

# Optocoupler—DIP Package

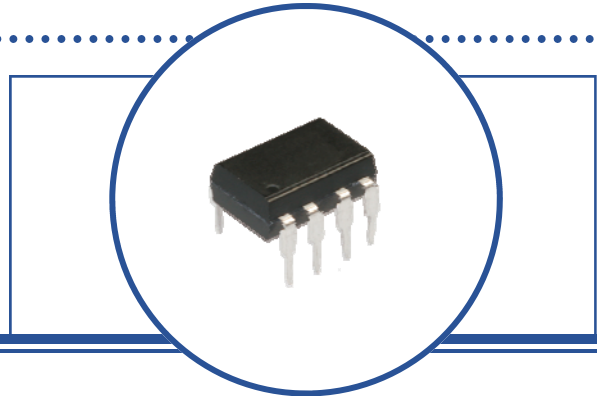
## OPIA800 through OPID804



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### Features:

- 5,000 Vrms electrical isolation
- Choice of a Single and Dual LED
- Choice of Phototransistor or Photologic® Sensor
- Low-cost plastic Dual-In-Line (DIP) package



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### Description:

The OPIA800D through OPID804D optocouplers are designed for applications that utilize a digital output (Photologic®) in a dual-in-line package. Isolation voltage from 2,500 to 5,000 Volts RMS product are designed for some of the most stringent power system isolation requirements.

Theory of operation: The LED transmitter is used to illuminate the Photosensor providing electrical isolation between two power systems while maintaining the ability to transmit information from one power system to the other. In many applications, analog or digital signals may be required to be transmitted between two power systems while maintaining isolation between the power systems up to 5,000 volts RMS. A variety of LED and photosensor configurations are available depending on the system requirements

All DIP product is shipped in a shipping tube with "TU" identified on the end of the part number.  
Example: OPI800DTU is a 8 Pin DIP shipped in a tube (TU).

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### Applications:

- High voltage isolation
- PCBoard power system isolation
- Industrial equipment power isolation
- Medical equipment power isolation
- Office equipment



**RoHS**

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# Optocoupler—DIP Package

## OPIA800 through OPID804



### Analog Output Devices Ordering Information

Part Number	Isolation Voltage Max. (Vrms)	CTR Min/Typ/Max	Typ. Tph / Tpl (ns) [R <sub>L</sub> = ohms]	Package	Configuration
OPIA800	2,500	300 / 1,600 / -	7 / 2 [ 2.2 K]	8 Pin DIP	A K—K A B C E (Dar)
OPIA801	2,500	500 / 1,600 / -	10 / 5 [ 4.7 K]	8 Pin DIP	A K—K A B C E (Dar)
OPIA802	2,500	15 / 43 / -	0.3 / 0.3 [ 1.9 K]	8 Pin DIP	A K—K A C E
OPIA803	5,000	5 / 43 / -	0.4 / 0.3 [ 4.1 K]	8 Pin DIP	A K—K A C E

### Digital Output Devices Ordering Information

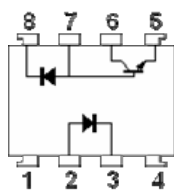
Part Number	Isolation Voltage Max. (Vrms)	Typ. Tr / Tf (ns) [R <sub>L</sub> = 350 ohms]	Typ. Tph / Tpl (ns) [R <sub>L</sub> = ohms]	Package	Configuration
OPID804	5,000	30 / 30	45 / 45 [ 350]	8 Pin DIP	A K—NAND

Configuration: Definition of Terms  
LED Identification—Sensor Identification

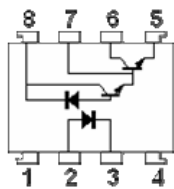
LED	A = Anode	K = Cathode			
Sensor	10K Logic	10K Inverted Logic	NAND Gate	NAND Gate	
	K = Cathode	A = Anode	B = Base	C = Collector	E = Emitter

Packaging Part Number Suffix: **TU** = Ship in Tubes, **TR** = Ship on Tape and Reel Example: OPID606D**TR**

Part Number	Pin #							
	1	2	3	4	5	6	7	8
OPIA800		A	K		E	C	C-B	K-C
OPIA801		A	K		E	C	C-B	K-C
OPIA802		A	K		E	C	A-B	K
OPIA803		A	K		E	C	A-B	K
OPID804		A	K		GND	Output	Enable	Vcc

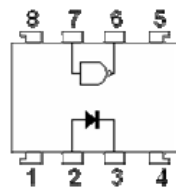


OPIA802  
OPIA803

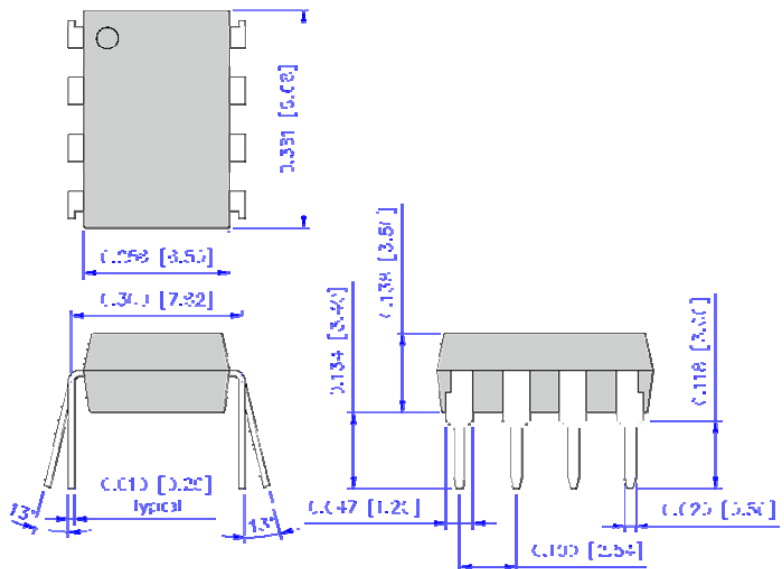


OPIA800  
OPIA801

Symbol	Definition
A	Anode
B	Base
C	Collector
E	Emitter
K	Cathode



OPID804



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## OPIA800 through OPID804



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

Storage Temperature	-55° C to +125° C
Operating Temperature OPIA800 OPIA801 OPIA802 OPIA803 OPID804	-40° C to +115° C 0° C to +125° C -55° C to +115° C -55° C to +100° C 0° C to +85° C
Isolation voltage (1 minute) OPID804 OPIA800, OPIA801, OPIA802, OPIA803	5,000 Vrms 2,500 Vrms
Lead Soldering Temperature (1/16" (1.6 mm) from case for 5 seconds with soldering iron)	260° C

