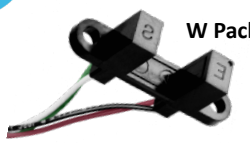
Wide Gap Slotted Optical Switch

OPB800 (L and W Series)





Features:

- 0.375” (9.525 mm) wide gap
- Choice of aperture size
- Choice of minimum photocurrent
- Choice of opaque or IR transmissive shells
- Available for printed circuit board mounting or with 24” #26 AWG UL rated wires

Description:

The OPB800L series, printed circuit board mounting, of wide gap switch provides the flexibility of a custom device from a standard product line, while the OPB800W series, remote mounted, switch offers 24” (610 mm) #26 AWG UL rated wire interconnect.

Building from a standard housing that utilizes a 0.375” (9.5 mm) wide slot, a user can specify the electrical output parameters, discrete shell material and the aperture width.

Housings are made from an opaque grade of injection-molded plastic that minimizes the assembly’s sensitivity to visible and near-infrared ambient radiation. Discrete shells, which are exposed on parallel faces inside the device throat, are made of IR transmissive plastic (for applications where aperture contamination may occur) or of opaque plastic with aperture openings (for maximum protection against ambient light).

For application information, refer to Application Bulletins 248 and 213.

Custom electricals, special wire/cable lengths and connectors are available through your OPTEK representative.

Applications:

- Non-contact interruptive object sensing
- Assembly line automation
- Machine automation
- Equipment security
- Machine safety

CONTAINS POLYSULFONE

To avoid stress cracking, we suggest using ND Industries’ **Vibra-Tite** for thread-locking. **ND Vibra-Tite VC-3** evaporates fast without causing structural failure in OPTEK’s molded plastics.

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Wide Gap Slotted Optical Switch

OPB800 (L and W Series)

Part Number Guide

OPB 8 X X X X X Z

Optek Assembly

Phototransistor Output Family

Discrete Shell Material:
0 – Transmissive Plastic Discrete Shell
1 – Opaque Plastic Discrete Shell

Electrical Specification Variations:
0 = Electrical Parameter A
1 = Electrical Parameter B
2 = Electrical Parameter C

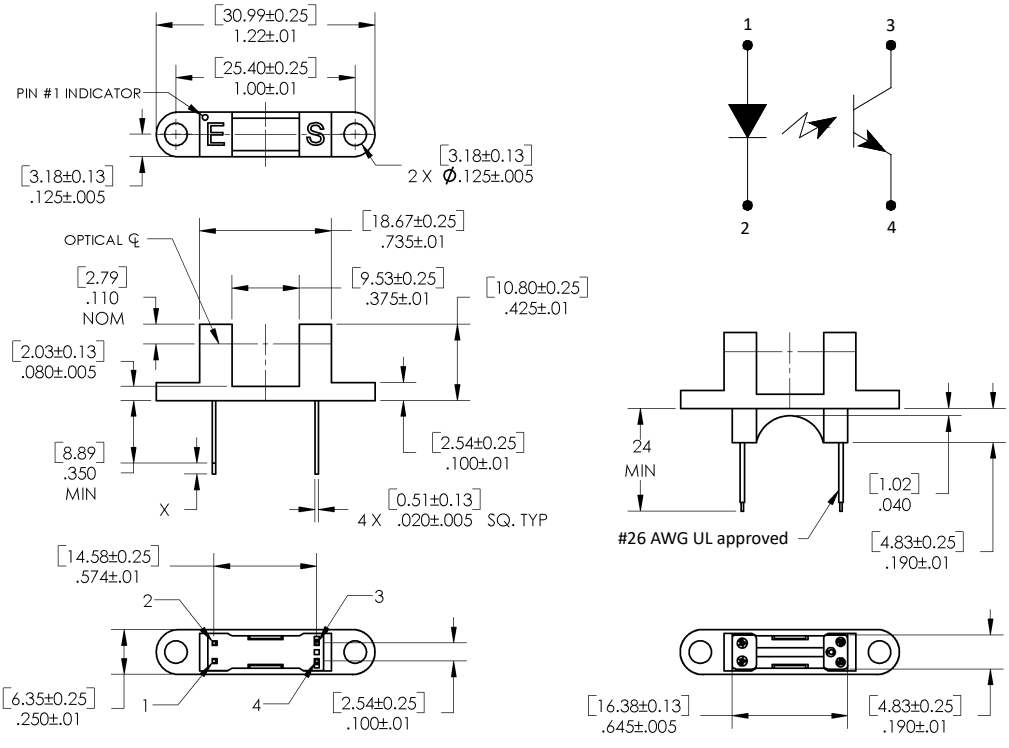
Note: Assemblies with 0.010" apertures are currently available with electrical parameter "A" only.
Wires = #26 AWG UL rated — 24" Long

