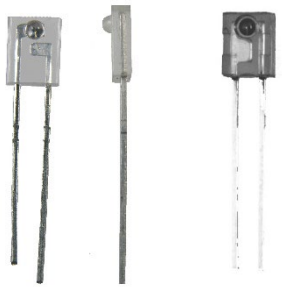
Plastic Infrared Emitting Diode

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 printed circuit board mounted slotted switch or an easy mount printed circuit 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 photodarlingtons. 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
- Printed circuit board mounted slotted switch
- Printed circuit 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				

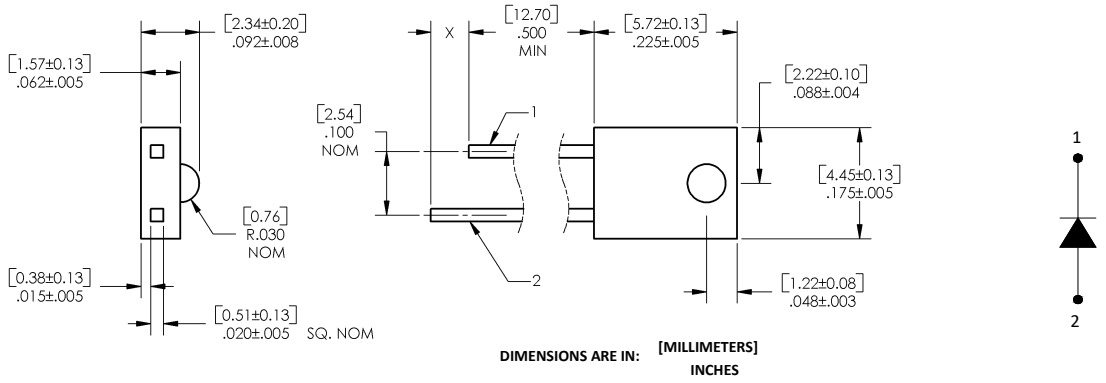
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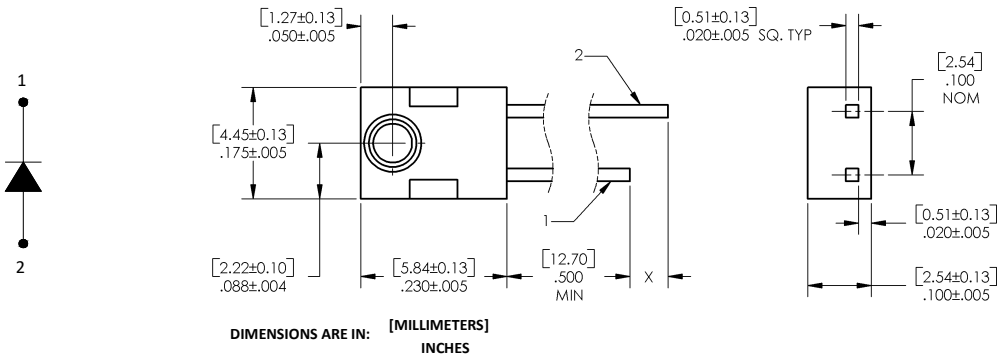
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OP140 (A, B, C, D)



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.

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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						
$E_{E\ (APT)}$ (3)	Apertured Radiant Incidence OP140A OP140B OP140C, OP145C OP140D	 0.40 0.30 0.20 0.10	 - - - -	 - 0.55 0.40 -	mW/cm²	I_F = 20 mA
V_F	Forward Voltage	1.0	-	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
β	Spectral Bandwidth between Half Power Points	-	50	-	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	-	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 1.07 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.