### Input Diode

Continuous Forward Current OPIA802, OPIA803, OPID804 OPIA800, OPIA801	25 mA 20 mA
Peak Forward current (1 $\mu\text{s}$ pulse width, 300 pps) OPIA800, OPIA801, OPIA802, OPIA803 OPID804	1 A 40 mA
Reverse Voltage OPIA800D, OPIA801D, OPIA802D, OPIA803D, OPID804D	5 V
Power Dissipation OPIA802D, OPIA803D, OPID804D OPIA800D, OPIA801D	45 mW 35 mW

### Absolute Maximum Ratings ( $T_A = 0^\circ\text{C}$ to $70^\circ\text{C}$ unless otherwise specified)

#### Output IC

<b>V<sub>cc</sub>—Collector-Emitter Voltage</b> OPIA800D OPIA801D OPIA802D, OPIA803D	-0.5 V to +7 V -0.5 V to +18 V -0.5 V to +15 V
<b>Collector Current</b> OPIA802D, OPIA803D OPIA800D, OPIA801D	8 mA 60 mA
<b>Power Dissipation</b> OPIA800D, OPIA801D, OPIA802D, OPIA803D	100 mW

#### Output NAND Gate—OPID804D

V <sub>cc</sub> —Supply voltage	7 V
Enable voltage	5.5 V
High Level Output voltage	7 V
Low Level Output current	50 mA
Output Collector Power Dissipation	85 mW

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# Optocoupler—DIP Package

## OPIA800 through OPID804



### Electrical Characteristic OPIA800

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
*6 Current transfer ratio	CTR	$I_F=1.6\text{mA}$ , $V_O=0.4\text{V}$ , $V_{CC}=4.5\text{V}$	300	1600	-	%
Logic (0) output voltage	$V_{OL}$	$I_F=1.6\text{mA}$ $I_O=4.8\text{mA}$ , $V_{CC}=4.5\text{V}$	-	0.1	0.4	V
Logic (1) output current	$I_{OH}$	$I_F=0$ , $V_O=V_{CC}=7\text{V}$	-	0.1	250	$\mu\text{A}$
Logic (0) supply current	$I_{CCL}$	$I_F=1.6\text{mA}$ , $V_O=\text{open}$ , $V_{CC}=5\text{V}$	-	0.5	-	mA
Logic (1) supply current	$I_{CCH}$	$I_F=0$ , $V_O=\text{open}$ , $V_{CC}=5\text{V}$	-	10	-	nA
Input forward voltage	$V_F$	$T_a=25^\circ\text{C}$ , $I_F=1.6\text{mA}$	-	1.5	1.7	V
Input forward voltage temperature coefficient	$\Delta V_F/\Delta T_a$	$I_F=1.6\text{mA}$	-	-1.9	-	$\text{mV}/^\circ\text{C}$
Input reverse voltage	BVR	$T_a=25^\circ\text{C}$ , $I_R=10\mu\text{A}$	5.0	-	-	V
Input capacitance	$C_{IN}$	$V_F=0$ , $f=1\text{MHz}$	-	60	-	pF
*7 Leak current(input-output)	$I_{I-O}$	$T_a=25^\circ\text{C}$ , 45% RH $V_{I-O}=3\text{kVDC}$ , $t=5\text{s}$	-	-	1.0	$\mu\text{A}$
*7 Isolation resistance(input-output)	$R_{I-O}$	$V_{I-O}=500\text{VDC}$	-	$10^{12}$	-	$\Omega$
*7 Capacitance(input-output)	$C_{I-O}$	$f=1\text{MHz}$	-	0.6	-	pF

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
*8 Propagation delay time Output (1)-->(0)	$t_{PHL}$	$R_L=2.2\text{k}\Omega$ , $I_F=1.6\text{mA}$	-	2	10	$\mu\text{S}$
*8 Propagation delay time Output (0)-->(1)	$t_{PLH}$	$R_L=2.2\text{k}\Omega$ , $I_F=1.6\text{mA}$	-	7	35	$\mu\text{S}$
*9 Instantaneous common *10 mode rejection voltage "Output (1)"	CMH	$I_F=0$ , $V_{CM}=10\text{Vp-p}$ , $R_L=2.2\text{k}\Omega$	-	500	-	$\text{V}/\mu\text{S}$
*9 Instantaneous common *10 mode rejection voltage "Output (0)"	CML	$I_F=1.6\text{mA}$ , $V_{CM}=10\text{Vp-p}$ , $R_L=2.2\text{k}\Omega$	-	-500	-	$\text{V}/\mu\text{S}$

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## OPIA800 through OPID804



### Electrical Characteristic OPIA801

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
*6 Current transfer ratio	CTR(1)	$I_F=0.5\text{mA}$ , $V_O=0.4\text{V}$ , $V_{CC}=4.5\text{V}$	400	1800	-	%
	CTR(2)	$I_F=1.6\text{mA}$ , $V_O=0.4\text{V}$ , $V_{CC}=4.5\text{V}$	500	1600	-	%
Logic ( 0 ) output voltage	$V_{OL}(1)$	$I_F=6.4\text{mA}$ , $I_O=1.6\text{mA}$ , $V_{CC}=4.5\text{V}$	-	0.1	0.4	V
	$V_{OL}(2)$	$I_F=5\text{mA}$ , $I_O=15\text{mA}$ , $V_{CC}=4.5\text{V}$	-	0.1	0.4	V
	$V_{OL}(3)$	$I_F=12\text{mA}$ , $I_O=24\text{mA}$ , $V_{CC}=4.5\text{V}$	-	0.1	0.4	V
Logic ( 1 ) output current	$I_{OH}$	$I_F=0$ , $V_O=V_{CC}=18\text{V}$	-	0.05	100	$\mu\text{A}$
Logic ( 0 ) supply current	$I_{CCL}$	$I_F=1.6\text{mA}$ , $V_O=\text{open}$ , $V_{CC}=5\text{V}$	-	0.5	-	mA
Logic ( 1 ) supply current	$I_{CCH}$	$I_F=0$ , $V_F=\text{open}$ , $V_{CC}=5\text{V}$	-	10	-	nA
Input forward voltage	$V_F$	$T_a=25^\circ\text{C}$ , $I_F=1.6\text{mA}$	-	1.5	1.7	V
Input forward voltage temperature coefficient	$\Delta V_F/\Delta T_a$	$I_F=1.6\text{mA}$	-	-1.9	-	$\text{mV}/^\circ\text{C}$
Input reverse voltage	$BV_R$	$T_a=25^\circ\text{C}$ , $I_R=10\mu\text{A}$	5.0	-	-	V
Input capacitance	$C_{IN}$	$V_F=0$ , $f=1\text{MHz}$	-	60	-	pF
*7 Leak current ( input-output )	$I_{I-O}$	$T_a=25^\circ\text{C}$ , 45%RH $V_{I-O}=3\text{KVDC}$ , $t=5\text{s}$	-	-	1.0	$\mu\text{A}$
*7 Isolation resistance ( input-output )	$R_{I-O}$	$V_{I-O}=500\text{VDC}$	-	$10^{12}$	-	$\Omega$
*7 Capacitance ( input-output )	$C_{I-O}$	$f=1\text{MHz}$	-	0.6	-	pF

