

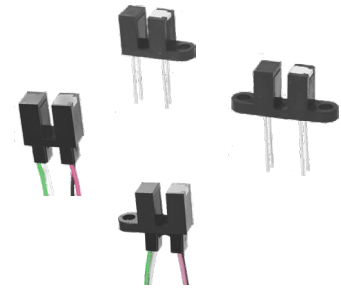
Slotted Optical Switch

OPB355T, OPB360, OPB370, OPB380, OPB390,
OPB859, OPB860, OPB870, OPB880, OPB890



Features:

- 0.125" (3.175 mm) slot width
- Choice of aperture (0.050" or 0.010" width)
- Choice of opaque or IR transmissive shell material
- Choice of mounting configurations
- Choice of lead spacing or #26 AWG UL rated wires



Description:

The slotted optical sensors in this series provide the flexibility of a custom device from a standard product line.

Building from a standard housing with a 0.125" (3.18 mm) wide slot, the user can specify output logic state, output driver circuit, aperture width, aperture surface and mounting tab locations. Furthermore, an option of #26 AWG UL rated wire or printed circuit board leads allows electrical interface flexibility.

The device body is an opaque plastic which minimizes sensitivity to both visible and near-infrared external light sources which may impact operation. Aperture width choices provide different optical resolution for motion sensing. A covered aperture provides dust protection, while an open aperture provides maximum protection against external light sources.

Phototransistor sensor devices are: OPB360, OPB370, OPB380, OPB390, OPB859, OPB860, OPB870, OPB880, OPB890. The OPB355T provides a photodiode detector, which has a lower linear output-versus-light.

Wide electrical output current ranges are available. LED emissions are near infrared (850-940 nm).

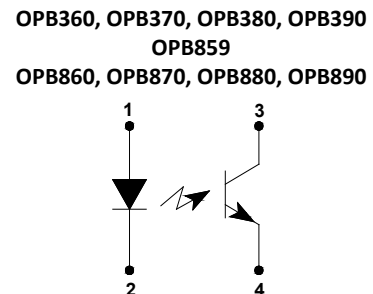
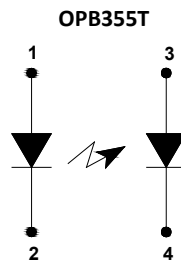
For application information, refer to Application Bulletins 248 and 213

Custom electrical, wire and cabling, and connector services are available.

Contact your local representative or OPTEK for more information.

Applications:

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



Wire Colors	
Color #	Description
1	Red
2	Black
3	White
4	Green

CONTAINS POLYSULFONE

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

Applies to: OPB360, OPB370, OPB380, OPB390
and OPB860, OPB870, OPB880, OPB890.



RoHS

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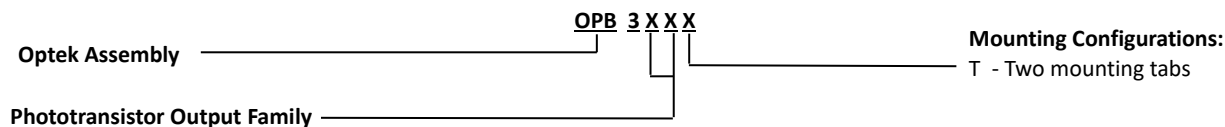
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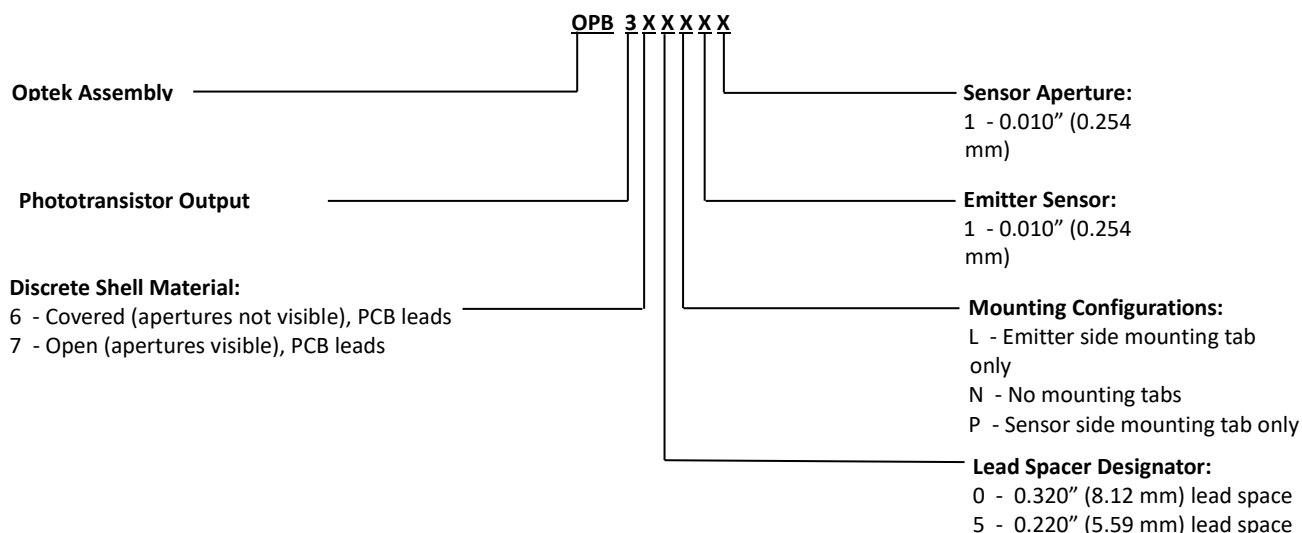
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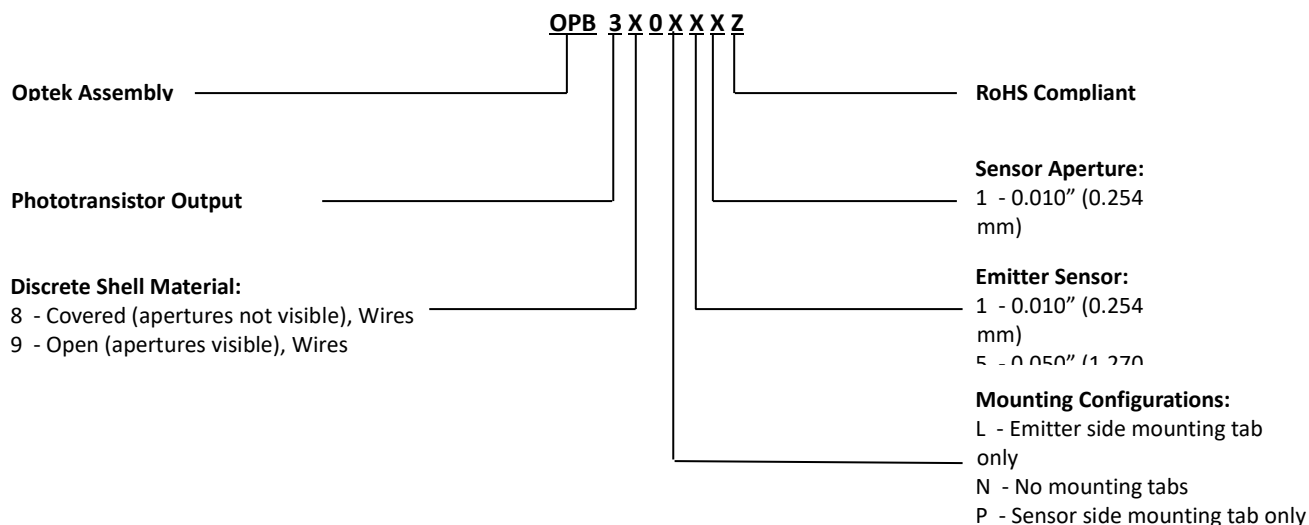
Part Number Guide (see active part number list) — OPB355



