Plastic Infrared Emitting Diode

OP140, OP145 Series

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 PCBoard mounted slotted switch or an easy mount PCBoard interrupter.

Each **OP140** (A, B, C, D) and **OP145** (A, C) device is a domed-lens 935 nm diode 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 photodarlingtons. OP145 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
OP140A	935 nm	Domed	40°	min of 0.50"
OP140B				
OP140C				
OP140D				
OP145A				
OP145C				

RoHS

OPTEK Technology, Inc.
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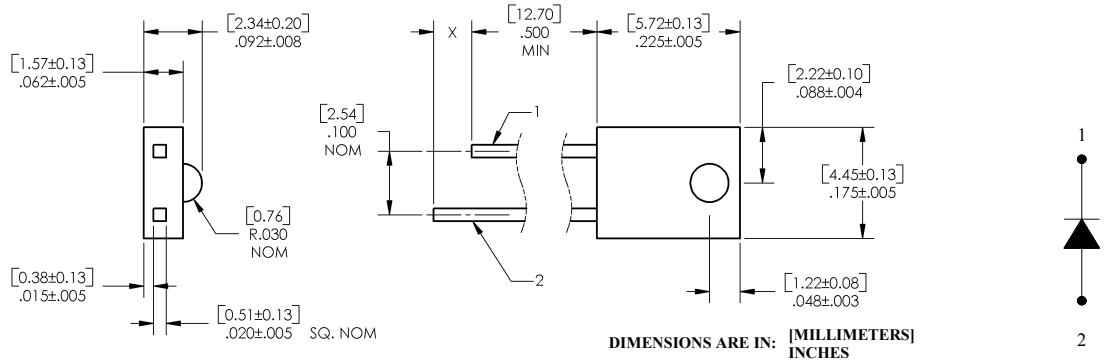
Plastic Infrared Emitting Diode

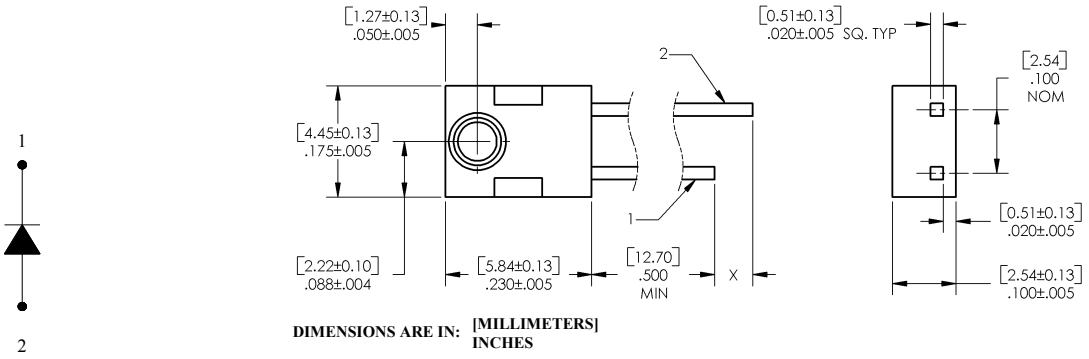
OP140, OP145 Series

OP140 (A, B, C, D)



Pin #	LED	Sensor
1	Cathode	Emitter/Anode
2	Anode	Collector/Cathode

OP145 (A, C)



Pin #	LED	Sensor
1	Cathode	Emitter/Anode
2	Anode	Collector/Cathode

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.