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
*8 Propagation delay time Output (1) $\rightarrow$ (0)	$t_{PHL}$	$R_L=4.7\text{K}\Omega$ , $I_F=0.5\text{mA}$	-	5	25	$\mu\text{s}$
		$R_L=270\Omega$ , $I_F=12\text{mA}$	-	0.3	1	$\mu\text{s}$
*8 Propagation delay time Output (0) $\rightarrow$ (1)	$t_{PLH}$	$R_L=4.7\text{K}\Omega$ , $I_F=0.5\text{mA}$	-	10	60	$\mu\text{s}$
		$R_L=270\Omega$ , $I_F=12\text{mA}$	-	1.5	7	$\mu\text{s}$
*9 Instantaneous common mode rejection voltage *10 " Output (1) "	$CM_H$	$I_F=0$ , $V_{CM}=10\text{V}_{P-P}$ , $R_L=2.2\text{K}\Omega$	-	500	-	$\text{V}/\mu\text{s}$
*9 Instantaneous common mode rejection voltage *10 " Output (0) "	$CM_L$	$I_F=1.6\text{mA}$ , $V_{CM}=10\text{V}_{P-P}$ , $R_L=2.2\text{K}\Omega$	-	-500	-	$\text{V}/\mu\text{s}$

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## OPIA800 through OPID804



### Electrical Characteristic OPIA802

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
*5 Current transfer ratio	CTR(1)	Ta=25°C, I <sub>F</sub> =16mA V <sub>O</sub> =0.4V, V <sub>CC</sub> =4.5V	19	40	-	%
	CTR(2)	I <sub>F</sub> =16mA V <sub>O</sub> =0.5V, V <sub>CC</sub> =4.5V	15	43	-	%
Logic ( 0 ) output voltage	V <sub>OL</sub>	*6 V <sub>CC</sub> =4.5V, I <sub>F</sub> =16mA	-	0.1	0.4	V
Logic ( 1 ) output current	I <sub>OH</sub> (1)	Ta=25°C, I <sub>F</sub> =0 V <sub>O</sub> =V <sub>CC</sub> =5.5V	-	3.0	500	nA
	I <sub>OH</sub> (2)	Ta=25°C, I <sub>F</sub> =0 V <sub>O</sub> =V <sub>CC</sub> =15V	-	0.01	1.0	uA
	I <sub>OH</sub> (3)	V <sub>CC</sub> =V <sub>O</sub> =15V, I <sub>F</sub> =0	-	-	50	uA
Logic ( 0 ) supply current	I <sub>CCL</sub>	I <sub>F</sub> =16mA V <sub>O</sub> =open, V <sub>CC</sub> =15V	-	200	-	uA
Logic ( 1 ) supply current	I <sub>CCH</sub> (1)	Ta=25°C, I <sub>O</sub> =0 V <sub>F</sub> =open, V <sub>CC</sub> =15V	-	0.02	1.0	uA
	I <sub>CCH</sub> (2)	I <sub>O</sub> =0 V <sub>O</sub> =open, V <sub>CC</sub> =15V	-	-	2.0	uA
Input forward voltage	V <sub>F</sub>	Ta=25°C, I <sub>F</sub> =16mA	-	1.7	1.95	V
Input forward voltage temperature coefficient	ΔV <sub>F</sub> /ΔTa	I <sub>F</sub> =16mA	-	-1.9	-	mV/°C
Input reverse voltage	BV <sub>R</sub>	Ta=25°C, I <sub>R</sub> =10uA	5.0	-	-	V
Input capacitance	C <sub>IN</sub>	V <sub>F</sub> =0, f=1MHz	-	60	-	pF
*7 Leak current ( input-output )	I <sub>I-O</sub>	Ta=25°C, 45%RH V <sub>I-O</sub> =3KVDC, t=5s	-	-	1.0	uA
*7 Isolation resistance ( input-output )	R <sub>I-O</sub>	V <sub>I-O</sub> =500VDC	-	10 <sup>12</sup>	-	Ω
*7 Capacitance ( input-output )	C <sub>I-O</sub>	f=1MHz	-	0.6	-	pF
Transistor current amplification factor	h <sub>FE</sub>	V <sub>O</sub> =5V, I <sub>O</sub> =3mA	-	70	-	

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
*8 Propagation delay time *9 Output (1) → (0)	t <sub>PHL</sub>	R <sub>L</sub> =1.9KΩ	-	0.3	0.8	uS
*8 Propagation delay time *9 Output (0) → (1)	t <sub>PLH</sub>	R <sub>L</sub> =1.9KΩ	-	0.3	0.8	uS
*10 Instantaneous common mode rejection voltage *11 " Output (1) "	CM <sub>H</sub>	I <sub>F</sub> =0, V <sub>CM</sub> =10V <sub>P-P</sub>	-	1000	-	V/uS
*10 Instantaneous common mode rejection voltage *11 " Output (0) "	CM <sub>L</sub>	I <sub>F</sub> =16mA, V <sub>CM</sub> =10V <sub>P-P</sub>	-	-1000	-	V/uS
*12 Bandwidth	BW	R <sub>L</sub> =100Ω	-	2.0	-	MHz