Part Number Guide (see active part number list) — OPB360 / OPB370



Part Number Guide (see active part number list) — OPB380 / OPB390



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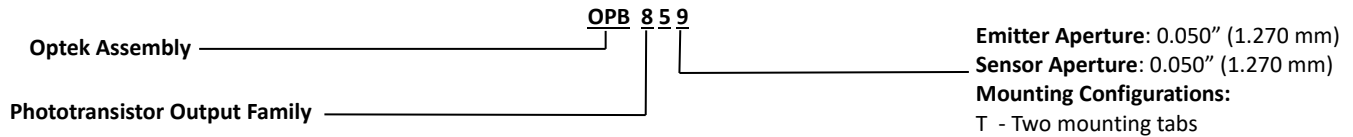
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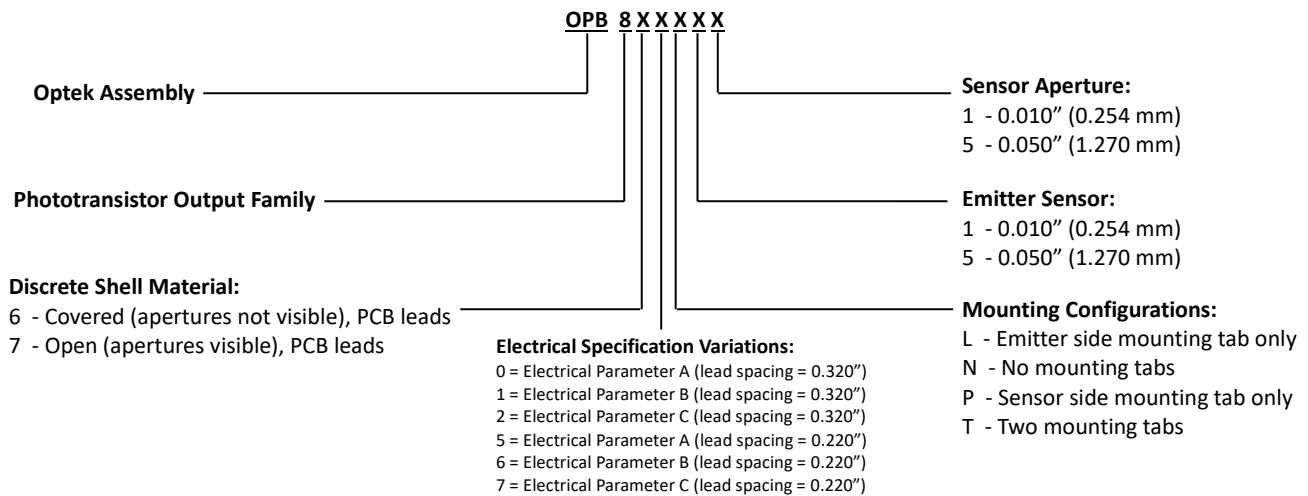
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Part Number Guide — OPB859

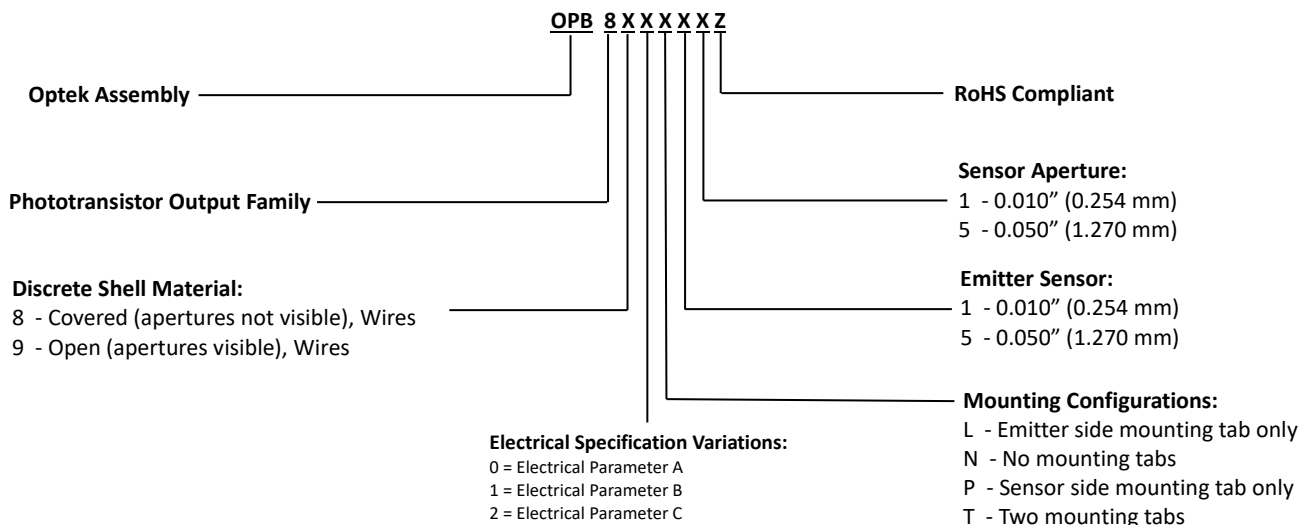


Part Number Guide (see active part number list) — OPB860 / OPB870



Note: Assemblies with dual 0.010" apertures are currently available with electrical parameter "A" only.

Part Number Guide (see active part number list) — OPB880 / OPB890



NOTE: Assemblies with dual 0.010" apertures are currently available with electrical parameter "A" only.
Wires = #26 AWG - 24" long. UL approved.

