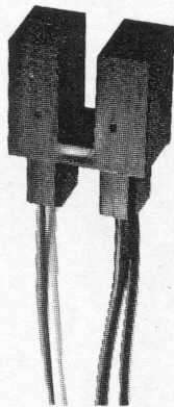
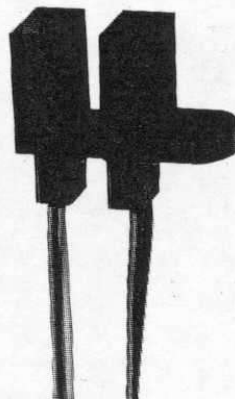


Slotted Optical Switches

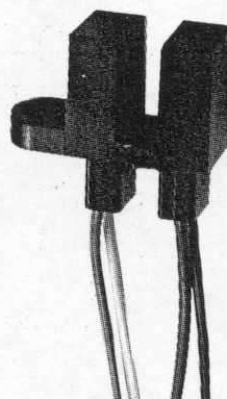
Types OPB880, OPB890 Series



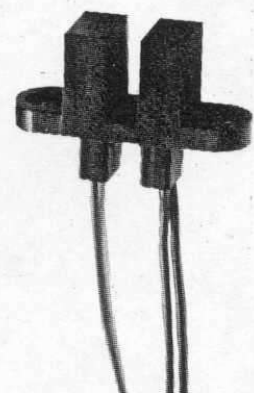
Package N



Package L



Package P



Package T

Features

- 0.125" wide gap
- 24" minimum, 26 AWG wire leads
- Choice of aperture
- Choice of opaque or IR transmissive shell material
- Choice of mounting configuration
- Choice of lead spacing

Description

The OPB880/890 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 with a .125" wide slot, the user can specify (1) electrical output parameters, (2) mounting tab configuration, (3) discrete shell material, and (4) aperture width.

All housings are an opaque grade of injection-molded plastic 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 plastic for applications where aperture contamination may occur or opaque plastic with aperture openings for maximum protection against ambient light.

Replaces KT880/KT890 Series
Upgrades OPB880/OPB890 Series

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

Storage and Operating Temperature Range -40°C to $+80^\circ\text{C}^{(1)}$

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 100mW⁽¹⁾

Notes:

- (1) Derate linearly 1.82mW/ $^\circ\text{C}$ above 25°C (Maximum storage and operating temperature is limited by the temperature rating of the lead wires)
- (2) All parameters tested using pulse technique.
- (3) The OPB880/OPB890 wire terminations are 24" of 7 strand, 26 AWG, UL 1429 insulated wire on each terminal. The devices incorporate a wire strain relief at the housing surface. The insulation colors and functions are:

RED - IRED Anode
 BLACK - IRED Cathode

WHITE - Phototransistor Collector
 GREEN - Phototransistor Emitter

Other wire lengths and/or colors are available. Contact your local representative or call the factory.

Types OPB880, OPB890 Series

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

SYMBOL	PARAMETER	MIN	MAX	UNITS	TEST CONDITIONS
Input Diode					
V_F	Forward Voltage		1.7	V	$I_F = 20\text{mA}$
I_R	Reverse Current		100	μA	$V_R = 2.0\text{V}$