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# Optocoupler—DIP Package

## OPIA800 through OPID804



### Electrical Characteristic OPIA803

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
*5 Current transfer ratio	CTR(1)	Ta=25°C, I <sub>F</sub> =16mA V <sub>O</sub> =0.4V, V <sub>CC</sub> =4.5V	7	40	-	%
	CTR(2)	I <sub>F</sub> =16mA V <sub>O</sub> =0.5V, V <sub>CC</sub> =4.5V	5	43	-	%
Logic ( 0 ) output voltage	V <sub>OL</sub>	*6 V <sub>CC</sub> =4.5V, I <sub>F</sub> =16mA	-	0.1	0.4	V
Logic ( 1 ) output current	I <sub>OH</sub> (1)	Ta=25°C, I <sub>F</sub> =0 V <sub>O</sub> =V <sub>CC</sub> =5.5V	-	3.0	500	nA
	I <sub>OH</sub> (2)	Ta=25°C, I <sub>F</sub> =0 V <sub>O</sub> =V <sub>CC</sub> =15V	-	0.01	1.0	uA
	I <sub>OH</sub> (3)	V <sub>CC</sub> =V <sub>O</sub> =15V, I <sub>F</sub> =0	-	-	50	uA
Logic ( 0 ) supply current	I <sub>CCL</sub>	I <sub>F</sub> =16mA V <sub>O</sub> =open, V <sub>CC</sub> =15V	-	200	-	uA
Logic ( 1 ) supply current	I <sub>CCH</sub> (1)	Ta=25°C, I <sub>O</sub> =0 V <sub>F</sub> =open, V <sub>CC</sub> =15V	-	0.02	1.0	uA
	I <sub>CCH</sub> (2)	I <sub>O</sub> =0 V <sub>O</sub> =open, V <sub>CC</sub> =15V	-	-	2.0	uA
Input forward voltage	V <sub>F</sub>	Ta=25°C, I <sub>F</sub> =16mA	-	1.7	1.95	V
Input forward voltage temperature coefficient	ΔV <sub>F</sub> /ΔTa	I <sub>F</sub> =16mA	-	-1.9	-	mV/°C
Input reverse voltage	BV <sub>R</sub>	Ta=25°C, I <sub>R</sub> =10uA	5.0	-	-	V
Input capacitance	C <sub>IN</sub>	V <sub>F</sub> =0, f=1MHz	-	60	-	pF
*7 Leak current ( input-output )	I <sub>I-O</sub>	Ta=25°C, 45%RH V <sub>I-O</sub> =3KVDC, t=5s	-	-	1.0	uA
*7 Isolation resistance ( input-output )	R <sub>I-O</sub>	V <sub>I-O</sub> =500VDC	-	10 <sup>12</sup>	-	Ω
*7 Capacitance ( input-output )	C <sub>I-O</sub>	f=1MHz	-	0.6	-	pF
Transistor current amplification factor	h <sub>FE</sub>	V <sub>O</sub> =5V, I <sub>O</sub> =3mA	-	70	-	

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
*8 Propagation delay time *9 Output (1) → (0)	t <sub>PHL</sub>	R <sub>L</sub> =4.1KΩ	-	0.3	1.5	uS
*8 Propagation delay time *9 Output (0) → (1)	t <sub>PLH</sub>	R <sub>L</sub> =4.1KΩ	-	0.4	1.5	uS
*10 Instantaneous common *11 mode rejection voltage " Output (1) "	CM <sub>H</sub>	I <sub>F</sub> =0, V <sub>CM</sub> =10V <sub>P-P</sub>	-	1000	-	V/uS
*10 Instantaneous common *11 mode rejection voltage " Output (0) "	CM <sub>L</sub>	I <sub>F</sub> =16mA, V <sub>CM</sub> =10V <sub>P-P</sub>	-	-1000	-	V/uS
*12 Bandwidth	BW	R <sub>L</sub> =100Ω	-	2.0	-	MHz

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# Optocoupler—DIP Package

## OPIA800 through OPID804



### Electrical Characteristics (OPID804D)

SYMBOL	PARAMETER	MIN	TYP	MAX	UNITS	TEST CONDITIONS
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#### Input Diode

$V_F$	Forward Voltage	-	1.6	1.8	V	$I_F = 10 \text{ mA}$ , $T_A = 25^\circ \text{ C}$
$BV_R$	Reverse Breakdown Voltage	5	-	-	V	$I_R = 10 \mu\text{A}$ , $T_A = 25^\circ \text{ C}$
$C_{IN}$	Input Capacitance	-	60	-	pf	$V_F = 0.0 \text{ V}$ , $f = 1 \text{ M Hz}$

#### Output Photologic

$V_{OL}$	Low Level Output Voltage	-	0.4	0.6	V	$I_{OL} = 13 \text{ mA}$ , $V_{CC} = 5.5 \text{ V}$ , $I_F = 5 \text{ mA}$ , $V_{EH} = 2 \text{ V}$
$I_{OH}$	High Level Output Current	-	2	250	$\mu\text{A}$	$V_{CC} = 5.5 \text{ V}$ , $V_O = 5.5 \text{ V}$ , $V_E = 2.0 \text{ V}$ , $I_F = 250 \mu\text{A}$
$I_{EH}$	High Level Enable Current	-	-0.8	-	mA	$V_{CC} = 5.5 \text{ V}$ , $V_E = 2.0 \text{ V}$
$I_{EL}$	Low Level Enable Current	-2.0	-1.2	-	mA	$V_{CC} = 5.5 \text{ V}$ , $V_E = 2.0 \text{ V}$
$I_{CCL}$	Low Level Output Current	-	13	18	mA	$V_{CC} = 5.5 \text{ V}$ , $V_E = 0.5 \text{ V}$ , $I_F = 10 \text{ mA}$
$I_{CCH}$	High Level Output Current	-	7	15	mA	$V_{CC} = 5.5 \text{ V}$ , $V_E = 0.5 \text{ V}$ , $I_F = 0 \text{ mA}$
$I_{I-O}$	Leakage Current	-	-	1.0	mA	$V_{I-O} = 3,000 \text{ V}$ , $T_A = 25^\circ \text{ C}$ , $t = 5 \text{ s}$ , $RH = 45\%$
$t_{EHL}$	Enable Propagation delay "High to Low"	-	15	-	ns	$V_{EH} = 3.0 \text{ V}$ , $V_{EL} = 0.5 \text{ V}$ , $R_L = 350 \Omega$ , $I_F = 7.5 \text{ mA}$ , $C_{LOAD} = 15 \text{ pf}$
$t_{ELH}$	Enable Propagation delay "Low to High"	-	40	-		
$I_{FHL} / I_{FLH}$	Hysteresis	-	0.8	-	Ratio	$V_{CC} = 5 \text{ V}$ , $R_L = 280 \Omega$
$R_{I-O}$	Input-Output Isolation resistance	-	$10^{12}$	-	ohm	$V_{I-O} = 500 \text{ V}$ , $T_A = 25^\circ \text{ C}$
$C_{I-O}$	Input-Output Capacitance	-	0.6	-	pf	$f = 1 \text{ M Hz}$ , $T_A = 25^\circ \text{ C}$
$t_{PHL} \& t_{PLH}$	Propagation delay "High to Low" and "Low to High"	-	45	75	ns	$V_{CC} = 5 \text{ V}$ , $R_L = 350 \Omega$ , $I_F = 7.5 \text{ mA}$ , $C_{LOAD} = 15 \text{ pf}$ , $T_A = 25^\circ \text{ C}$
$t_R \& t_F$	Rise and Fall Time	-	30	-		
$CM_H$	Instantaneous common mode rejection voltage "High Output"	-	500	-	V/us	$V_{CM} = 10 \text{ V}$ , $R_L = 350 \Omega$ , $I_F = 0 \text{ mA}$ , $V_O = 2.0 \text{ V}$
$CM_L$	Instantaneous common mode rejection voltage "Low Output"	-	-500	-		$V_{CM} = 10 \text{ V}$ , $R_L = 350 \Omega$ , $I_F = 5 \text{ mA}$ , $V_O = 0.8 \text{ V}$

