

# Plastic Infrared Emitting Diode

## OP140 Series, OP145C



### Features:

- IR-transmissive plastic package
- Side-looking package for space-limited applications
- Wide irradiance pattern
- Mechanically and spectrally matched to other OPTEK products

### Description:

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

Each **OP140** (A, B, C, D) and **OP145C** device is a dome lens 935 nm LED that is molded in an IR-transmissive plastic side-looking package.

*OP140 is mechanically and spectrally matched to the OP550 series of phototransistors and the OP560 series of photodarlington. OP145 is mechanically and spectrally matched to the OP555 and OP565 series devices.*

*Please refer to Application Bulletin 210 for additional thermal design information.*

*Custom electrical, wire and cabling and connectors are available. Contact your local representative or OPTEK for more information.*

### Applications:

- Space-limited applications
- PC Board mounted slotted switch
- PC Board interrupter

Ordering Information				
Part Number	LED Peak Wavelength	Lens Type	Total Beam Angle	Lead Length
OP140A	935 nm	Dome	40°	min of 0.50"
OP140B				
OP140C				
OP140D				
OP145C				



RoHS

#### General Note

TT Electronics reserves the right to make changes in product specification without notice or liability. All information is subject to TT Electronics' own data and is considered accurate at time of going to print.

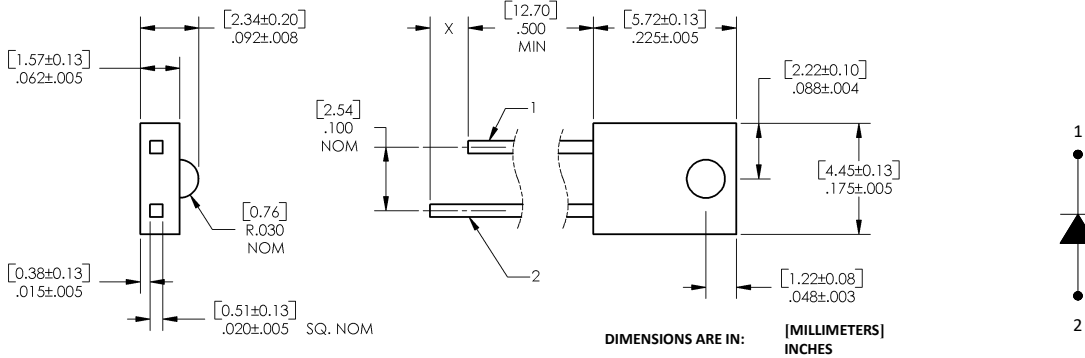
TT Electronics | OPTEK Technology  
2900 E. Plano Pkwy, Plano, TX 75074 | Ph: +1 972 323 2200  
www.ttelectronics.com | sensors@ttelectronics.com

# Plastic Infrared Emitting Diode

## OP140 Series, OP145C

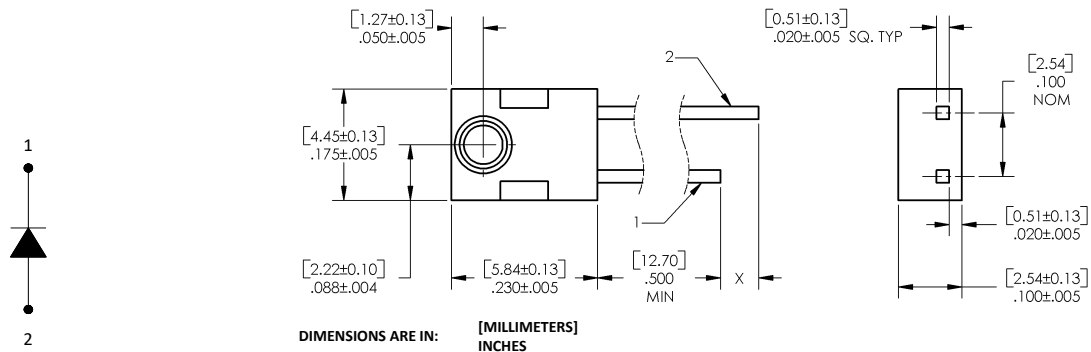


### OP140 (A, B, C, D)



Pin #	LED
1	Cathode
2	Anode

### OP145C



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.

