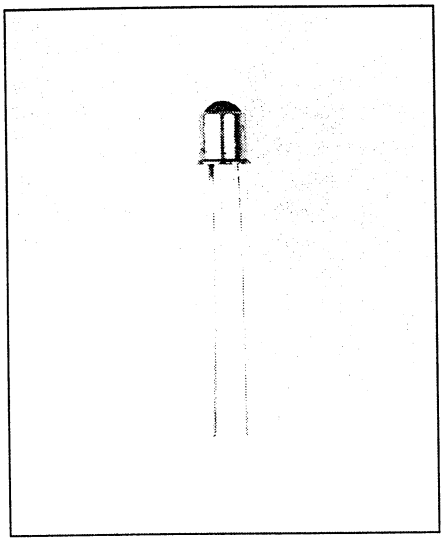
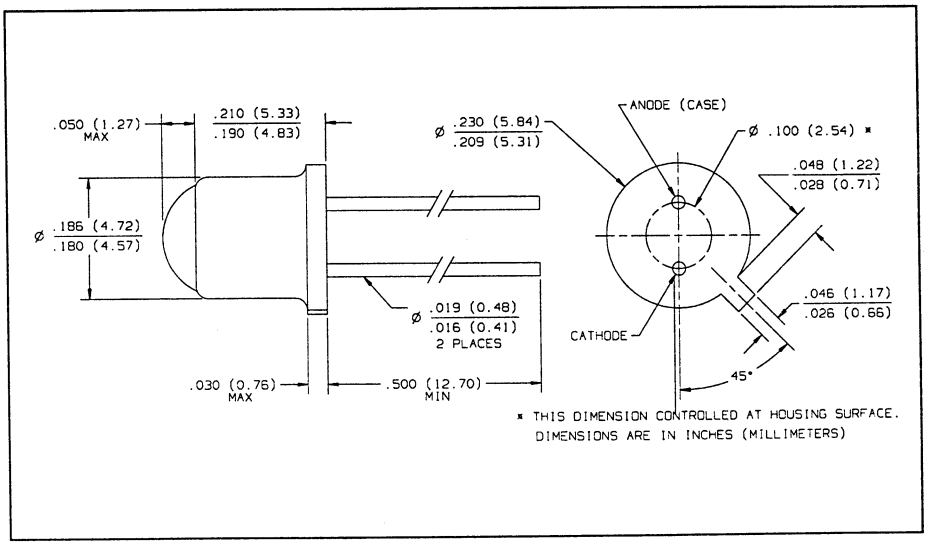
GaAlAs Hermetic Infrared Emitting Diodes
Types OP231, OP232, OP233





Features

- Enhanced temperature range
- TO-46 hermetically sealed package
- Mechanically and spectrally matched to OP800, OP593, and OP598 phototransistors
- Specified apertured power in ranges to satisfy most applications
- Variety of power ranges

Description

The OP231 series devices are gallium aluminum arsenide infrared emitting diodes mounted in hermetic TO-46 housings. Gallium aluminum arsenide features higher radiated output than gallium arsenide at the same forward current. The wavelength is centered at 890 nm which closely matches the spectral response of silicon phototransistors. The OP231 series is lensed to provide a narrow beam angle (18° between half power points). The narrow beam angle and the specified radiant intensity of the OP231 series allow ease of design in beam interrupt applications in conjunction with the OP800 or OP598 series photosensor.

Please refer to application bulletins 208 and 210 for additional design information and reliability (degradation) data.

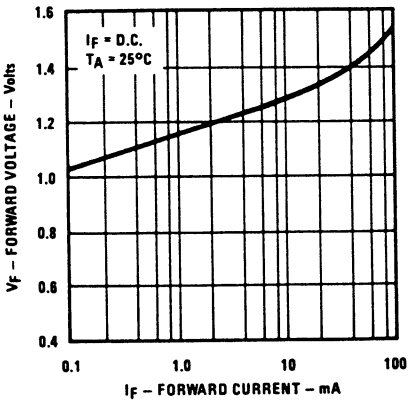
Absolute Maximum Ratings (T_A = 25° C unless otherwise noted)

Reverse Voltage	2.0 V
Continuous Forward Current	100 mA
Peak Forward Current (2 µs pulse width, 0.1% duty cycle)	10.0 A
Storage Temperature Range	-65° C to +150° C
Operating Temperature Range	-65° C to +125° C
Lead Soldering Temperature [1/16 inch (1.6 mm) from case for 5 sec. with soldering iron]	260° C(1)
Power Dissipation	200 mW(2)

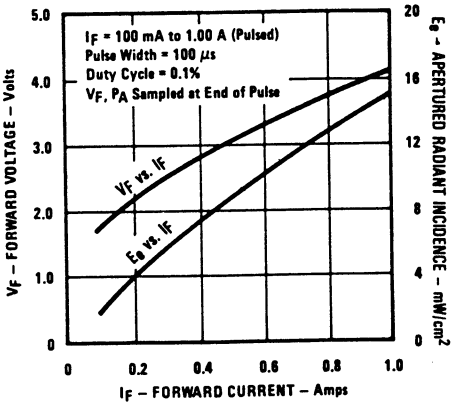
Notes:
(1) RMA flux is recommended. Duration can be extended to 10 seconds max. when flow soldering.
(2) Derate linearly 2.0 mW/° C above 25° C.
(3) $E_{e(APT)}$ is a measurement of the average radiant intensity within the cone formed by the measurement surface, a radius of 1.429" (36.30 mm) measured from the lens side of the tab to the sensing surface and a sensing surface of 0.250" (6.35 mm) in diameter forming a 10° cone. $E_{e(APT)}$ is not necessarily uniform within the measured area.
(4) Measurement made with 100µs pulse measured at the trailing edge of the pulse with a duty cycle of 0.10% and an I_F = 100 mA.