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



### OPIA800

Fig.1 LED Forward Current vs. Forward Voltage

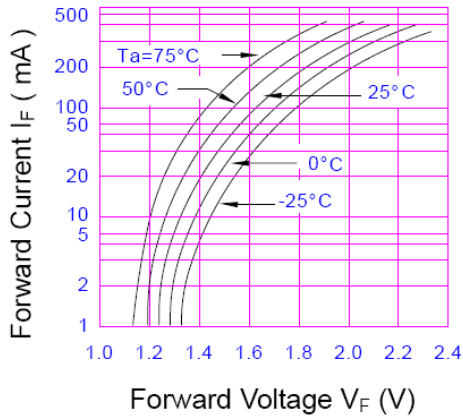


Fig.2 LED Forward Current vs. Ambient Temperature

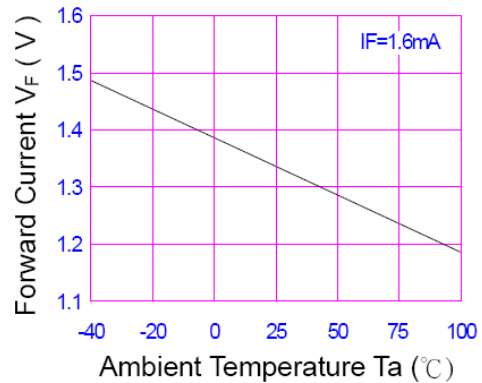


Fig.3 Response and Fall Time vs. Load Resistance

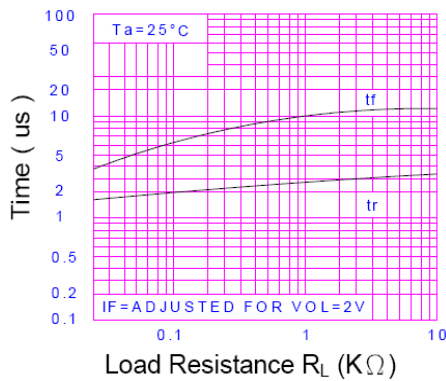


Fig.4 Current Transfer Ratio vs. Forward Current

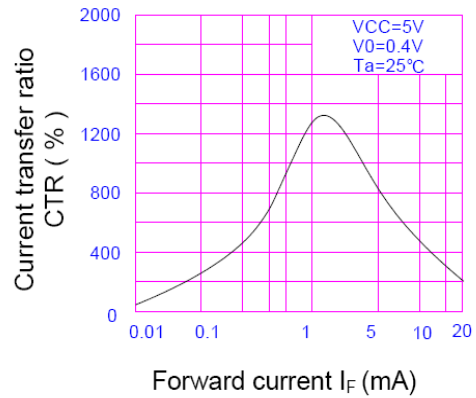


Fig.5 Current Transfer Ratio vs. Base-Emitter Resistance

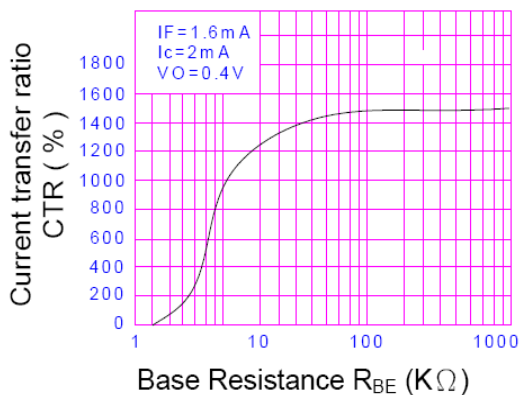
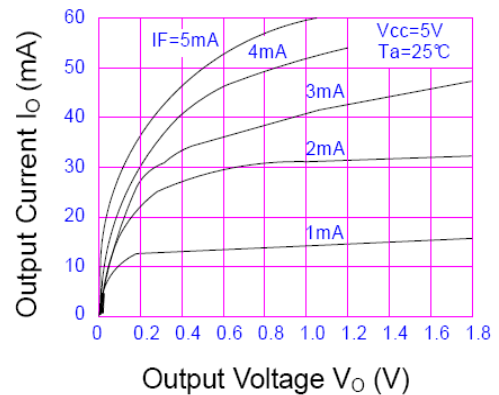


Fig.6 Output Current vs. Output Voltage



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### OPIA800

Fig.7 Output Current vs. Input Diode Forward Current

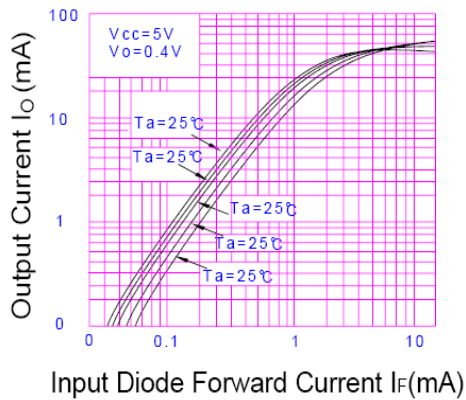


Fig.8 Logic Low Supply Current vs. Input Diode Forward Current

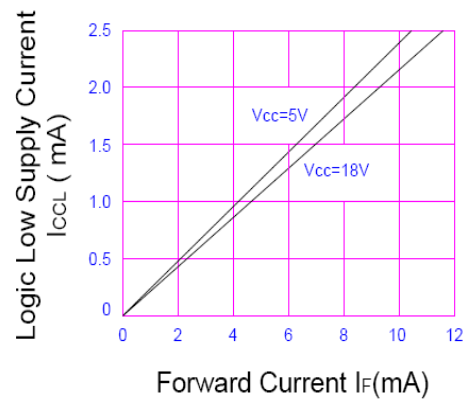


Fig.9 Propagation Delay vs. Input Diode Forward Current

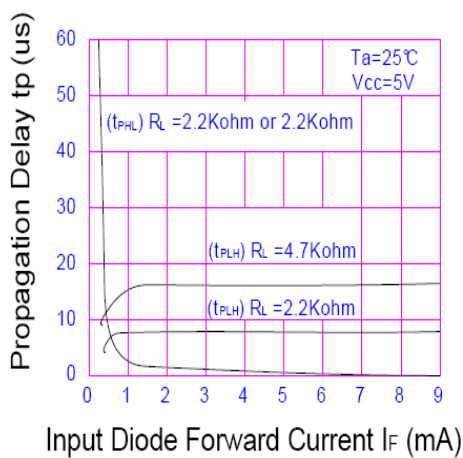
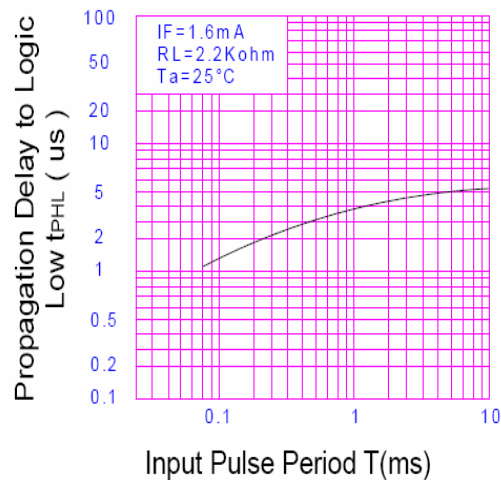


