

Optoelectronics Division
TRW Electronic Components Group

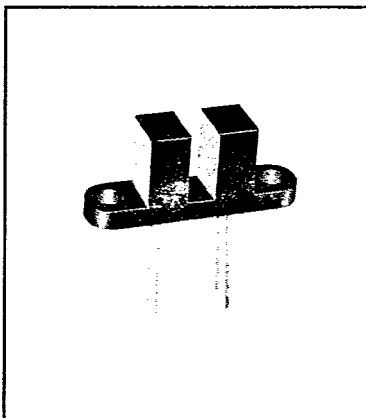
Product Bulletin 5360
January 1985

TRW

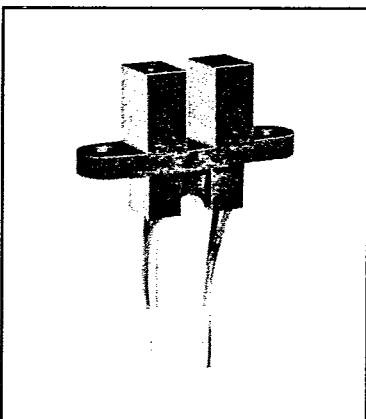
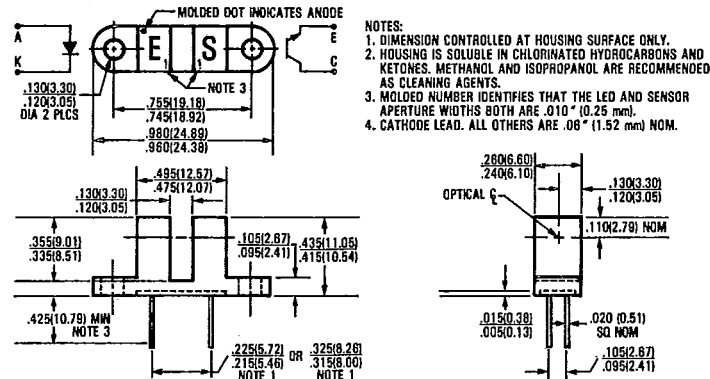
T-41-73

Slotted Optical Switches

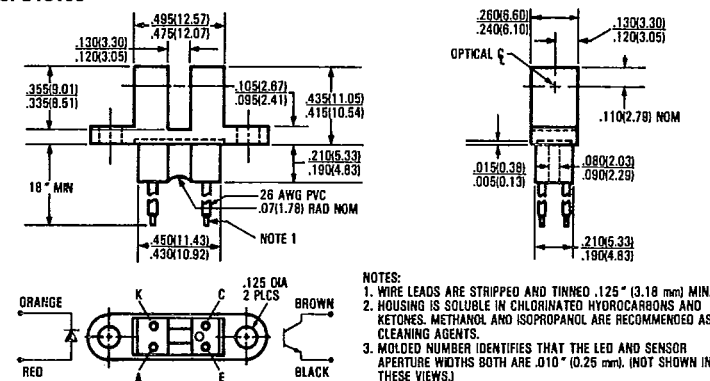
Type OPB10100 Series



OPB10110, OPB10120



OPB10130



Features

- Choice of lead spacing or wires
- Polysulfone housing
- High resolution
- Dual flange mounting configuration

Description

The all new OPB10100 series is intended to provide custom design capability in a standard series. Each device consists of an infrared emitting diode and an NPN silicon phototransistor mounted on opposite sides of an 0.125" (3.18 mm) wide slot. Sensor aperture width of 0.010" (0.25 mm); LED aperture width of 0.010" (0.25 mm); sensor-LED lead spacing of 0.320" (8.13 mm) or 0.220" (5.59 mm); or 26 ga., 18" min. wire leads, respectively; minimum $I_C(ON)$ of 100 μA ; and polysulfone housings for dust and dirt protection.

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

Storage and Operating Temperature Range $-40^\circ C$ to $+85^\circ C$
Lead Soldering Temperature (1/16 inch [1.6 mm] from case for 5 sec. with soldering iron) $240^\circ C^{(1)}$

Input Diode

Reverse Voltage 2.0 V
Continuous Forward Current 50 mA
Peak Forward Current (1 μs pulse width, 300 pps) 3.0 A
Power Dissipation 100 mW⁽²⁾

Output Phototransistor

Collector-Emitter Voltage 30 V
Emitter-Collector Voltage 5.0 V
Power Dissipation 100 mW⁽²⁾

Notes:

- (1) RMA flux is recommended. Duration can be extended to 10 sec. max. when wave soldering.
- (2) Derate linearly 1.33 mW/ $^\circ C$ above $25^\circ C$.
- (3) Junction temperature maintained at $25^\circ C$.

