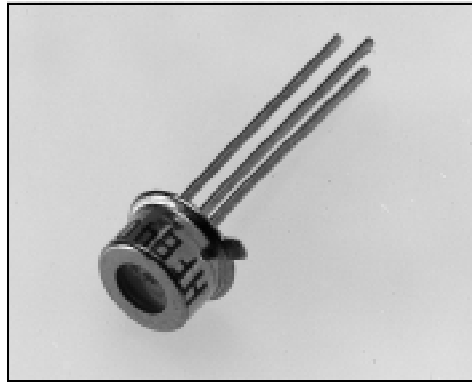


# HFE4026

## Low Drive Current Fiber Optic LED, Metal Package

### FEATURES

- High speed: 70 MHz
- Optimized for linear optical output with drive currents between 5 and 60 mA
- Metal TO-18 style package
- High reliability
- Power out designed for drive currents between 5 and 60 mA



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### DESCRIPTION

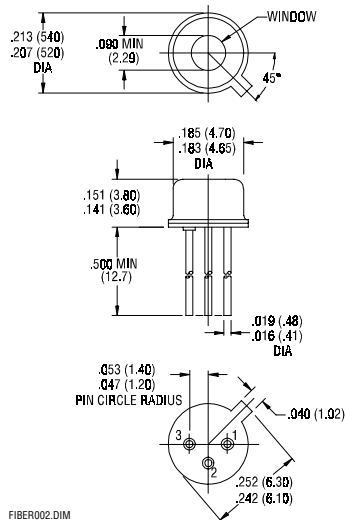
The HFE4026 is a high radiance GaAlAs 850 nanometer LED optimized for coupling into small fiber core diameters at a forward current of 5 to 60 mA. The patented "Caprock™" LED chip is designed to combine high power coupling with wide bandwidth. The peak wavelength is matched for use with Honeywell silicon fiber optic detectors and receivers. When the HFE4026 is used at elevated temperatures, thermal resistance must be taken into consideration.

### APPLICATION

The HFE4026 is a high radiance LED packaged on a TO-18 header with a metal can. Data rates can vary from DC to above 70 MHz depending upon component application. The LED is designed for use in fiber optic communications. As the current varies (typically from 5 to 60 mA), the light intensity increases proportionally. Heat sinking is recommended to maintain the expected long life. If the HFE4026 is heat sunk, the package has a typical thermal resistance of 250°C per watt. If not heat sunk, typical thermal resistance is 500°C per watt.

The HFE4026 LED is designed to give high fiber coupled power (high radiance into a standard fiber optic cable). In order to enhance the light being sent into a fiber optic cable, a 0.30 mm diameter glass microlens is placed over the "Caprock™" junction. The microlens collimates the light, increasing the intensity directed toward a fiber optic cable. This creates a "SWEET SPOT" of power, allowing greater power to be launched into standard fiber optic cables.

### OUTLINE DIMENSIONS in inches (mm)



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### Pinout

1. Anode (case)
2. Cathode
3. Not connected

Honeywell reserves the right to make changes in order to improve design and supply the best products possible.

# HFE4026

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### ELECTRO-OPTICAL CHARACTERISTICS (-40°C < T<sub>C</sub> < 100°C unless otherwise stated)

PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS	TEST CONDITIONS
Fiber Coupled Power	HFE4026-313 P <sub>OC</sub>	10.0 -20.0	12.0 -19.0		μW dBm	I <sub>F</sub> = 6 mA, 100/140 micron, 0.29 NA fiber. T = 25°C <sup>(1)</sup>
Forward Voltage	V <sub>F</sub>		1.70 1.40	2.00	V V	I <sub>F</sub> = 50 mA I <sub>F</sub> = 6 mA
Reverse Voltage	B <sub>VR</sub>	1.0	5.0		V	I <sub>R</sub> = 10 μA
Peak Wavelength	λ <sub>P</sub>		850		nm	I <sub>F</sub> = 25 mA DC
Spectral Bandwidth	Δλ		50		nm	I <sub>F</sub> = 25 mA DC
Response Time						1 V Prebias, 50 mA peak
T = 25°C, 10-90%			12	20	ns	
T = 25°C, 90-10%			12	20	ns	
Analog Bandwidth	BWE		70		MHz	I <sub>F</sub> = 50 mA DC, small signal sinusoidal modulation
P <sub>O</sub> Temperature Coefficient	ΔP <sub>O</sub> /ΔT		-0.007			I <sub>F</sub> = 50 mA, +25°C < T <sub>A</sub> < +80°C
Series Resistance	r <sub>s</sub>		4.0		Ω	DC
Capacitance	C		70		pF	V <sub>R</sub> = 0 V, f = 1 MHz
Thermal Resistance			250 500		°C/W °C/W	Heat sunked <sup>(2)</sup> Not heat sunked