Fig.10 Propagation Delay to Logic Low vs. Pulse Period



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### OPID804

Fig.1 Low Level Output Voltage vs. Ambient Temperature

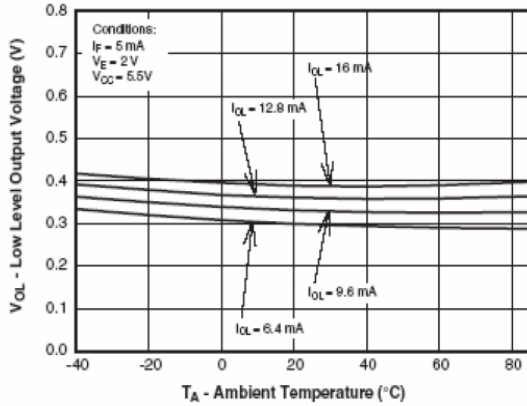


Fig.2 Input Diode Forward Voltage vs. Forward Current

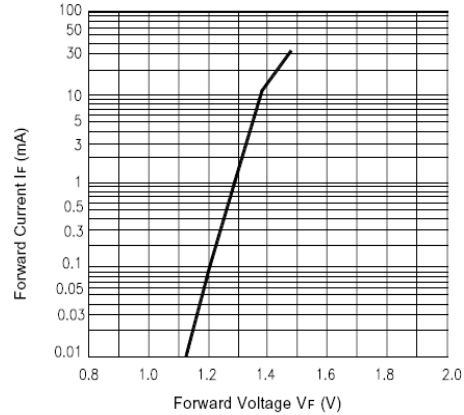


Fig.3 Switching Time vs. Forward Current

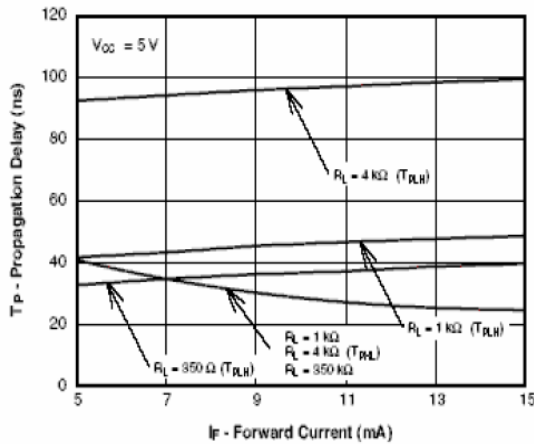


Fig.4 Low Level Output Current vs. Ambient Temperature

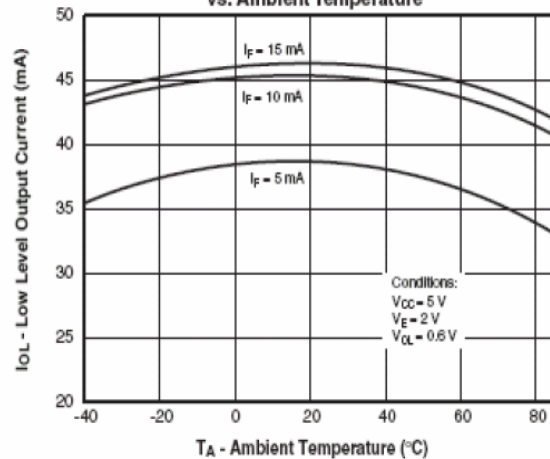


Fig.5 Input Threshold Current vs. Ambient Temperature

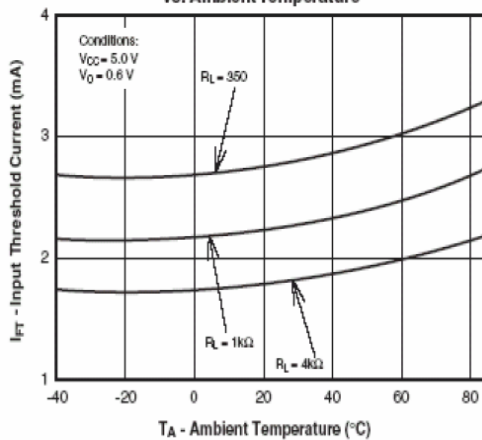
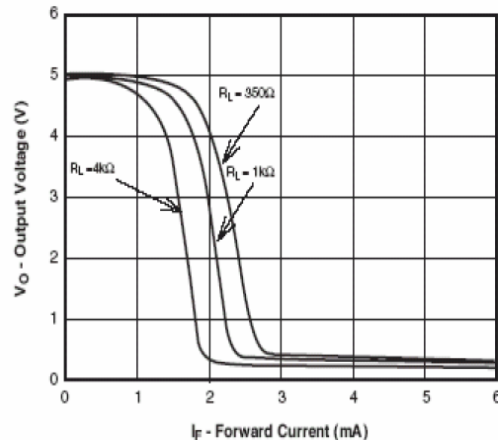