For "W" series only

Sensor Aperture:
1 – 0.010" (.254 mm)
5 – 0.050" (1.270 mm)

Emitter Aperture:
5 – 0.050" (1.270 mm)

Mounting Configurations:
L – Solder lead termination
W – Wire termination



Color/Pin #	Description
Red-1	Anode
Black-2	Cathode
White-3	Collector
Green-4	Emitter

DIMENSIONS ARE IN INCHES AND [MILLIMETERS].

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Electrical Specifications

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

Storage and Operating Temperature L Series W Series	 -40° C to +85° C -40° C to +80° C
Lead Soldering Temperature [1/16 inch (1.6 mm) from the case for 5 sec. with soldering iron] (2)(4)	260° C
Input Diode	
Forward DC Current	50 mA
Peak Forward Current (1 µs pulse width, 300 pps)	3 A
Reverse DC Voltage	2 V
Power Dissipation (1)	100 mW
Output Phototransistor	
Collector-Emitter Voltage	30 V
Emitter-Collector Voltage	5 V
Collector DC Current	30 mA
Power Dissipation (1)	100 mW

Notes:

(1) Derate linearly 1.33 mW/° C above 25° C.
(2) RMA flux is recommended. Duration can be extended to 10 seconds maximum when flow soldering.
(3) All parameters tested using pulse technique.
(4) Methanol or isopropanol are recommended as cleaning agents. Plastic housing is soluble in chlorinated hydrocarbons and ketones.
(5) The W Series includes wire terminations of 24” (610 mm) 7-strand, #26 AWG UL rated insulated wire on each terminal. Each device incorporates a wire strain relief at the housing surface. The insulation functions and colors are anode (red), cathode (black), phototransistor collector (white) and phototransistor emitter (green).

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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	1.0	-	1.7	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 = 1 mA
$V_{(BR)ECO}$	Emitter-Collector Breakdown Voltage	5	-	-	V	I_E = 100 µA
I_{CEO}	Collector-Emitter Dark Current	-	-	100	nA	V_{CE} = 10 V
Combined						
$V_{CE(SAT)}$	Collector-Emitter Saturation Voltage					
	Parameter A (OPB800, OPB810)	-	-	0.4	V	I_C = 250 µA, I_F = 20 mA
	Parameter B (OPB801, OPB811)	-	-	0.4	V	I_C = 500 µA, I_F = 10 mA
	Parameter C (OPB802, OPB812)	-	-	0.6	V	I_C = 1800 µA, I_F = 20 mA
$I_{C(ON)}$	On-State Collector Current					
	Parameter A (OPB800, OPB810)	0.625	-	-	mA	V_{CE} = 10 V, I_F = 20 mA
	Parameter B (OPB801, OPB811)	1.25	-	-		V_{CE} = 5 V, I_F = 10 mA
	Parameter C (OPB802, OPB812)	2.25	-	-		V_{CE} = 0.6 V, I_F = 20 mA

Notes:

