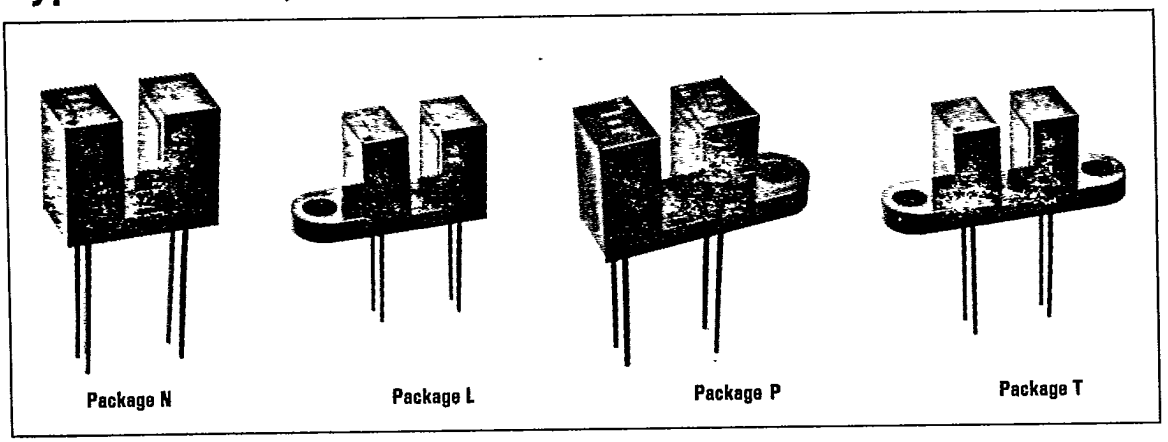
Product Bulletin OPB860
July 1989 Replaces January 1988

OPTEK

T-41-73

Slotted Optical Switches
Types OPB860, OPB870 Series



Package N Package L Package P Package T

Features

- 0.125" wide gap
- Choice of aperture
- Choice of opaque or IR transmissive shell material
- Choice of mounting configuration
- Choice of lead spacing

Description

The following series of slotted switches provides the design engineer with the flexibility of a custom device from a standard product line. Building from a standard housing utilizing a .125" wide slot, the user can specify (1) Electrical output parameters, (2) mounting tab configuration, (3) choice of lead spacing (4) discrete shell material and (5) aperture width.

All housings are an opaque grade of injection-molded polysulfone (P1700-935) to minimize the assembly's sensitivity to ambient radiation, both visible and near-infrared. Discrete shells (exposed only on the parallel faces inside the device throat) are either IR transmissive polysulfone (P1700-1615) for applications where aperture contamination may occur, or opaque polysulfone (P1700-935) with aperture openings, where maximum protection against ambient radiation is a concern.

Replaces KT860/KT870 Series
Upgrades OPB860/OPB870 Series

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

Storage and Operating Temperature Range	-40°C to +85°C(1)
Lead Soldering Temperature Range [1/16 inch (1.6mm) from case for 5 sec. with soldering iron]	240°C(2)
Input Diode	
Forward DC Current	50mA
Peak Forward Current (1 µs pulse width, 300 pps)	3.0A
Reverse DC Voltage	2.0V
Power Dissipation	100mW(1)
Output Phototransistor	
Collector-Emitter Voltage	30V
Emitter-Collector Voltage	5.0V
Collector DC Current	30mA
Power Dissipation OPB830/OPB840	100mW(1)

Notes:
(1) Derate linearly 1.67mW/°C above 25°C.
(2) RMA flux is recommended. Duration can be extended to 10 sec. max. when flow soldering.
(3) All parameters tested using pulse technique.
(4) Lead spacing of .220" or .320" is available. Leads are 0.20" sq and .425" long (min).

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Types OPB860/OPB870 Series

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Electrical Characteristics (T_A = 25°C unless otherwise noted)

SYMBOL	PARAMETER		MIN	TYP	MAX	UNITS	TEST CONDITIONS
Input Diode							
V_F	Forward Voltage				1.7	V	I_F = 20mA
I_R	Reverse Current				100	µA	V_R = 2.0V
Output Phototransistor							
$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage			30		V	I_C = 1.0mA
$V_{(BR)ECO}$	Emitter-Collector Breakdown Voltage			5		V	I_E = 100µA
I_{CEO}	Collector-Emitter Dark Current				100	nA	V_{CE} = 10V, I_F = 0, E_e = 0
Coupled							
$V_{CE(SAT)}$	Saturation Voltage: Parameter A	OPB860 / OPB870 OPB865 / OPB875			0.4	V	I_C = 400µA, I_F = 20mA
	Parameter B	OPB861 / OPB871 OPB866 / OPB876			0.4	V	I_C = 800µA, I_F = 10mA
	Parameter C	OPB862 / OPB872 OPB867 / OPB877			0.6	V	I_C = 1800µA, I_F = 20mA
$I_{C(ON)}$	On-State Collector Current: Parameter A	OPB860 / OPB870 OPB865 / OPB875		500		µA	V_{CE} = 10V, I_F = 20mA
	Parameter B	OPB861 / OPB871 OPB866 / OPB876		1000		µA	V_{CE} = 5V, I_F = 10mA
	Parameter C	OPB862 / OPB872 OPB867 / OPB877		1800		µA	V_{CE} = 0.6V, I_F = 20mA