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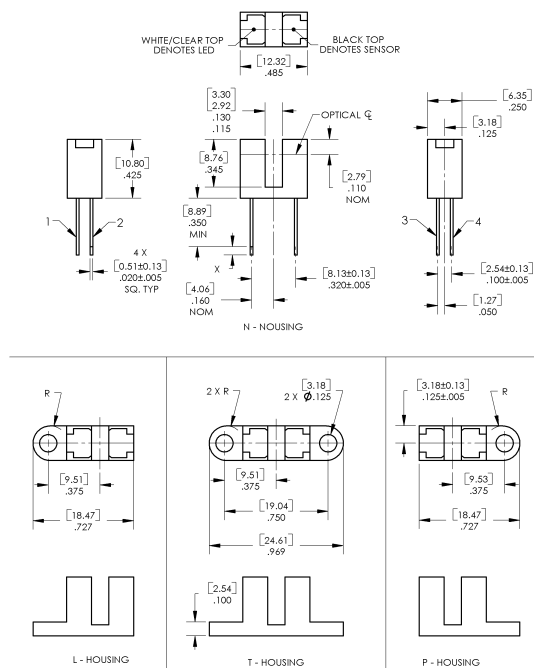
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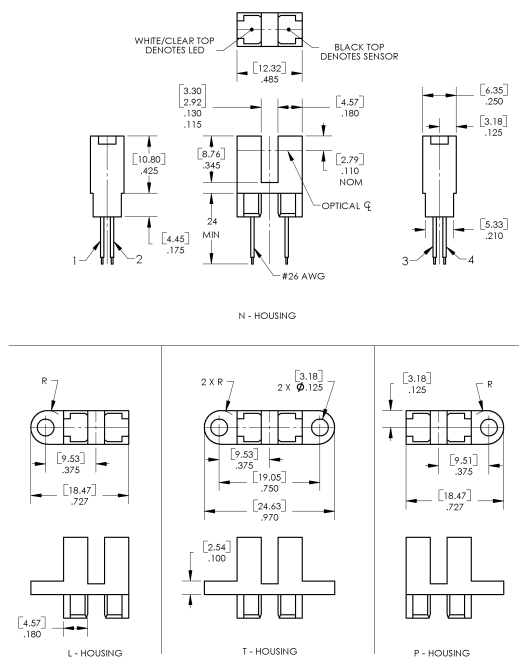
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OPB355, OPB360, OPB370

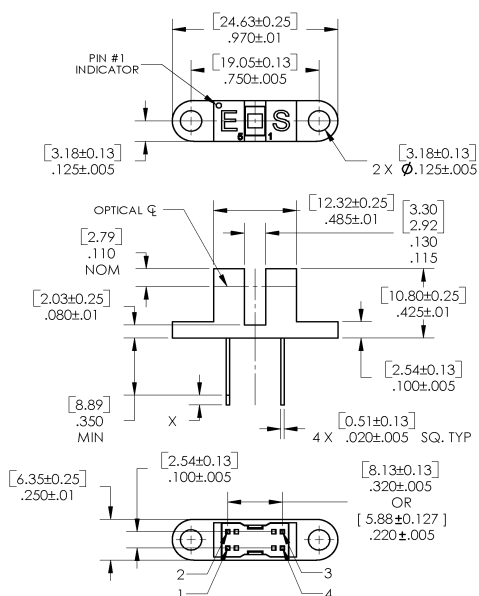


OPB380, OPB390

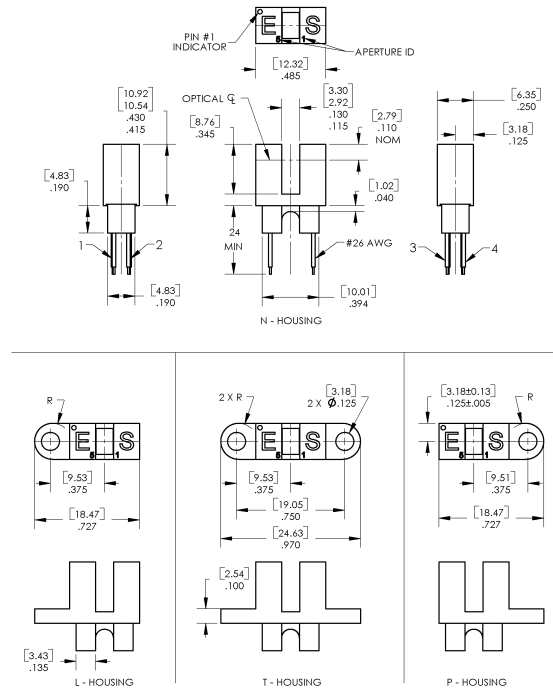


DIMENSIONS ARE IN INCHES AND MILLIMETERS
TOLERANCES ARE $\pm .010"$ [.25].

OPB859



OPB880, OPB890



DIMENSIONS ARE IN: [MILLIMETERS]
INCHES

Pin #	Emitter	Pin #	Transistor/Diode
1	Anode	3	Collector / Anode
2	Cathode	4	Emitter / Cathode

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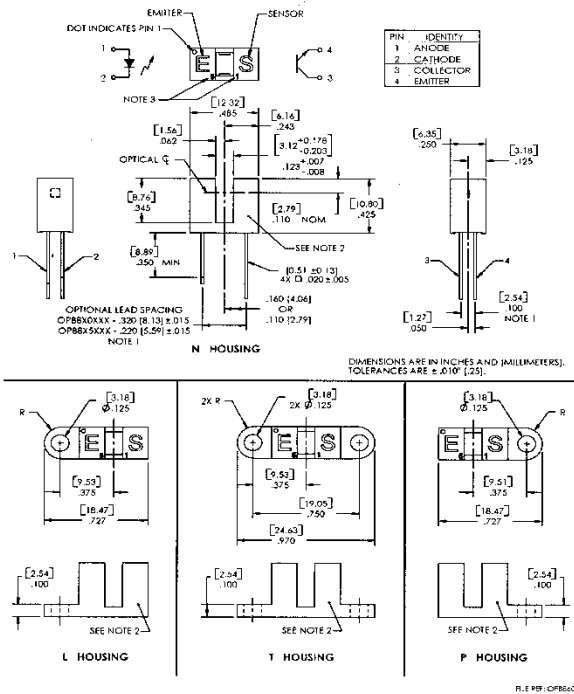
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OPB860, OPB870



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Electrical Specifications

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

Storage Temperature ⁽¹⁾ OPB355T, OPB360, OPB370, OPB859, OPB860, OPB870 Series OPB380, OPB390, OPB880, OPB890 Series	-40° C to +100° C -40° C to +85° C
Operating Temperature ⁽¹⁾	-40° C to +85° C
Lead Soldering Temperature ⁽⁶⁾ ⁽⁴⁾	260° C
Input LED	
Forward DC Current OPB355T, OPB360, OPB370, OPB380, OPB390, OPB859, OPB860, OPB870, OPB880, OPB890	50 mA
Peak Forward Current (1 μs pulse width, 300 pps)	1 A
Reverse DC Voltage	2 V
Power Dissipation ⁽²⁾	100 mW
Output Phototransistor/Diode	
Cathode-Anode Reverse Voltage -OPB355T	60 V
Collector-Emitter Voltage OPB360, OPB370, OPB380, OPB390, OPB859, OPB860, OPB870, OPB880, OPB890 Series	30 V
Emitter-Collector Voltage	5 V
Collector DC Current	30 mA
Power Dissipation ⁽²⁾	100 mW

Notes:

- (1) For wire series (OPB380, OPB390, OPB880 and OPB890), maximum storage and operating temperature is limited by the temperature rating of the lead wires.
- (2) Derate linearly 1.33 mW/° C above 25° C.
- (3) For OPB355T, OPB360 and OPB370, polarity is denoted by color of housing top: LED (clear); sensor (black).
- (4) Cleaning agents' methanol and isopropanol are recommended. Spray or wipe; do not submerge.
- (5) OPB380 and OPB390 wire terminations have 24" of 7-strand #26 AWG UL approved insulated wire on each terminal. These devices incorporate a wire strain relief at the housing surface. The insulation colors and functions are: IRED anode (red); IRED cathode (black); phototransistor collector (white); phototransistor emitter (green).
- (6) RMA flux is recommended. Duration can be extended to 10 seconds maximum when flow soldering.
- (7) All parameters were tested using pulse technique.

