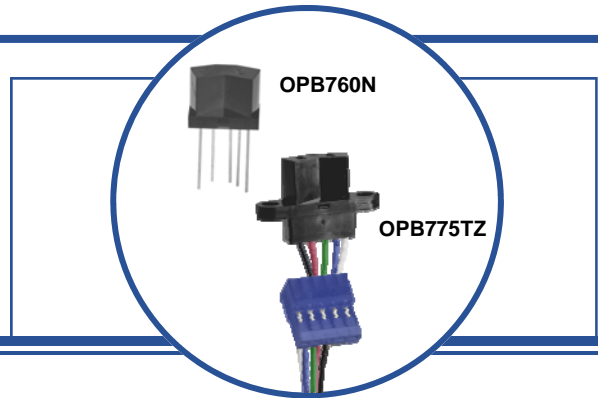


Photologic® Reflective Object Sensor
OPB760, OPB761, OPB762, OPB763 (Series N and T)
OPB770, OPB771, OPB772, OPB773 (Series NZ and TZ)



Features:

- Choice of mounting configurations
- Choice of four output configurations
- .040" (10.160 mm) PCBoard mount (N and T series)
- 12" (304.800 mm) AWG 26 wires (NZ and TZ series)



Description:

The **OPB760N, OPB760T, OPB770N** and **OPB770T** series of reflective assemblies feature Photologic® output. The electrical output can be specified as either TTL Totem-Pole or TTL Open-Collector, either of which can be supplied with inverter or buffer output polarity.

OPB760N and **OPB760T** series devices are designed for PCBoard mounting and have 0.04" (10 mm) long leads. **OPB770N** and **OPB770T** series devices are designed for remote mounting with two mounting tags and have 12" (305 mm) long, UL approved 26 AWG wires.

All devices in this series offer the added stability of a built-in hysteresis amplifier.

Custom electrical, wire and cabling and connectors are available. Contact your local representative or OPTEK for more information.

Applications:

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

Ordering Information					
Part Number	LED Peak Wavelength	Sensor Photologic®	Reflection Distance (Inch) Min / Max	Mounting	Tabs
OPB760N	890 nm	Totem-Pole	0.080" / 0.220"	PCBoard .40" (10.160 mm) leads)	No tabs
OPB761N		Open Collector			2 tabs
OPB762N		Inv-Totem-Pole			No tabs
OPB763N		Inv-Open Collector			2 tabs
OPB760T		Totem-Pole			No tabs
OPB761T		Open Collector			2 tabs
OPB762T		Inv-Totem-Pole			No tabs
OPB763T		Inv-Open Collector			2 tabs
OPB770NZ		Totem-Pole			No tabs
OPB771NZ		Open Collector			2 tabs
OPB772NZ		Inv-Totem-Pole		No tabs	
OPB773NZ		Inv-Open Collector		2 tabs	
OPB770TZ		Totem-Pole		No tabs	
OPB771TZ		Open Collector		2 tabs	
OPB772TZ		Inv-Totem-Pole		No tabs	
OPB773TZ		Inv-Open Collector		2 tabs	



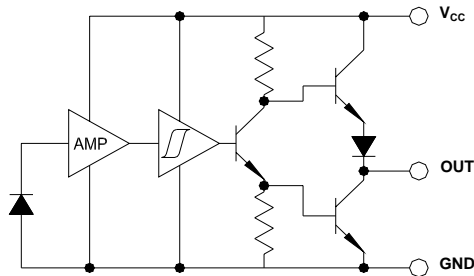
RoHS

OPTEK reserves the right to make changes at any time in order to improve design and to supply the best product possible.

