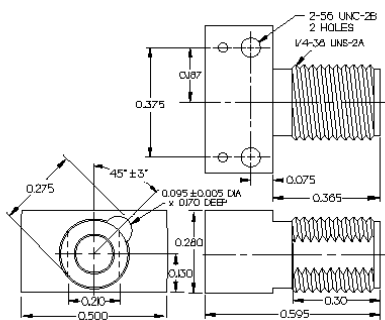
HFE4070-500-AAA SMA single hole



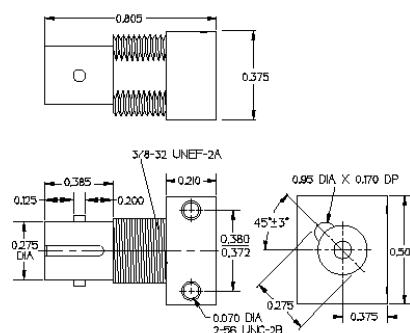
HFE4070-500-BAA ST single hole



HFE4070-500-ABA SMA PCB



HFE4070-500-BBA ST PCB



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Fig. 1 Typical Optical Power Output vs Forward Current

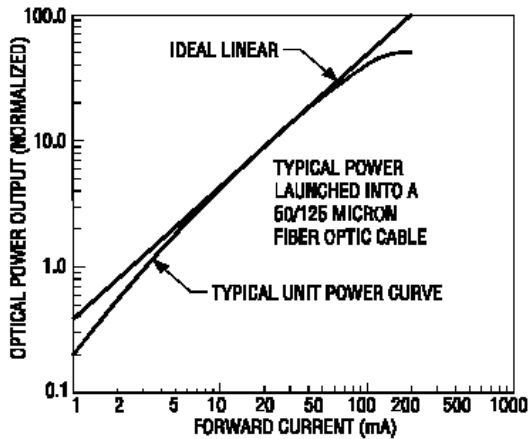


Fig. 2 Typical Spectral Output vs Wavelength

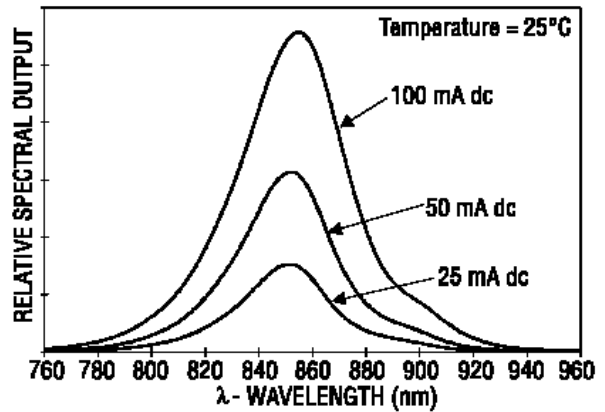
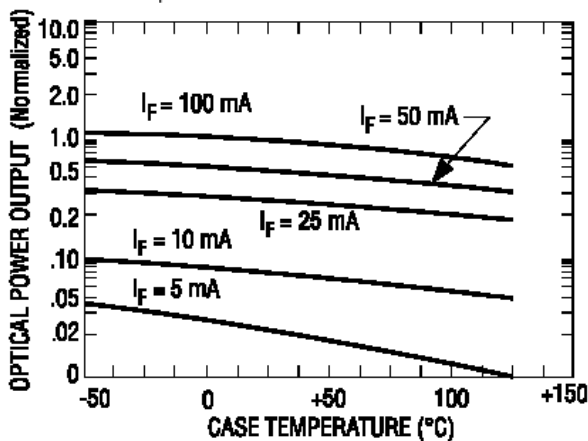


Fig. 3 Typical Optical Power Output vs Case Temperature



All Performance Curves Show Typical Values

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 worldwide network of sales offices, representatives and distributors. For application assistance, current specifications, pricing or name of the nearest Authorized Distributor, contact your local sales office or:

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www.honeywell.com/sensing

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