



Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



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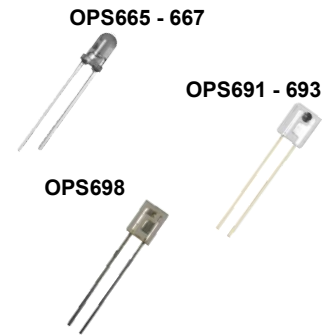
LED and Photosensor Pairs

OPS665, OPS666, OPS667, OPS691, OPS692, OPS693, OPS698



Features:

- High current transfer ratio
- Low-cost plastic package
- Lateral side-looking clear plastic package (OPS691, OPS692, OPS693 and OPS698)



Description:

Each LED/Photosensor pair in the series consists of a gallium arsenide infrared emitting diode and a NPN silicon phototransistor, mounted in a T-1 package (**OPS665, OPS666, OPS667**) or in a matched lateral side-looking plastic package (**OPS691, OPS692, OPS693 and OPS698**).

Matched pairs are desirable where the application is unique and the quantity required does not justify assembly tooling costs. If separation between the LED and sensor is greater than two times the specified $IC_{(ON)}$ distance, proper alignment becomes critical. Although sold as pairs, emitters and sensors are packaged separately for handling ease.

Please note that the sensor is sensitive to ambient light.

Applications:

- Non-contact reflective object sensor
- Assembly line automation
- Machine automation
- Machine safety
- End of travel sensor
- Door sensor

Ordering Information				
Part Number	Output	Package Style	Description	Lead Length
OPS665	Transistor	T-1	Gallium arsenide infrared emitting diode (OP165) NPN silicon phototransistor (OP505)	0.50" (1.700 mm)
OPS666	Transistor	T-1	Gallium arsenide infrared emitting diode (OP165) NPN silicon phototransistor (OP505)	0.50" (1.700 mm)
OPS667	Transistor	T-1	Gallium arsenide infrared emitting diode (OP165) NPN silicon phototransistor (OP505)	0.50" (1.700 mm)
OPS691	Transistor	Lateral Side-looking	Gallium arsenide infrared emitting diode (OP140) NPN silicon phototransistor (OP550)	0.50" (1.700 mm)
OPS692	Transistor	Lateral Side-looking	Gallium arsenide infrared emitting diode (OP140) NPN silicon phototransistor (OP550)	0.50" (1.700 mm)
OPS693	Transistor	Lateral Side-looking	Gallium arsenide infrared emitting diode (OP140) NPN silicon phototransistor (OP550)	0.50" (1.700 mm)
OPS698	Transistor	Lateral Side-looking	Gallium arsenide infrared emitting diode (OP145) NPN silicon phototransistor (OP555)	0.50" (1.700 mm)



General Note

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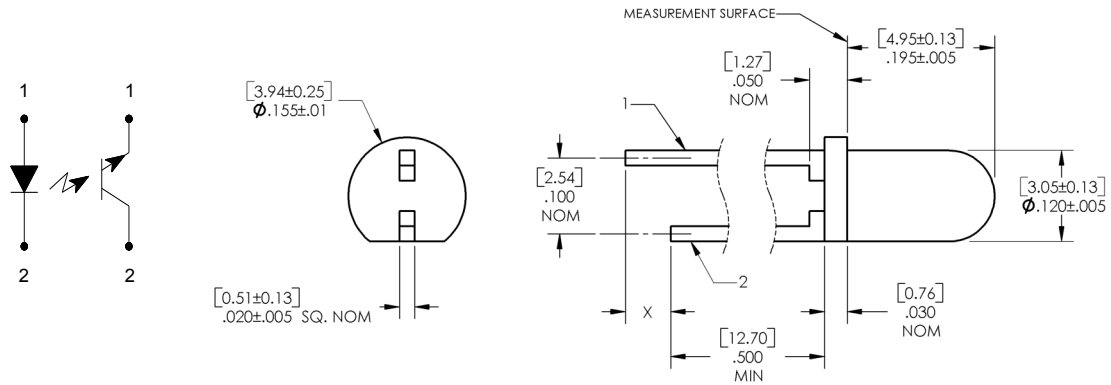
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LED and Photosensor Pairs