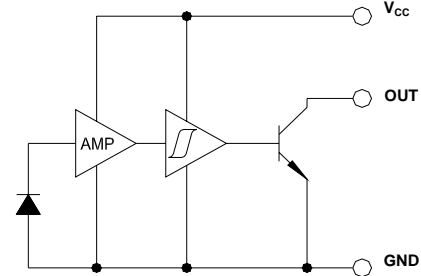
Photologic® Reflective Object Sensor
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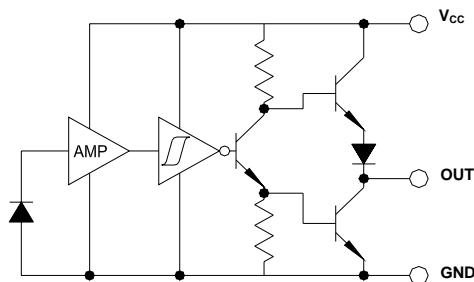
OPB760, OPB770 Buffered Totem-Pole



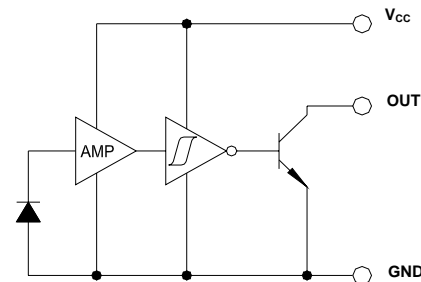
OPB761, OPB771 Buffered Open Collector



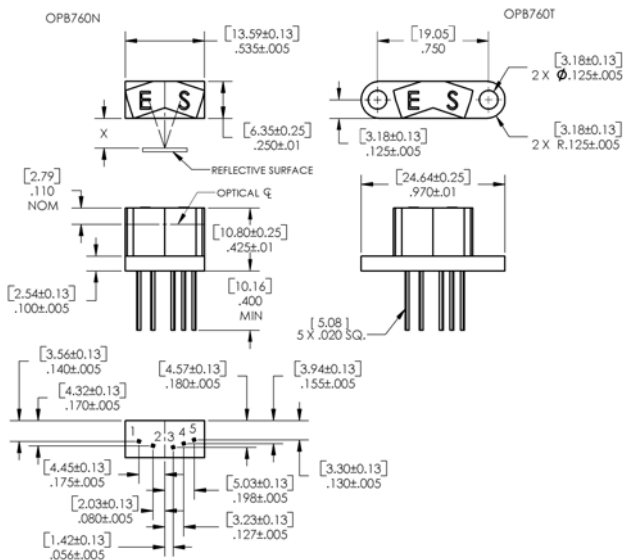
OPB762, OPB772 Inverted Totem-Pole



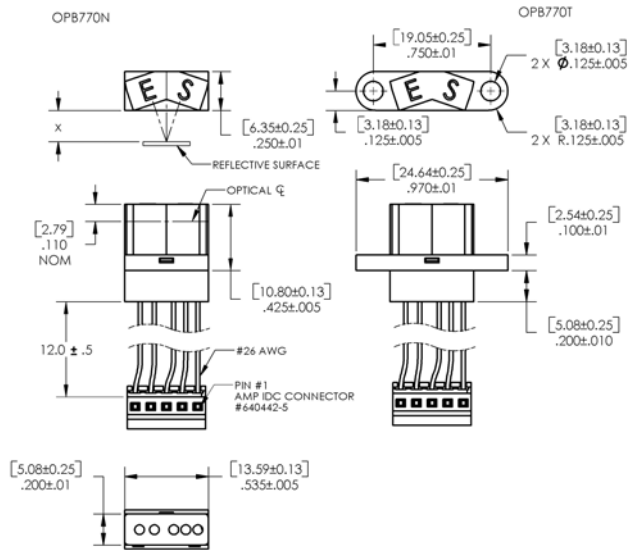
OPB763, OPB773 Inverted Open-Collector



OPB760 (N and T Series)



OPB770 (NZ and TZ Series)



X = 0.08" [2.0mm] to 0.22" [5.6mm]

