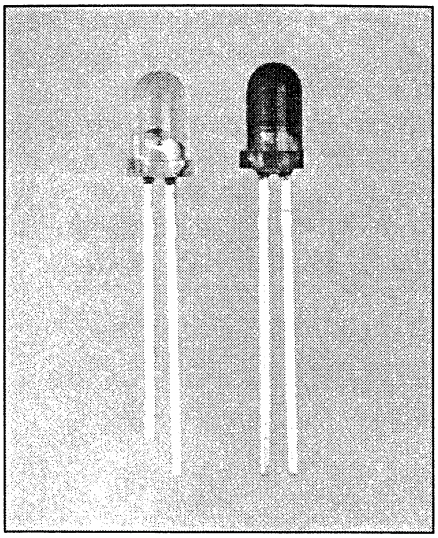
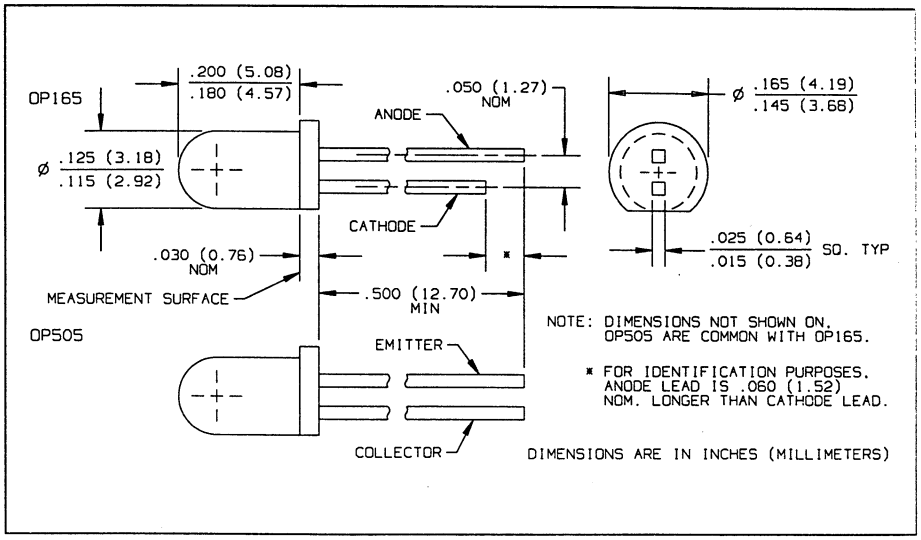
LED and Photosensor Pair
Types OPS665, OPS666, OPS667





Features

- T-1 package style
- High current transfer ratio
- Low cost plastic package
- Three current range selections

Description

The OPS665 through OPS667 each consist of a gallium arsenide infrared emitting diode (OP165) and an NPN silicon phototransistor (OP505) mounted in matched plastic T-1 packages. Matched pairs are desirable where the application is unique and the quantity required does not justify assembly tooling costs. The units are offered in three different sensitivity ranges to give the designer more flexibility. If separation between the LED and sensor is greater than two times the specified $I_{C(ON)}$ distance, proper alignment becomes critical. It should be remembered that the sensor is sensitive to ambient light. Although sold as pairs, emitters are packaged separately from sensors for ease of handling.

Absolute Maximum Ratings (T_A = 25° C unless otherwise noted)

Storage and Operating Temperature ..... -40° C to +100° C
Lead Soldering Temperature [1/16 inch (1.6 mm) from case for 5 sec. with soldering iron] ..... 260° C(1)

Input Diode

Continuous Forward Current ..... 50 mA
Peak Forward Current (1 µs pulse width, 300 pps) ..... 3.0 A
Reverse Voltage ..... 2.0 V
Power Dissipation ..... 100 mW(2)

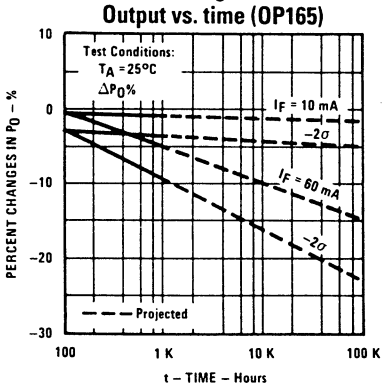
Output Photosensor

Collector-Emitter Voltage ..... 30 V
Emitter-Collector Voltage ..... 5.0 V
Power Dissipation ..... 100 mW(2)

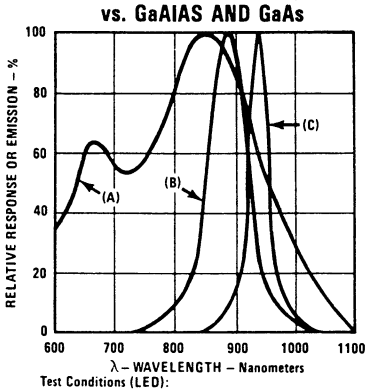
Notes:
(1) RMA flux is recommended. Duration can be extended to 10 sec. max when flow soldering. Max. 20 grams force may be applied to leads when soldering.
(2) Derate linearly 1.33 mW/° C above 25° C.

