

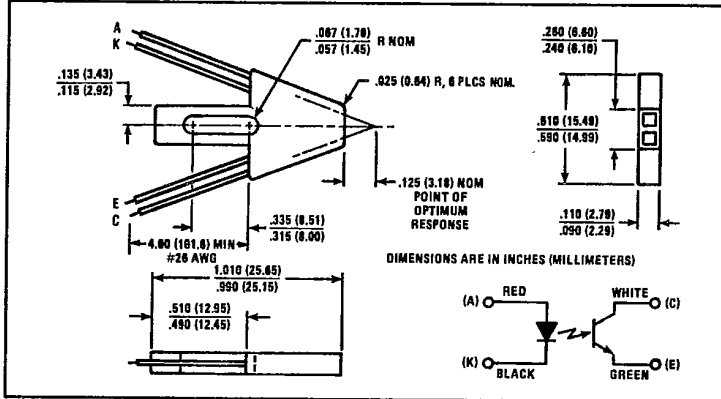
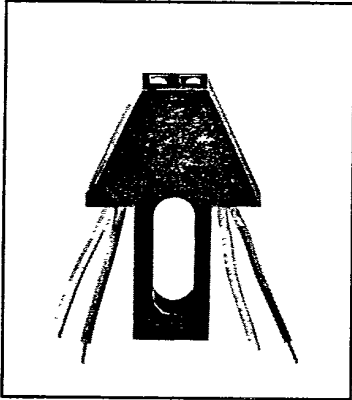
T-41-73



Optoelectronics Division
TRW Electronic Components Group

Product Bulletin 5282
January 1985

Reflective Object Sensor Type OPB253A



Features

- Phototransistor output
- Low profile to facilitate stacking
- Low cost plastic housing
- 4.0 inches (101.6 mm) minimum length lead wire

Description

The OPB253A consists of an infrared emitting diode and an NPN silicon phototransistor mounted side-by-side on converging optical axes, in a black plastic housing. The phototransistor responds to radiation from the LED only when a reflective object passes within its field of view.

The OPB253A utilizes an OP123 or OP223 LED and an OP600 family sensor. Leads are #26 AWG, teflon insulation, 4.0" (101.6 mm) minimum length, stripped and tinned.

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

Storage Temperature Range	.....	-40°C to +125°C
Operating Temperature Range	.....	-40°C to +100°C

Input Diode

Reverse Voltage	.....	2.0 V
Continuous Forward Current	.....	50 mA
Power Dissipation	.....	80 mW ⁽¹⁾

Output Phototransistor

Collector-Emitter Voltage	.....	25 V
Emitter-Collector Voltage	.....	5.0 V
Power Dissipation	.....	50 mW ⁽²⁾

Notes:

- (1) Derate linearly 1.07 mW/°C above 25°C.
- (2) Derate linearly 0.67 mW/°C above 25°C.
- (3) Measured using an Eastman Kodak neutral white test card having 90% diffuse reflectance as a reflecting surface.
- (4) Crosstalk (I_{cx}) is the collector current measured with the indicated current in the input diode and with no reflecting surface.
- (5) Lower curve is based on a calculated worst case condition rather than the conventional -2σ limit.
- (6) d is the distance from the assembly head to the reflective surface.

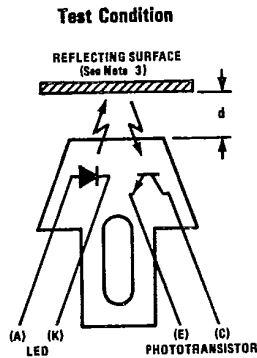
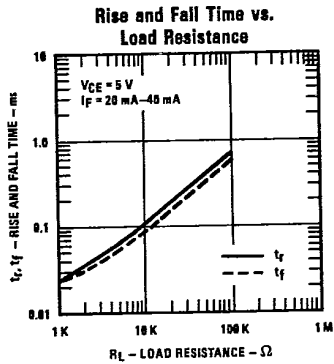
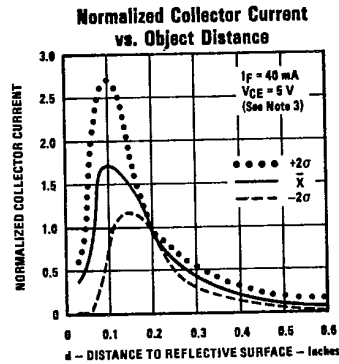
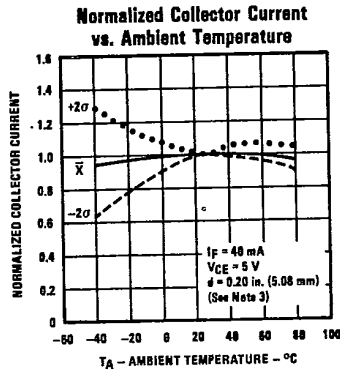
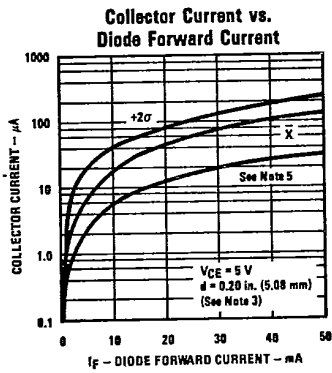
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Type OPB253A

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

Symbol	Parameter	Min.	Max.	Units	Test Conditions
Input Diode					
V _F	Forward Voltage		1.70	V	I _F = 50 mA
I _R	Reverse Current		100	μA	V _R = 2.0 V
Output Phototransistor					
V _{(BR)CEO}	Collector-Emitter Breakdown Voltage	25		V	I _C = 100 μA
V _{(BR)ECO}	Emitter-Collector Breakdown Voltage	5.0		V	I _E = 100 μA
I _{CEO}	Collector Dark Current		100	nA	V _{CE} = 10.0 V, I _F = 0, E ₀ ≤ 0.1 μW/cm ²
Combined					
I _{C(OH)}	On-State Collector Current	25		μA	I _F = 40 mA, V _{CE} = 5.0 V, d = 0.20 in. (5.08 mm). ⁽⁶⁾ See Note 3.
I _{CX}	Crosstalk		2.0	μA	I _F = 40 mA, V _{CE} = 5.0 V. No Reflecting Surface
V _{CE(SAT)}	Collector-Emitter Saturation Voltage		0.40	V	I _F = 40 mA, I _C = 10.0 μA, d = 0.20 in. (5.08 mm). ⁽⁶⁾ See Note 3.

Typical Performance Curves



TRW 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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