

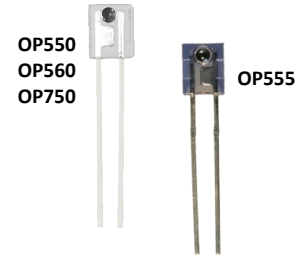
NPN Silicon Phototransistor

OP550, OP555, OP560, OP750 Series



Features:

- Wide receiving angle
- Side-looking package
- Ideal for space-limited applications
- Ideal for PC Board mounting
- Choice of clear or blue-tinted package



Description:

OP550, OP555 and OP750 series consists of a NPN silicon phototransistor molded in an epoxy package with a wide receiving angle that provides relatively even reception over a large area. The **OP750** series have additional circuitry to enhance the operation of the device for stray light levels.

The **OP560** series consists of a NPN silicon photodarlington transistor molded in an epoxy package with a wide receiving angle that provides relatively even reception over a large area.

The side-looking package design allows easy PC Board mounting of slotted optical switches or optical interrupt detectors.

The **OP550, OP560 and OP750** devices have an external lens in a clear epoxy package.

The **OP555** device has an internal lens in a blue-tinted package.

*These devices are 100% production tested using infrared light for close correlation with OPTEK's GaAs and GaAlAs emitters. All of these sensors are mechanically and spectrally matched to the **OP140, OP145, OP240 and OP245** series of infrared emitting diodes.*

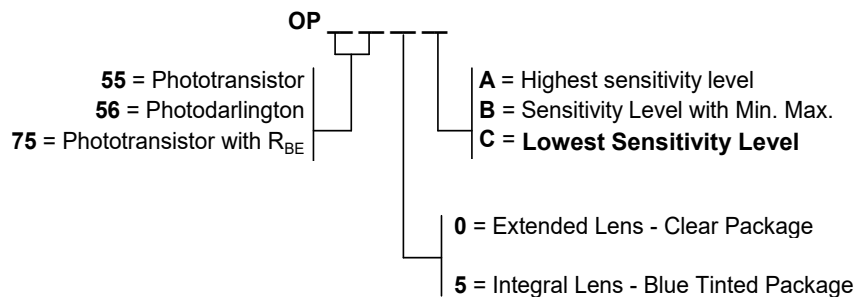
Please refer to Application Bulletin 210 for additional thermal design information.

For custom versions please contact your OPTEK representative.

Compliant to EU RoHS 2 Directive 2011/65/EU.

Applications:

- Applications requiring wide receiving angle
- Applications requiring PC Board mounting
- Space-limited applications
- Optical switches
- Optical interrupt detectors
- Optical encoders
- Non-contact position sensing
- Machine automation



RoHS

Available Part Numbers			
OP550A	OP555A	OP560A	OP750A
OP550B	OP555B	OP560C	OP750B
OP550C			

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

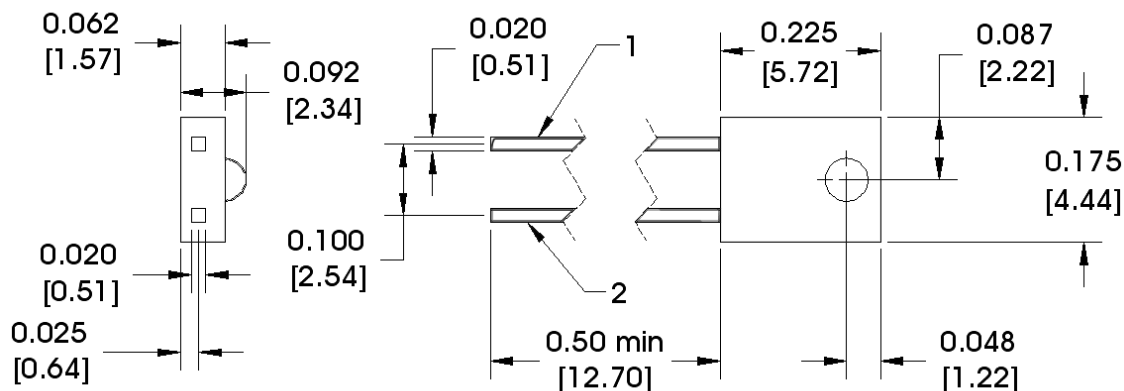
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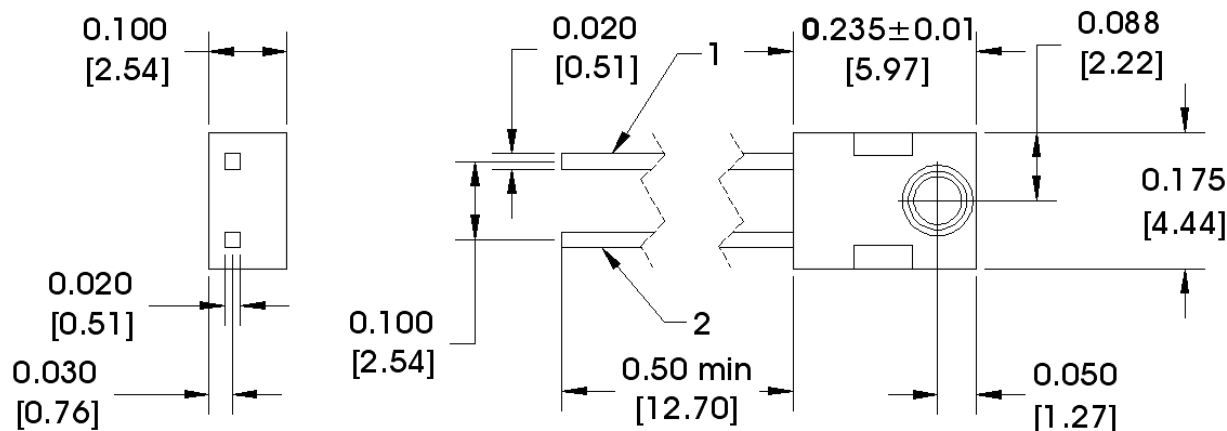