DIMENSIONS ARE IN: [MILLIMETERS]
INCHES

Pin #	Description	Pin#	Description
1	Cathode	3	Ground
2	Anode	4	Output
		5	V _{CC}

Color/Pin#	Description	Color/Pin#	Description
Red-4	Anode	White-1	V _{CC}
Black-5	Cathode	Blue-2	Output
		Green-3	Ground

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

Supply Voltage, V_{CC} (not to exceed 3 seconds)	10 V
Storage Temperature Range	-40°C to $+85^\circ\text{C}$
Operating Temperature Range	-40°C to $+70^\circ\text{C}$
Lead Soldering Temperature (1/16" inch (1.6 mm) from case for 5 seconds with soldering iron) ⁽¹⁾	260° C
Input Diode Power Dissipation ⁽²⁾	100 mW
Output Photologic® Power Dissipation ⁽³⁾	200 mW
Total Device Power Dissipation ⁽⁴⁾	300 mW
Voltage at Output Lead (Open Collector Output)	35 V
Diode Forward DC Current	40 mA
Diode Reverse DC Voltage	3 V

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

SYMBOL	PARAMETER	MIN	TYP	MAX	UNITS	TEST CONDITIONS
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Input Diode

V_F	Forward Voltage	-	-	1.8	V	$I_F = 40\text{ mA}$, $T_A = 25^\circ\text{C}$
I_R	Reverse Current	-	-	100	μA	$V_R = 2.0\text{ V}$, $T_A = 25^\circ\text{C}$

Output Photologic® Sensor

V_{CC}	Operating DC Supply Voltage	4.75	-	5.25	V	
I_{CCL}	Low Level Supply Current: Buffered Totem-Pole Output ⁽⁵⁾⁽⁶⁾ Buffered Open-Collector Output ⁽⁵⁾⁽⁶⁾	-	-	10	mA	$V_{CC} = 5.25\text{ V}$, $I_f = 0\text{ mA}$ (output open)
	Inverted Totem-Pole Output ⁽⁵⁾ Inverted Open-Collector Output ⁽⁵⁾	-	-	10	mA	$V_{CC} = 5.25\text{ V}$, $I_f = 0\text{ mA}$ (output open)
I_{CCH}	High Level Supply Current: Buffered Totem-Pole Output ⁽⁵⁾⁽⁶⁾ Buffered Open-Collector Output ⁽⁵⁾	-	-	10	mA	$V_{CC} = 5.25\text{ V}$, $I_f = 25\text{ mA}$ (output open)
	Inverted Totem-Pole Output ⁽⁵⁾⁽⁶⁾ Inverted Open-Collector Output ⁽⁵⁾⁽⁶⁾	-	-	10	mA	$V_{CC} = 5.25\text{ V}$, $I_f = 0\text{ mA}$ (output open)
I_{OH}	High Level Output Voltage: Buffered Open-Collector Output	-	-	100	μA	$V_{CC} = 4.5\text{ V}$, $I_f = 25\text{ mA}$, $V_{OH} = 30\text{ V}$, $T_A=25^\circ\text{C}$
	Inverted Open-Collector Output	-	-	100	μA	$V_{CC} = 4.5\text{ V}$, $I_f = 0\text{ mA}$, $V_{OH} = 30\text{ V}$, $T_A = 25^\circ\text{C}$

Notes:

- (1) RMA flux is recommended. Duration can be extended to 10 seconds maximum when flow soldering.
- (2) Derate linearly 2.22 mW/°C above 25° C.
- (3) Derate linearly 4.44 mW/°C above 25° C.
- (4) Derate linearly 6.66 mW/°C above 25° C. Normal application would be with light source blocked, simulated by $I_f=0\text{ mA}$.
- (5) Tested at $d = 0.080"$ (mm) from a 90% diffuse white test surface.
- (6) Normal application would be with light source blocked, simulated by $I_f = 0\text{ mA}$.
- (7) All parameters tested using pulse technique.