OPS665, OPS666, OPS667, OPS691, OPS692, OPS693, OPS698



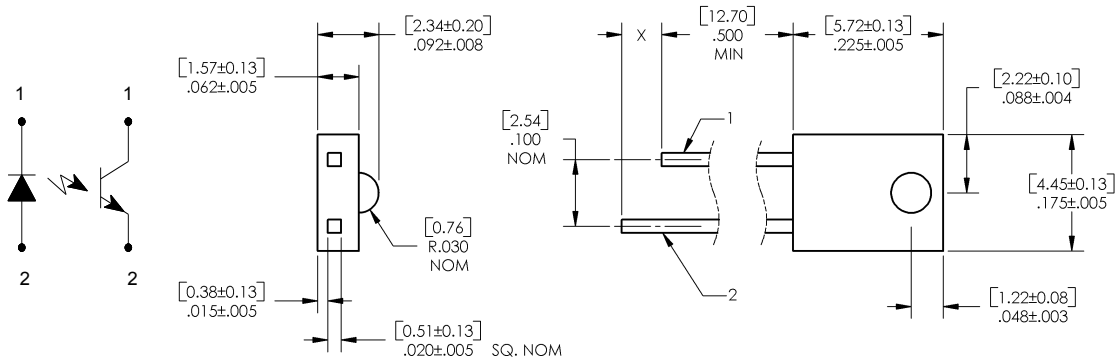
OPS665, OPS666, OPS667



DIMENSIONS ARE IN INCHES AND [MILLIMETERS].

Pin #	LED & Diode X=0.060" (1.5)	Transistor X=0" (0.0 mm)
1	Anode	Emitter
2	Cathode	Collector

OPS691, OPS692, OPS693



DIMENSIONS ARE IN INCHES AND [MILLIMETERS].

Pin #	LED X=0.060" (1.5)	Sensor X=0" (0.0 mm)
1	Cathode	Emitter/Anode
2	Anode	Collector/Cathode

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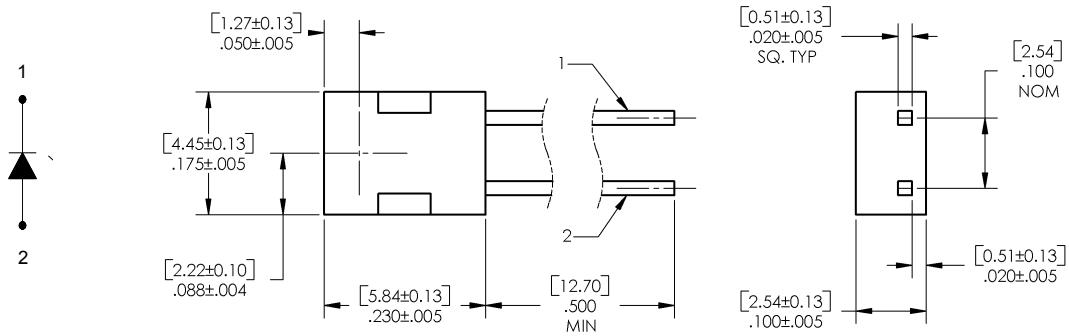
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LED and Photosensor Pairs

OPS665, OPS666, OPS667, OPS691, OPS692, OPS693, OPS698



OPS698



DIMENSIONS ARE IN INCHES AND [MILLIMETERS].

Pin #	Diode
1	Cathode
2	Anode

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OPS693, OPS698



Electrical Specifications

Absolute Maximum Ratings ($T_A = 25^\circ\text{C}$ unless otherwise noted)	
Storage & Operating Temperature Range	-40°C to +100°C
Lead Soldering Temperature [1/16 inch (1.6mm) from the case for 5 sec. with soldering iron]	260°C ⁽¹⁾
Input Diode	
Forward DC Current	50 mA
Peak Forward Current (1 μs pulse width, 300 pps)	3.0 A
Reverse DC Voltage	2.0 V
Power Dissipation	100 mW ⁽²⁾
Output Photosensor (OPS665/666/667) or Output Phototransistor (691/692/693/698)	
Collector-Emitter Voltage	30 V
Emitter-Collector Voltage	5 V
Power Dissipation	100 mW ⁽²⁾

