

# Plastic Infrared Emitting Diode

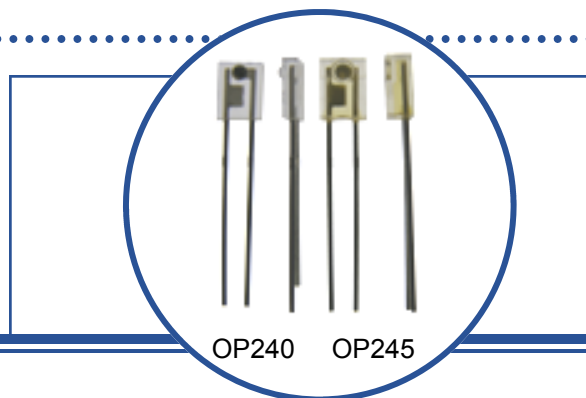
OP240 Series

OP245 Series



## Features:

- Wide irradiance pattern
- Side-looking package for space-limited applications
- Wavelength matched to silicon's peak response
- Mechanically and spectrally matched to other OPTEK products



## Description:

Each device in this series is a high intensity gallium aluminum arsenide infrared emitting diode that is suited for use as a PCBoard mounted slotted switch or an easy mount PCBoard interrupter.

Each dome lens **OP240** and **OP245** device is an 890 nm diode that is molded in an IR-transmissive clear epoxy side-looking package. *OP240 is mechanically and spectrally matched to the OP550 and OP560 series of phototransistors. OP245 is mechanically and spectrally matched to the OP555 and OP565 series devices.*

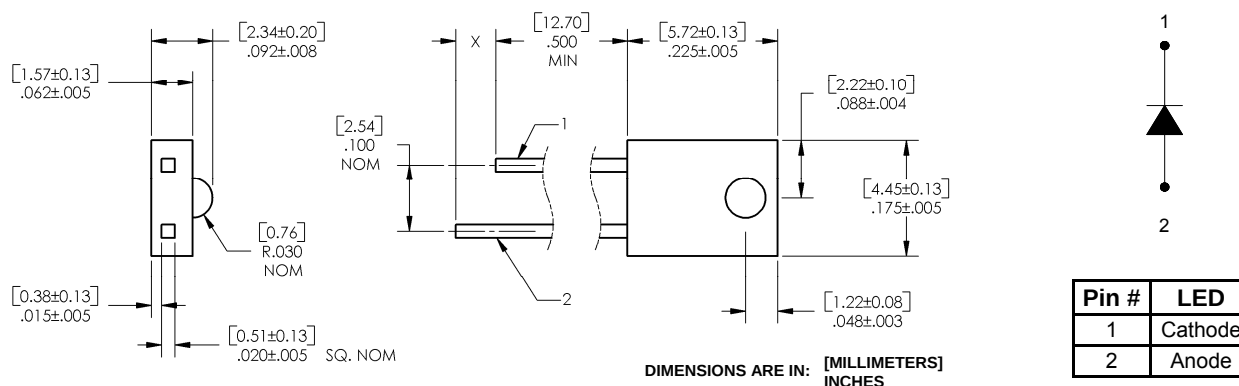
Please refer to Application Bulletins 208 and 210 for additional design information and reliability (degradation) data.

## Applications:

- Space-limited applications
- PCBoard mounted slotted switch
- PCBoard interrupter

| Ordering Information |                     |           |                  |               |
|----------------------|---------------------|-----------|------------------|---------------|
| Part Number          | LED Peak Wavelength | Lens Type | Total Beam Angle | Lead Length   |
| OP240A               | 890 nm              | Dome      | 40°              | 0.50" minimum |
| OP240B               |                     |           |                  |               |
| OP240C               |                     |           |                  |               |
| OP240D               |                     |           |                  |               |
| OP245A               |                     | Recessed  |                  |               |
| OP245B               |                     |           |                  |               |
| OP245C               |                     |           |                  |               |
| OP245D               |                     |           |                  |               |

OP240 (A, B, C, D)



RoHS

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

**CONTAINS POLYSULFONE**  
To avoid stress cracking, we suggest using ND Industries' **Vibra-Tite** for thread-locking. **Vibra-Tite** evaporates fast without causing structural failure in OPTEK'S molded plastics.