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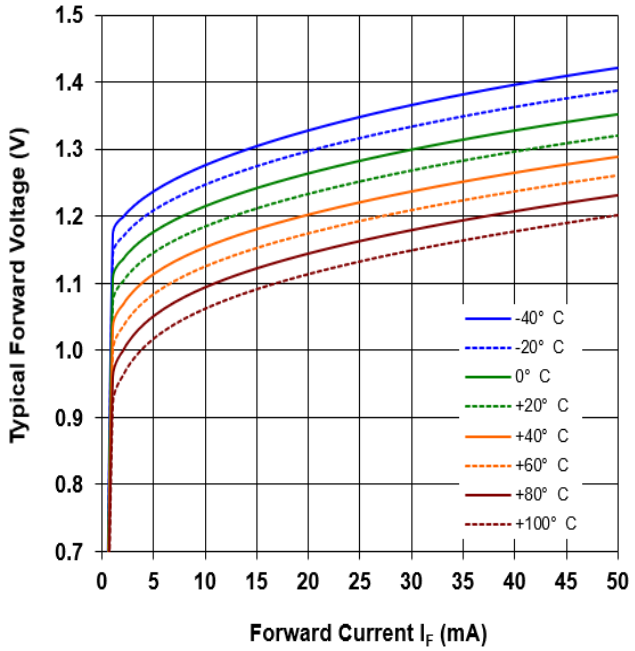
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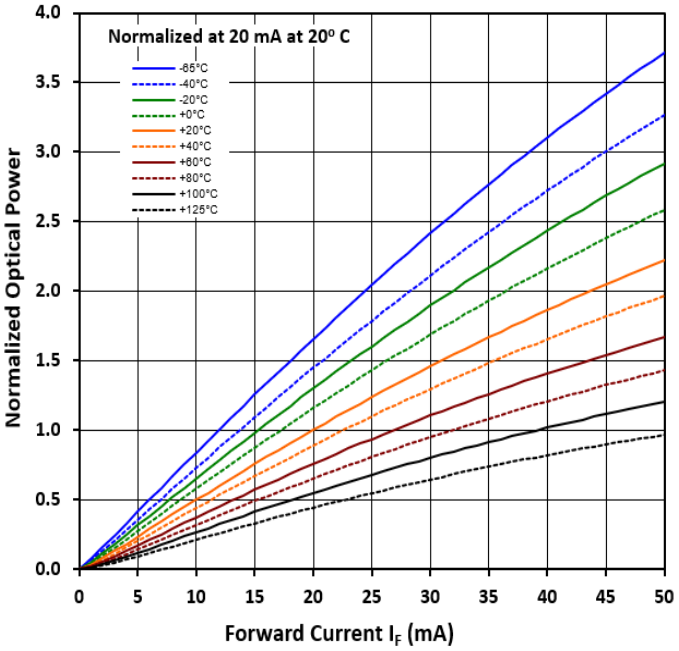
Typical Performance

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

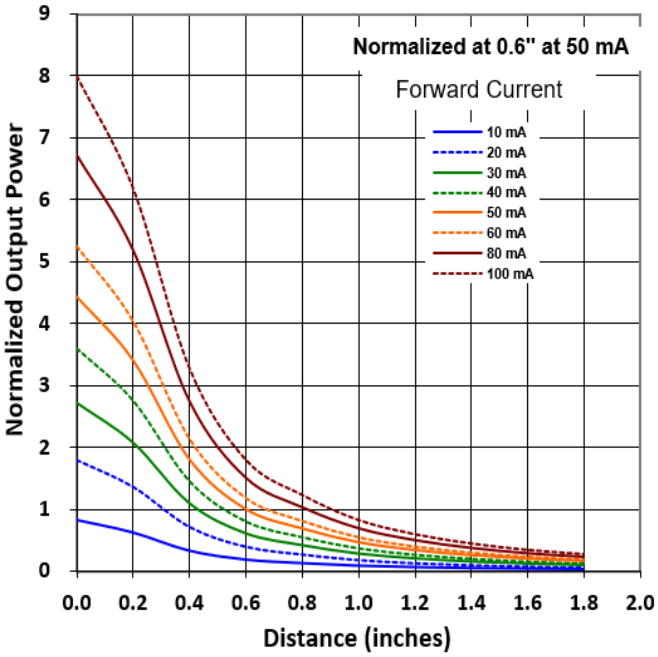
LED Forward Current vs Forward Voltage vs Temp



