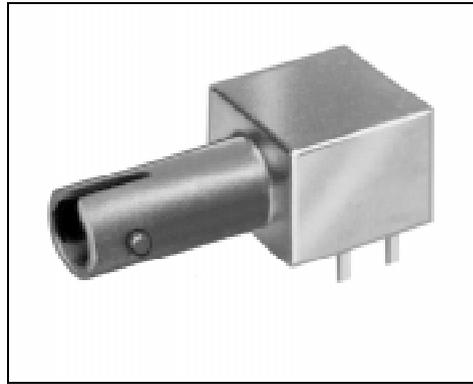


HFE4224

Next Generation High Power LEDs, Metal ST Package

FEATURES

- Industry standard ST® fiber connector
- 850 nm GaAlAs LED
- Fiber Dip package style
- High reliability construction
- Straight metal barrel and housing
- Wave solderable
- Metal package provides enhanced durability and heat dissipation over plastic packages



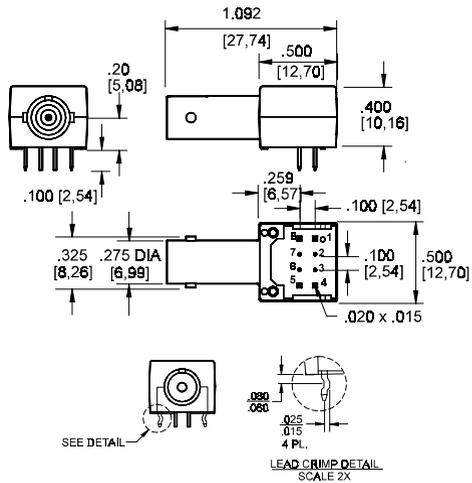
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DESCRIPTION

Next Generation LEDs are designed for use in IEEE 802.3 Ethernet and IEEE 802.5J Token Ring applications such as repeaters, bridges, hubs, routers, switches and gateways. The devices are GaAlAs 850 nm LEDs which are designed to efficiently couple optical power into different fiber sizes ranging from 50/125 micron to 200/240 micron. They typically couple -12.0 dBm into 62.5/125 micron cable at 60 mA peak. The LED component is electrically isolated from the connector barrel. The mechanical construction uses a high reliability ST Fiber-Dip fiber optic connector/housing designed to be easily mounted on printed circuit boards without the need for additional hardware. This component is specifically designed to provide performance and flexibility to the designer and should be driven with a 50% duty cycle at 60 mA to 100 mA peak forward current for the electrical input signal.

Next Generation LEDs have been updated and improved over existing Fiber Optic LEDs. The Next Generation LEDs provide an improved lensing scheme which makes the fiber optic coupling more repeatable. The LEDs are manufactured with an automated process that eliminates variable introduced by a manual process. The Next Generation LEDs are pin for pin compatible with existing Fiber Dip LEDs.

OUTLINE DIMENSIONS in inches (mm)



FIBER309.DIM

Pinout

- | | |
|------------|------------|
| 1. Common* | 5. Common* |
| 2. Anode | 6. Anode |
| 3. Cathode | 7. Anode |
| 4. Common* | 8. Common* |

Pins 1, 4, 5 and 8 are common and connected to the metal housing

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ELECTRO-OPTICAL CHARACTERISTICS (T_A = -40 to +85°C unless otherwise specified)

