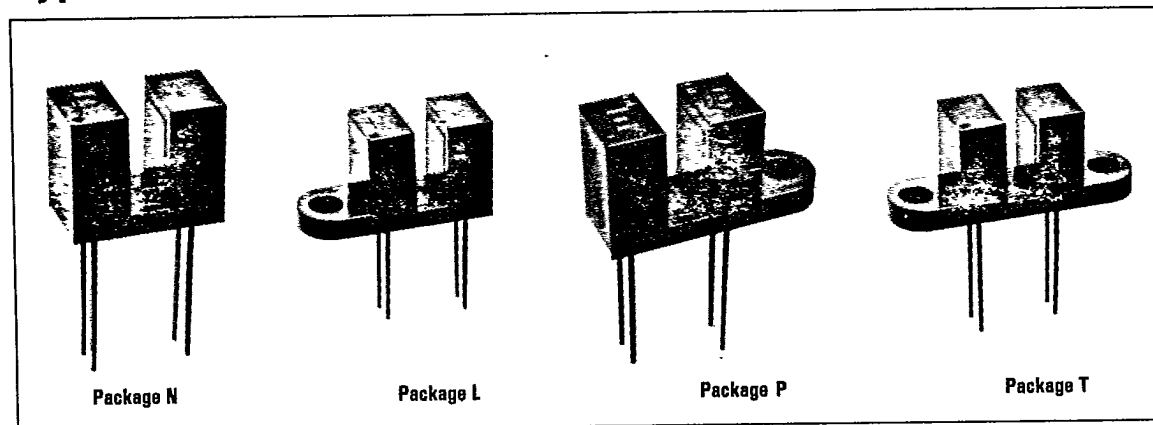


Slotted Optical Switches

Types OPB860, OPB870 Series

T-41-73



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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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 _B = 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	Aperture Width In Front of Sensor 5 = .050" 1 = 0.10"
Phototransistor Output Family	Aperture Width In Front of Emitter 5 = .050" 1 = 0.10"
Discrete Shell Material Designation	Mounting Configurations
6 - Base Mount IR Transmissive Polysulfone Discrete Shell PC Mountable Leads	T - Both Mounting Tabs N - No Mounting Tabs L - Single Mounting Tab Emitter Side
7 - Base Mount Opaque Polysulfone Discrete Shell PC Mountable Leads	P - Single Mounting Tab Phototransistor Side

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.

TX-TXV Process
Available
See Hi-Rel
Section

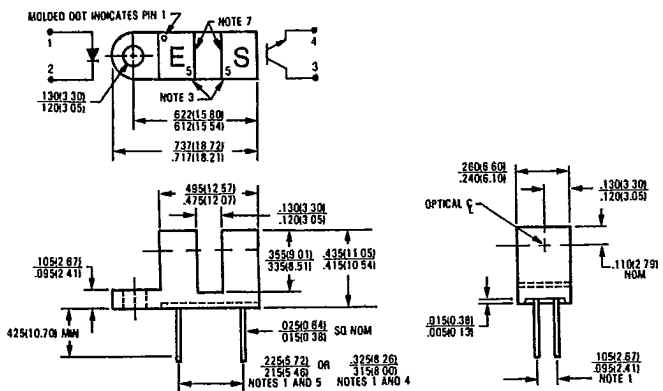
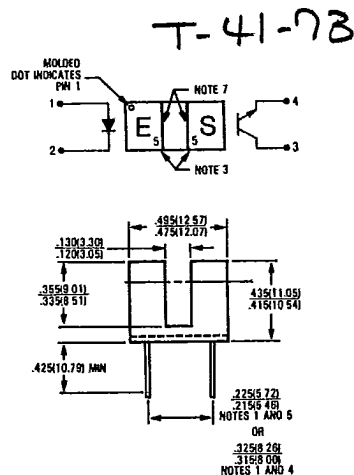
Optek reserves the right to make changes at any time in order to improve design and to supply the best product possible.

