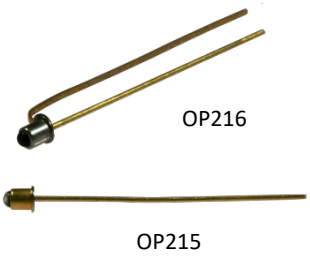
Hermetic Infrared Emitting Diode

OP215, OP216



Features:

- Hermetically sealed package
- Mechanically and spectrally matched to other OPTEK devices
- Designed for direct mount to printed circuit board
- Enhanced temperature range
- Excellent coupling efficiency

Description:

Each **OP215** and **OP216** device is an 890 nm gallium aluminum arsenide (GaAlAs) infrared emitting diode, mounted in a hermetically sealed "pig tale" package with an enhanced temperature range and a narrow irradiance pattern that provides high on-axis intensity for excellent coupling efficiency. These devices offer significantly higher power output than GaAs at equivalent drive currents and have a wavelength that is matched to silicon's peak response. Their small package size permits high device density mounting.

The **OP216A** device provides an additional mounting tab connected to the Cathode/Case.

These LEDs are mechanically and spectrally matched to the OP300 series, OP516, OP600 series and OP640 series devices.

Please refer to Application Bulletin 210 for additional thermal design information and to Application Bulletin 202 for pill-type soldering into a Printed Circuit Board.

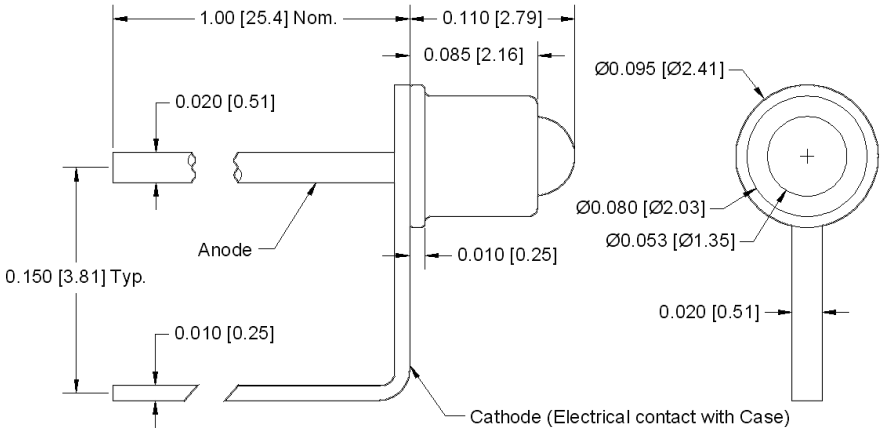
Applications:

- Non-contact reflective object sensor
- Assembly line automation
- Machine automation
- Machine safety
- End of travel sensor
- Door sensor

Ordering Information			
Part Number	LED Peak Wavelength	Optical Power mW/cm² (Min)	Total Beam Angle
OP215A **OP216A**	890 mm	1.20	24°



Pin #	LED
1	Anode
2	Cathode



RoHS

General Note
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Electrical Specifications

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

Storage Temperature Range	-65° C to +150° C
Operating Temperature Range	-65° C to +125° C
Reverse Voltage	2.0 V
Continuous Forward Current	100 mA
Peak Forward Current (2 µs pulse with 0.1% duty cycle)	1.0 A
Lead Soldering Temperature [1/16 inch (1.6 mm) from case for 5 seconds with soldering iron] (1)(2)	260° C
Power Dissipation (3)	150 mW

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

SYMBOL	PARAMETER	MIN	TYP	MAX	UNITS	TEST CONDITIONS
Input Diode						
$E_{E\ (APT)}$(4)	Apertured Radiant Incidence OP216A	1.20	-	-	mW/cm^2	I_F = 50 mA
V_F	Forward Voltage	1.0	-	1.80	V	I_F = 50 mA
I_R	Reverse Current	-	-	100	µA	V_R = 2.0 V
λ_P	Wavelength at Peak Emission	-	890	-	nm	I_F = 10 mA
β	Spectral Bandwidth between Half Power Points	-	80	-	nm	I_F = 10 mA
$\Delta\lambda_P/\Delta_T$	Spectral Shift with Temperature	-	+0.18	-	nm/° C	I_F = Constant
θ_{HP}	Emission Angle at Half Power Points	-	24	-	Degree	I_F = 50 mA
t_r	Output Rise Time	-	500	-	ns	$I_{F(PK)}$ = 100 mA, PW = 10 µs, and D.C. = 10.0%
t_f	Output Fall Time	-	250	-	ns	

Notes:

(1) Refer to Application Bulletin 202 which reviews proper soldering techniques for pill-type devices.
(2) No clean or low solids. RMA flux is recommended. Duration can be extended to 10 seconds maximum when flow soldering.
(3) Derate linearly 1.30 mW/° C above 25° C.
(4) For OP216, $E_{E(APT)}$ is a measurement using a 0.180" (4.57 mm) diameter apertured sensor placed 0.653" (16.59 mm) from the lens tip. $E_{E(APT)}$ is not necessarily uniform within the measured area.

