

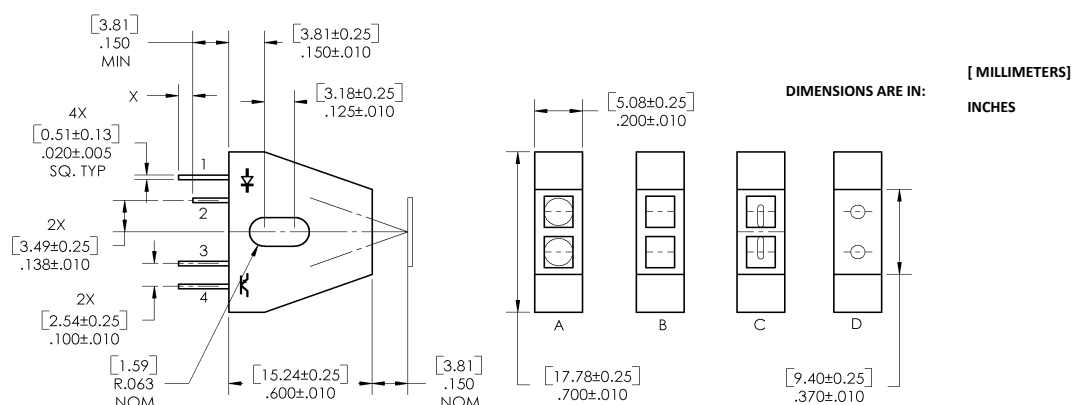
Reflective Object Sensor

OPB708, OPB709, OPB740 Series, OPB740WZ Series

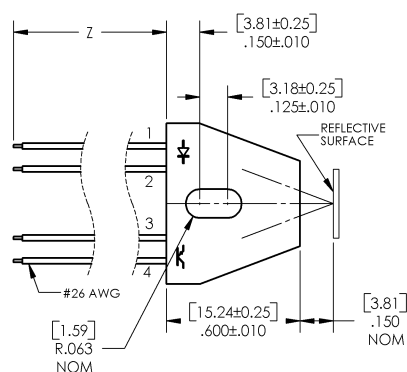


Electrical Specifications

**OPB708, OPB709, OPB740, OPB741,
OPB742, OPB743, OPB744, OPB745**



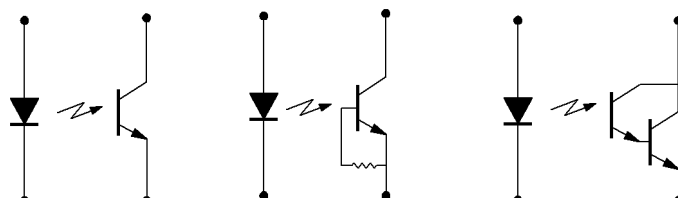
**OPB740WZ, OPB741WZ, OPB742WZ, OPB743WZ,
OPB744WZ, OPB745WZ, OPB746WZ, OPB747WZ,
OPB748WZ**



**OPB708
OPB740 thru OPB744
OPB740WZ thru OPB744WZ**

**OPB746WZ,
OPB747WZ,
OPB748WZ**

**OPB709,
OPB745,
OPB745WZ**



Color-PIN #	LED	Color-PIN #	Transistor
Orange-1	Anode	White-4	Collector
Green-2	Cathode	Blue-3	Emitter

Package Style

Part Number	Lens Configuration
OPB708	D - No windows
OPB709	D - No windows
OPB740	A - No windows
OPB740WZ	A - No windows
OPB741	B - Blue windows
OPB741WZ	B - Blue windows
OPB742	C - Offset windows
OPB742WZ	C - Offset windows
OPB743	A - No windows
OPB743WZ	A - No windows
OPB744	B - Blue windows
OPB744WZ	B - Blue windows
OPB745	C - Offset windows
OPB745WZ	C - Offset windows
OPB746WZ	B - Blue windows
OPB747WZ	C - Offset windows
OPB748WZ	C - Offset windows