OP550 (A, B, C), OP560 (A, C), OP750 (A, B)

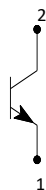


DIMENSIONS ARE IN: [MILLIMETERS] INCHES

OP555 (A, B)



DIMENSIONS ARE IN: [MILLIMETERS] INCHES



Pin #	Sensor
1	Emitter
2	Collector

OP555 - 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 ($T_A = 25^\circ\text{C}$ unless otherwise noted)

Storage Temperature Range	-40° C to +100° C
Operating Temperature Range OP550, OP555, OP560, OP750	-40° C to +100° C
Collector-Emitter Voltage OP550, OP555, OP750 OP560	30 V 15 V
Emitter-Collector Voltage OP550, OP555, OP560 OP750	5 V 0.4 V
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

Notes:

1. RMA flux is recommended. Duration can be extended to 10 seconds maximum when flow soldering. A maximum 20 grams force may be applied to the leads when soldering.
2. Derate linearly 1.07 mW/° C above 25° C.

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Electrical Specifications

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

SYMBOL	PARAMETER	MIN	TYP	MAX	UNITS	TEST CONDITIONS
$I_{C(ON)}$	On-State Collector Current					
	OP550A, OP555A	2.55	-	-		$V_{CE} = 5.0 \text{ V}, E_E = 1.0 \text{ mW/cm}^2$
	OP550B, OP555B	1.30	-	4.70		
	OP550C	0.25	-	2.40		
	OP560A	6.6	-	-	mA	$V_{CE} = 2.0 \text{ V}, E_E = 0.1 \text{ mW/cm}^2$
	OP560C	1.1	-	-		
	OP750A	2.25	-	7.00		$V_{CE} = 5.0 \text{ V}, E_E = 1.0 \text{ mW/cm}^2$
	OP750B	1.50	-	4.20		
$I_C/\Delta T$	Relative I_C Change with Temperature	-	1.00	-	%/ $^\circ \text{C}$	$V_{CE} = 5.0 \text{ V}, E_E = 1.0 \text{ mW/cm}^2$, $\lambda = 935 \text{ nm}$
$I_{CEO}^{(1)}$	Collector-Dark Current	-	-	100	nA	$V_{CE} = 10.0 \text{ V}, E_E = 0$
$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage					
	OP550, OP555, OP750	30	-	-	V	$I_C = 100 \mu\text{A}, E_E = 0$
	OP560	15	-	-		$I_C = 1 \text{ mA}, E_E = 0$
$V_{(BR)ECO}$	Emitter-Collector Breakdown Voltage					
	OP550, OP555, OP560	5.0	-	-	V	$I_E = 100 \mu\text{A}$
	OP750	0.4				
$V_{CE(SAT)}$	Collector-Emitter Saturation Voltage					
	OP550, OP555, OP750	-	-	0.40	V	$I_C = 100 \mu\text{A}, E_E = 1.0 \text{ mW/cm}^2$
	OP560	-	-	1.10		$I_C = 0.4 \text{ mA}, E_E = 0.1 \text{ mW/cm}^2$

Notes:

- To calculate typical collector dark current in μA , use the formula $I_{CEO} = 10^{(0.040 T_A - 3.4)}$, where T_A is ambient temperature in $^\circ \text{C}$.