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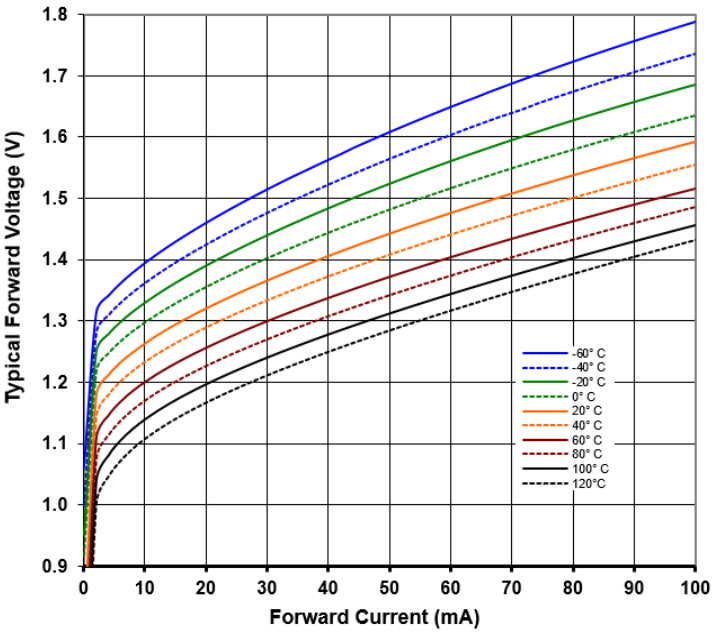
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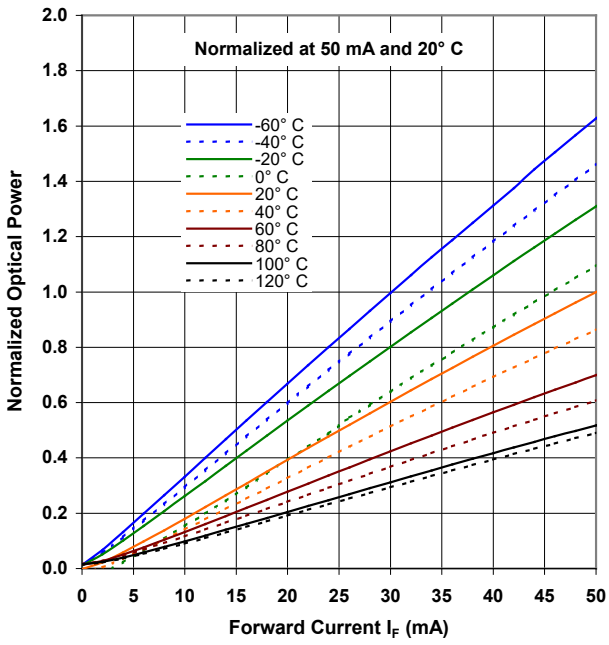
Typical Performance

OP215 & OP216

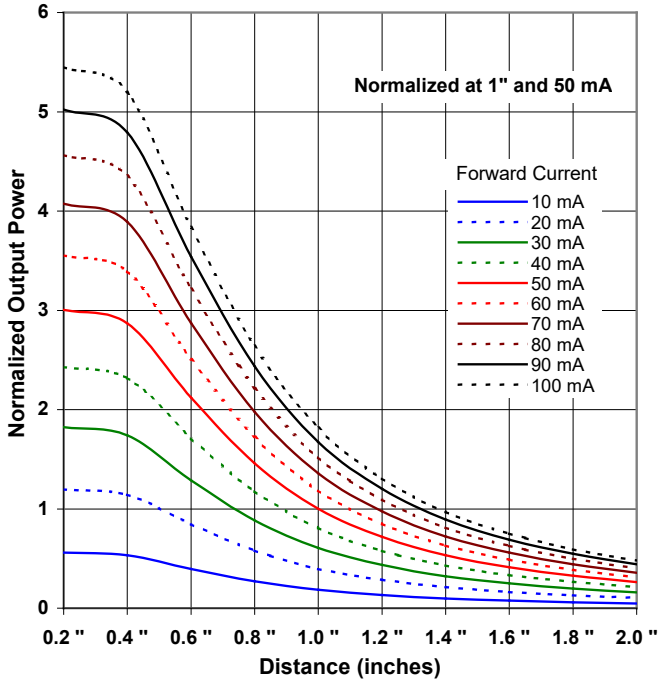
Forward Voltage vs Forward Current vs Temperature



