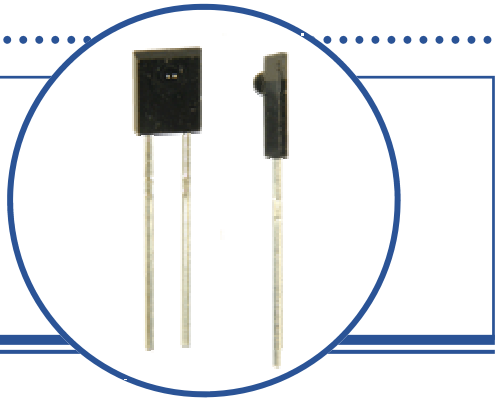
NPN Silicon Phototransistors in Side Looking Package

TT electronics
OPTEK Technology

OP552A, OP552B, OP552C

- Wide receiving angle
- Four sensitivity ranges
- Side-looking package for space limited applications
- Opaque epoxy package for visible lighting immunity



The OP552 series are silicon phototransistors mounted in opaque epoxy packages. The package is optically transparent to infrared light, but is opaque to visible wavelengths. This allows the device to be used in high ambient light conditions or anywhere external light sources could interfere with the intended sensing application.

The device incorporates a integral molded lens which enables a wide receiving angle and provides even reception over a large area. The side looking package is designed for PC board mounting and enables sensing in a plane perpendicular to the mounting surface. The OP552 series is mechanically and spectrally matched to the OP141 series infrared emitting diodes.

Applications

- Non-Contact Position Sensing
- Datum detection
- Machine automation
- Optical encoders

Ordering Information

Part Number	On-State Collector Current Range
OP552A	2.55 mA—
OP552B	1.30 mA—4.70 mA
OP552C	0.25 mA—2.40 mA
OP552D	0.25 mA—

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Absolute Maximum Ratings
T_A = 25° C unless otherwise noted

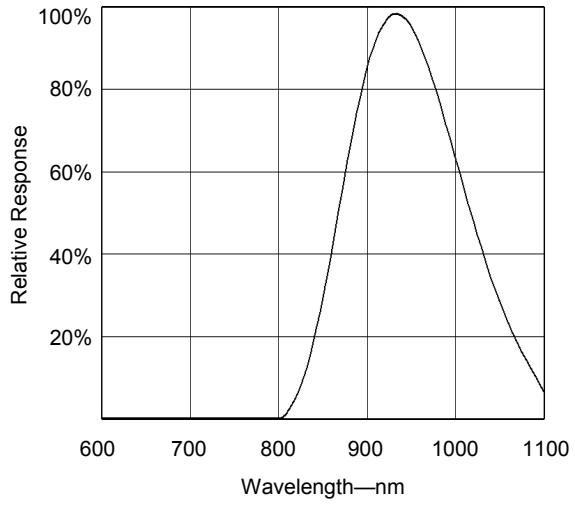
Storage Temperature Range	-40° C to +100° C
Operating Temperature Range	-40° C to +85° C
Lead Soldering Temperature [1/16 inch (1.6mm) from case for 5 sec with soldering iron]	260° C(1)
Collector—Emitter Voltage	30 V
Emitter—Collector voltage	5 V
Power Dissipation	100 mW(2)

Notes:
1. RMA flux is recommended. Duration can be extended to 10 sec when flow soldering.
2. De-rate linearly at 1.25 mW/° C above 25° C.
3. Light source is an unfiltered GaAl LED with a peak emission wavelength of 935nm.
4. To Calculate typical collector dark current in µA, use the formula $I_{CEO} = 10^{(0.04\ T_A - 3/4)}$ where T_A is the ambient temperature in ° C.

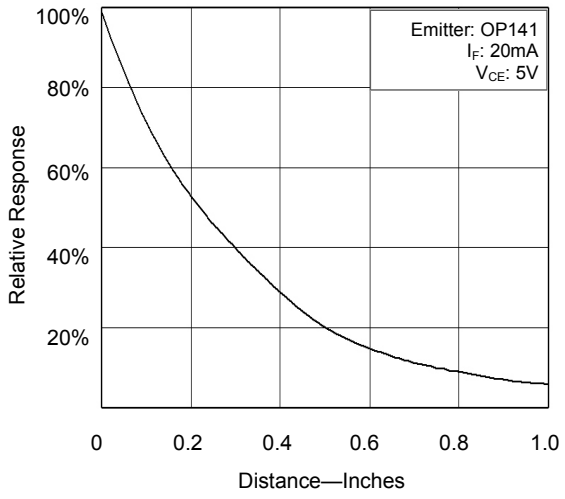
Electrical Characteristics (T_A = 25°C unless otherwise noted)