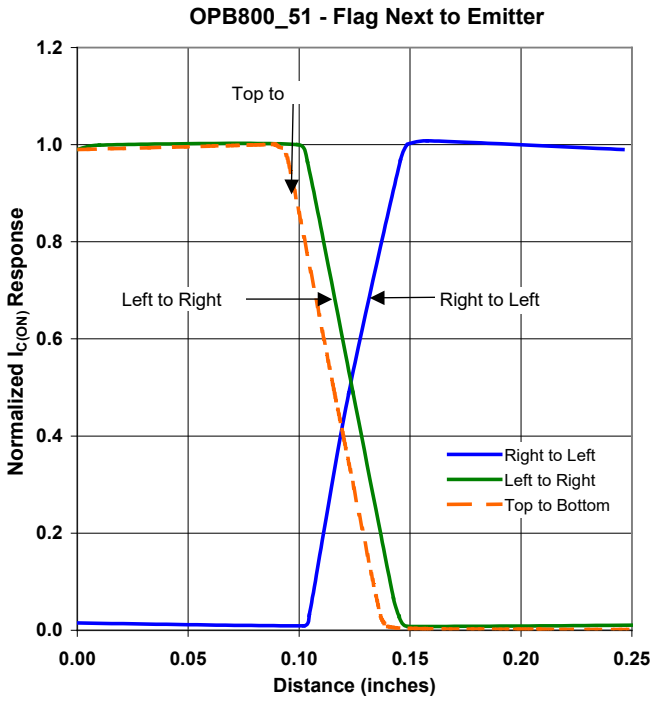
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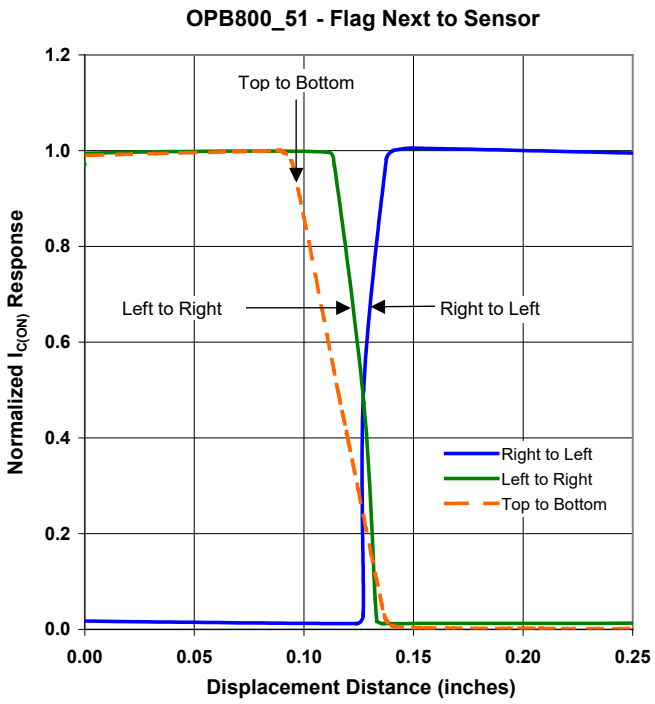
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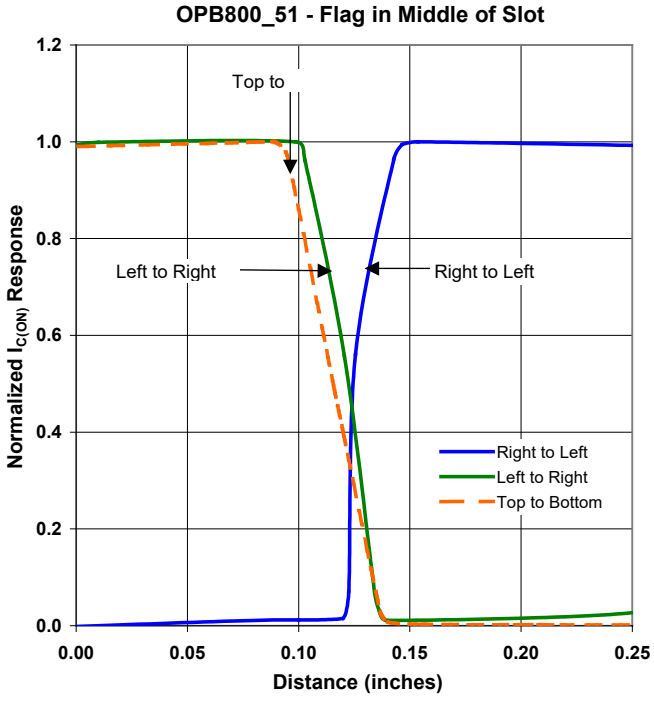
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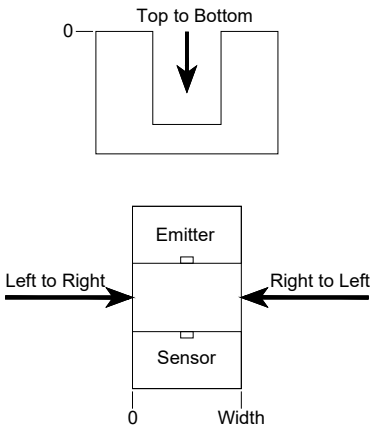
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Typical Performance