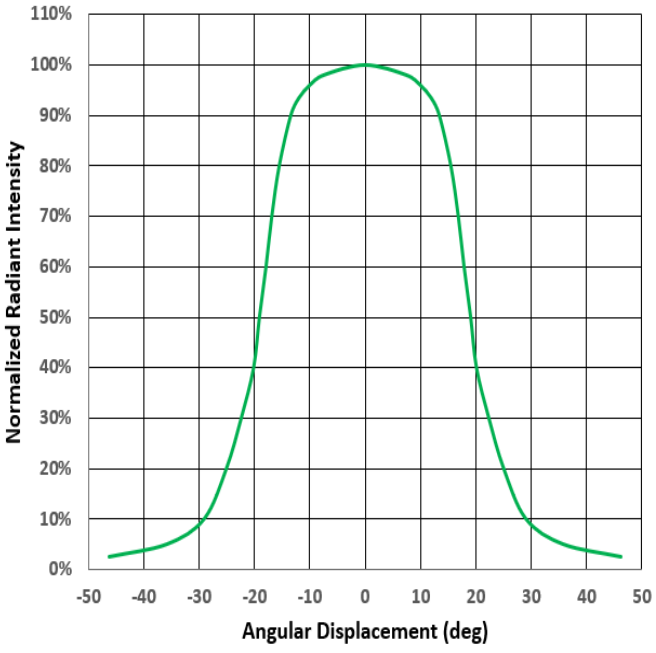
Optical Power vs I_F vs Temperature



Distance vs Output Power vs I_F



Normalized Radiant Intensity vs Angular Displacement



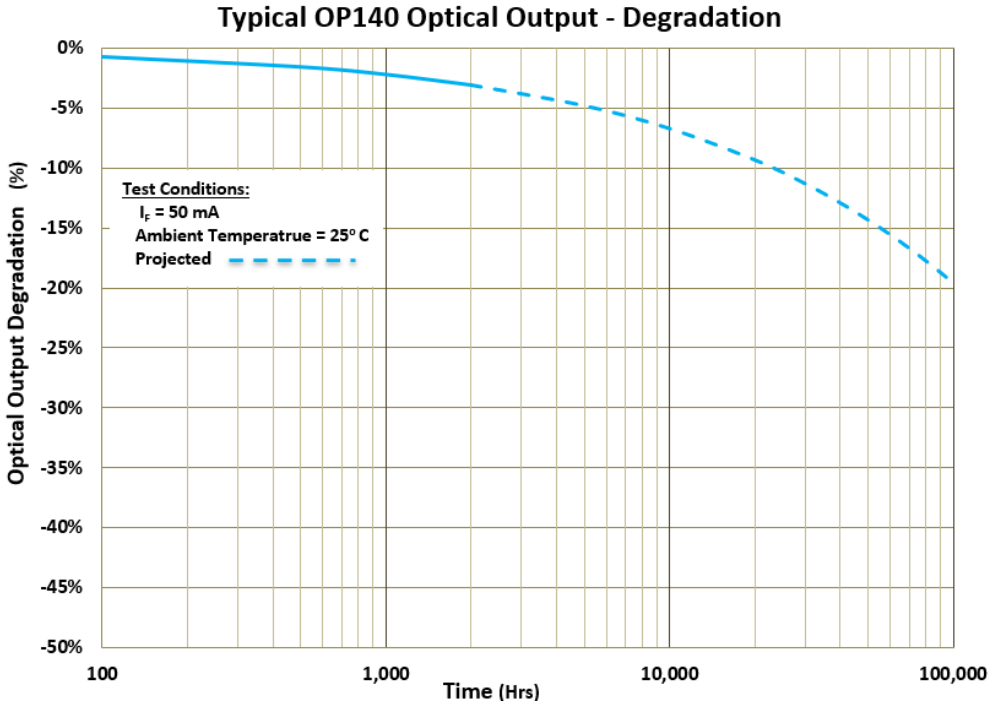
General Note

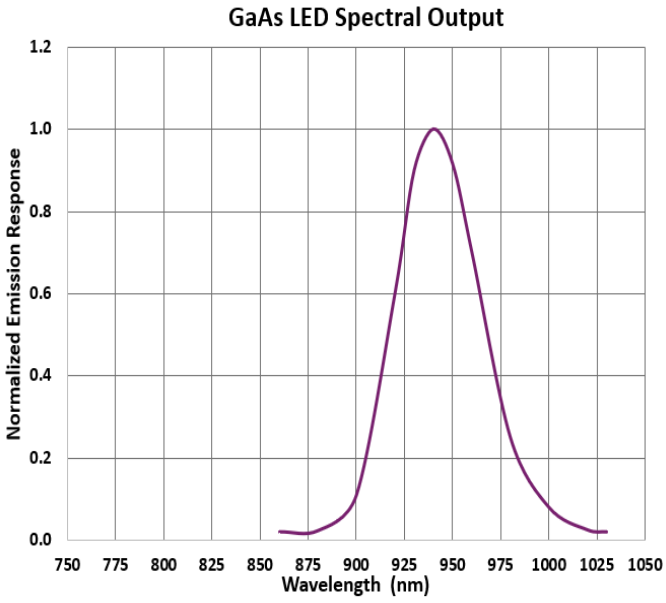
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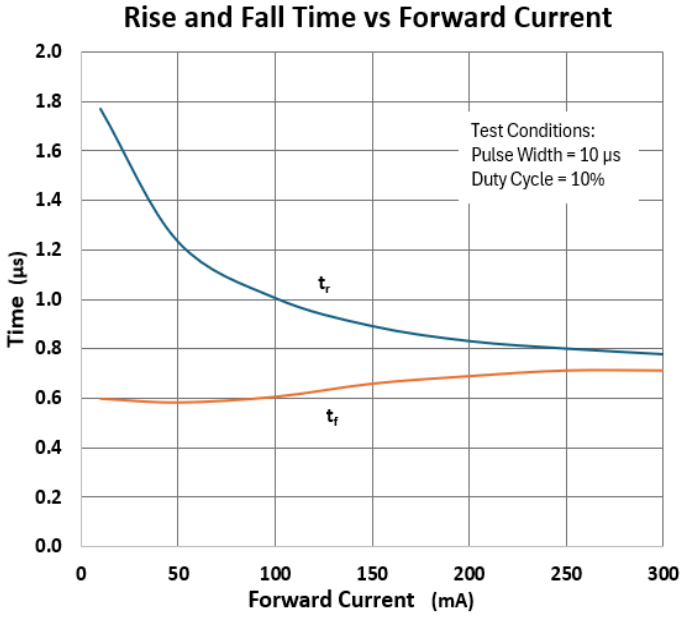
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Typical Performance







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