SYMBOL	PARAMETER		MIN	MAX	UNITS	CONDITIONS
$I_{C(ON)}$	On-State Collector Current	OP552D OP552C OP552B OP552A	0.25 0.25 1.30 2.55	- 2.40 4.70 -	mA	V_{CE} = 5.0V, E_e = 1.0mW/cm^2 (note 3)
$V_{CE(SAT)}$	Collector-Emitter Saturation Voltage			0.4	V	I_C = 100µA, E_e = 1.0mW/cm^2 (Note 3)
I_{CEO}	Collector-Emitter Dark Current			100	nA	V_{CE} = 5.0V, E_e = 0 (Note 4)
$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage		30		V	I_C = 100µA
$V_{(BR)ECO}$	Emitter-Collector Breakdown Voltage		5		V	I_E = 100µA

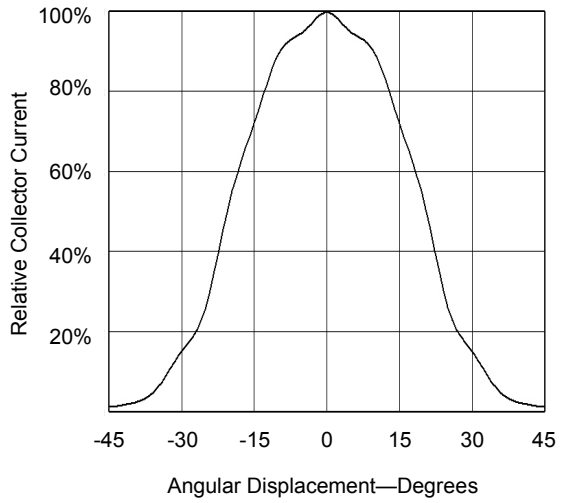
Typical Spectral Response



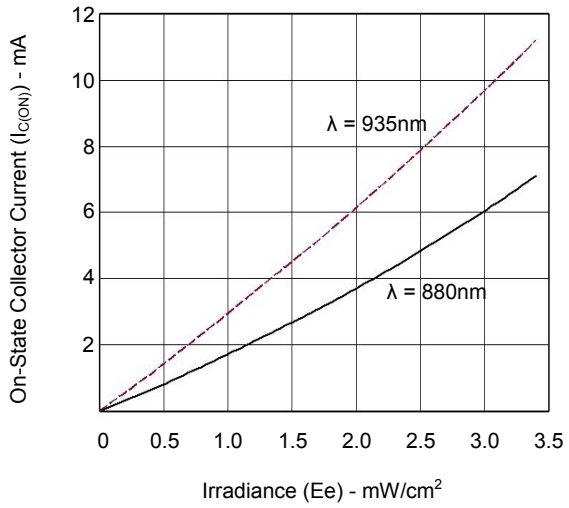
Coupling Characteristic



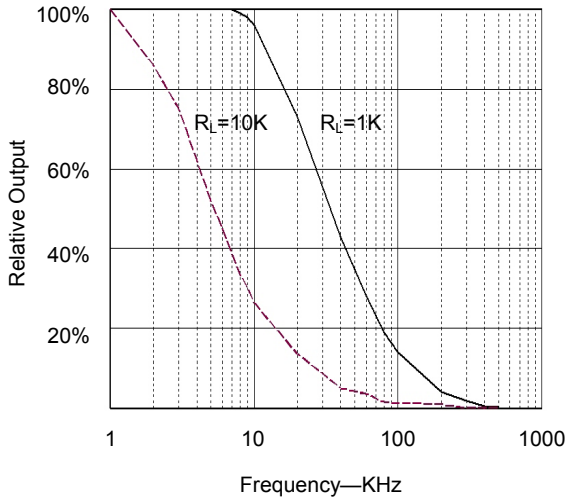
Angular Response



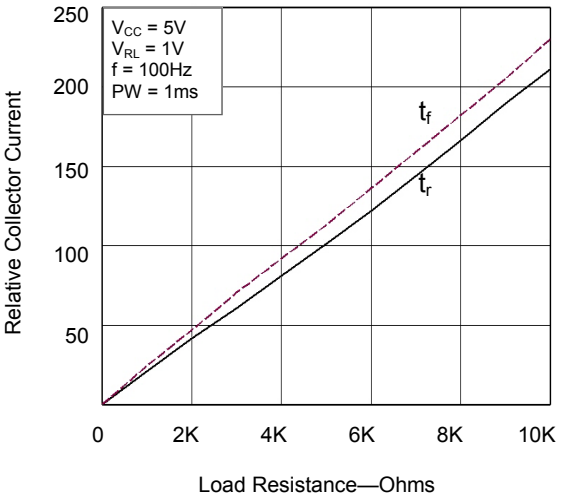
On-State Collector Current vs. Irradiance