PARAMETER	SYMBOL	MIN	TYP ⁽¹⁾	MAX	UNITS	TEST CONDITIONS
Fiber Coupled Power (HFE4224-X22) Peak, T _A =25°C Peak over temp.	P _{OC}	-17.3 -18.9	-13.8	-11.4 -10.8	dBm	I _F =100 mA Peak 50/125μm fiber, NA = 0.20
Fiber Coupled Power Peak, T _A =25°C Peak over temp.	P _{OC}	-18.8 -19.8	-15.8	-13.8 -12.8	dBm	I _F = 60 mA Peak 50/125 μm fiber, NA = 0.20
Fiber Coupled Power Peak, T _A =25°C Peak over temp.	P _{OC}	-13.5 -15.1	-10.0	-7.6 -7.0	dBm	I _F = 100 mA Peak 62.5/125 μm fiber, NA = 0.275
Fiber Coupled Power Peak, T _A =25°C Peak over temp.	P _{OC}	-15.0 -16.0	-12.0	-10.0 -9.0	dBm	I _F = 60 mA Peak 62.5/125 μm fiber, NA = 0.275
Fiber Coupled Power (HFE4224-X23) Peak, T _A =25°C Peak over temp.	P _{OC}	-15.0 -16.0	-10.5	-9.0 -8.0	dBm	I _F = 60 mA Peak 62.5/125 μm fiber, NA = 0.275
Forward Voltage	V _F V _F	1.48	1.84 1.70	2.09	V V	I _F = 100 mA I _F = 60 mA
Forward Voltage Temperature Coefficient	ΔV _F /ΔT ΔV _F /ΔT	-0.18 -0.22			mV/°C mV/°C	I _F = 100 mA I _F = 60 mA
Reverse Voltage	B _{VR}	1.8	3.8		V	I _R = 10 μA, T _A =25°C
Peak Wavelength	λ _P λ _P	810 810	856 850	895 885	nm nm	I _F = 100 mA DC I _F = 60 mA DC
Spectral Bandwidth (FWHM)			55 50		nm nm	I _F = 100 mA DC I _F = 60 mA DC
Response Time	t _R /t _F		4.0	6.3	ns	I _F = 60 mA peak, No Prebias
P _O Temperature Coefficient	ΔP _O /ΔT ΔP _O /ΔT	-0.017 -0.006			dB/°C dB/°C	I _F = 100 mA I _F = 60 mA
Series Resistance	r _S		4.0		Ω	DC
Device Capacitance	C		40		pF	V _R = 0 V, f = 1 MHz
Thermal Resistance			260		°C/W	Heat sunked

Notes

1. Typical specifications are for operations at T_C = 25°C.
2. P_{OC} is measured using a 10 meter mode stripped cable which is intended to accurately represent a working system.

ABSOLUTE MAXIMUM RATINGS

Storage temperature	-55 to +85°C
Case operating temperature	-40 to +85°C
Lead solder temperature	269°C, 10 s
Reverse voltage	1.8 V
Continuous forward current (heat sunked)	100 mA

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.

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ORDER GUIDE

Description	Catalog Listing
Straight metal barrel and housing, standard power	HFE4224-022
Straight metal barrel and housing, crimped leads, standard power	HFE4224-422
Straight metal barrel and housing, extended power	HFE4224-023
Straight metal barrel and housing, crimped leads, extended power	HFE4224-423

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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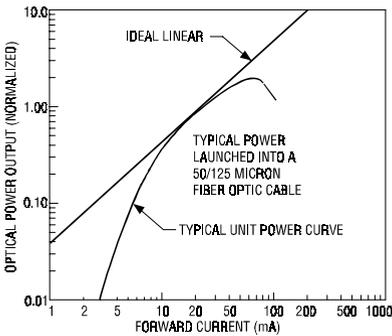


Fig. 2 Typical Spectral Output vs Wavelength

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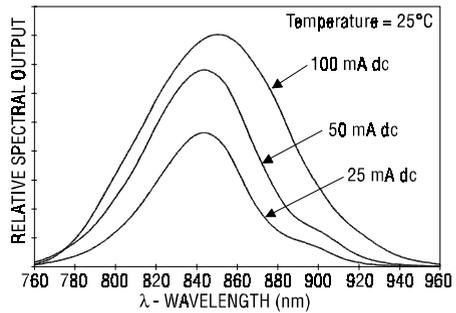
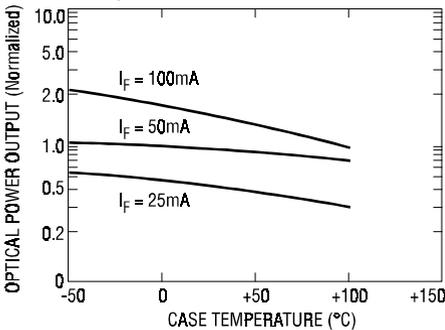


Fig. 3 Typical Optical Power Output vs Case Temperature

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All Performance Curves Show Typical Values