#### Notes

- HFE4026 is tested using a 10 meter length of 100/140 μm dia. fiber cable, terminated in a precision ST ferrule. Actual coupled power values may vary due to alignment procedures and/or receptacle and fiber tolerances.
- HFE4026 must be heat sunked for continuous I<sub>F</sub> > 50 mA operation for maximum reliability (i.e. mounted in a metal connector with thermally conductive epoxy).

#### ABSOLUTE MAXIMUM RATINGS

(25°C Free-Air Temperature unless otherwise noted)

Storage temperature	-40 to +100°C
Case operating temperature	-40 to +100°C
Lead solder temperature	260°C 10 s
Continuous forward current (heat sunked)	60 mA
Reverse voltage	1 V @ 10 μA

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.

#### FIBER INTERFACE

Honeywell LEDs are designed to interface with multimode fiber with sizes ranging from 50/125 to 200/230 microns. Honeywell performs final tests using 100/140 micron core fiber. All multimode fiber optic cables between 50/125 and 200/230 should operate with similar excellent performance. See table for typical powers.

# HFE4026

## Low Drive Current Fiber Optic LED, Metal Package

### ORDER GUIDE

Description	Catalog Listing
Standard screening, metal package, typical power out 12 $\mu$ W	HFE4026-313

This package is also available in special interface receptacles for interfacing to standard fiber optic cables.

### WARNING

Under certain application conditions, the infrared optical output of this device may exceed Class 1 eye safety limits, as defined by IEC 825-1 (1993-11). Do not use magnification (such as a microscope or other focusing equipment) when viewing the device's output.

### 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.



Fig. 1 Typical Optical Power Output vs Forward Current

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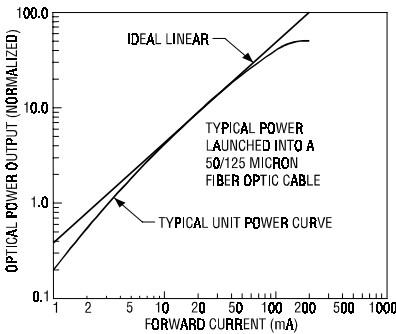


Fig. 2 Typical Spectral Output vs Wavelength

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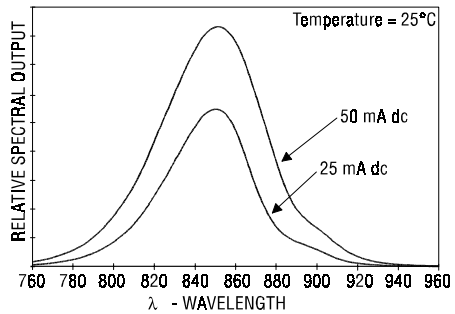
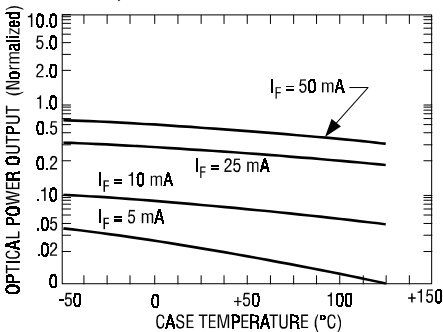


Fig. 3 Typical Optical Power Output vs Case Temperature

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All Performance Curves Show Typical Values

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