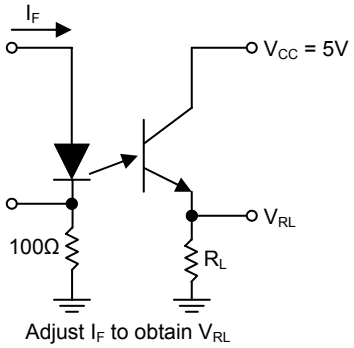
Output Vs. Frequency



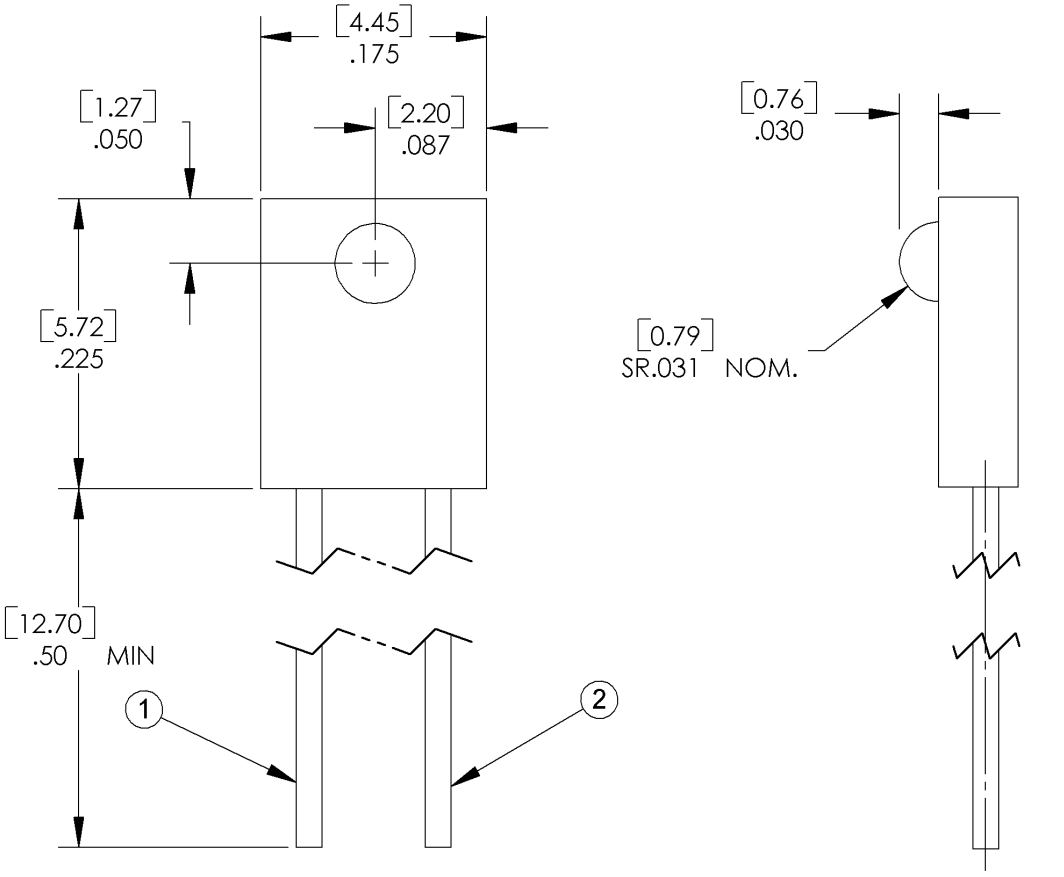
Rise and Fall Time vs. Load Resistance

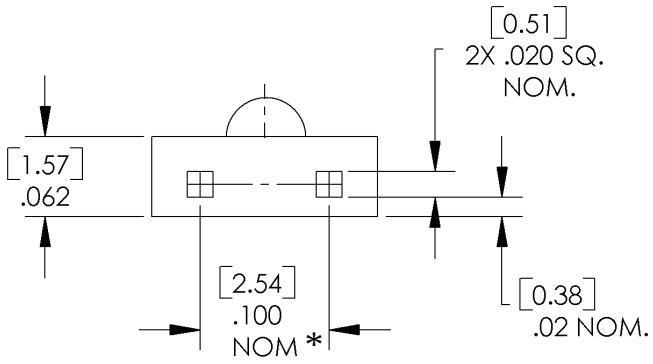


Switching Test Circuit



Mechanical Data





DISCRETE PIN-OUT

1 - EMITTER

2 - COLLECTOR

Notes:

1. All dimensions are in inches [mm]
2. Tolerances are ±0.005” [0.13m] unless otherwise stated
3. Mold flash at lead egress and body edges
4. * = measured at lead egress from body