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

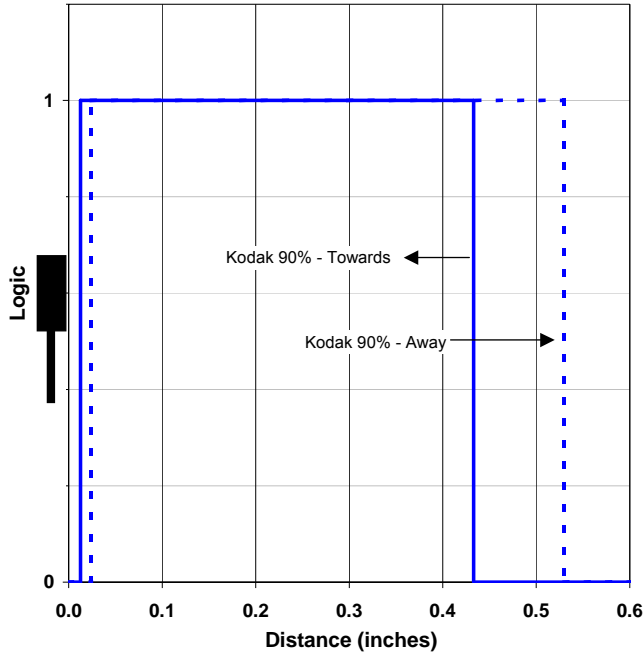
SYMBOL	PARAMETER	MIN	TYP	MAX	UNITS	TEST CONDITIONS
Output Photologic® Sensor (continued)						
$I_{F(+)}$	LED Positive-Going Threshold Current ⁽²⁾	-	-	25	mA	$V_{CC} = 5\text{ V}$, $T_A = 25^\circ\text{ C}$
$I_{F(+)} / I_{F(-)}$	Hysteresis ⁽²⁾	1.1	-	2.0	-	$V_{CC} = 5\text{ V}$
I_{OS}	Short Circuit Output Current: Buffered Totem-Pole Output ⁽¹⁾	-15	-	-100	mA	$I_F = 25\text{ mA}$, $V_{CC} = 5.25\text{ V}$, Output = GRD
	Inverted Totem-Pole Output ⁽¹⁾	-15	-	-100	mA	$I_F = 0\text{ mA}$, $V_{CC} = 5.25\text{ V}$, Output = GRD
V_{OL}	Low Level Output Voltage: Buffered Totem-Pole Output ⁽¹⁾⁽⁴⁾	-	-	0.4	V	$V_{CC} = 4.5\text{ V}$, $I_{OL} = 12.8\text{ mA}$, $I_F = 0\text{ mA}$ or $I_F = 30\text{ mA}$
	Buffered Open-Collector Output ⁽¹⁾⁽⁴⁾	-	-	0.4	V	
	Inverted Totem-Pole Output	-	-	0.4	V	$V_{CC} = 4.5\text{ V}$, $I_{OL} = 12.8\text{ mA}$, $I_F = 25\text{ mA}$
	Inverted Open-Collector Output ⁽¹⁾⁽⁴⁾	-	-	0.4	V	
V_{OH}	High Level Output Voltage: Buffered Totem-Pole Output ⁽¹⁾	2.4	-	-	V	$V_{CC} = 4.5\text{ V}$, $I_{OH} = -800\text{ }\mu\text{A}$, $I_F = 25\text{ mA}$
	Inverted Totem-Pole Output ⁽¹⁾⁽⁴⁾	2.4	-	-	V	$V_{CC} = 4.5\text{ V}$, $I_{OH} = -800\text{ }\mu\text{A}$, $I_F = 0\text{ mA}$
	Inverted Totem-Pole Output ⁽³⁾ Inverted Open-Collector Output ⁽³⁾	2.4 2.4	- -	- -	V V	$V_{CC} = 4.5\text{ V}$, $I_{OL} = -800\text{ }\mu\text{A}$, $I_F = 30\text{ mA}$