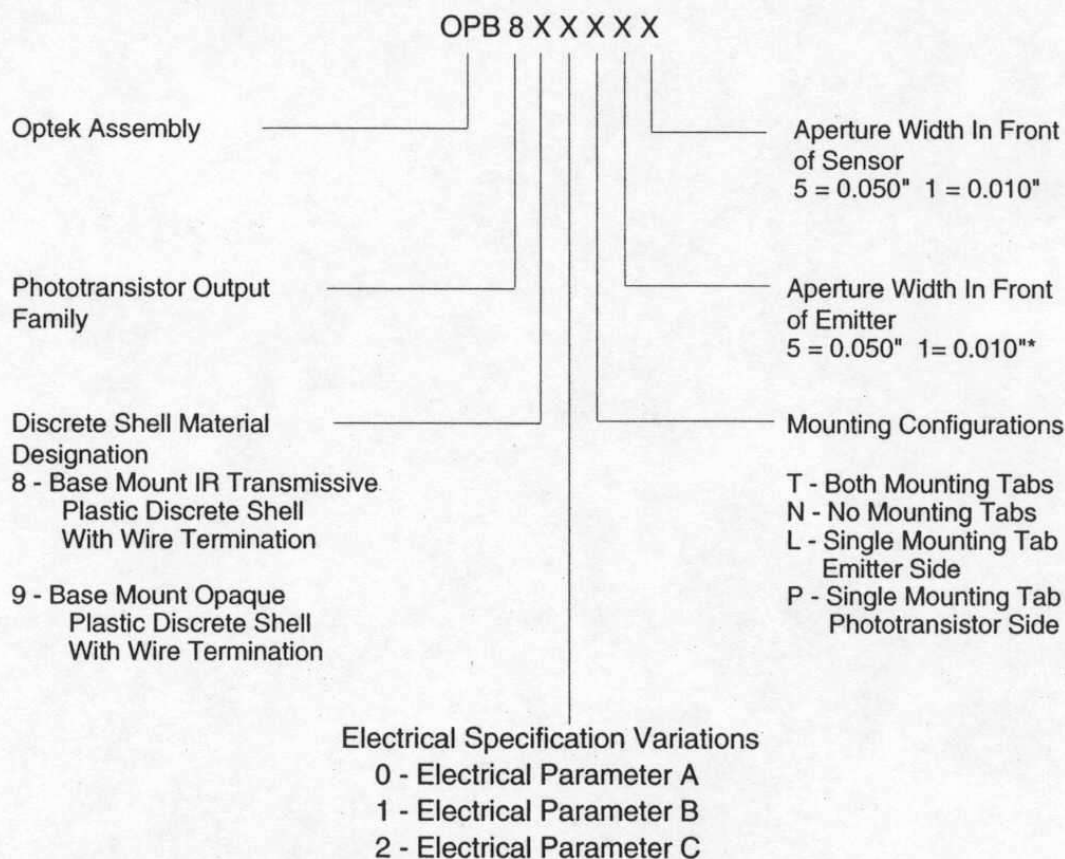
Output Phototransistor

$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage	30		V	$I_C = 1.0\text{mA}$
$V_{(BR)ECO}$	Emitter-Collector Breakdown Voltage	5.0		V	$I_E = 100\mu\text{A}$
I_{CEO}	Collector-Emitter Dark Current		100	nA	$V_{CE} = 10\text{V}, I_F = 0, E_e = 0$

Coupled

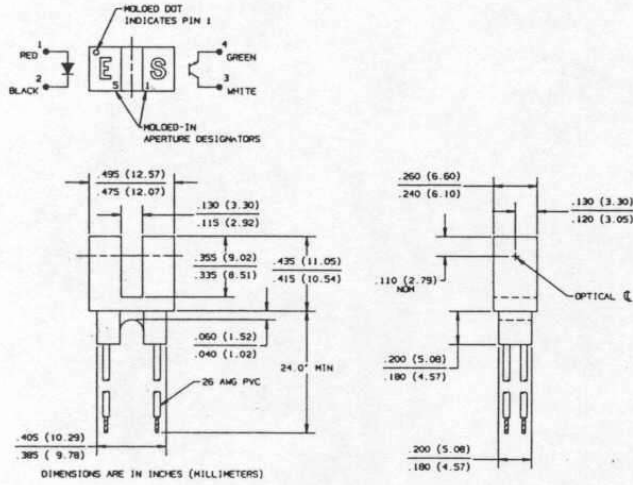
$V_{CE(SAT)}$	Saturation Voltage:					
	Parameter A	OPB880 / OPB890		0.4	V	$I_C = 400\mu\text{A}, I_F = 20\text{mA}$
	Parameter B	OPB881 / OPB891		0.4	V	$I_C = 800\mu\text{A}, I_F = 10\text{mA}$
	Parameter C	OPB882 / OPB892		0.6	V	$I_C = 1800\mu\text{A}, I_F = 20\text{mA}$
$I_{C(ON)}$	On-State Collector Current:					
	Parameter A	OPB880 / OPB890	500		μA	$V_{CE} = 10\text{V}, I_F = 20\text{mA}$
	Parameter B	OPB881 / OPB891	1000		μA	$V_{CE} = 5\text{V}, I_F = 10\text{mA}$
	Parameter C	OPB882 / OPB892	1800		μA	$V_{CE} = 0.6\text{V}, I_F = 20\text{mA}$

PART NUMBER GUIDE

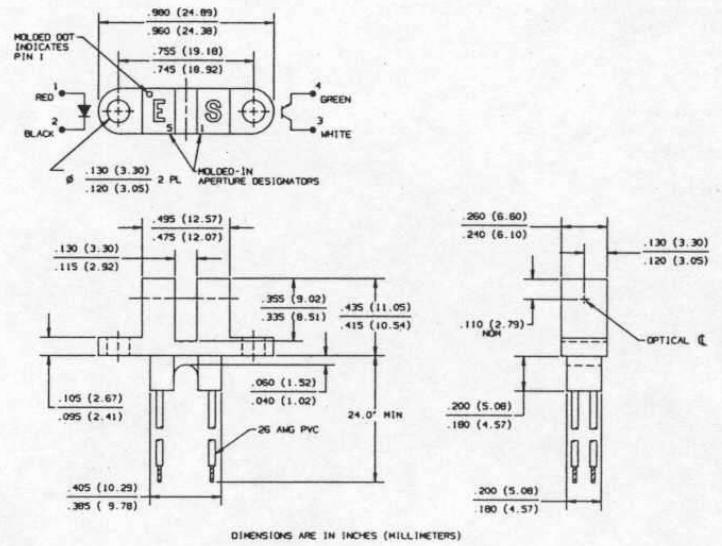


*Assemblies with dual 0.010" apertures are currently available with electrical parameter "A" only.