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Electrical Specifications

Electrical Characteristics ($T_A = 25^\circ\text{C}$ unless otherwise noted) ⁽⁷⁾

SYMBOL	PARAMETER	MIN	TYP	MAX	UNITS	TEST CONDITIONS
Input Transistor/Diode						
V_F	Forward Voltage	1.0	1.3	1.8	V	$I_F = 20\text{ mA}$
I_R	Reverse Current	-	-	100	μA	$V_R = 2\text{ V}$
Output Diode — OPB355T						
V_{BR}	Reverse Diode Breakdown Voltage	60	-	-	V	$I_R = 100\text{ }\mu\text{A}$, $I_F = 0$, $E_E = 0$
V_{FD}	Forward Voltage Photodiode	-	-	1.2	V	$I_F = 1\text{ mA}$, $I_R = 0$, $E_E = 0$
I_D	Reverse Dark Current	-	-	60	nA	$V_R = 30\text{ V}$, $E_E = 0$, $I_F = 0$
Output Transistor						
$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage	30	-	-	V	$I_C = 1\text{ mA}$
$V_{(BR)ECO}$	Emitter-Collector Breakdown Voltage	5	-	-	V	$I_E = 100\text{ }\mu\text{A}$
I_{CEO}	Collector-Emitter Dark Current	-	-	100	nA	$V_{CE} = 10\text{ V}$, $I_F = 0$, $E_E = 0$
Coupled						
I_L	On-State Collector Current OPB355T	10	-	200	μA	$V_R = 5\text{ V}$, $I_F = 40\text{ mA}$
$V_{CE(SAT)}$	Collector-Emitter Saturation Voltage OPB859 OPB860/870/865/875 (Para. A) OPB861/871/866/876 (Para. B) OPB862/872/867/877 (Para. C) OPB880/890/ (Para. A) OPB881/891 (Para. B) OPB882/892 (Para. C)	- - - - - - -	- - - - - - -	0.4 0.4 0.4 0.6 0.4 0.4 0.6	V	$I_C = 125\text{ }\mu\text{A}$, $I_F = 20\text{ mA}$ $I_C = 400\text{ }\mu\text{A}$, $I_F = 20\text{ mA}$ $I_C = 800\text{ }\mu\text{A}$, $I_F = 20\text{ mA}$ $I_C = 1800\text{ }\mu\text{A}$, $I_F = 20\text{ mA}$ $I_C = 400\text{ }\mu\text{A}$, $I_F = 20\text{ mA}$ $I_C = 800\text{ }\mu\text{A}$, $I_F = 10\text{ mA}$ $I_C = 1800\text{ }\mu\text{A}$, $I_F = 20\text{ mA}$
$I_{C(ON)}$	On-State Collector Current OPB36X, OPB37X (T, N, L, P 11) OPB36X, OPB37X (T, N, L, P 51) OPB36X, OPB37X (T, N, L, P 55) OPB38X, OPB39X (T, N, L, P 11) OPB38X, OPB39X (T, N, L, P 51) OPB38X, OPB39X (T, N, L, P 55)	1.0 2.5 3.5 1.0 2.5 3.5	- - - - - -	5 10 14 5 10 14	mA	$V_{CE} = 0.4\text{ V}$, $I_F = 20\text{ mA}$
	OPB859	250	-	-	μA	$V_{CE} = 10\text{ V}$, $I_F = 20\text{ mA}$
	OPB860/870/865/875 (Para. A) OPB861/871/866/876 (Para. B) OPB862/872/867/877 (Para. C) OPB880/890/ (Para. A) OPB881/891 (Para. B) OPB882/892 (Para. C)	0.5 1.0 1.8 0.5 1.0 1.8	- - - - - -	- - - - - -	mA	$V_{CE} = 10\text{ V}$, $I_F = 20\text{ mA}$ $V_{CE} = 5\text{ V}$, $I_F = 10\text{ mA}$ $V_{CE} = 0.6\text{ V}$, $I_F = 20\text{ mA}$ $V_{CE} = 10\text{ V}$, $I_F = 20\text{ mA}$ $V_{CE} = 5\text{ V}$, $I_F = 10\text{ mA}$ $V_{CE} = 0.6\text{ V}$, $I_F = 20\text{ mA}$

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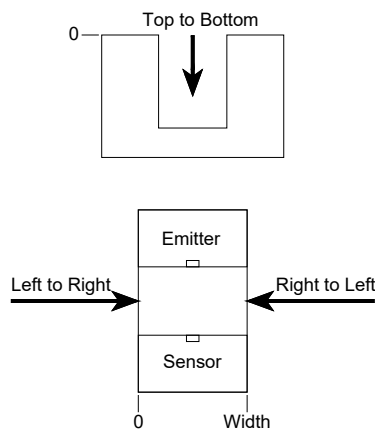
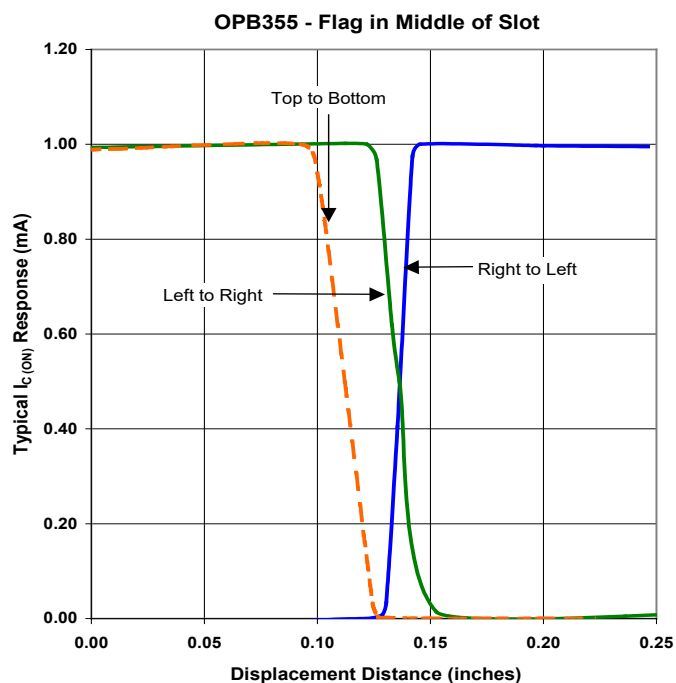
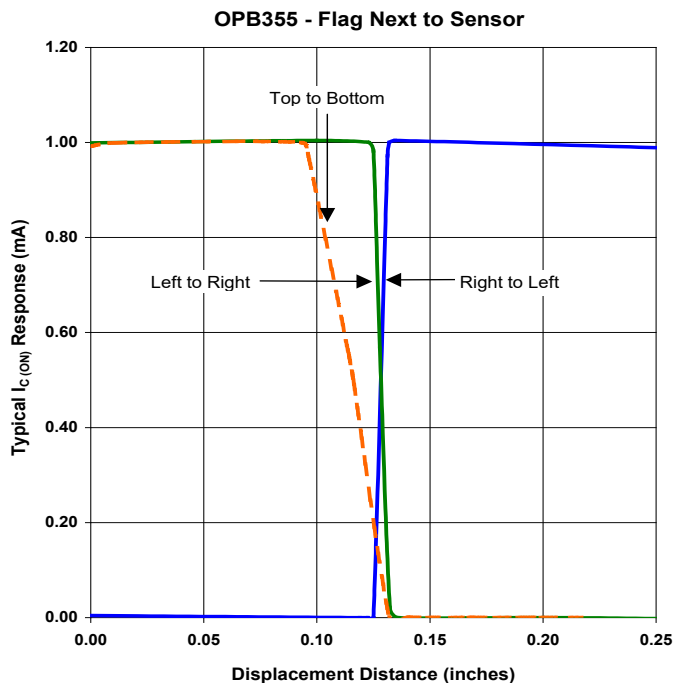
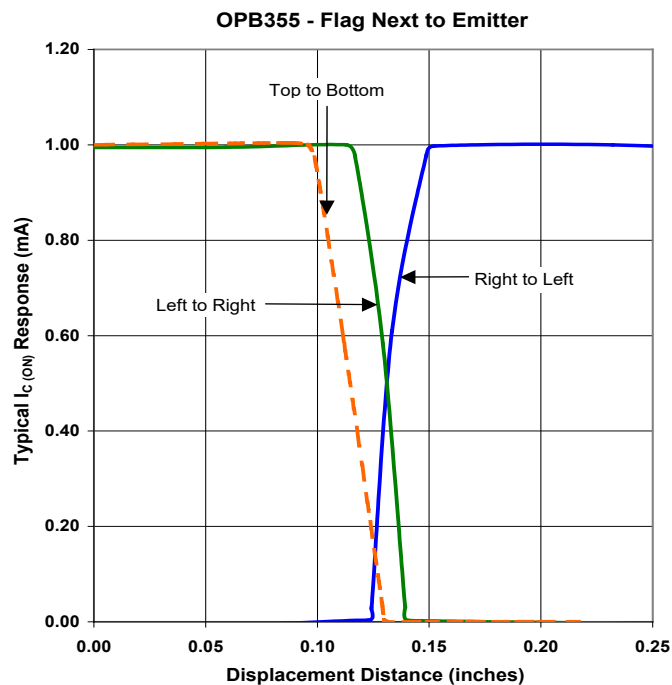
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Typical Performance