Notes:

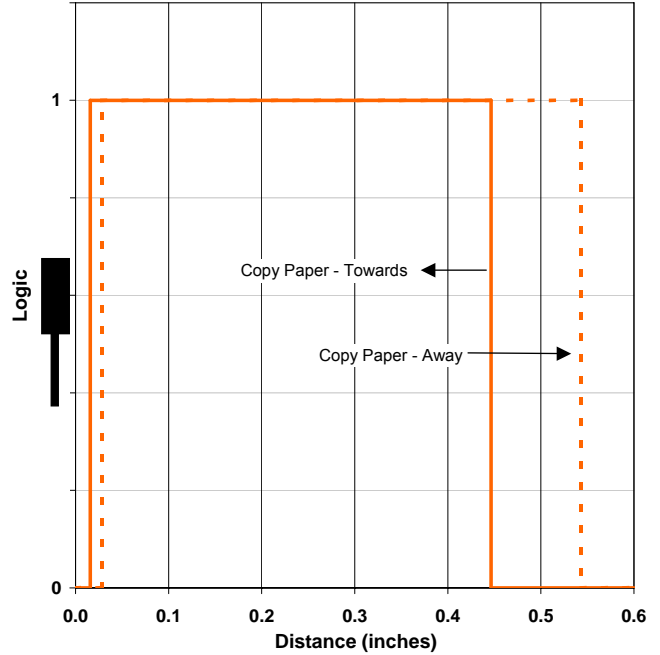
- (1) Tested at $d = 0.080''$ (mm) from a 90% diffuse white test surface.
- (2) Tested at $d = 0.080''$ (mm), $0.150''$ (mm) and $0.220''$ (mm) from a 90% diffuse white test surface. Reference: Eastman Kodak, Catalog #E 152 7795.
- (3) Tested at $d = 0.080''$ (mm), $0.150''$ (mm) and $0.220''$ (mm) from a 5% diffuse black test surface.
- (4) Normal application would be with light source blocked, simulated by $I_F = 0\text{ mA}$.
- (5) OPB760N through OPB763N series devices are terminated with $0.20''$ (mm) square leads designed for printed PCBoard mounting.
- (6) OPB770NZ through OPB773NZ series devices are terminated with 12 inches (mm) of 7-strand 26 AWG UL1429 insulated wire on each terminal. A standard AMP No. 640442-5 connector has been attached to the lead wires to ease connection to wire harnesses.
- (7) OPB760T through OPB763T series devices are terminated with $0.020''$ (mm) square leads designed for printed PCBoard mounting.
- (8) OPB770TZ through OPB773TZ series are terminated with $12''$ (mm) of 7-strand 26 AWG UL1429 insulated wire on each terminal. A standard AMP No. 640442-5 connector has been attached to the lead wires to ease connection to wire harnesses.
- (9) All parameters tested using pulse technique.

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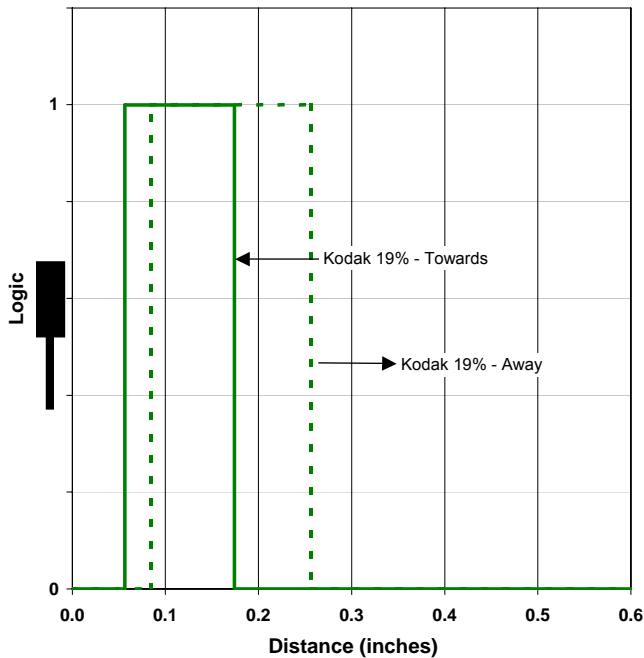
Logic Level vs Distance