Typical Performance Curves

Percent Changes in Power Output vs. time (OP165)



Photosensor Spectral Response vs. GaAlAs AND GaAs



Test Conditions (LED):
$T_A = T_J$ = 25°C; I_F = 100 mA, DC = 0.1%, PW = 100 µs
Peak Wavelength - λp: (A) XSTR – 850 ± 30 nm
(B) LED GaAlAs – 890 ± 20 nm
(C) LED GaAs – 930 ± 15 nm

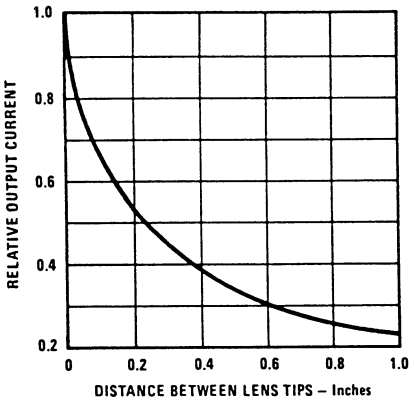
Types OPS665, OPS666, OPS667

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

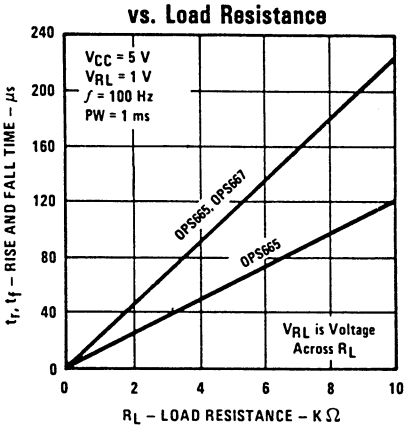
SYMBOL	PARAMETER		MIN	TYP	MAX	UNITS	TEST CONDITIONS
Input Diode							
V_F	Forward Voltage				1.60	V	I_F = 20 mA
I_R	Reverse Current				100	µA	V_R = 2.0 V
Output Photosensor							
$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage		30			V	I_C = 100 µA
$V_{(BR)ECO}$	Emitter-Collector Breakdown Voltage		5.0			V	I_E = 100 µA
I_{CEO}	Collector Dark Current				100	nA	V_{CE} = 15 V, E_e = 0
$I_{C(ON)}$	On-State Collector Current	OPS665	0.5			mA	V_{CE} = 5 V, I_F = 20 mA
		OPS666	1.0		10.0	mA	d = 0.25" lens tip to lens tip
		OPS667	5.0			mA	

Typical Performance Curves

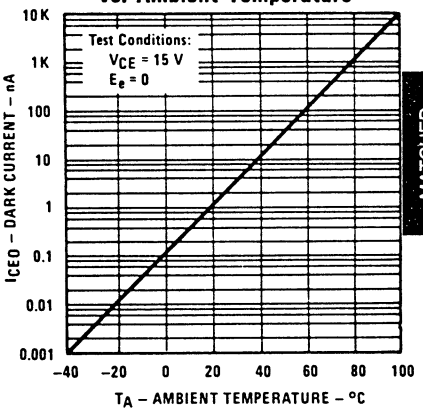
Coupling Characteristics of OP165 and OP505



Rise and Fall Time vs. Load Resistance

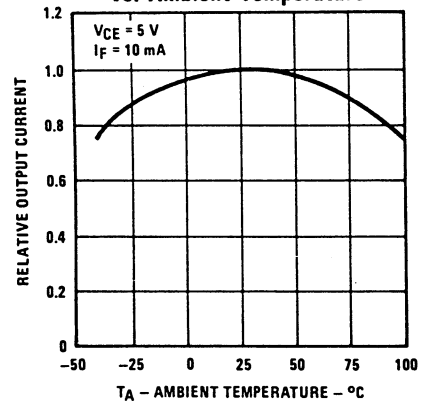


Collector Dark Current vs. Ambient Temperature

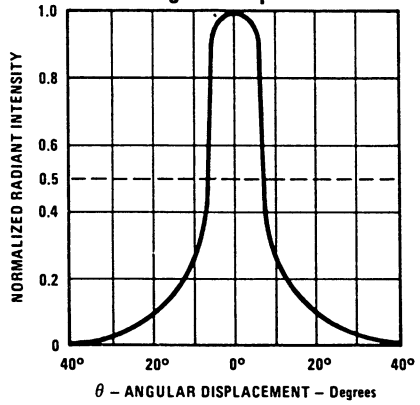


MATCHED PAIRS

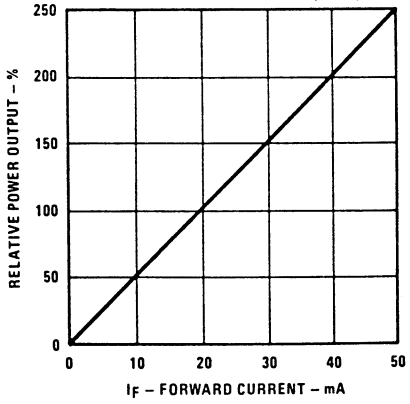
Coupled-Relative Output Collector Current vs. Ambient Temperature



Emission (LED) and Response (Sensor) Normalized Radiant Intensity vs. Angular Displacement



Relative Power Output vs. Forward Current (LED)



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