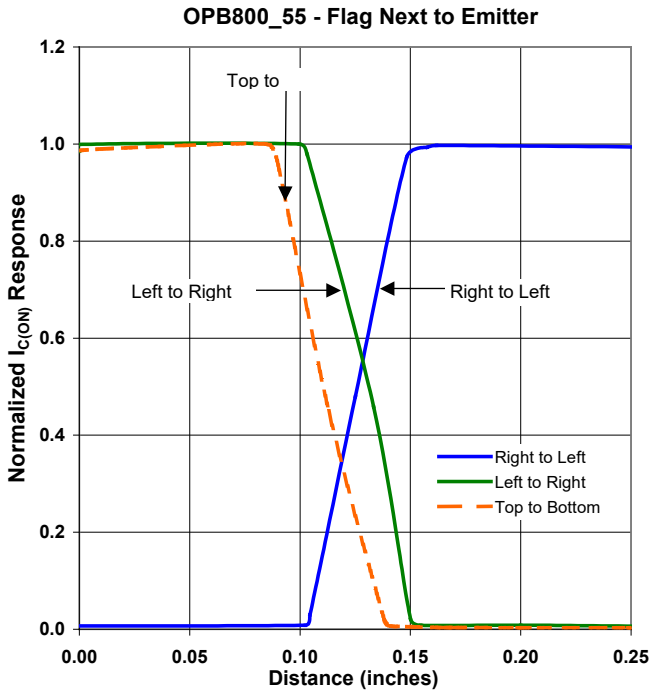


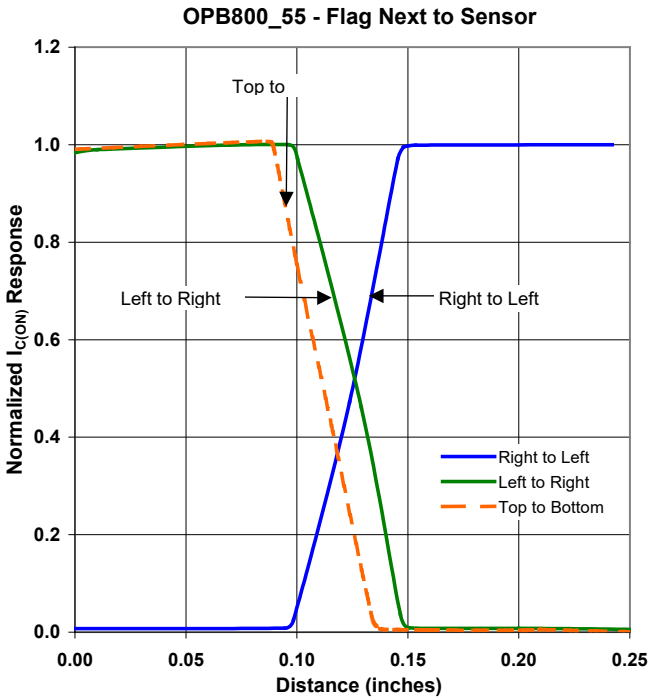
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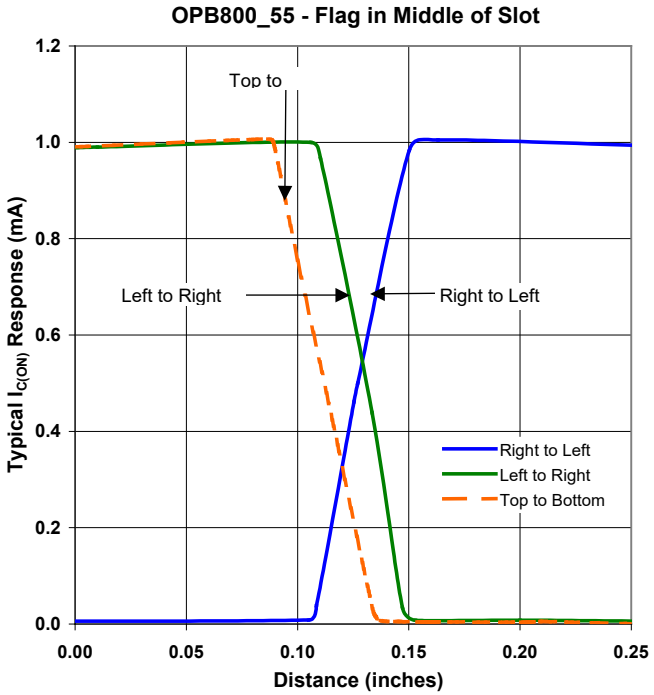
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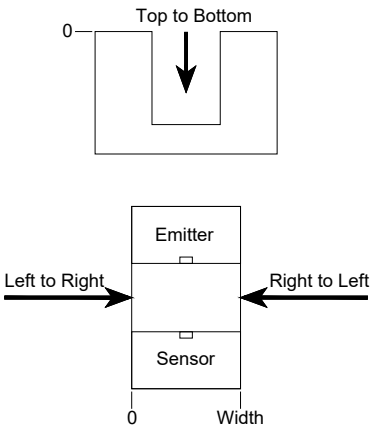
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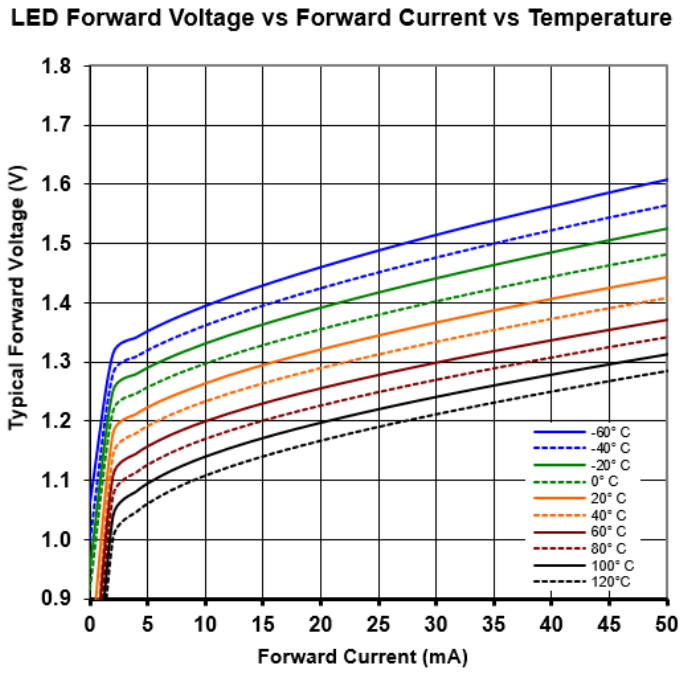