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OPS693, OPS698



Electrical Specifications

Electrical Characteristics (T _A = 25° C unless otherwise noted)						
SYMBOL	PARAMETER	MIN	TYP	MAX	UNITS	TEST CONDITIONS
Input Diode						
V _F	Forward Voltage	-	-	1.6	V	I _F = 20 mA
I _R	Reverse Current	-	-	100	µA	V _R = 2 V
Output Phototransistor						
V _{(BR)CEO}	Collector-Emitter Breakdown Voltage	30	-	-	V	I _C = 100 µA, E _E = 0
V _{(BR)ECO}	Emitter-Collector Breakdown Voltage	5.0	-	-	V	I _E = 100 µA, E _E = 0
I _{CEO}	Collector-Emitter Dark Current	-	-	100	nA	V _{CE} = 15 V, I _F = 0, I _E = 0
	OPS665/666/667	-	-	100	nA	V _{CE} = 10 V, I _F = 0, I _E = 0
	OPS691/692/693 OPS698	-	-	100	nA	V _{CE} = 10 V, I _F = 0, I _E = 0
Combined						
V _{CE(SAT)}	Collector-Emitter Saturation Voltage	-	-	-	-	-
	OPS665/666/667	-	-	0.4	V	I _F = 20 mA, I _C = 50 µA ⁽³⁾
	OPS691/692/693 OPB698	-	-	0.4	V	I _F = 20 mA, I _C = 50 µA ⁽³⁾
I _{C(ON)}	On-State Collector Current					
	OPS665	0.5	-	-	mA	V _{CE} = 5 V, I _F = 20 mA ⁽³⁾
	OPS666	1.0	-	-	mA	
	OPS667	5.0	-	-	mA	
	OPS691	500	-	-	µA	V _{CE} = 10 V, I _F = 20 mA ⁽³⁾
	OPS692 OPS693, OPS698	1.0 2.0	- -	- -	mA mA	

Notes:

- (1) RMA flux is recommended. Duration can be extended to 10 seconds maximum when flow soldering.
- (2) Derate linearly 1.33 mW/° C above 25° C.
- (3) Distance from lens tip to lens tip is 0.250" (6.35 mm) - OPS665, OPS666, OPS667
Distance from lens tip to lens tip is 0.125" (3.175 mm) - OPS691 thru OPS698

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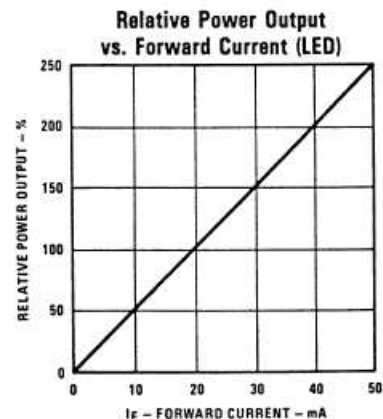
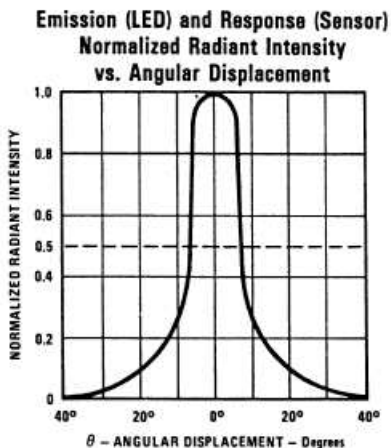
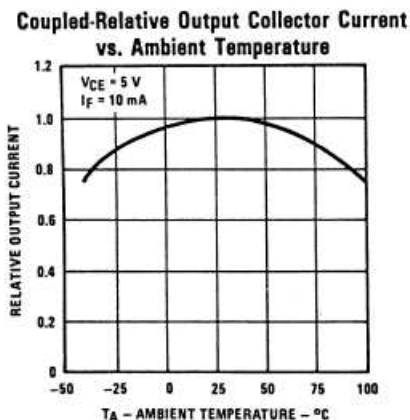
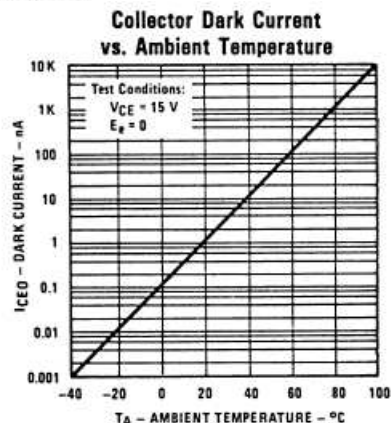
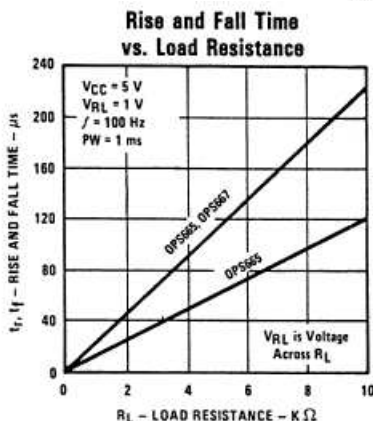
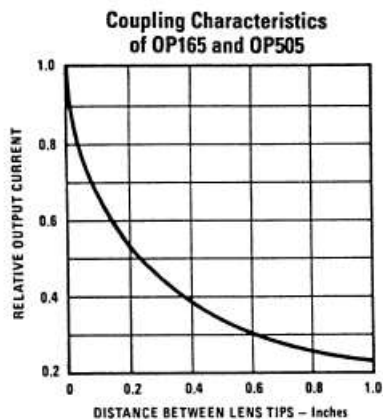
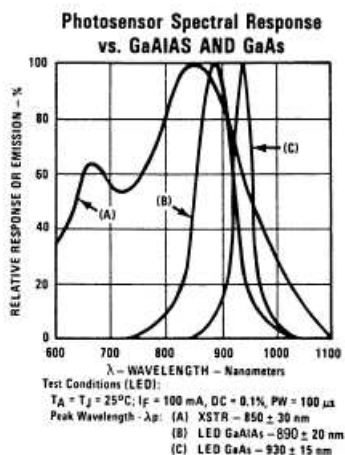
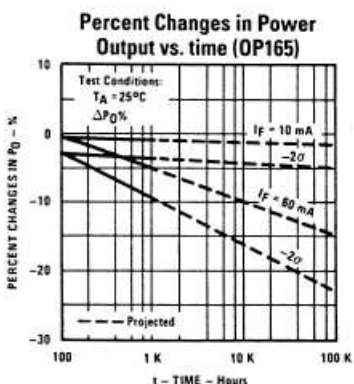
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Performance