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Electrical Specifications

Absolute Maximum Ratings (T_A = 25° 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](1)	260° C
Power Dissipation(2)	100 mW

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

SYMBOL	PARAMETER	MIN	TYP	MAX	UNITS	TEST CONDITIONS
Input Diode						
$E_{E\ (APT)}$	Apertured Radiant Incidence OP140A, OP145A OP140B OP140C, OP145C OP140D	 0.40 0.30 0.20 0.10	 - - - -	 - 0.55 0.40 -	mW/cm^2	I_F = 20 mA(3)
V_F	Forward Voltage	-	-	1.60	V	I_F = 20 mA
I_R	Reverse Current	-	-	100	µA	V_R= 2.0 V
λ_P	Wavelength at Peak Emission	-	935	-	nm	I_F = 10 mA
B	Spectral Bandwidth between Half Power Points	-	50	-	nm	I_F = 10 mA
$\lambda_P / \Delta T$	Spectral Shift with Temperature	-	±0.30	-	nm/°C	I_F = Constant
θ_{HP}	Emission Angle at Half Power Points	-	40	-	Degree	I_F = 20 mA
t_r	Output Rise Time	-	1000	-	ns	$I_{F(PK)}$=100 mA, PW=10 µs, 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 1.33 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

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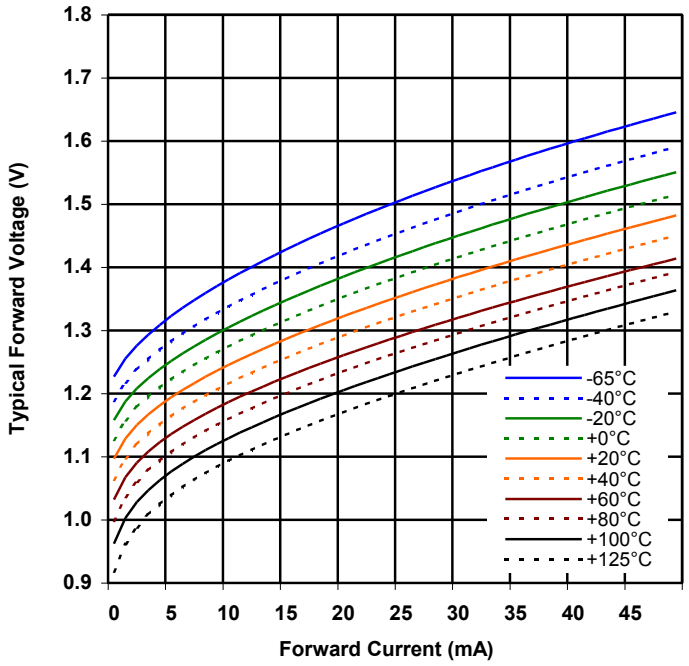
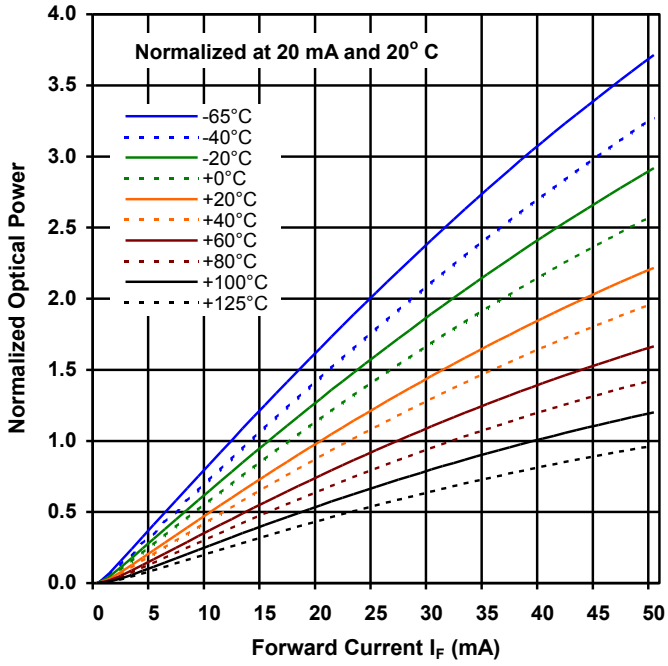
Performance

OP140, OP145 (A, B, C, D)