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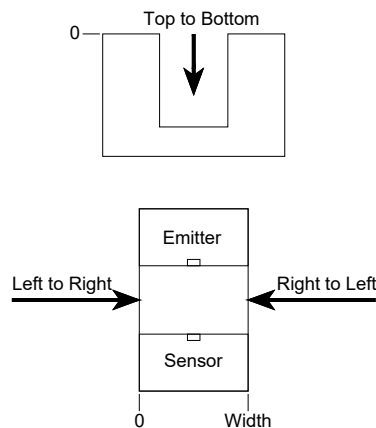
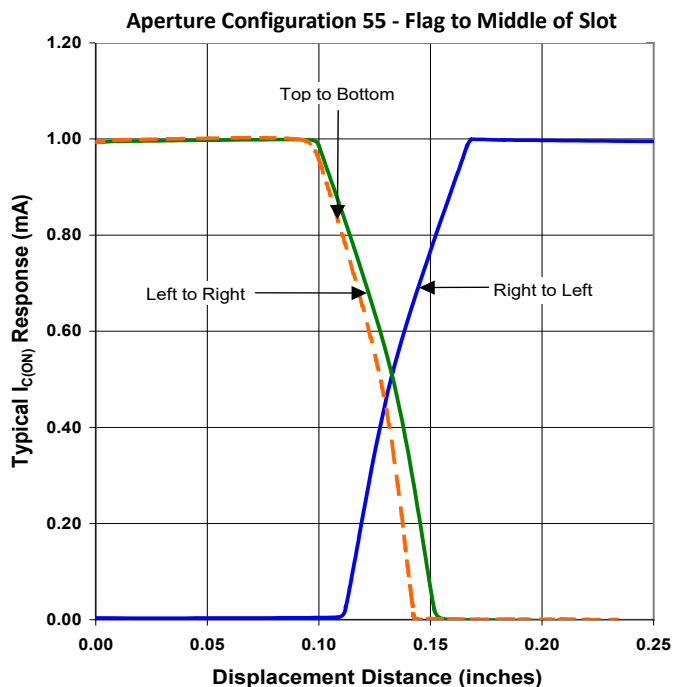
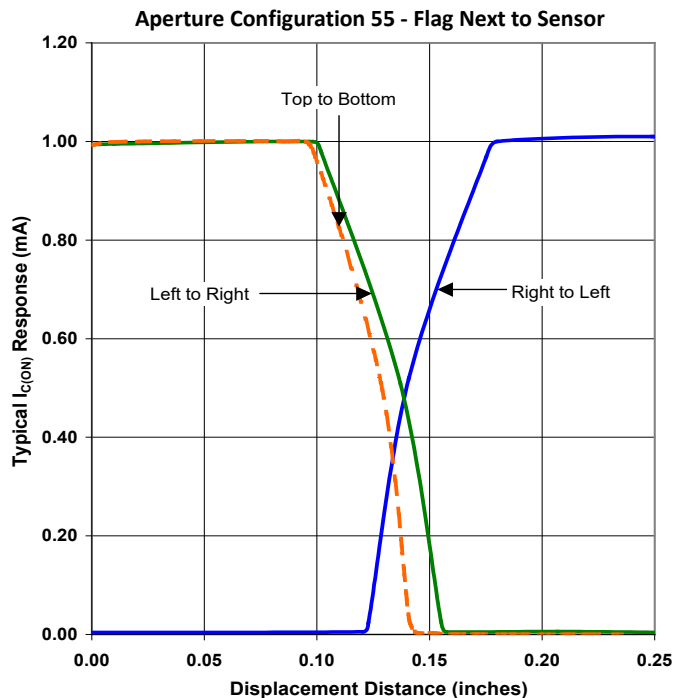
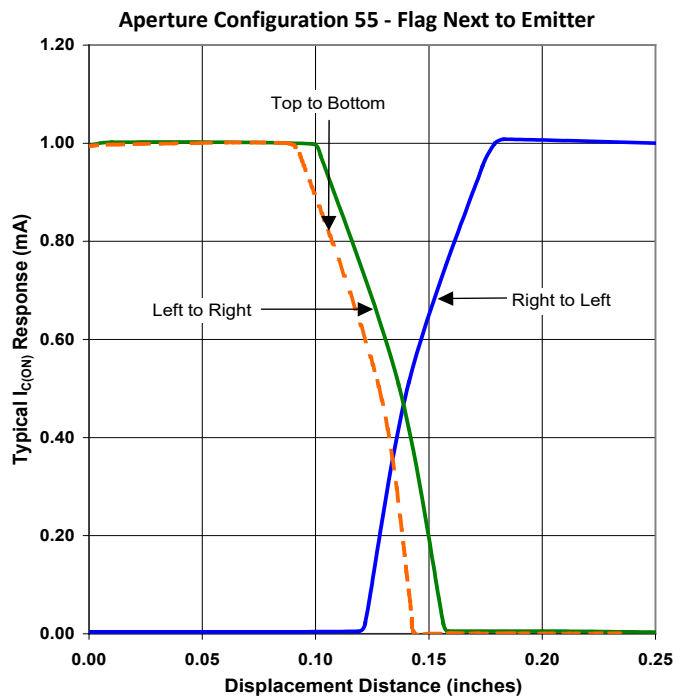
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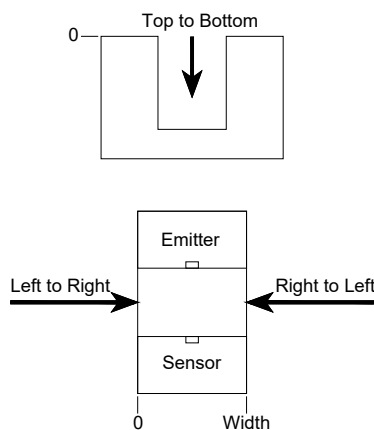
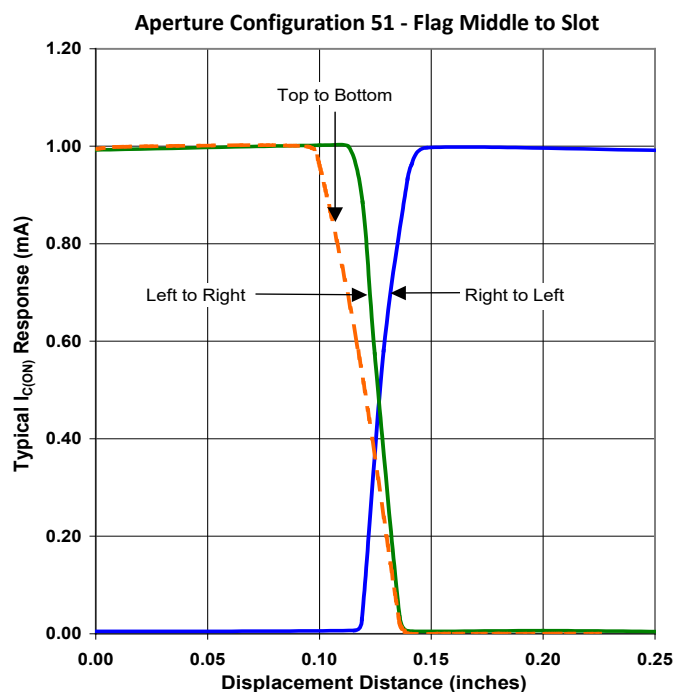
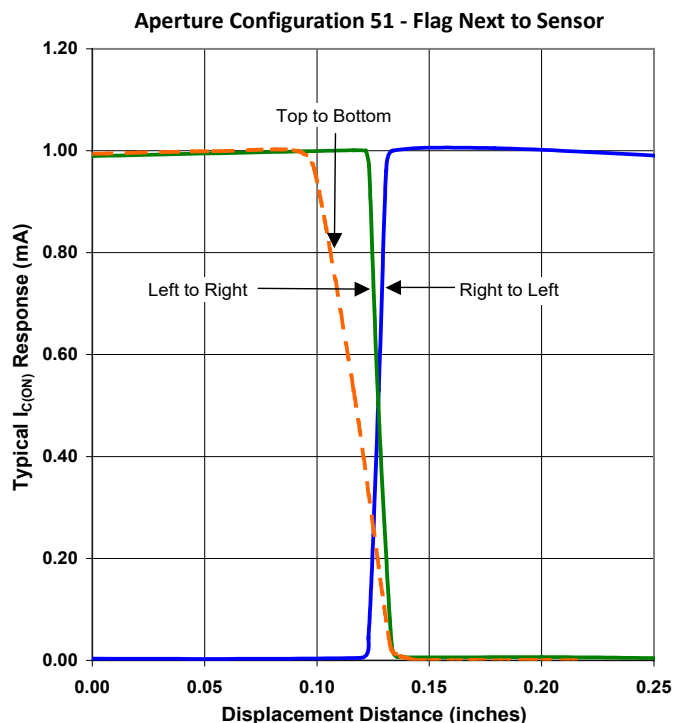
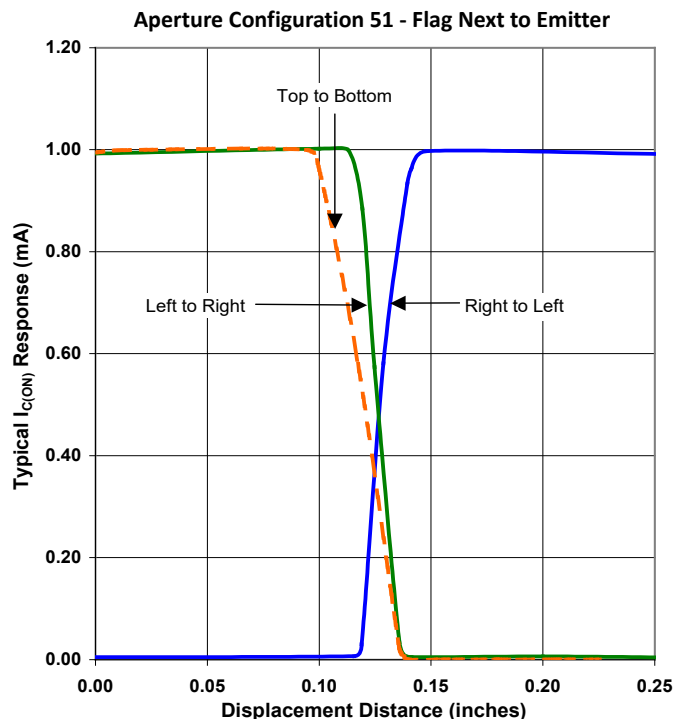
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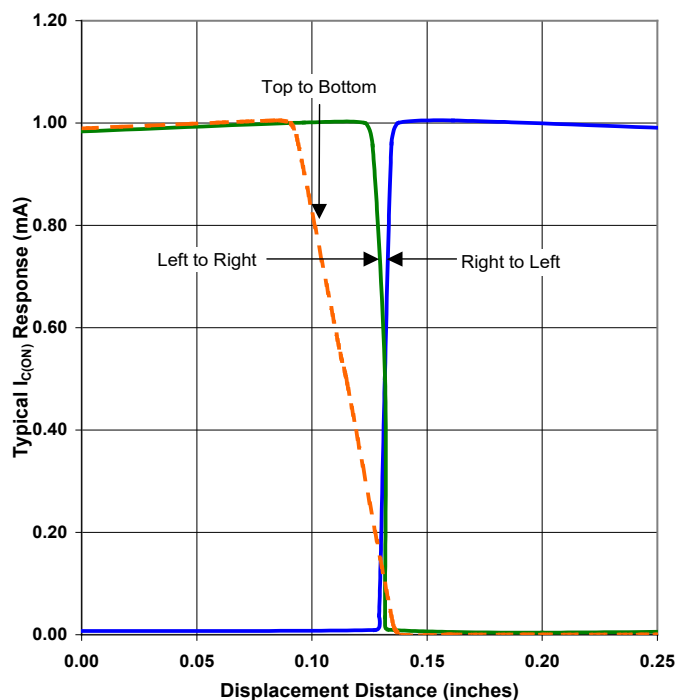
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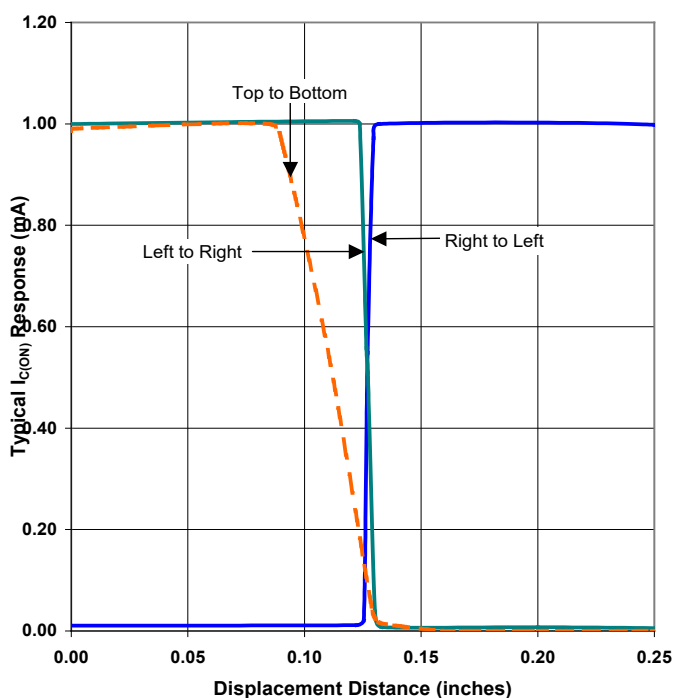