Type OPB10100 Series

T-41-73

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

Symbol	Parameter	Min.	Max.	Units	Test Conditions
--------	-----------	------	------	-------	-----------------

Input Diode

V _F	Forward Voltage		1.70	V	I _F = 20 mA
I _R	Reverse Current		100	μA	V _R = 2.0 V

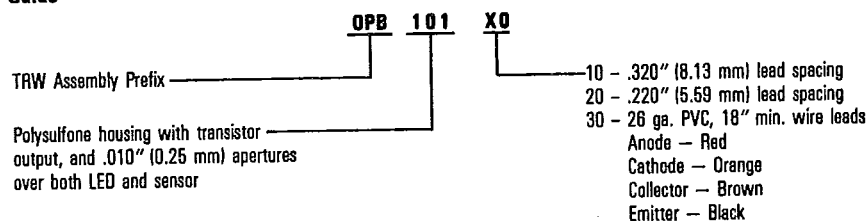
Output Phototransistor

V _{(BR)CEO}	Collector-Emitter Breakdown Voltage	30		V	I _C = 1.00 mA
V _{(BR)ECO}	Emitter-Collector Breakdown Voltage	5.0		V	I _E = 100 μA
I _{CEO}	Collector-Emitter Dark Current		100	nA	V _{CE} = 10.0 V

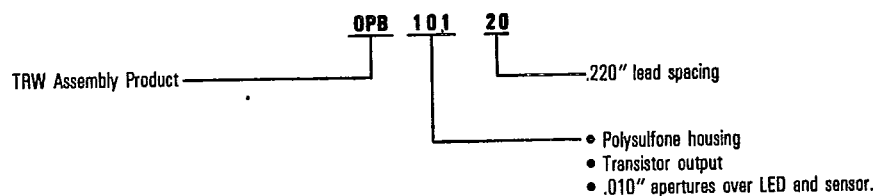
Coupled

V _{CE(SAT)} ⁽³⁾	Collector-Emitter Saturation Voltage OPB10110, OPB10120, OPB10130		0.4	V	I _C = 60 μA, I _F = 20 mA
I _{C(ON)} ⁽³⁾	On-State Collector Current OPB10110, OPB10120, OPB10130	100		μA	V _{CE} = 10.0 V, I _F = 20 mA

Part Numbering Guide



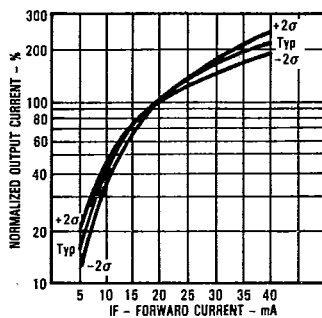
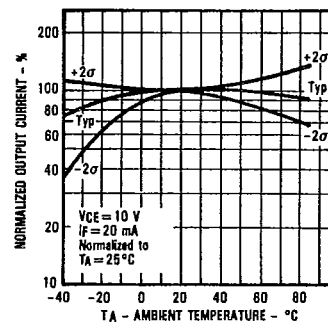
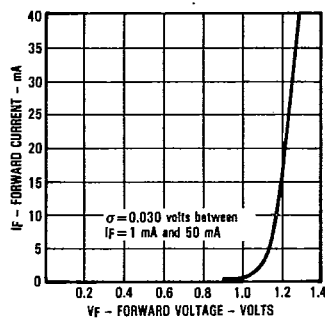
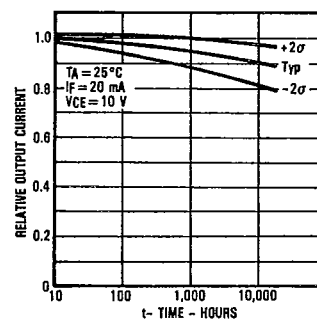
Example



Type OPB10100 Series

T-41-73

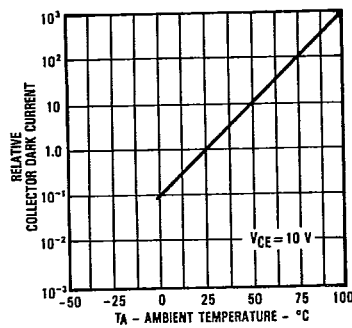
Typical Performance Curves

Normalized Output Current
vs Forward CurrentNormalized Output Current
vs Ambient TemperatureForward Current
vs Forward Voltage Input DiodeRelative Output Current
vs Time

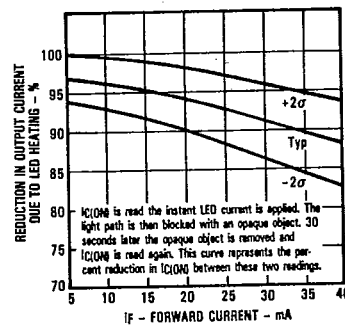
Type OPB10100 Series

T-41-73

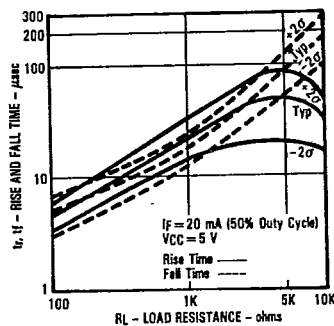
Collector Dark Current
vs Ambient Temperature



Reduction in Output Current Due to
LED Heating vs Forward Current



Rise and Fall Time
vs Load Resistance



H

TRW reserves the right to make changes at any time in order to improve design and to supply the best product possible.
Optoelectronics Division, TRW Electronic Components Group, 1215 W. Crosby Rd., Carrollton, TX 75006 (214) 323-2200, TLX 6716032 or 215849
© TRW Inc. 1985, 1984. TRW is the name and mark of TRW Inc. Printed in U.S.A.