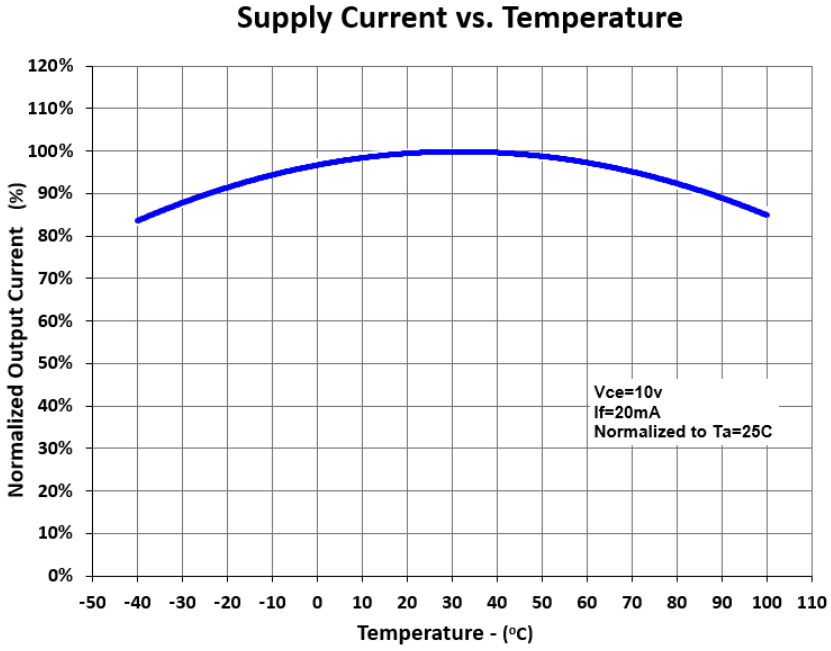
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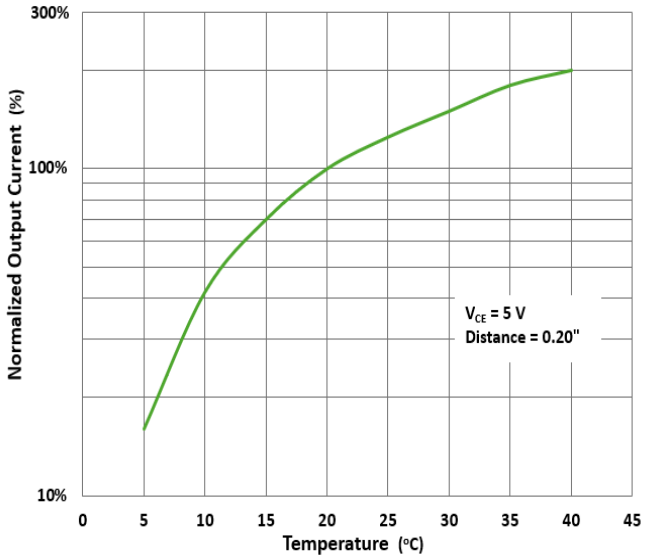
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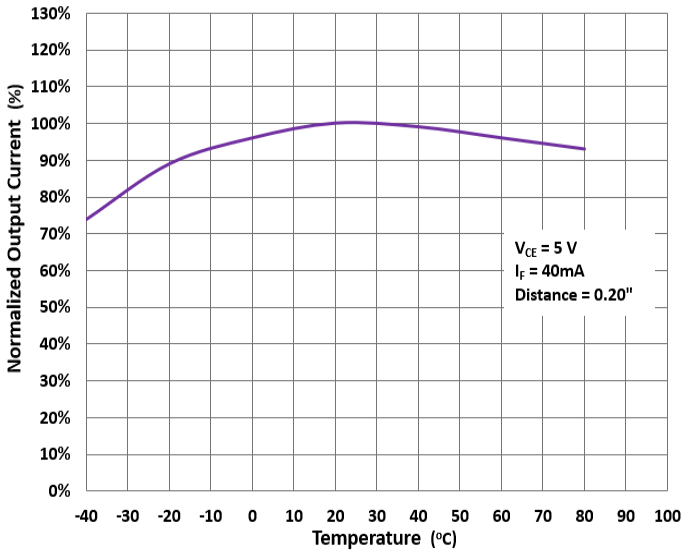
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Typical Performance