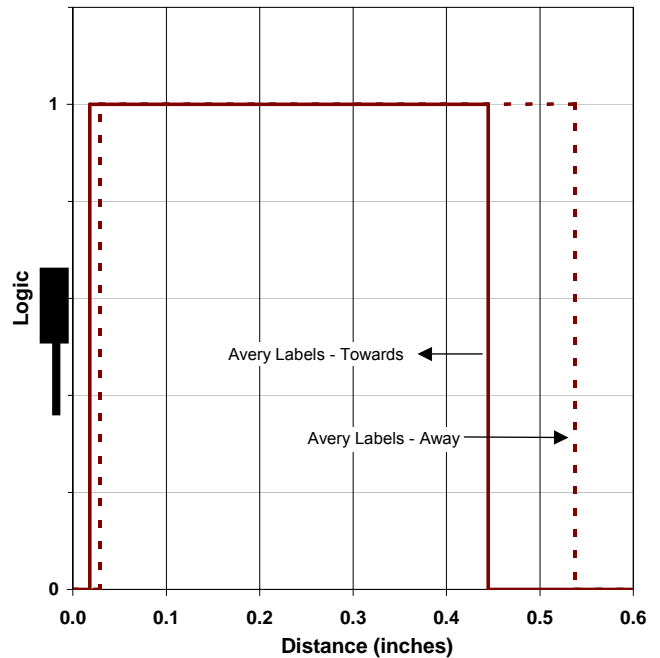
Logic Level vs Distance



Logic Level vs Distance

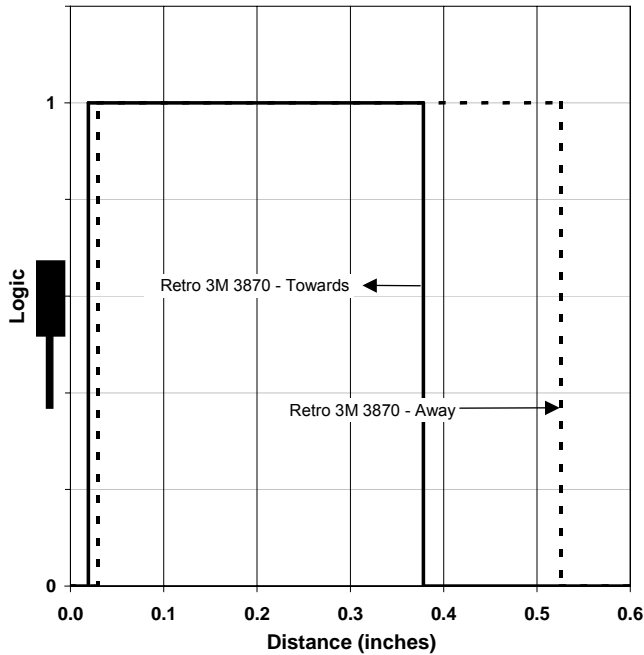


Logic Level vs Distance

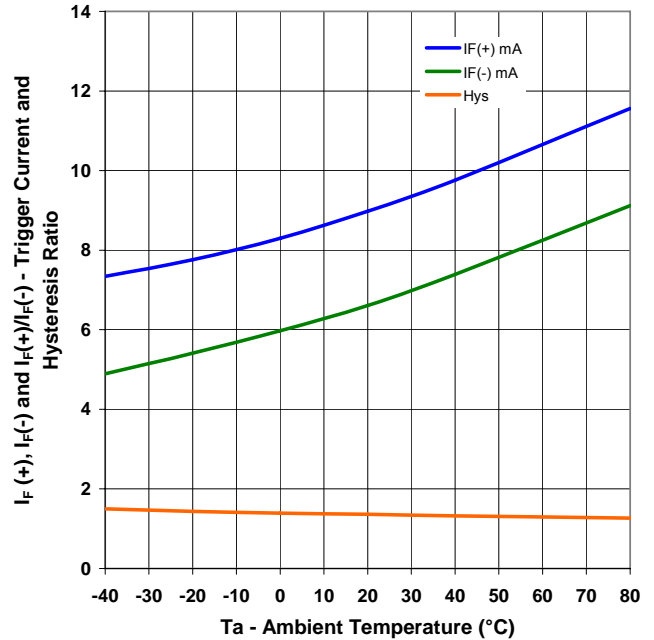


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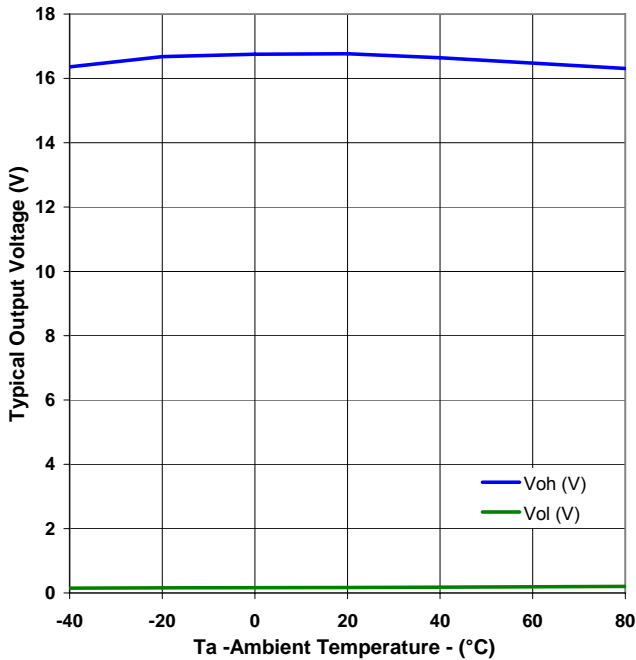