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Printed in USA

 ОПТЕК

Package Configuration N



- NOTES:**
- 1. DIMENSION CONTROLLED AT HOUSING SURFACE ONLY
 - 2. METHANOL AND ISOPROPANOL ALCOHOLS ARE RECOMMENDED AS CLEANING 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

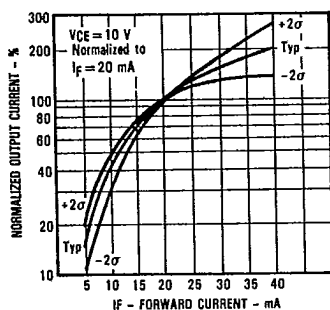
DIMENSIONS ARE IN INCHES (MILLIMETERS).

Types OPB860/OPB870 Series

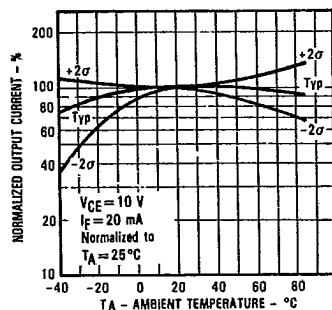
T-41-73

Typical Performance Curves

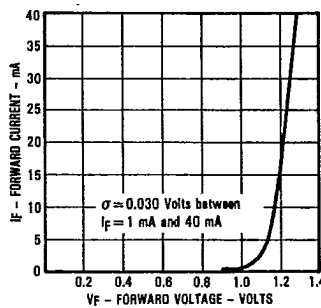
Normalized Output Current vs Forward Current



Normalized Output Current vs Ambient Temperature

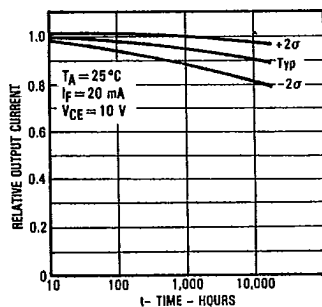


Forward Current vs Forward Voltage Input Diode

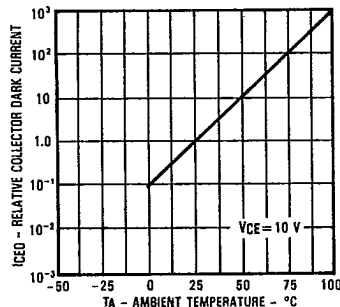


SLOTTED
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SWITCHES

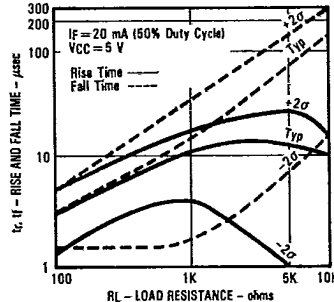
Relative Output Current vs Time



Collector Dark Current vs Ambient Temperature

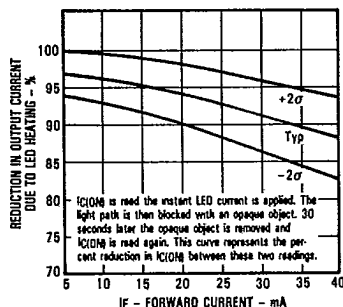


Rise and Fall Time vs Load Resistance

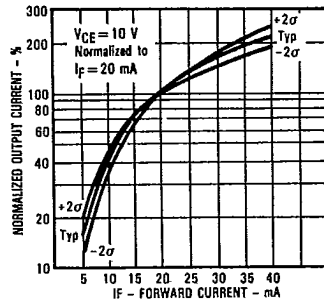


All Part Numbers Ending in "1"

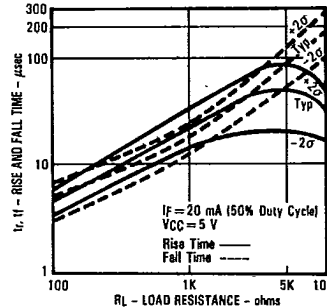
Reduction in Output Current Due to LED Heating vs Forward Current



Normalized Output Current vs Input Current



Rise and Fall Time vs Load Resistance



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