Fig.6 Output Voltage vs. Input Forward Current



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### OPID804

Fig. 11 High Level Output Current vs. Temperature

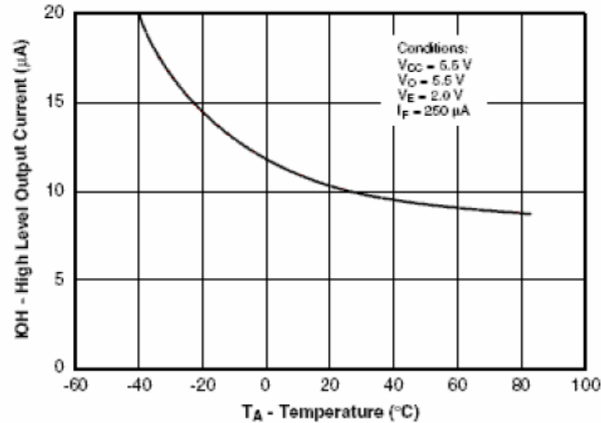


Fig. 9 Enable Propagation Delay vs. Temperature

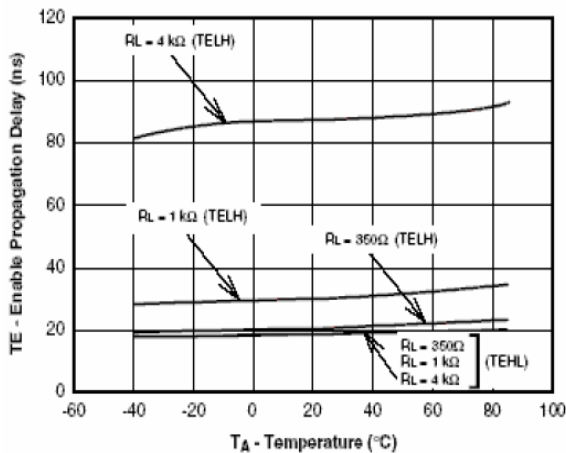


Fig. 10 Switching Time vs. Temperature

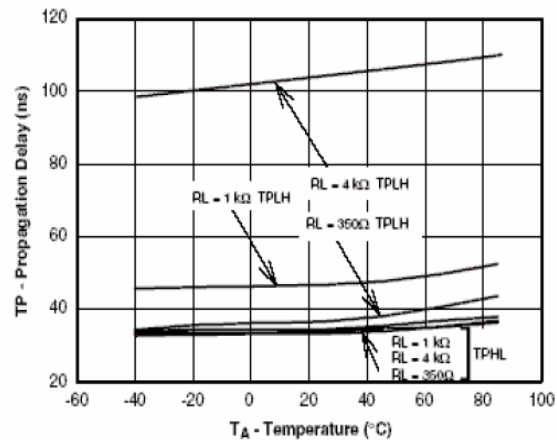


Fig. 7 Pulse Width Distortion vs. Temperature

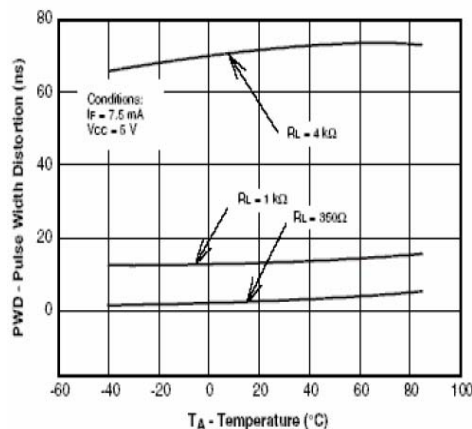
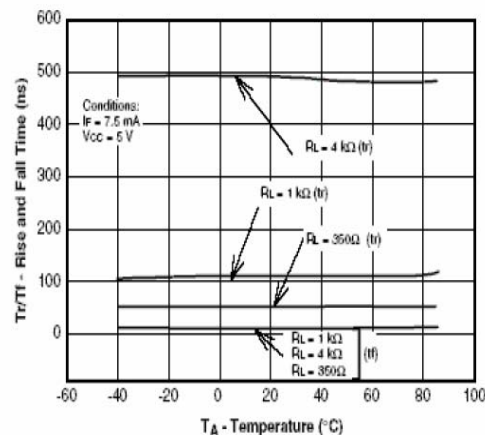
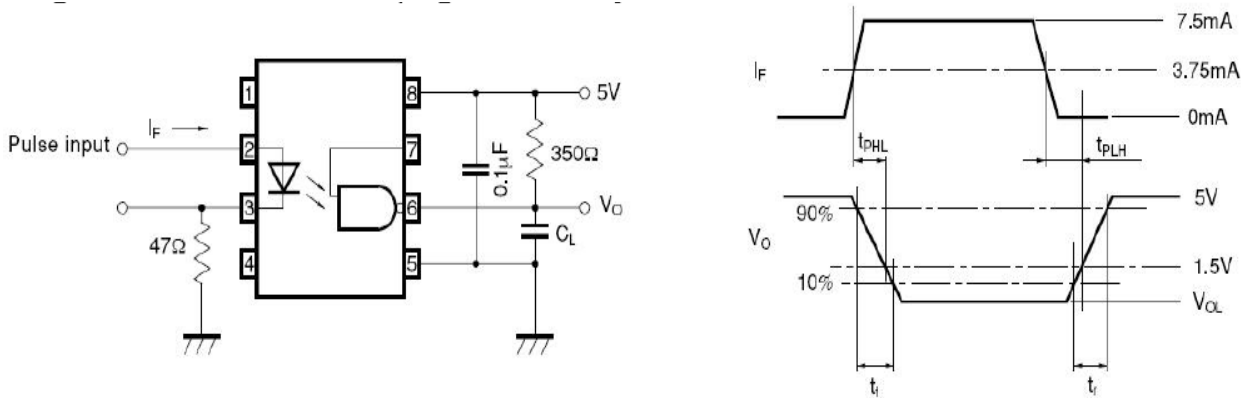


Fig. 8 Rise and Fall Time vs. Temperature

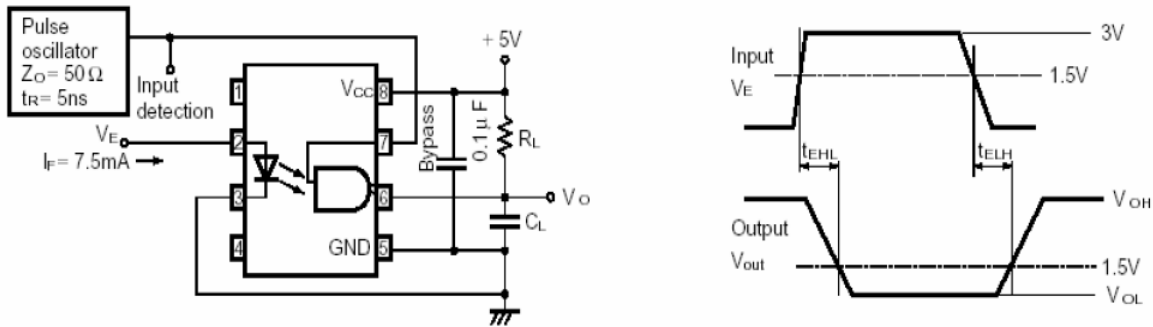


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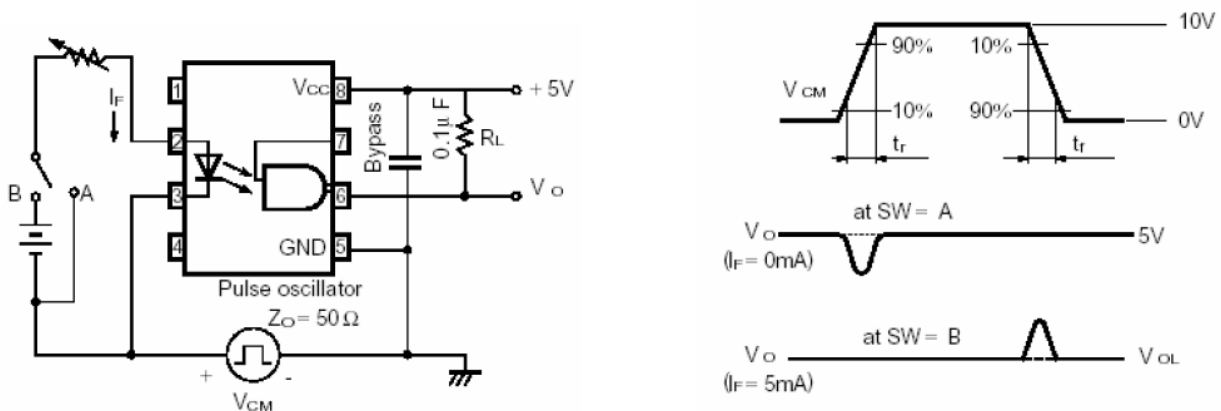
### Test Circuit Propagation Delay Time