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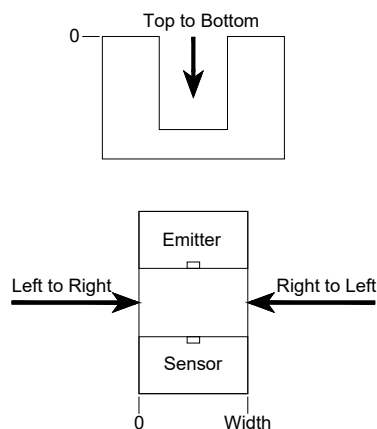
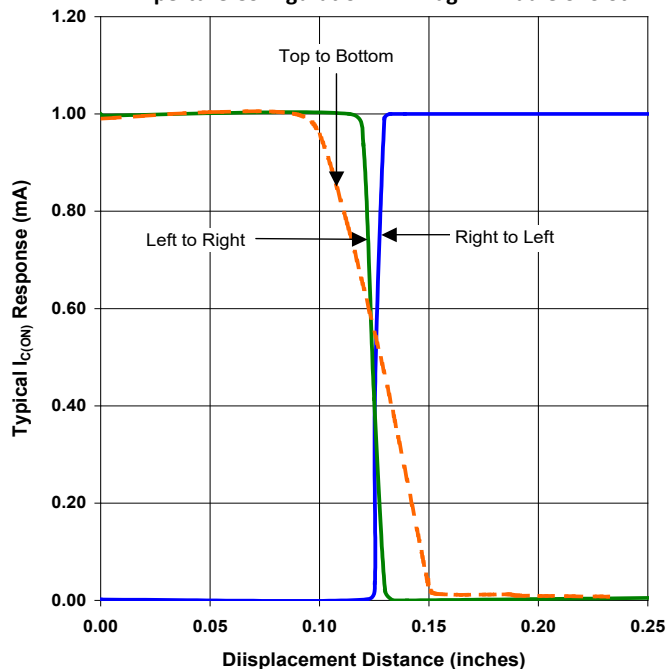
Aperture Configuration 11 - Flag Next to Emitter