Logic Level vs Distance



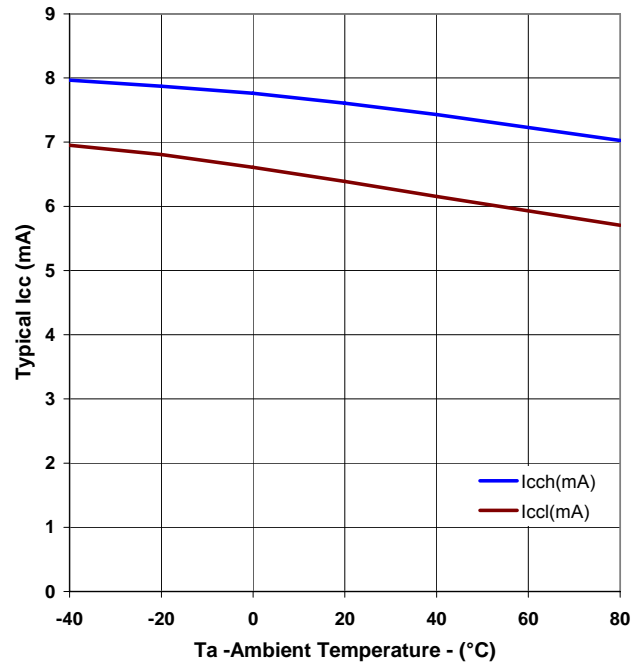
Typical Trigger Current and Hysteresis Ratio vs Ambient Temperature



Output Voltage vs Ambient Temperature



Supply Current vs Ambient Temperature



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