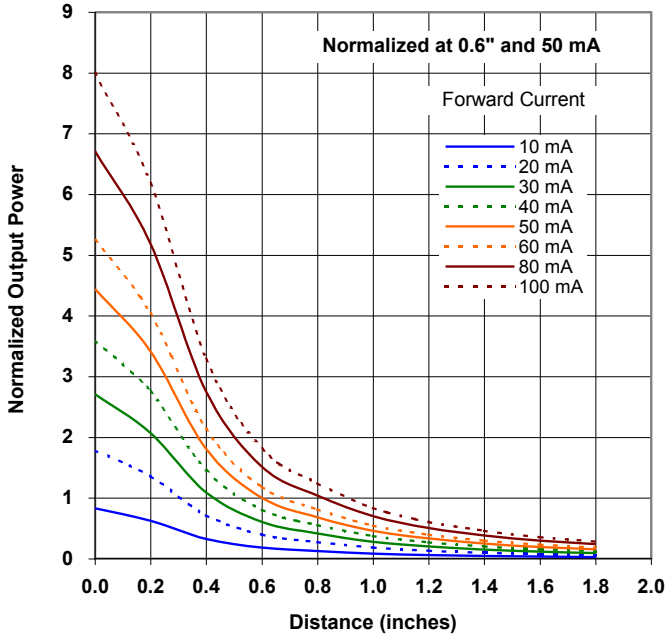
Forward Voltage vs Forward Current vs Temperature