**General Note**

TT Electronics reserves the right to make changes in product specification without notice or liability. All information is subject to TT Electronics' own data and is considered accurate at time of going to print.

TT Electronics | OPTEK Technology  
 2900 E. Plano Pkwy, Plano, TX 75074 | Ph: +1 972 323 2200  
[www.ttelectronics.com](http://www.ttelectronics.com) | [sensors@ttelectronics.com](mailto:sensors@ttelectronics.com)

### Electrical Specifications

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

Storage and Operating Temperature Range	-40° C to +100° 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] <sup>(1)</sup>	260° C
Power Dissipation <sup>(2)</sup>	100 mW

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

SYMBOL	PARAMETER	MIN	TYP	MAX	UNITS	TEST CONDITIONS
Input Diode						
$E_{E(APT)}^{(3)}$	Apertured Radiant Incidence					$I_F = 20\text{ mA}$
	OP140A	0.40	-	-	mW/cm <sup>2</sup>	
	OP140B	0.30	-	0.55		
	OP140C, OP145C	0.20	-	0.40		
OP140D	0.10	-	-			
$V_F$	Forward Voltage	1.0	-	1.60	V	$I_F = 20\text{ mA}$
$I_R$	Reverse Current	-	-	100	μA	$V_R = 2.0\text{ V}$
$\lambda_P$	Wavelength at Peak Emission	-	935	-	nm	$I_F = 10\text{ mA}$
B	Spectral Bandwidth between Half Power Points	-	50	-	nm	$I_F = 10\text{ mA}$
$\lambda_P/\Delta T$	Spectral Shift with Temperature	-	±0.30	-	nm/° 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	-	1000	-	ns	$I_{F(PK)} = 100\text{ mA}$ , $PW = 10\text{ }\mu\text{s}$ , and D.C. = 10.0 %
$t_f$	Output Fall Time	-	500	-	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 1.07 mW/° C above 25° 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.

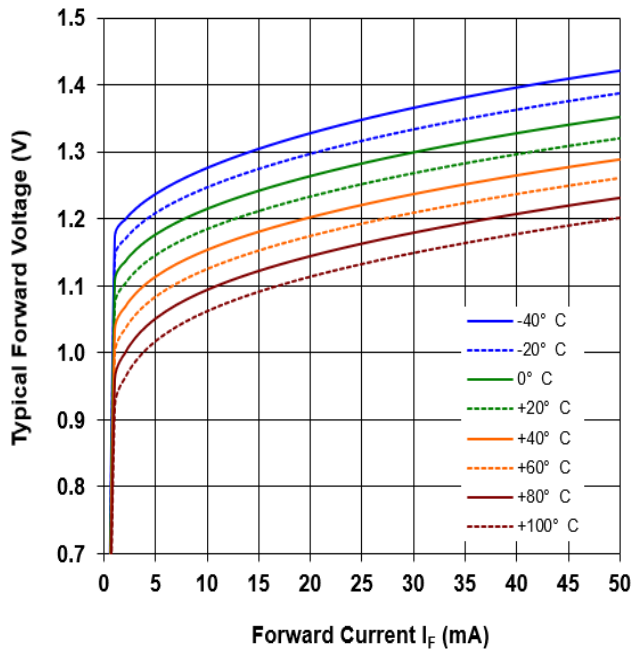
#### General Note

TT Electronics reserves the right to make changes in product specification without notice or liability. All information is subject to TT Electronics' own data and is considered accurate at time of going to print.