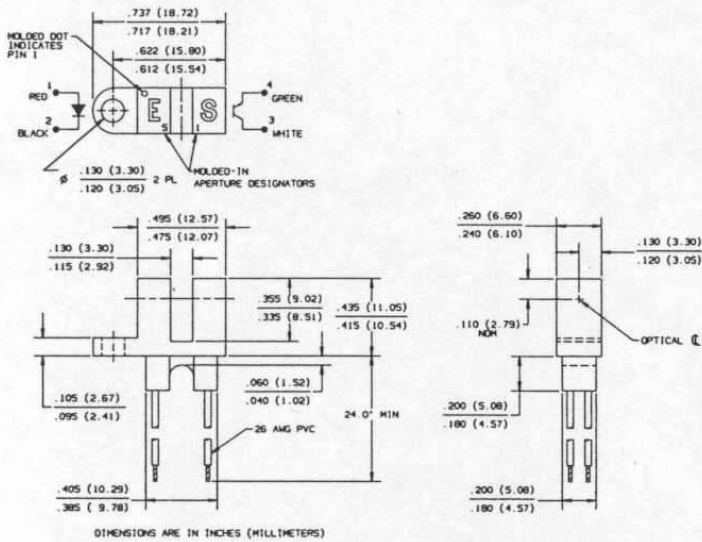
Package N



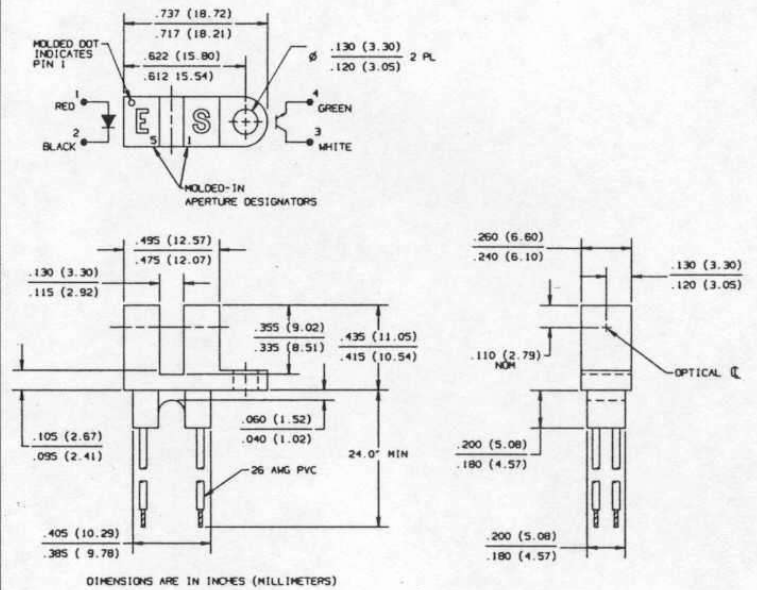
Package T



Package L



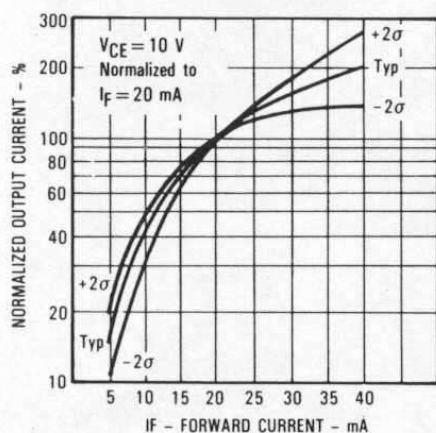
Package P



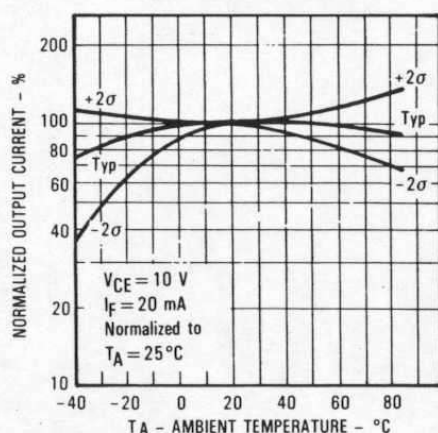
Types OPB880, OPB890 Series

Typical Performance Curves

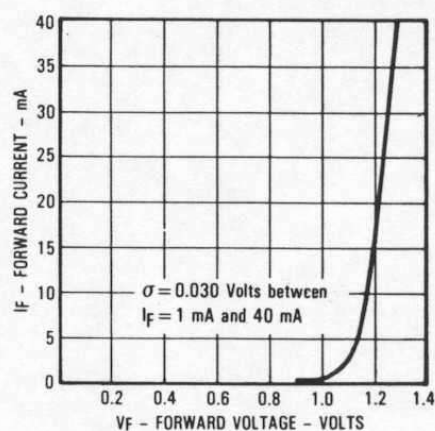
Normalized Output Current vs Forward Current



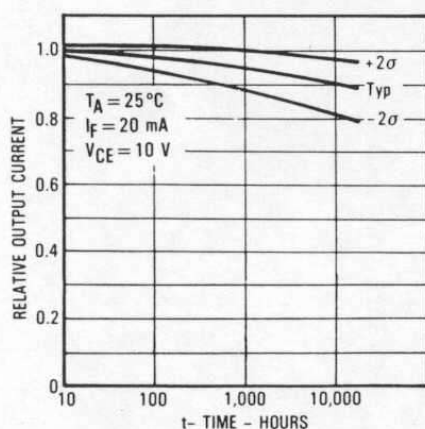
Normalized Output Current vs Ambient Temperature



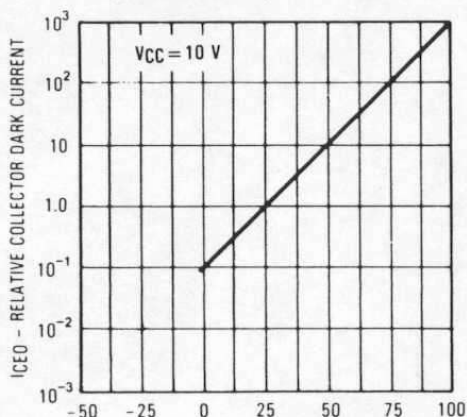