General Note

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

Operating and Storage Temperature Range OPB708, OP709, OPB740, OPB741, OPB742, OPB743, OPB744, OPB745 OPB741WZ, OPB742WZ, OPB743WZ, OPB744WZ, OPB745WZ, OPB746WZ, OPB747WZ, OPB748WZ	-40 $^{\circ}\text{C}$ to +85 $^{\circ}\text{C}$ -40 $^{\circ}\text{C}$ to +80 $^{\circ}\text{C}$
Lead Soldering Temperature [1/16 inch (1.6mm) from the case for 5 sec. with soldering iron] ⁽¹⁾	260 $^{\circ}\text{C}$
Input Diode (See OP165 (935 nm), OP265 (890 nm) or OVLA56CB8 (645 nm) for additional information)	
Forward DC Current	40 mA
Reverse DC Voltage	2 V
Power Dissipation ⁽²⁾	100 mW
Sensor Output (See OP505 (Transistor), OP705 (R_{BE} Transistor) or OP535 (Darlington) for additional Information)	
Collector-Emitter Voltage OPB708 OPB709 OPB740, OPB741, OPB742, OPB743, OPB744 OPB740WZ, OPB741WZ, OPB742WZ, OPB743WZ, OPB744WZ OPB748WZ OPB745 OPB745WZ OPB746WZ, OPB747WZ	30 V 15 V 30 V 30 V 15 V 15 V 24 V
Emitter-Collector Voltage OPB708 through OPB745, OPB748 OPB746 through OPB747	5.0 V 0.4 V
Power Dissipation ⁽²⁾	100 mW

Notes:

1. RMA flux is recommended. Duration can be extended to 10 seconds maximum when flow soldering.
2. Derate linearly 1.33 mW $^{\circ}\text{C}$ above 25 $^{\circ}\text{C}$.

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

SYMBOL	PARAMETER	MIN	TYP	MAX	UNITS	TEST CONDITIONS
645 nm LED (See OVLA56CB8 for generic information — for reference only)						
V_F	Forward Voltage	-	-	2.6	V	$I_F = 20\text{ mA}$
I_R	Reverse Current	-	-	100	μA	$V_R = 2\text{ V}$
890 nm LED (See OP265 for additional information — for reference only)						
V_F	Forward Voltage	-	-	1.8	V	$I_F = 40\text{ mA}$
I_R	Reverse Current	-	-	100	μA	$V_R = 2\text{ V}$
935 nm LED (See OP165 for additional information — for reference only)						
V_F	Forward Voltage	-	-	1.7	V	$I_F = 40\text{ mA}$
I_R	Reverse Current	-	-	100	μA	$V_R = 2\text{ V}$

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OPB708, OPB709,
OPB740 Series, OPB740WZ Series