SLOTTED OPTICAL SWITCHES

PART NUMBER GUIDE

OPB 8 X X X X X

Optek Assembly

Phototransistor Output Family

Discrete Shell Material Designation

6 - Base Mount IR Transmissive Polysulfone Discrete Shell PC Mountable Leads

7 - Base Mount Opaque Polysulfone Discrete Shell PC Mountable Leads

Electrical Specification Variations

0 - Electrical Parameter A Lead Spacing .320"
1 - Electrical Parameter B Lead Spacing .320"
2 - Electrical Parameter C Lead Spacing .320"
5 - Electrical Parameter A Lead Spacing .220"
6 - Electrical Parameter B Lead Spacing .220"
7 - Electrical Parameter C Lead Spacing .220"
*Assemblies with dual .010" apertures are currently available with electrical parameter "A" only.

Mounting Configurations

T - Both Mounting Tabs
N - No Mounting Tabs
L - Single Mounting Tab Emitter Side
P - Single Mounting Tab Phototransistor Side

Aperture Width In Front of Sensor
5 = .050" 1 = 0.10"

Aperture Width In Front of Emitter
5 = .050" 1= 010"*

TX-TXV Process Available See Hi-Rel Section

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Printed in USA

Types OPB860 Series, OPB870 Series

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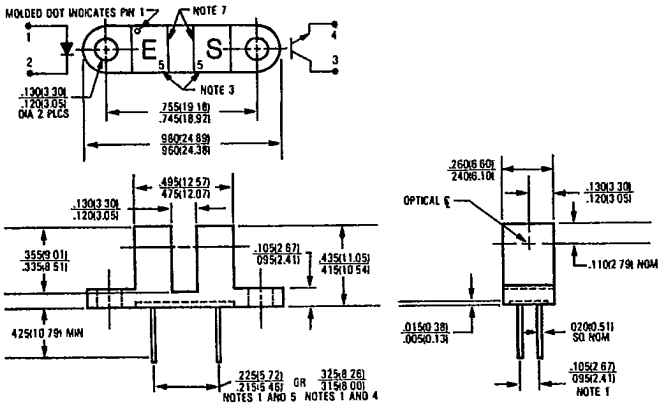
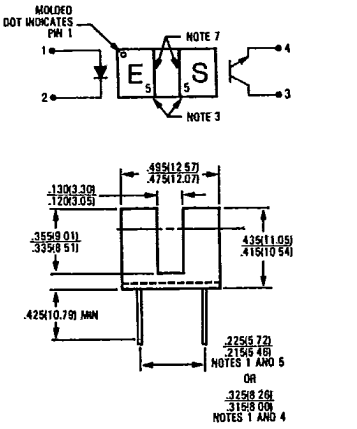
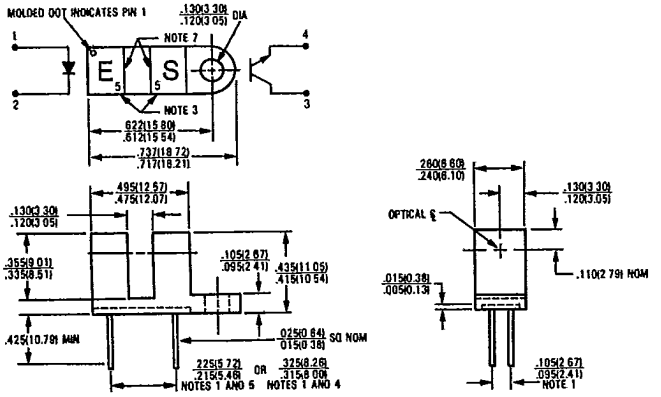
Package Configuration T