# Plastic Infrared Emitting Diode

OP240 Series

OP245 Series

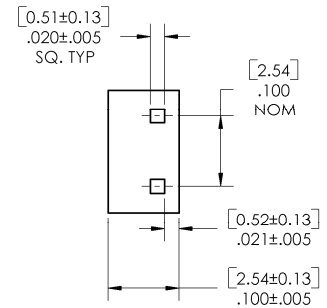
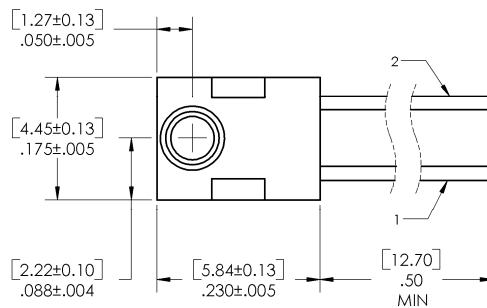


## OP245 (A, B, C, D)



| Pin # | LED     |
|-------|---------|
| 1     | Cathode |
| 2     | Anode   |

**CONTAINS POLYSULFONE**  
To avoid stress cracking, we suggest using ND Industries' **Vibra-Tite** for thread-locking. **Vibra-Tite** evaporates fast without causing structural failure in OPTEK'S molded plastics.



DIMENSIONS ARE IN: [MILLIMETERS]  
INCHES

## Absolute Maximum Ratings ( $T_A=25^{\circ}\text{C}$ unless otherwise noted)

|                                                                                             |                                                 |
|---------------------------------------------------------------------------------------------|-------------------------------------------------|
| Storage and Operating Temperature Range                                                     | $-40^{\circ}\text{C}$ to $+100^{\circ}\text{C}$ |
| Reverse Voltage                                                                             | 2.0 V                                           |
| Continuous Forward Current                                                                  | 50 mA                                           |
| Peak Forward Current                                                                        | 3.0 A                                           |
| Lead Soldering Temperature [1/16 inch (1.6 mm) from case for 5 seconds with soldering iron] | $260^{\circ}\text{C}^{(1)}$                     |
| Power Dissipation                                                                           | 100 mW <sup>(2)</sup>                           |

## Electrical Characteristics ( $T_A = 25^{\circ}\text{C}$ unless otherwise noted)

| SYMBOL | PARAMETER | MIN | TYP | MAX | UNITS | TEST CONDITIONS |
|--------|-----------|-----|-----|-----|-------|-----------------|
|--------|-----------|-----|-----|-----|-------|-----------------|

### Input Diode

|                              |                                                                                                     |                              |                  |                        |                        |                                                                            |
|------------------------------|-----------------------------------------------------------------------------------------------------|------------------------------|------------------|------------------------|------------------------|----------------------------------------------------------------------------|
| $E_E$ (APT)                  | Apertured Radiant Incidence<br>OP240A, OP245A<br>OP240B, OP245B<br>OP240C, OP245C<br>OP240D, OP245D | 0.60<br>0.40<br>0.20<br>0.05 | -<br>-<br>-<br>- | -<br>1.20<br>0.86<br>- | mW/cm <sup>2</sup>     | $I_F = 20 \text{ mA}^{(3)}$                                                |
| $V_F$                        | Forward Voltage                                                                                     | -                            | -                | 1.80                   | V                      | $I_F = 20 \text{ mA}$                                                      |
| $I_R$                        | Reverse Current                                                                                     | -                            | -                | 100                    | $\mu\text{A}$          | $V_R = 2.0 \text{ V}$                                                      |
| $\lambda_P$                  | Wavelength at Peak Emission                                                                         | -                            | 890              | -                      | nm                     | $I_F = 10 \text{ mA}$                                                      |
| B                            | Spectral Bandwidth between Half Power Points                                                        | -                            | 80               | -                      | nm                     | $I_F = 10 \text{ mA}$                                                      |
| $\Delta\lambda_P / \Delta T$ | Spectral Shift with Temperature                                                                     | -                            | $\pm 0.18$       | -                      | nm/ $^{\circ}\text{C}$ | $I_F = \text{Constant}$                                                    |
| $\theta_{HP}$                | Emission Angle at Half Power Points                                                                 | -                            | 40               | -                      | Degree                 | $I_F = 20 \text{ mA}$                                                      |
| $t_r$                        | Output Rise Time                                                                                    | -                            | 500              | -                      | ns                     | $I_{F(PK)} = 100 \text{ mA}$ , $PW = 10 \mu\text{s}$ , and $D.C. = 10.0\%$ |
| $t_f$                        | Output Fall Time                                                                                    | -                            | 250              | -                      | ns                     |                                                                            |