Electrical Characteristics (T _A = 25 °C unless otherwise noted)						
SYMBOL	PARAMETER	MIN	TYP	MAX	UNITS	TEST CONDITIONS
Output R_{BE} Phototransistor (See OP705 for general information — for reference only)						
V _{(BR)CEO}	Collector-Emitter Breakdown Voltage	24	-	-	V	I _C = 100 µA
I _{CEO}	Collector Dark Current	-	-	100	nA	V _{CE} = 10 V, I _F = 0, E _E = 0
Output Phototransistor (See OP505 for general information — for reference only)						
V _{(BR)CEO}	Collector-Emitter Breakdown Voltage	30	-	-	V	I _C = 100 µA
V _{(BR)ECO}	Emitter-Collector Breakdown Voltage	5	-	-	V	I _E = 100 µA
I _{CEO}	Collector Dark Current	-	-	100	nA	V _{CE} = 10 V, I _F = 0, E _E = 0
Output Photodarlington (See OP535 for general information — for reference only)						
V _{(BR)CEO}	Collector-Emitter Breakdown Voltage	15	-	-	V	I _C = 100 µA
V _{(BR)ECO}	Emitter-Collector Breakdown Voltage	5	-	-	V	I _E = 100 µA
I _{CEO}	Collector-Emitter Dark Current OPB709, OPB745, OPB745WZ	-	-	25	µA	V _{CE} = 5 V, I _F = 0, E _E = 0
Coupled						
V _{CE(SAT)}	Saturation Voltage OPB708 OPB709 OPB745, OPB745WZ	- - -	- - -	0.40 1.10 1.10	V	I _F = 40 mA, I _C = 3 µA, d = 0.15" ⁽¹⁾⁽²⁾ I _F = 40 mA, I _C = 3 µA, d = 0.15" ⁽¹⁾⁽²⁾ I _F = 40 mA, I _C = 400 µA, d = 0.15" ⁽¹⁾⁽²⁾
I _{C(ON)} ⁽¹⁾⁽²⁾	On-State Collector Current OPB708 OPB709 OPB740, OPB740WZ OPB741, OPB741WZ OPB742, OPB742WZ OPB743, OPB743WZ OPB744, OPB744WZ OPB745, OPB745WZ OPB746WZ OPB747WZ OPB748WZ	0.01 1.00 0.05 0.05 0.01 0.20 0.20 5.00 0.50 0.01 0.01	- - - - - - - - - - -	3.00 - 2.50 2.50 0.70 2.00 2.00 26.0 2.50 0.70 0.70	mA	V _{CE} = 5 V, I _F = 40 mA, d = 0.15" (3.810 mm)
I _{CX} ⁽³⁾	Crosstalk OPB708, OPB709, OPB740, OPB740WZ OPB741, OPB741WZ OPB742, OPB742WZ OPB743, OPB743WZ OPB744, OPB744WZ OPB745, OPB745WZ OPB746WZ OPB747WZ OPB748WZ	- - - - - - - - - - -	- - - - - - - - - - -	- 10.0 10.0 1.0 20.0 20.0 25.0 1.0 1.0 1.0	µA	V _{CC} = 5 V, I _F = 40 mA

Notes:

- The distance from the assembly face to the reflective surface is "d".
- Reflective surface is Eastman Kodak (Catalog #190 3061) neutral white test card with 90% diffuse reflectance as a reflecting surface.
- Crosstalk is the photocurrent measured with current to the input diode, no reflective surface and no ambient light (E_E = 0).