Aperture Configuration 11 - Flag Next to Sensor



Aperture Configuration 11 - Flag in Middle of Slot



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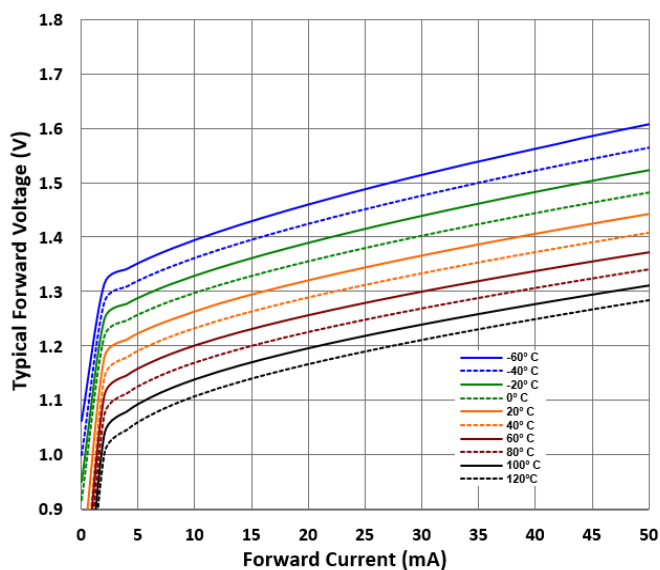
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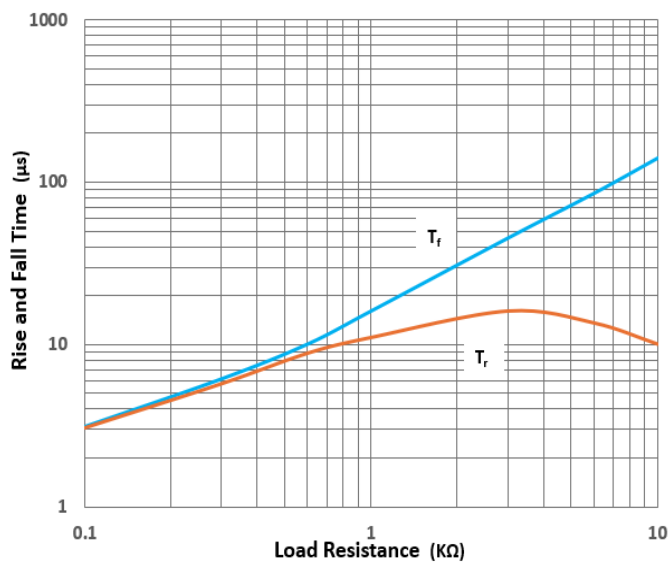


Typical Performance Part #s Ending in 5

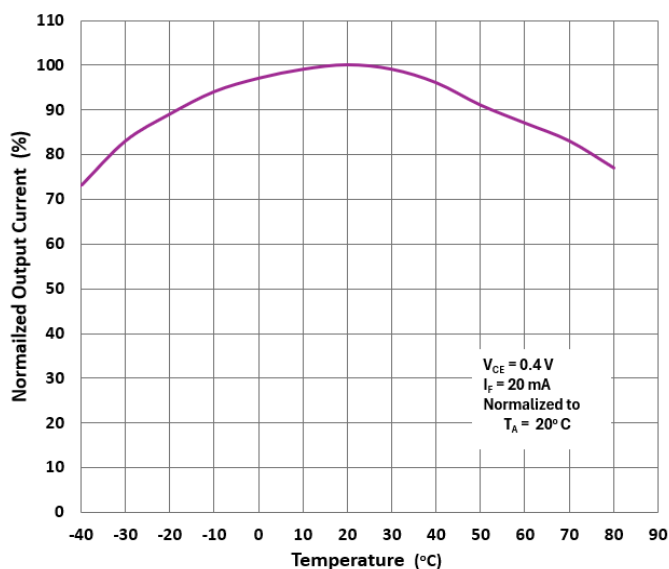
LED Forward Voltage vs I_F vs Temperature



