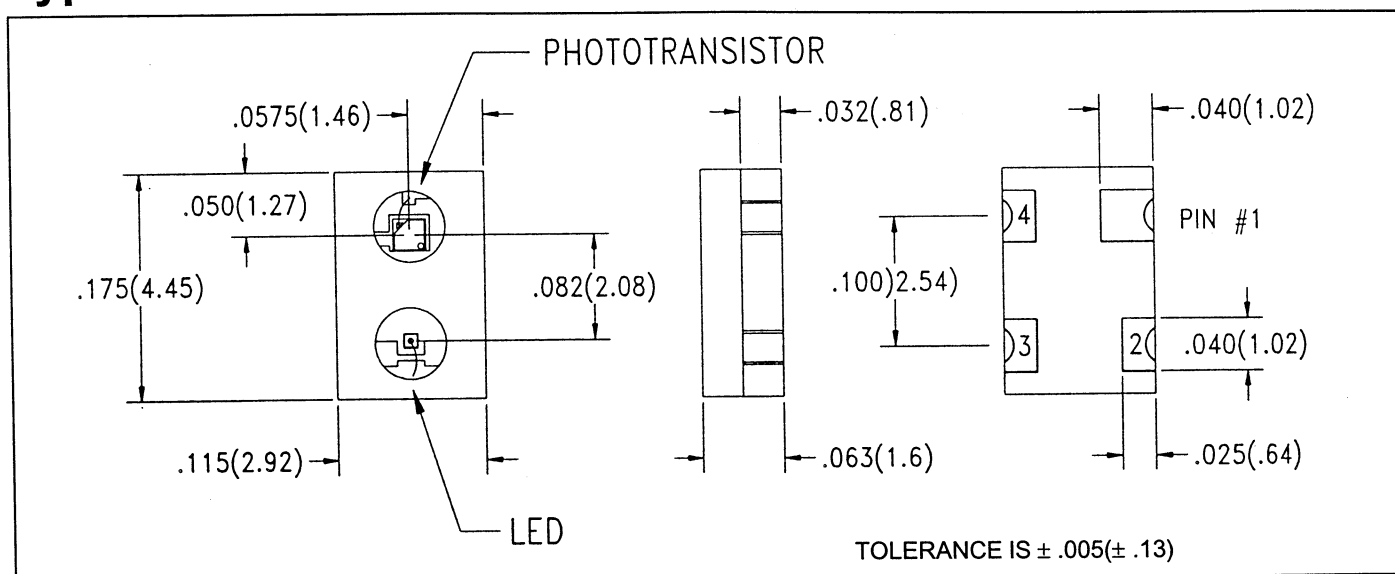


SMD Reflective Sensor Type OPR5005



Features

- Surface mountable
- High temperature operation
- Compact size

Description

This miniature sensor combines a silicon phototransistor with a GaAlAs LED in a high temperature opaque polyimide chip carrier. It is designed to sense the motion or proximity of diffuse reflective surfaces in applications where space constraints preclude the use of larger leaded components. The opaque package insures very low cross talk and shields the phototransistor from ambient light sources. Silicone encapsulation allows operation over a wide temperature range, and the wrap around solder pads are gold plated for exceptional storage and wetting characteristics.

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

Storage and Operating Temperature -55°C to $+125^\circ\text{C}$
Soldering Temperature (Vapor Phase Reflow for 10 sec.) 235°C

Input Diode

Forward DC Current 50 mA
Peak Forward Current (1 μs pulse width, 300 pps) 1.0 A
Reverse DC Voltage 2.0 V
Power Dissipation 75 mW⁽²⁾

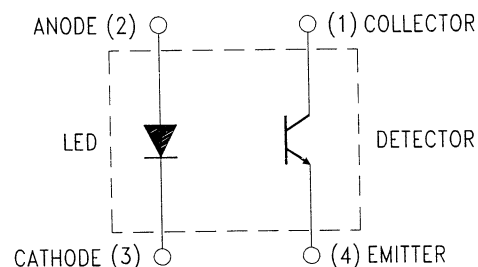
Output Phototransistor

Collector-Emitter Voltage 30 V
Emitter-Collector Voltage 5.0 V
Collector DC Current 25 mA
Power Dissipation 75 mW⁽²⁾

Notes:

- (1) RMA flux is recommended. Duration can be extended to 30 sec. max when flow soldering.
- (2) Derate linearly 0.75 mW/ $^\circ\text{C}$ above 25°C .
- (3) d is the distance from the assembly face to the reflective surface.
- (4) Measured using Eastman Kodak neutral white test card with 90% diffuse reflectance as a reflecting surface.
- (5) Crosstalk (I_{cx}) is the collector current measured with the indicated current in the input diode and with no reflecting surface.