OPS665, OPS666, OPS667



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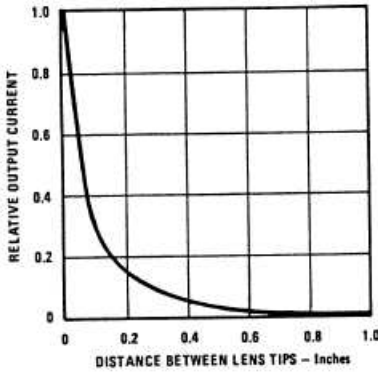
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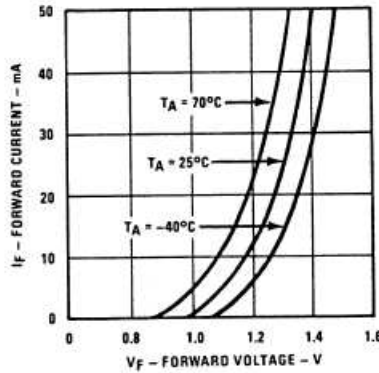
Performance

OPS691, OPS692, OPS693

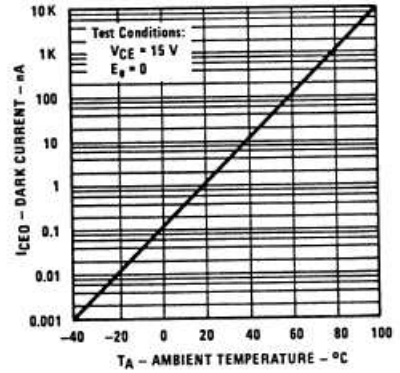
Coupling Characteristics of OP140 and OP550