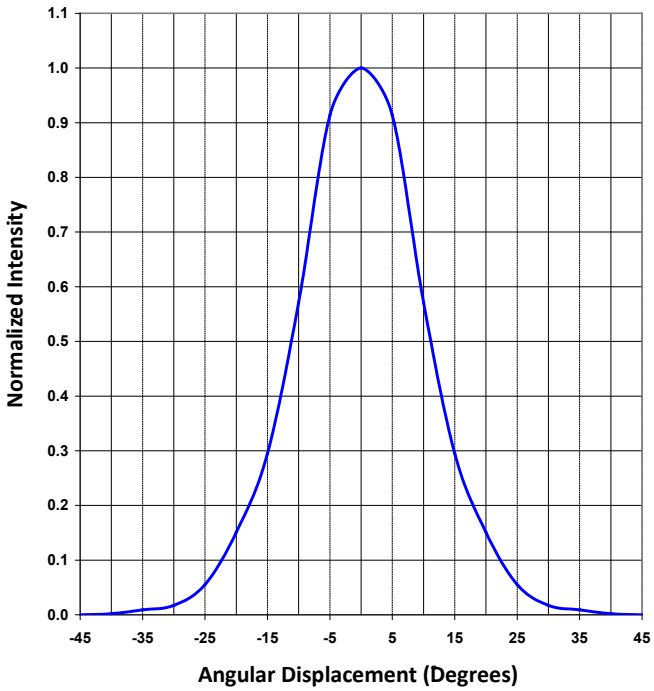
Optical Power vs I_F vs Temperature



Distance vs Output Power vs Forward Current



Normalized Intensity vs Beam Angle



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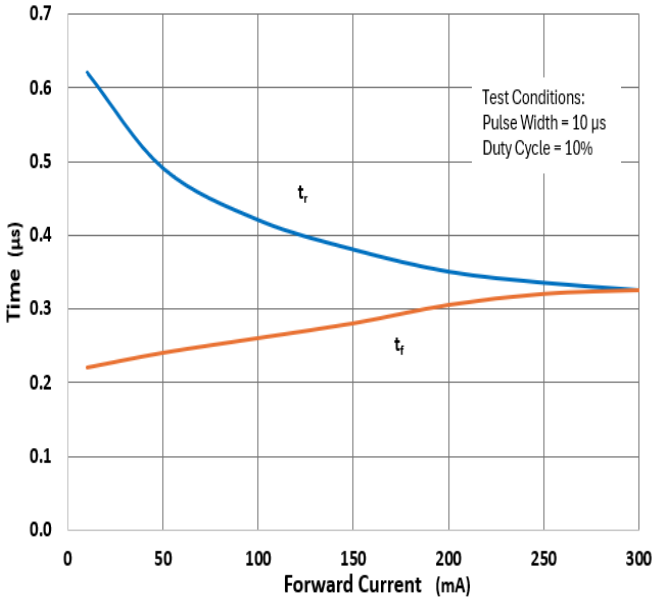
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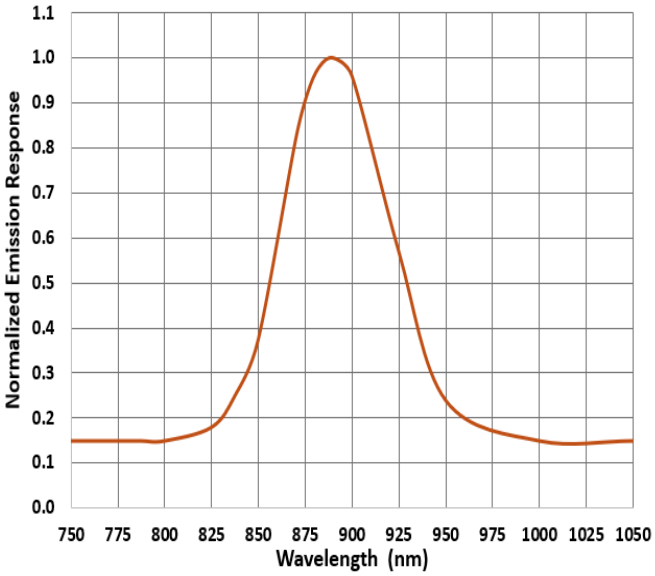
Typical Performance

OP215 & OP216

Rise and Fall Time vs Forward Current



GaAlAs LED Spectral Output



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