Output Current vs LED Current

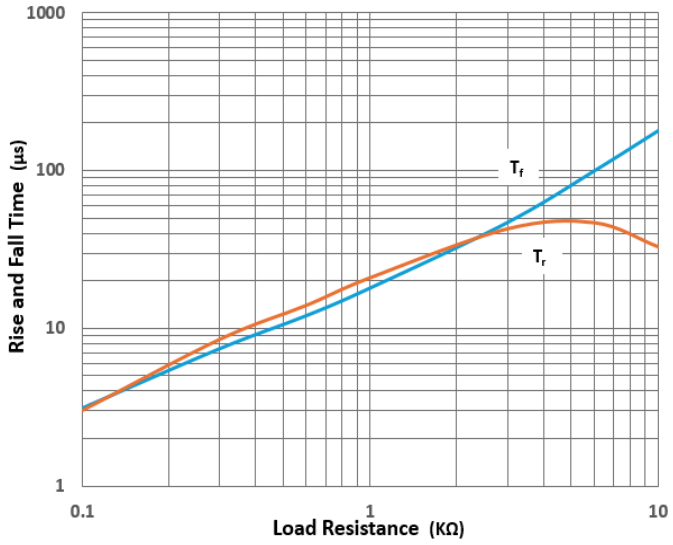


Collector Current vs Temperature



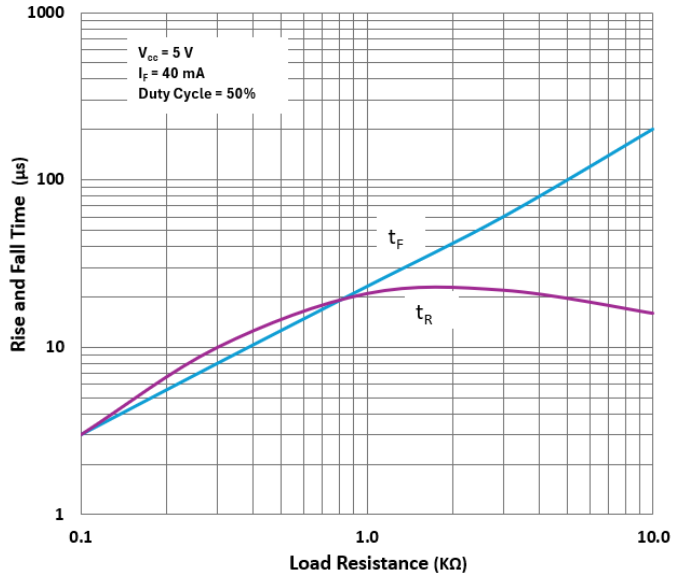
OPB800 - "51", "11"

Rise and Fall time vs Load Resistance



OPB800 - "55"

Transistor Output - Rise and Fall Time



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