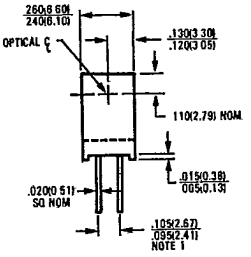


Package Configuration N

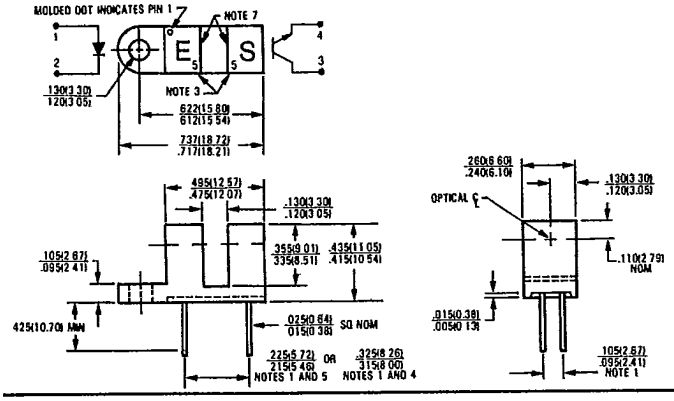


Package Configuration P





Package Configuration L



NOTES:
1. DIMENSION CONTROLLED AT HOUSING SURFACE ONLY
2. M'ENTHANOL AND ISOPROPANOL ALCOHOLS ARE RECOMMENDED AS CLEAN.NG AGENTS. HOUSINGS ARE SOLUBLE IN CHLORINATED HYDROCARBONS AND KEYTONES. HIGHLY ACTIVATED, WATER SOLUBLE FLUXES, MAY ATTACK HOUSINGS IN SOME SITUATIONS.
3. MOLDED NUMBER TO IDENTIFY APERTURE SIZE. SEE PART NUMBER GUIDE.
4. OPB860, OPB861, OPB862, OPB870, OPB871, OPB872, OPB873
5. OPB865, OPB866, OPB867, OPB875, OPB876, OPB877, OPB878

DIMENSIONS ARE IN INCHES (MILLIMETERS).

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Types OPB860/OPB870 Series

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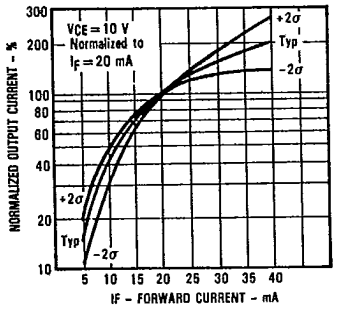
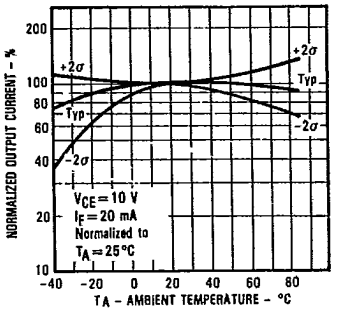
Typical Performance Curves

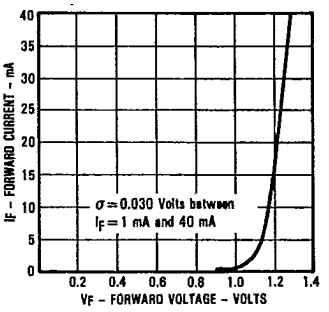
Normalized Output Current vs Forward Current



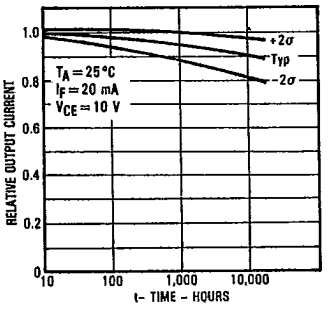
Normalized Output Current vs Ambient Temperature



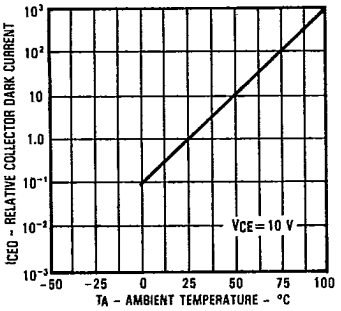
Forward Current vs Forward Voltage Input Diode



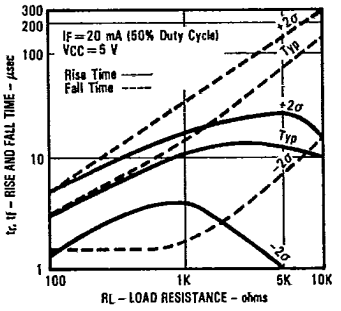
Relative Output Current vs Time



Collector Dark Current vs Ambient Temperature

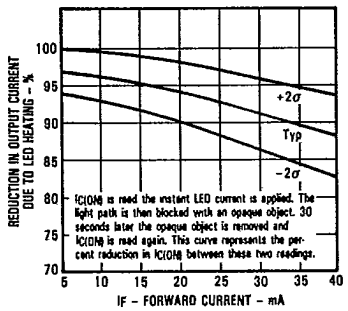


Rise and Fall Time vs Load Resistance

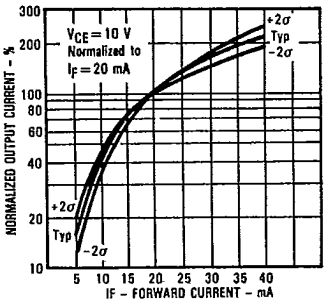


All Part Numbers Ending in "1"

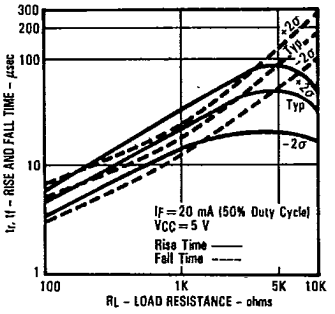
Reduction in Output Current Due to LED Heating vs Forward Current



Normalized Output Current vs Input Current



Rise and Fall Time vs Load Resistance



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