Forward Current vs Forward Voltage Input Diode



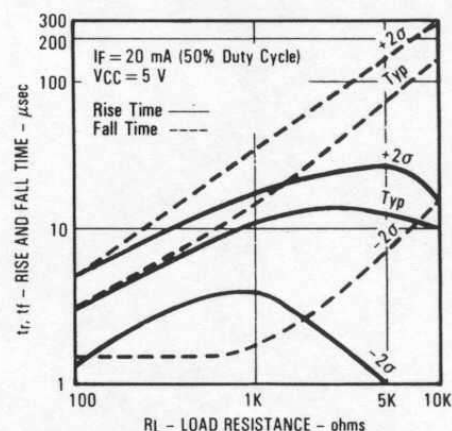
Relative Output Current vs Time



Collector Dark Current vs Ambient Temperature

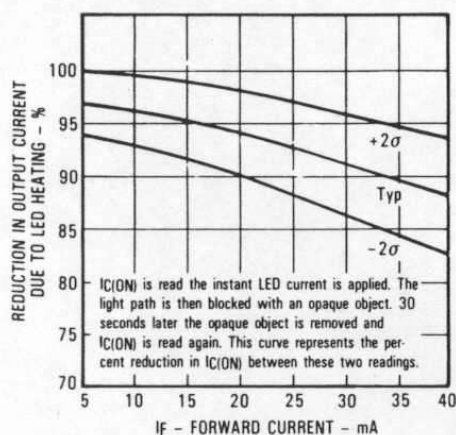


Rise and Fall Time vs Load Resistance

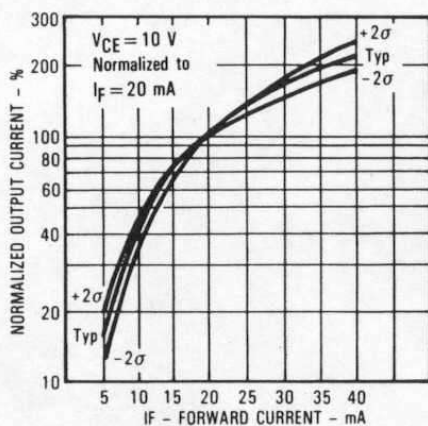


All Part Numbers Ending in "1"

Reduction in Output Current Due to LED Heating vs Forward Current



Normalized Output Current vs Input Current



Rise and Fall Time vs Load Resistance

