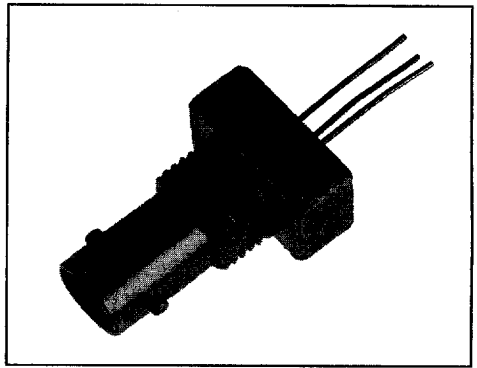


HFE4835

High Speed Fiber Optic LED

FEATURES

- High speed: 150 MHz
- Optimized for linear optical output with drive currents between 10 mA and 100 mA
- Wave solderable
- Industry standard ST®-LP fiber optic connector
- Popular straight lead, low profile package



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DESCRIPTION

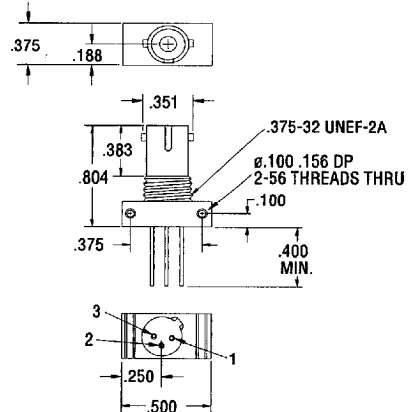
The HFE4835 is a high radiance GaAlAs 850 nanometer LED optimized for coupling into small fiber core diameters at a forward current of 10 to 100 mA. The patented "Caprock™" LED chip combines high power coupling with wide bandwidth. The peak wavelength is matched for use with Honeywell silicon fiber optic detectors and receivers. When the HFE4835 is used at elevated temperatures, thermal resistance must be taken into consideration. The mechanical construction uses a highly reliable ST®-LP fiber optic connector / housing, designed for easy mounting on printed circuit boards.

APPLICATION

The HFE4835 is a high radiance LED packaged in a ST®-LP metal housing. Data rates can vary from DC to 150 MHz depending upon component application. The LED converts electrical current into optical power that can be used in fiber optic communications. As the current varies (typically from 10 to 100 mA), the light intensity increases proportionally.

The HFE4835 LED provides high fiber coupled power (high radiance into a standard 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. The "SWEET SPOT" of power sends greater power into standard fiber optic cables.

OUTLINE DIMENSIONS in inches (mm)



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Pinout

1. Anode
2. Cathode
3. Not connected

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HFE4835

High Speed Fiber Optic LED

ELECTRO-OPTICAL CHARACTERISTICS (-55°C < T_C < 125°C unless otherwise stated)

| PARAMETER | SYMBOL | MIN | TYP | MAX | UNITS | TEST CONDITIONS |
|--|---------------------|-------|-------|------|-------|---|
| Fiber Coupled Power ⁽¹⁾ | P _{oc} | | | | | I _F = 100 mA, 50/125 micron, 0.20 NA fiber, T = 25°C (2) |
| HFE4835-023 | | 10 | 15 | | μW | |
| | | -30.0 | -18.2 | | dBm | |
| HFE4835-024 | | 20 | 25 | | μW | |
| | | -17.0 | -16.0 | | dBm | |
| Forward Voltage | V _F | | 1.70 | 2.00 | V | I _F = 100 mA |
| Reverse Voltage | E _{VR} | 1.0 | 5.0 | | V | I _R = 10 μA |
| Peak Wavelength | λ _P | | 850 | | nm | I _F = 100 mA DC |
| Spectral Bandwidth | Δλ | | 50 | | nm | I _F = 100 mA DC |
| Response Time | | | | | ns | 1 V Prebias, 100 mA peak |
| T = 25°C, 10-90% | t _R | | 3 | 6 | | |
| T = 25°C, 90-10% | t _F | | 4 | 6 | | |
| -55 < T < +125°C, 10-90% | t _R | | 3 | 7 | | |
| -55 < T < +125°C, 90-10% | t _F | | 4 | 7 | | |
| Analog Bandwidth | BWE | | 150 | | MHz | I _F = 100 mA DC, small signal sinusoidal modulation |
| P _o Temperature Coefficient | ΔP _o /ΔT | | -0.01 | | dB/°C | I _F = 100 mA |
| Series Resistance | r _s | | 4.0 | | Ω | DC |
| Capacitance | C | | 70 | | pF | V _R = 0 V, f = 1 MHz |
| Thermal Resistance | | | 150 | | °C/W | Heat sinked |

Notes

1. Dash numbers indicate power output. See ORDER GUIDE.
2. HFE4835 is tested using a 50/125 micron fiber cable. Actual coupled power values may vary due to mechanical alignment procedures and/or receptacle and fiber tolerances.

ABSOLUTE MAXIMUM RATINGS

| | |
|--|---------------|
| Storage temperature | -65 to +150°C |
| Case operating temperature | -55 to +125°C |
| Lead solder temperature | 260°C, 10 s |
| Continuous forward current (heat sinked) | 100 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 50/125 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.

TYPICAL COUPLED POWER (μW/dBm) @ I_F=100 mA

| Dia. | Index | N.A. | -023 | -024 |
|----------|--------|------|----------|----------|
| 50/125 | Graded | 0.20 | 15/-18.2 | 25/-16.0 |
| 62.5/125 | Graded | 0.28 | 33/-14.8 | 55/-12.6 |
| 100/140 | Graded | 0.29 | 91/-10.4 | 145/-8.4 |

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HFE4835

High Speed Fiber Optic LED

ORDER GUIDE

| Description | Catalog Listing |
|--|-----------------|
| Standard screening, typical power out 15 μ W | HFE4835-023 |
| Standard screening, typical power out 25 μ W | HFE4835-024 |

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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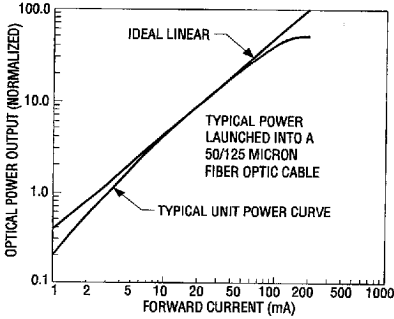


Fig. 2 Typical Spectral Output vs Wavelength

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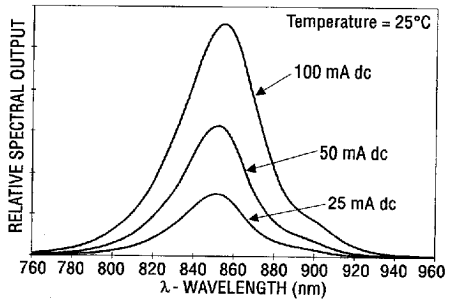
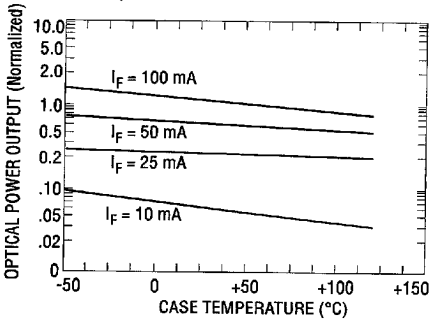


Fig. 3 Typical Optical Power Output vs Case Temperature

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All Performance Curves Show Typical Values

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