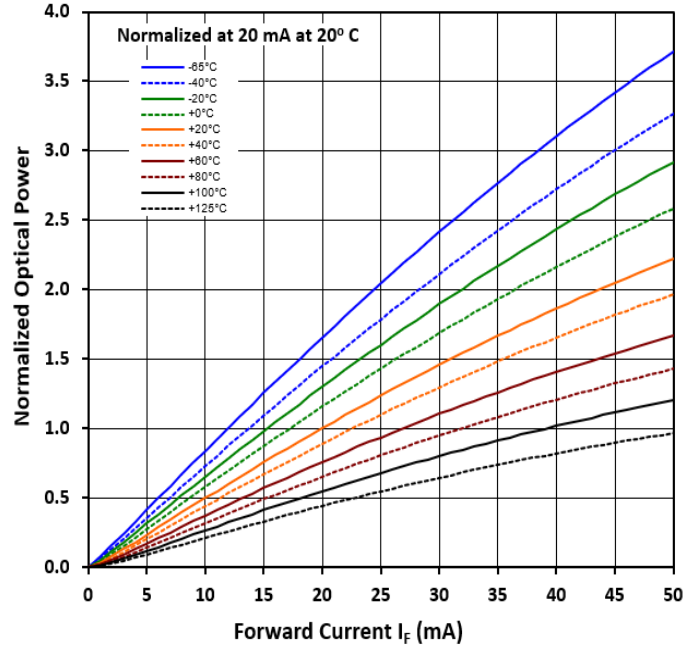
### Typical Performance

OP140 (A, B, C,D), OP145C

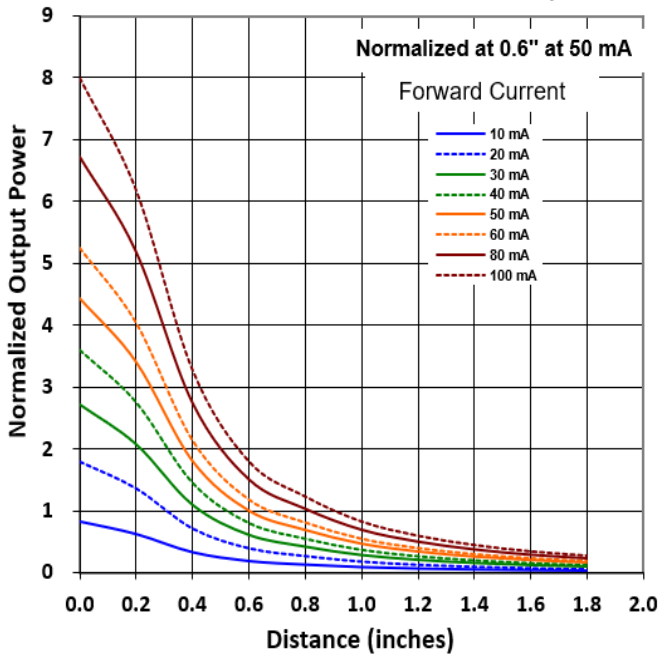
LED Forward Current vs Forward Voltage vs Temp



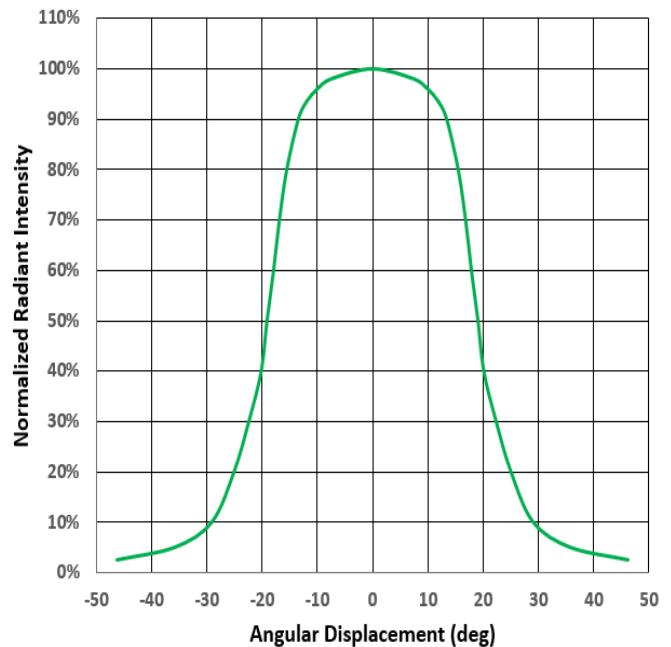
Optical Power vs  $I_F$  vs Temperature



Distance vs Output Power vs  $I_F$



Normalized Radiant Intensity vs Angular Displacement



General Note

TT Electronics reserves the right to make changes in product specification without notice or liability. All information is subject to TT Electronics' own data and is considered accurate at time of going to print.

TT Electronics | OPTEK Technology  
 2900 E. Plano Pkwy, Plano, TX 75074 | Ph: +1 972 323 2200  
[www.ttelectronics.com](http://www.ttelectronics.com) | [sensors@ttelectronics.com](mailto:sensors@ttelectronics.com)

### Typical Performance