Schematic

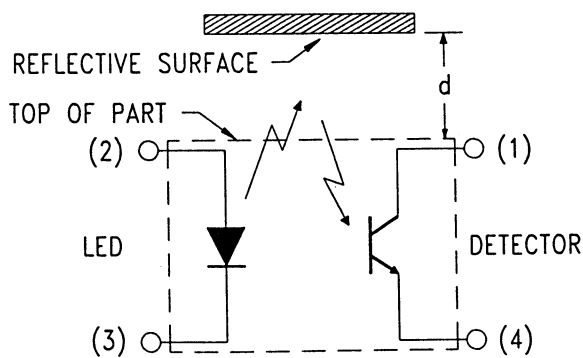
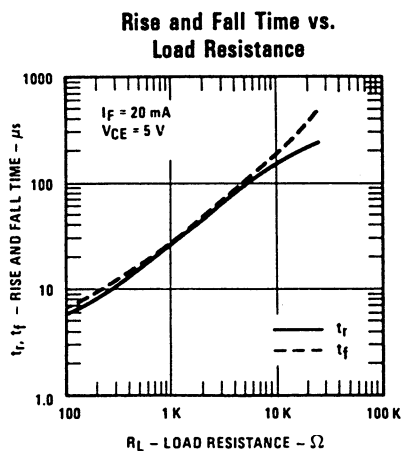
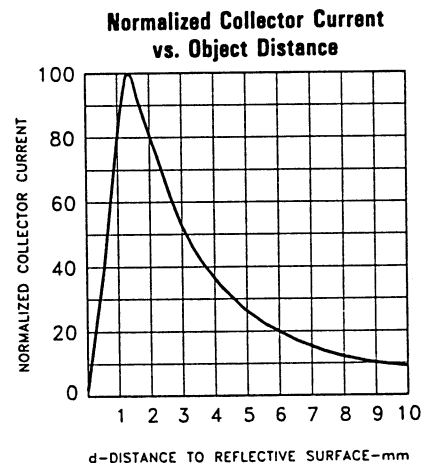
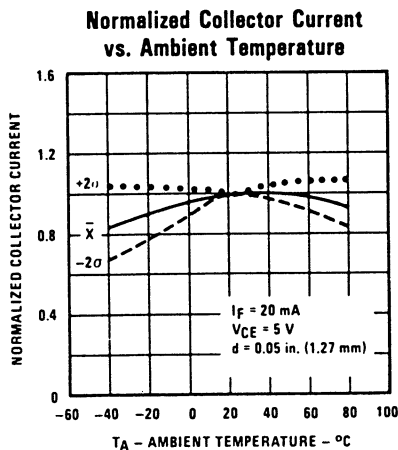
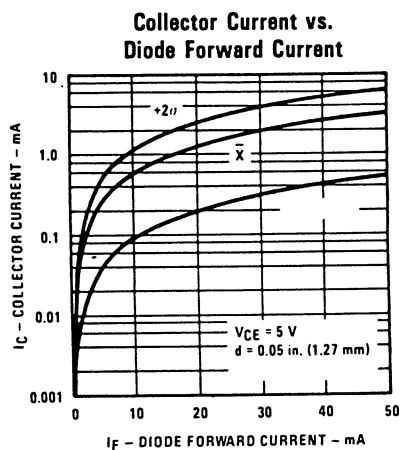


Type OPR5005

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

SYMBOL	PARAMETER	MIN	TYP	MAX	UNITS	TEST CONDITIONS
Input Diode						
V_F	Forward Voltage			1.7	V	$I_F = 20\text{ mA}$
I_R	Reverse Current			100	μA	$V_R = 2.0\text{ V}$
Output Phototransistor						
$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage	30			V	$I_C = 100\text{ }\mu\text{A}$
$V_{(BR)ECO}$	Emitter-Collector Breakdown Voltage	5.0			V	$I_E = 100\text{ }\mu\text{A}$
I_{CEO}	Collector Dark Current			100	nA	$V_{CE} = 5.0\text{ V}$, $I_F = 0$, $E_e = \leq 0.10\text{ }\mu\text{W/cm}^2$
Combined						
$I_{C(ON)}$	On-State Collector Current	100			μA	$V_{CE} = 5.0\text{ V}$, $I_F = 20\text{ mA}$, $d = 0.050\text{ in. (1.27 mm)}$ ⁽³⁾⁽⁴⁾
$V_{CE(SAT)}$	Collector-Emitter Saturation Voltage			0.40	V	$I_F = 20\text{ mA}$, $I_C = 100\text{ }\mu\text{A}$, $d = 0.050\text{ in. (1.27 mm)}$ ⁽³⁾⁽⁴⁾

Typical Performance Curves



HYBRID
ASSEMBLIES

Optek reserves the right to make changes at any time in order to improve design and to supply the best product possible.

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