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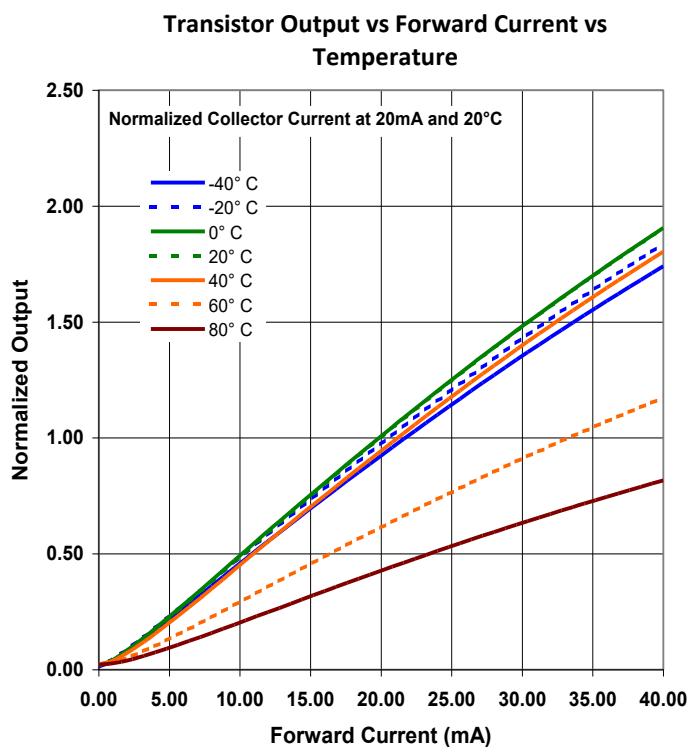
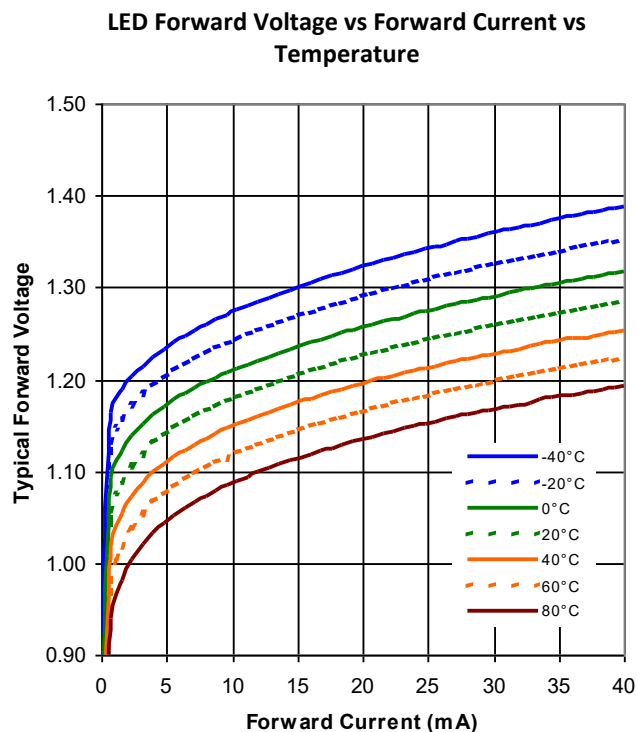
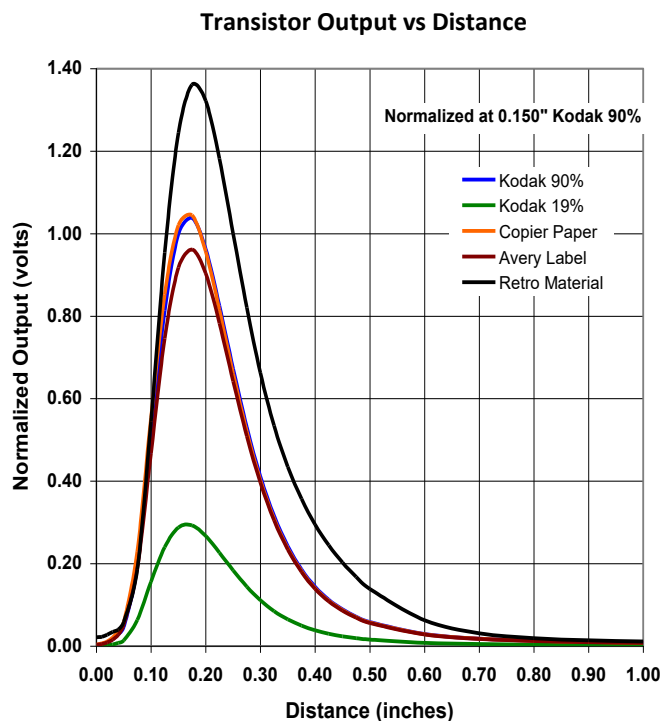
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Performance