### Notes:

1. RMA flux is recommended. Duration can be extended to 10 seconds maximum when flow soldering. A maximum of 20 grams force may be applied to the leads when soldering.
2. Derate linearly 1.33 mW/ $^{\circ}\text{C}$  above  $25^{\circ}\text{C}$ .
3.  $E_E$  (APT) is a measurement of the average apertured radiant energy incident upon a sensing area 0.180" (4.57 mm) in diameter perpendicular to and centered on the mechanical axis of the lens and 0.653" (6.60 mm) from the lens tip.  $E_E$  (APT) is not necessarily uniform within the measured area.

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# Plastic Infrared Emitting Diode

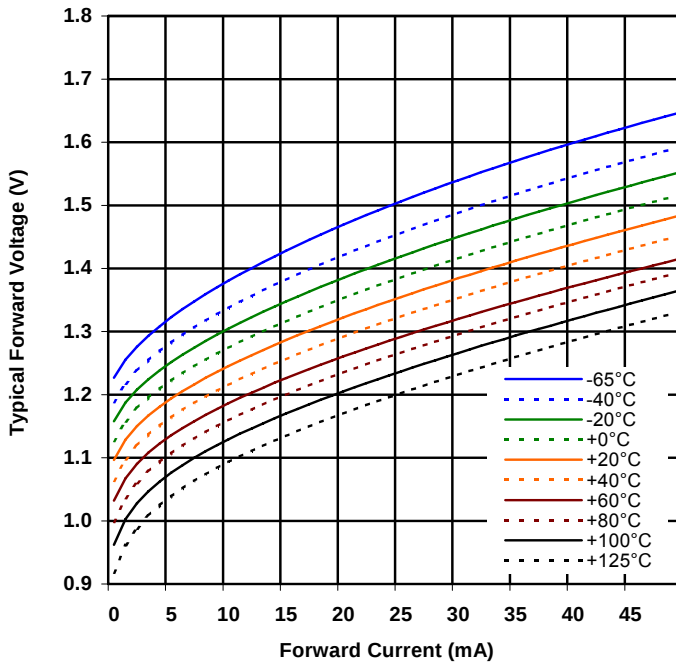
OP240 Series

OP245 Series

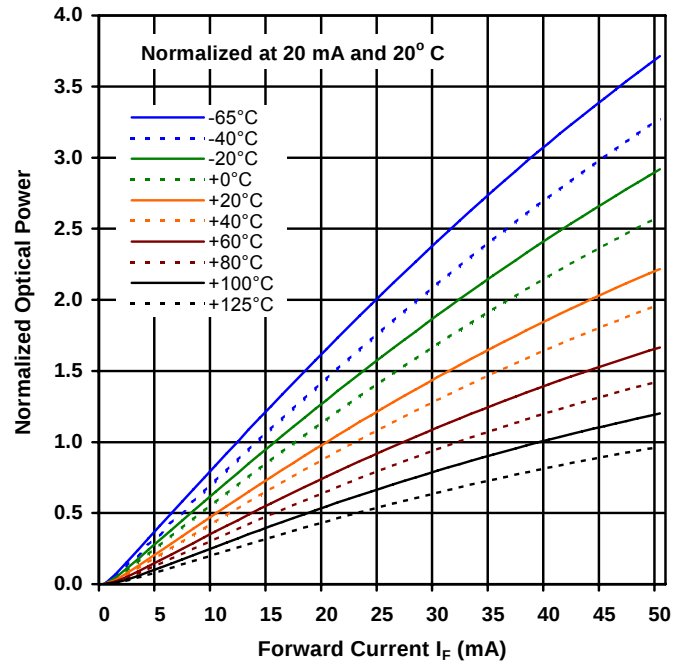


## OP240, OP245 (A, B, C, D)

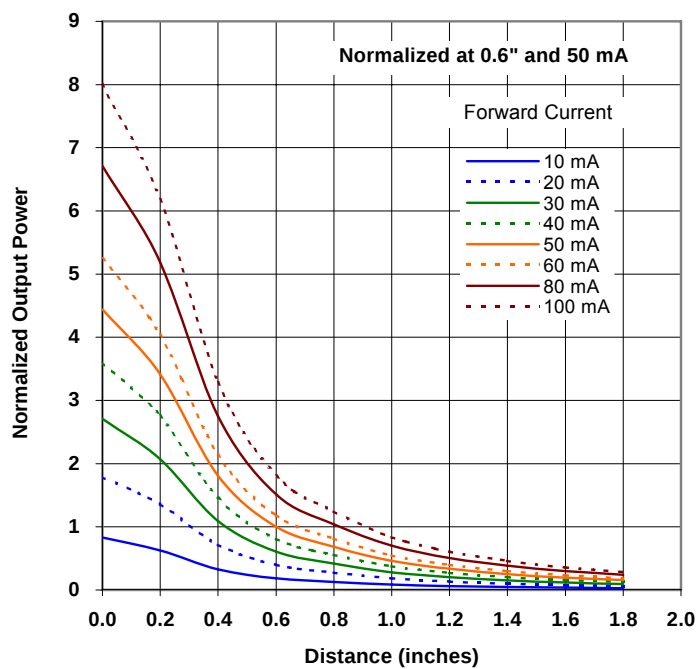
Forward Voltage vs Forward Current vs Temperature



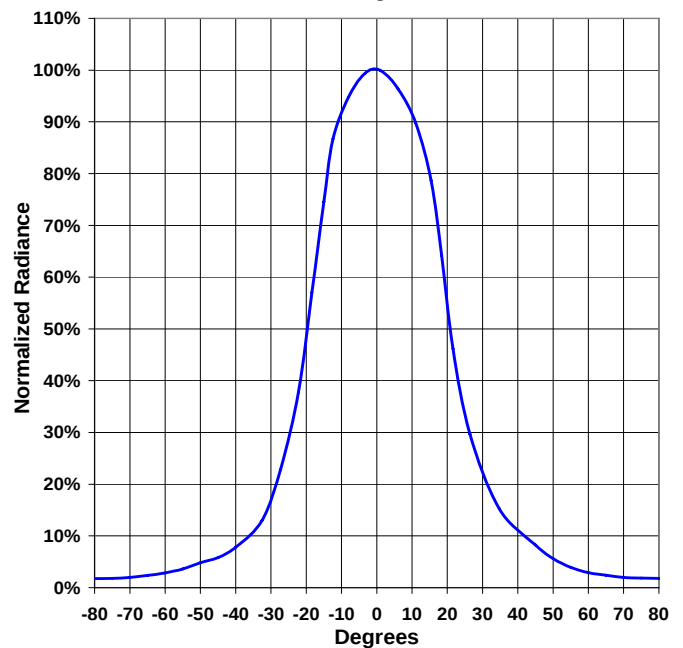
Optical Power vs  $I_F$  vs Temp



Distance vs Output Power vs Forward Current



Beam Angle



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