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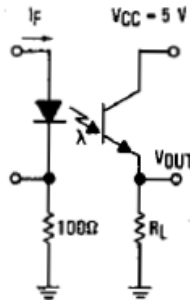
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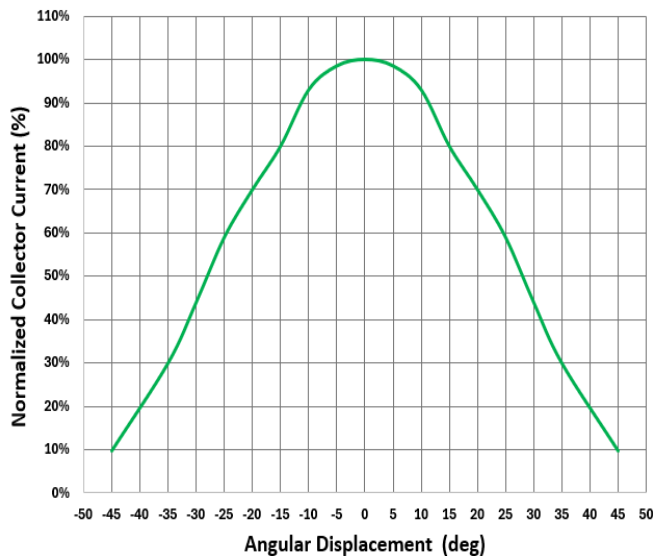
Typical Performance

Switching Test Circuit

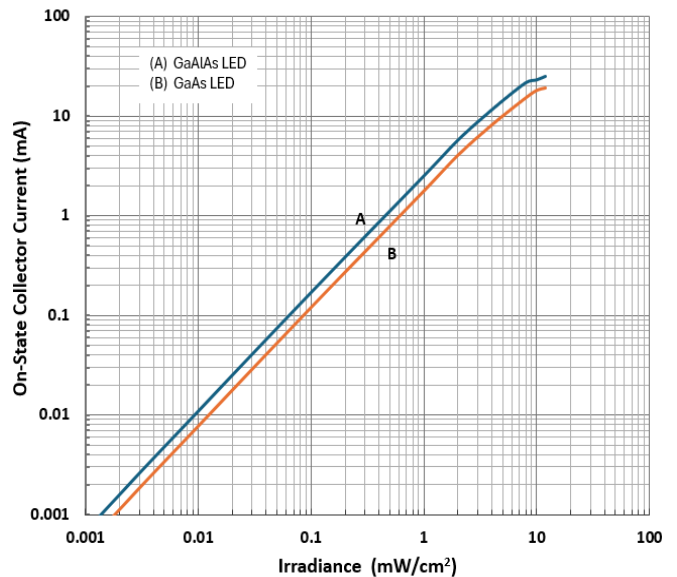


OP550, OP555

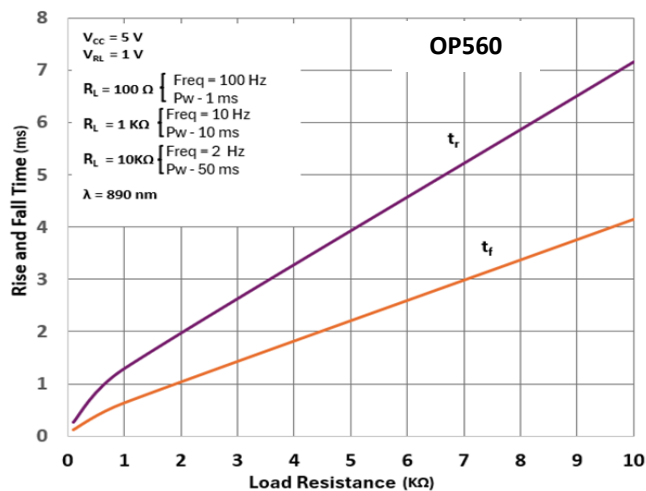
Normalized Collector Current vs Angular Displacement



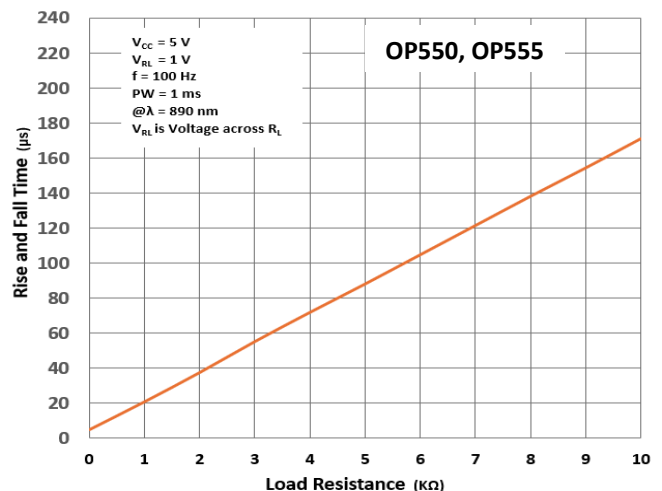
On-State Collector Current vs Irradiance



Rise and Fall Times vs Load Resistance



Rise and Fall Times vs Load Resistance



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