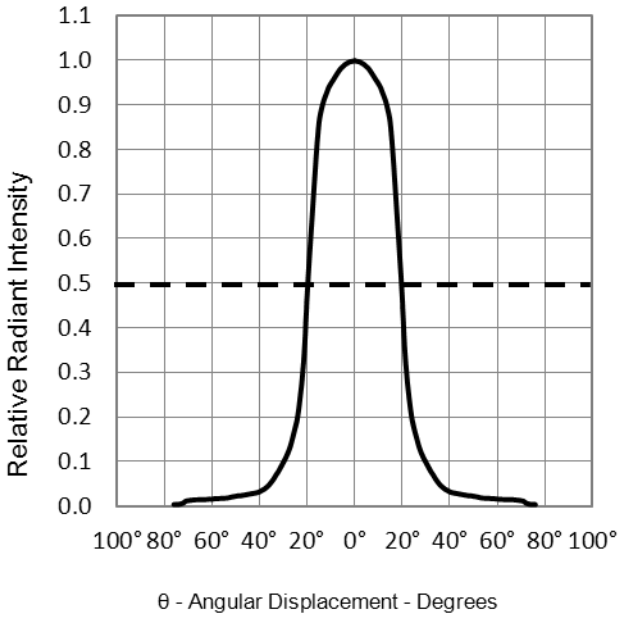


Optical Power vs I_F vs Temp



Distance vs Output Power vs Forward Current





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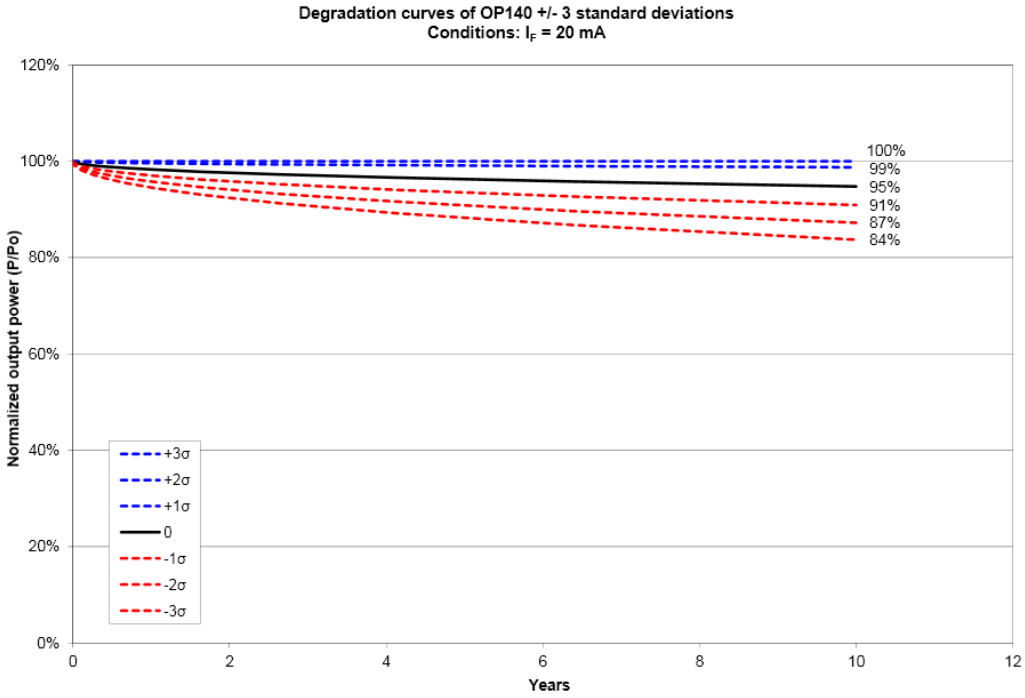
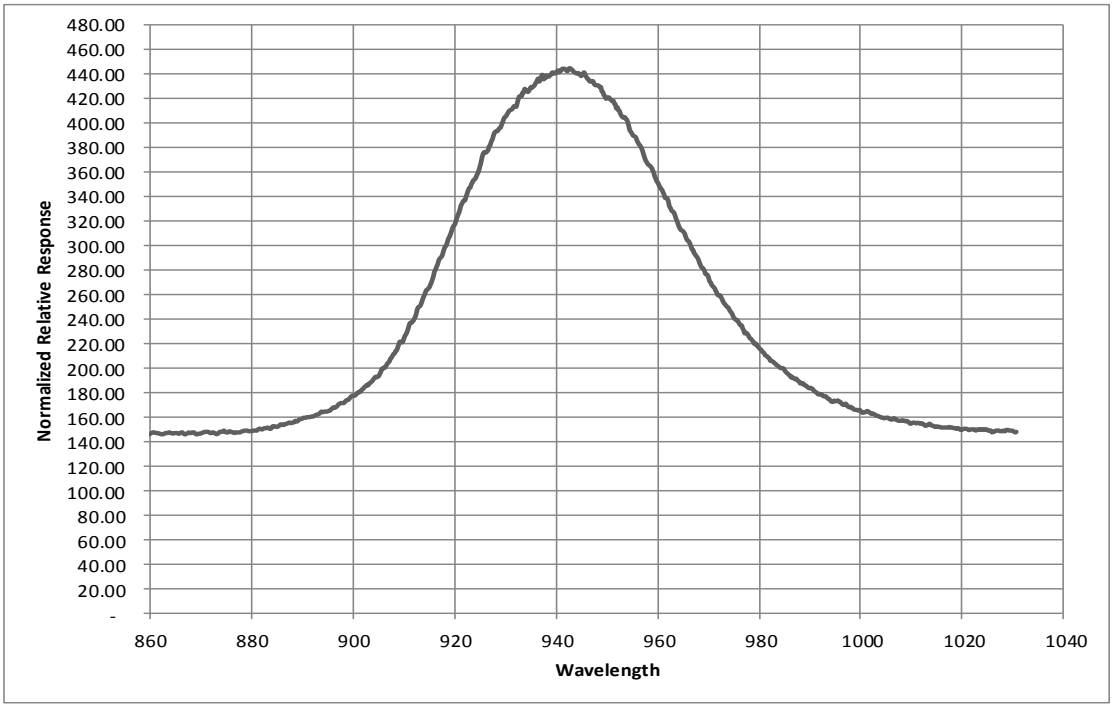
Performance



Spectral Response



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