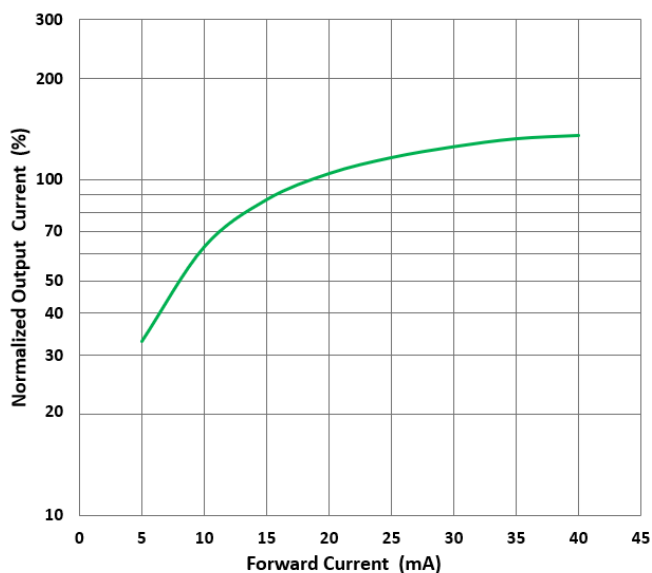
Rise and Fall time vs Load Resistance



Output Current vs Temperature



Output Current vs LED Forward Current



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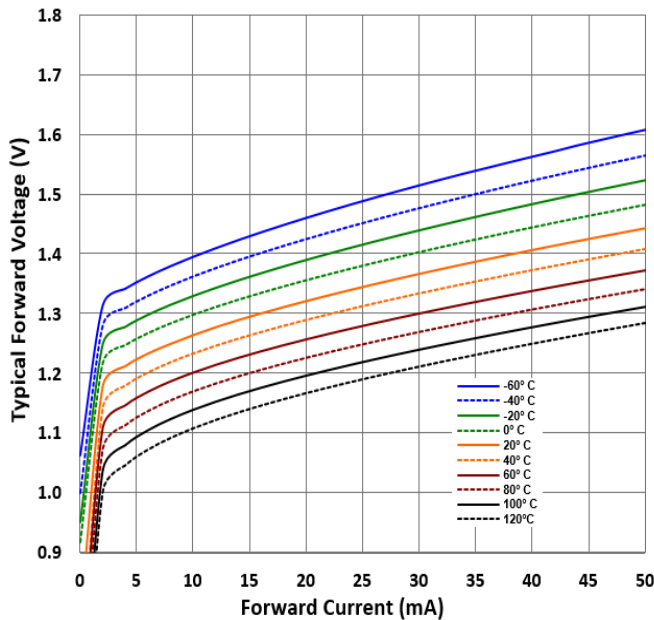
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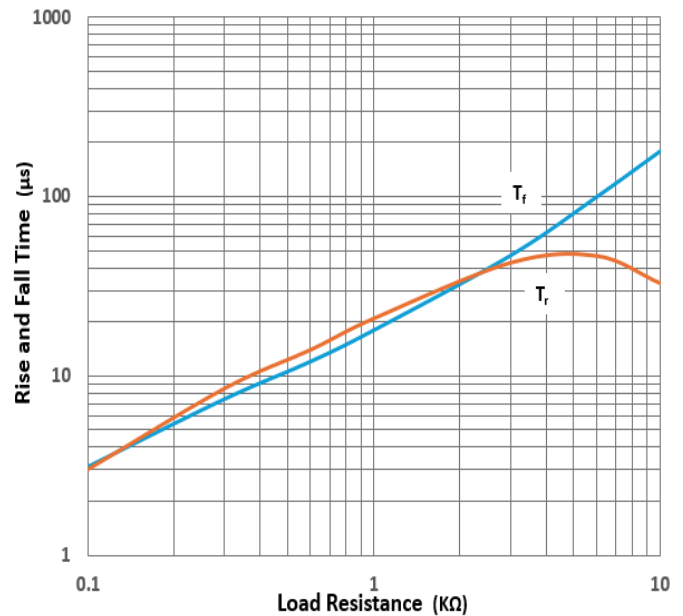


Typical Performance Part #s Ending in 1

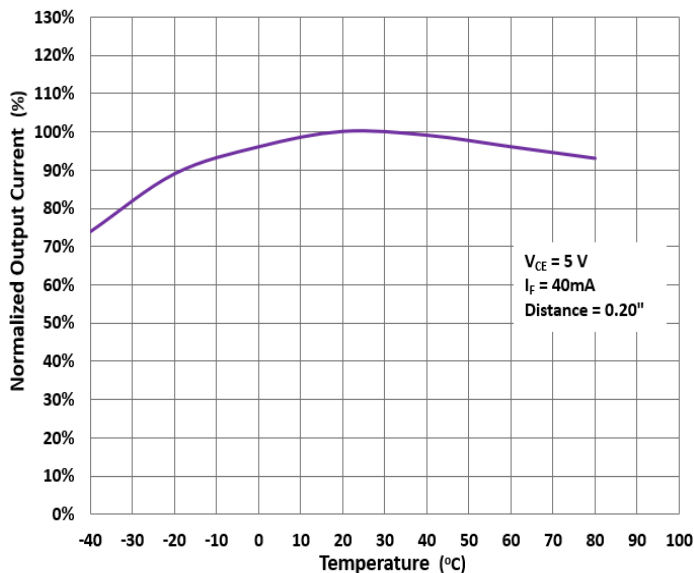
LED Forward Voltage vs I_F vs Temperature



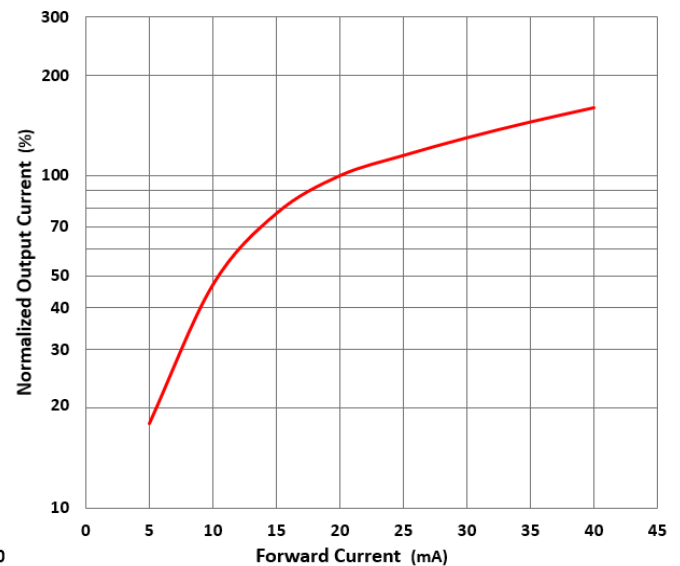
Rise and Fall time vs Load Resistance



Collector Current vs Temperature



Output Current vs LED Forward Current



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