Typical Performance Curves

Forward Voltage vs. Forward Current



Forward Voltage and Radiant Incidence vs. Forward Current



Types OP231, OP232, OP233

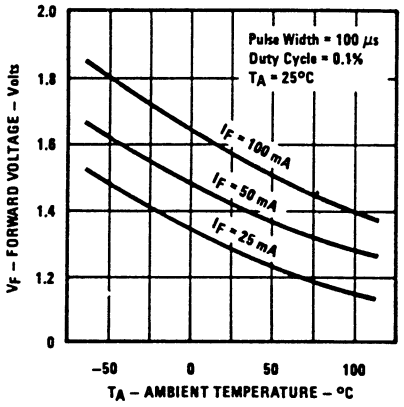
Electrical Characteristics (T_A = 25° C unless otherwise noted)

SYMBOL	PARAMETER		MIN	TYP	MAX	UNITS	TEST CONDITIONS
$E_{e(APT)}$	Apertured Radiant Incidence	OP231	1.5			mW/cm^2	I_F = 100 mA[3][4]
		OP232	2.0		6.0	mW/cm^2	I_F = 100 mA[3][4]
		OP233	3.0			mW/cm^2	I_F = 100 mA[3][4]
P_O	Radiant Power Output	OP231		6.0		mW	I_F = 100 mA[3][4]
		OP232		8.0		mW	I_F = 100 mA[3][4]
		OP233		10.0		mW	I_F = 100 mA[3][4]
V_F	Forward Voltage				2.0	V	I_F = 100 mA[4]
I_R	Reverse Current				100	µA	V_R = 2 V
λp	Wavelength at Peak Emission			890		nm	I_F = 10 mA
B	Spectral Bandwidth Between Half Power Points			80		nm	I_F = 10 mA
$\Delta\lambda p/\Delta T$	Spectral Shift with Temperature			+0.30		nm/° C	I_F = Constant
θ_{HP}	Emission Angle at Half Power Points			18		Deg.	I_F = 100 mA
t_r	Output Rise Time			500		ns	$I_{F(PK)}$ = 100 mA,
t_f	Output Fall Time			250		ns	PW = 10 µs, D.C. = 10%

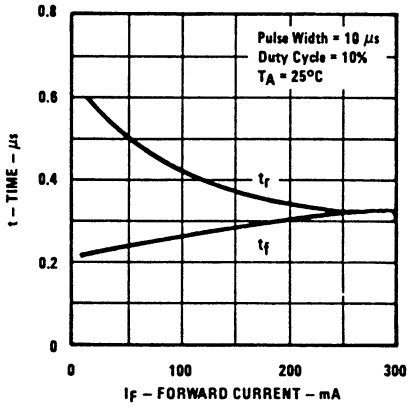
INFRARED EMITTING DIODES

Typical Performance Curves

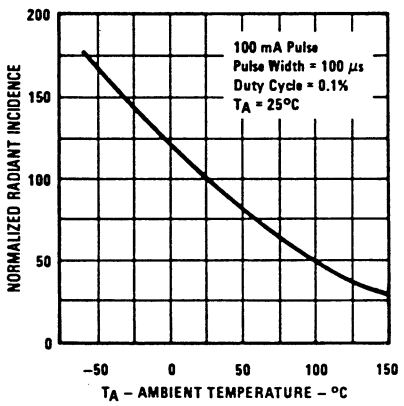
Forward Voltage vs. Ambient Temperature



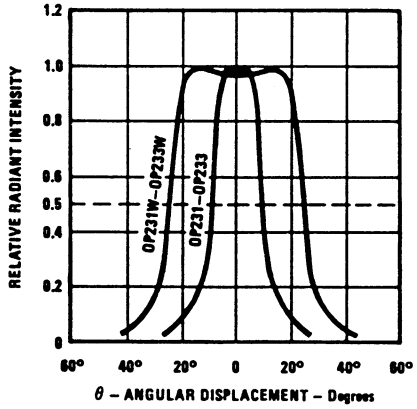
Rise Time and Fall Time vs. Forward Current



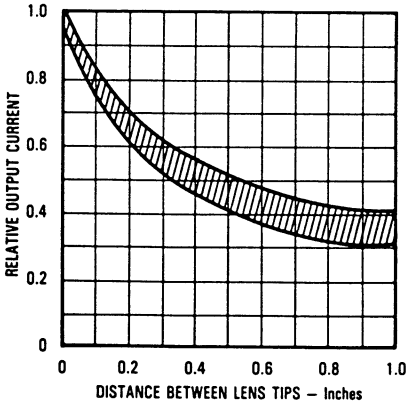
Normalized Radiant Incidence vs. Ambient Temperature



Relative Radiant Intensity vs. Angular Displacement



Coupling Characteristics of OP231 and OP800



Optek reserves the right to make changes at any time in order to improve design and to supply the best product possible.

Optek Technology, Inc. 1215 W. Crosby Road Carrollton, Texas 75006 (972)323-2200 Fax (972)323-2396