### Test Circuit for Enable Propagation Delay Time



### Test Circuit for Instantaneous Common Mode Rejection Voltage



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# Optocoupler—DIP Package

## OPIA800 through OPID804



### Quality / Reliability Requirements

Parameter	Failure Criteria	Conditions
HTRB D I <sub>C(OFF)</sub>	± 10%	11 samples after 500Hrs
	0 Fail	@ VCE = 5.0VDC, Ta = 70°C
HTFB D I <sub>C(ON)</sub>	± 10%	50 samples after 96Hrs
	0 Fail	@ Max P <sub>D</sub> , Ta = 25°C
MTTF @ 90% confidence	150,000 Min.	@ 25°C, 25mADC
Moisture Sensitivity Level	MSL2 or >	per JDEC stnd J-STD-020B
Lead Solderability	0 Fail	per Method 208 of MIL-STD-202.
Glass Transition of body	125°C Min.	DSC test method
Temperature Humidity-Bias	± 20%	85°C, 85%RH, 500Hrs, 80% min I <sub>ceo</sub>
Temperature Cycle	± 20%	per Method 1010.7 of MIL-STD-883E
High Temperature Storage	± 20%	85°C, 500Hrs
Autoclave	0 Fail	T <sub>A</sub> = 121°C, Pressure = 15psi, Humidity = 100%, Time = 96Hrs

**Note:** This is to be performed when a change occurs to form, fit or function.

### Government and Industry Standard Compliance Requirements

European Union's Reduction of Hazardous Substances (RoHS) Directive 2002/95/EC





### Label Identification

#### DESCRIPTION:

Size: 3" (7.5 cm) X 2.2" (5.5 cm)  
 Lettering shall be black on white background.  
 Format shall be as:

#### Notes:

- The DATE CODE is a 4-digit code for date of manufacture where YY is the last two digits of the year, and WW is week number of manufacture.
- The LOT I.D. is the manufacturing location lot identification where Y is the year of manufacture, NNNN is a sequential lot identifier, and DDD is the day of the year of manufacture. – or use equivalent label format.

OPTEK TECHNOLOGY, INC. Carrollton, TX, USA MADE IN TAIWAN
OPTEK P/N <u>  OPIA410D/A  </u>

QTY. <u>          N/A          </u>

DATE CODE <u>          (YYWW)          </u>

LOT I.D. <u>          (Y-NNNNDDD)          </u>


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# Optocoupler—DIP Package

## OPIA800 through OPID804

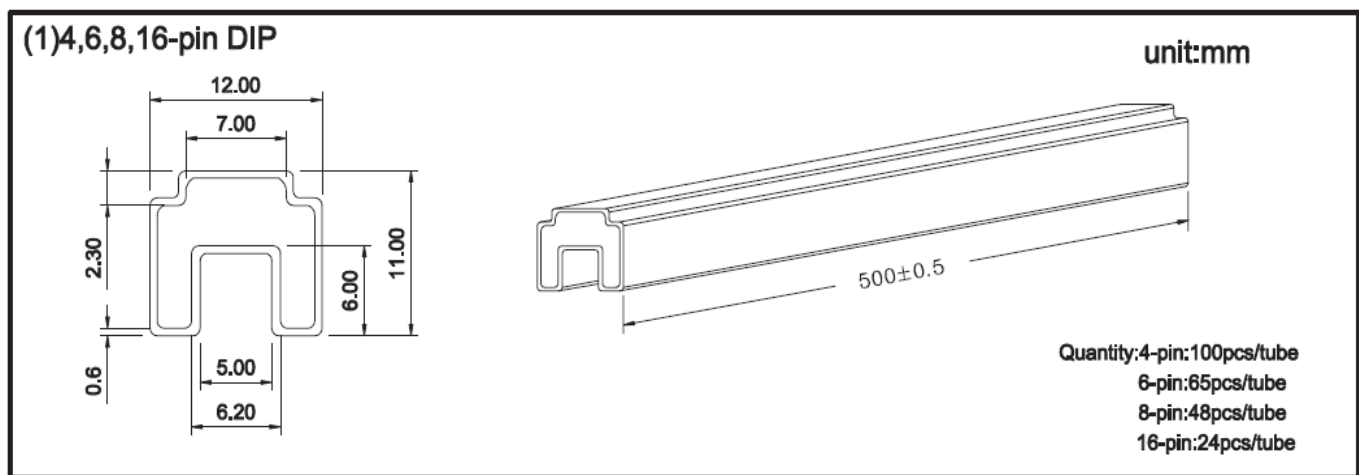


### Packaging Information:

Optek's Optocoupler Part Numbers		Tube		Inner		Small Carton			Medium Carton			Large Carton		
						53.5 x 16 x 17.5 cm			53.5 x 30.7 x 17.5 cm			53.5 x 31.7 x 25 cm		
		Qty	Weight	Qty	Weight	Qty	Weight	Weight	Qty	Weight	Weight	Qty	Weight	Weight
P/H and SMD	4-PIN OPIA400D/A, OPIA410D/A - OPIA413D/A	100	44	3,000	1.40	12,000	6.0	6.5	24,000	12.0	12.5	36,000	18.0	18.5
	6-PIN OPIA6XXD/A Series	65	44	1,950	1.50	7,800	6.5	7.0	15,600	12.0	12.5	23,400	18.5	19.0
	8-PIN OPIA8XXD Series and OPID804D	48	44	1,440	1.44	5,760	6.0	6.5	11,520	12.0	12.5	17,280	18.0	18.5
M/F	OPIA500B, OPIA401B - OPIA404B, OPIA414B	100	24	6,000	1.60	24,000	6.5	7.0	48,000	13.0	13.5	72,000	19.5	20.0
SSOP	OPIA405C - OPIA409C	170	--	10,200	--									

P/H = Pin-Hole Packages (Referred as D = Dual-In-Line Package)  
 SMD = Standard Surface Mount Packages (Referred as A = 6.5mil SMD)  
 M/F or SOP = Mini-Flat Packages or Small Outline Packages (Referred as B=4.40mil SMD w/ 2.54 Lead-Spacing)  
 SSOP = Slim SOP Packages (Referred as C = 4.40mil SMD with 1.27 Lead-Spacing)

### Tube Packaging Specifications (TU):



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