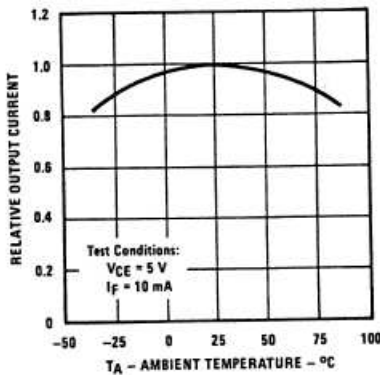
Forward Current vs Forward Voltage



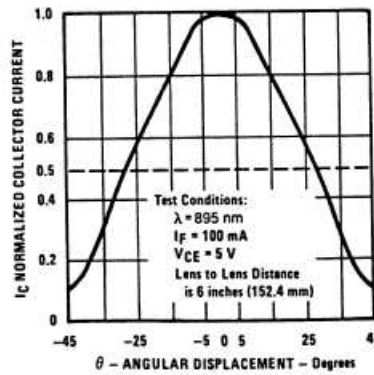
Dark Current vs Free Air Temperature



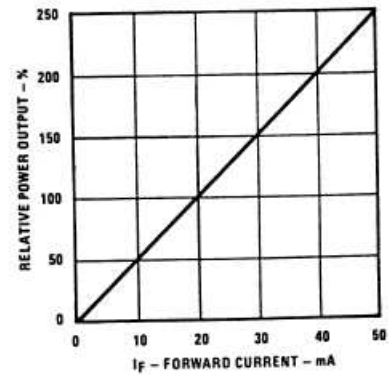
Relative Output Current vs Free Air Temperature



Normalized Collector Current vs Angular Displacement



Relative Power Output vs Forward Current (LED)



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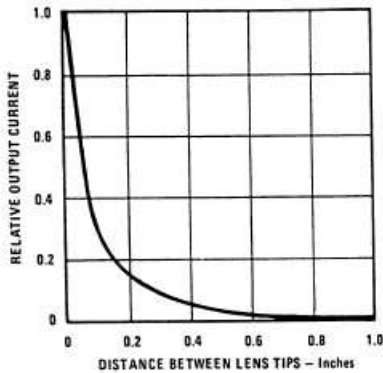
OPS665, OPS666, OPS667, OPS691, OPS692, OPS693, OPS698



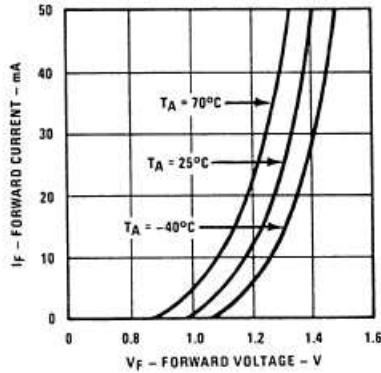
Performance

OPS698

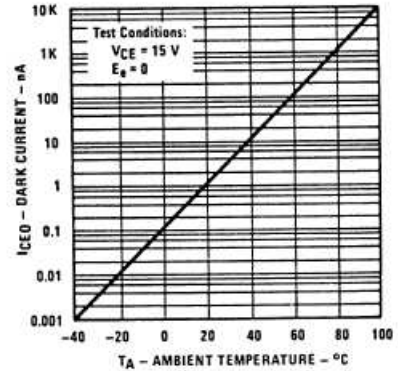
Coupling Characteristics of OP145 and OP555



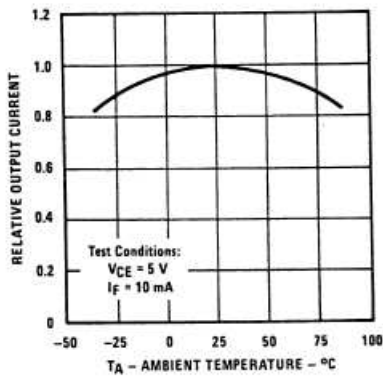
Forward Current vs Forward Voltage



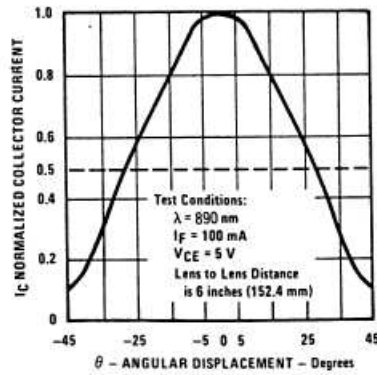
Dark Current vs Free Air Temperature



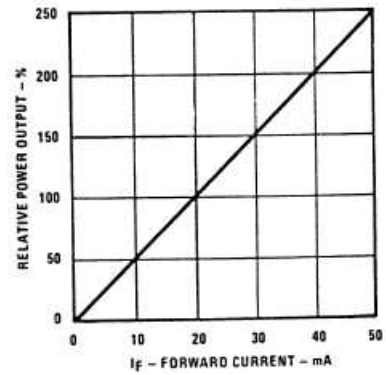
Relative Output Current vs Free Air Temperature



Normalized Collector Current vs Angular Displacement



Relative Power Output vs Forward Current (LED)



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