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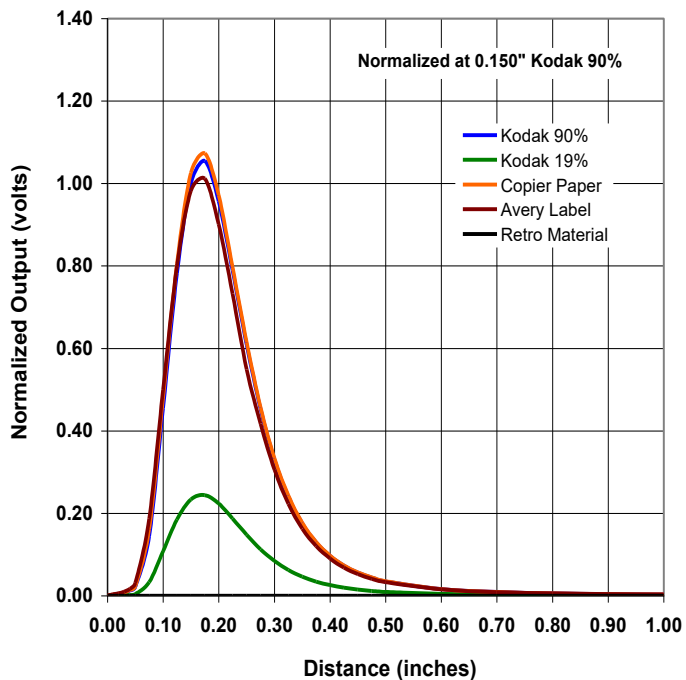
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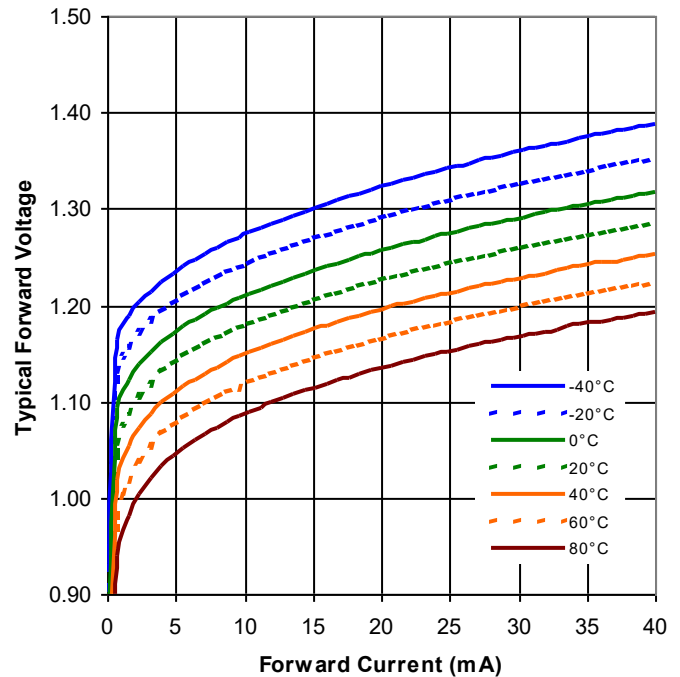


Performance

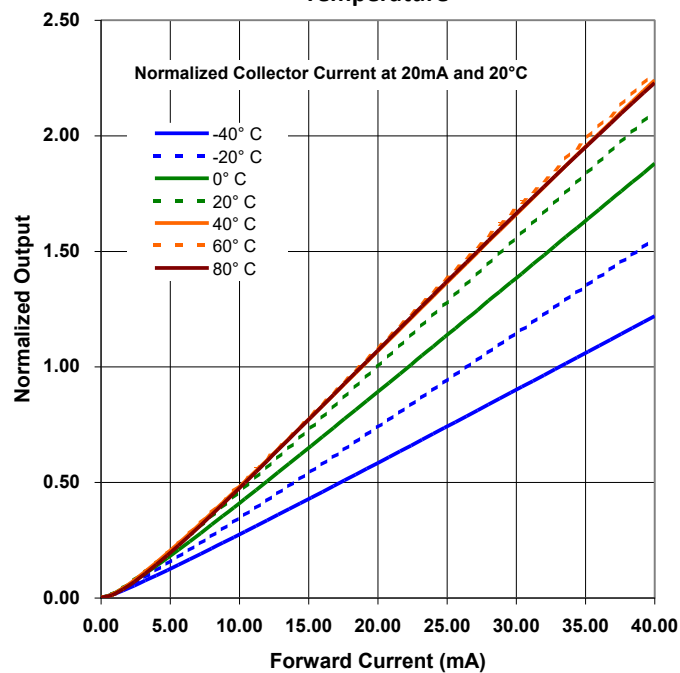
Darlington Output vs Distance



LED Forward Voltage vs
Forward Current vs Temperature



Darlington Output vs Forward Current vs
Temperature



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