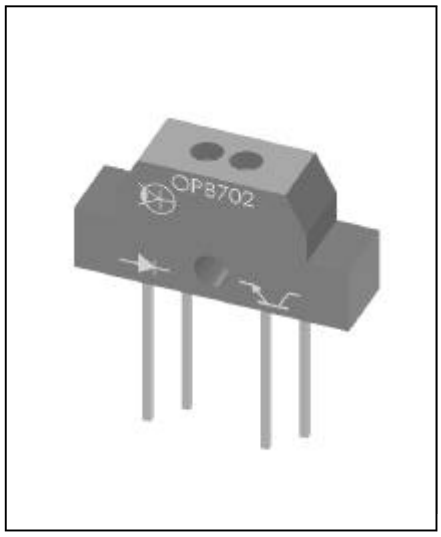
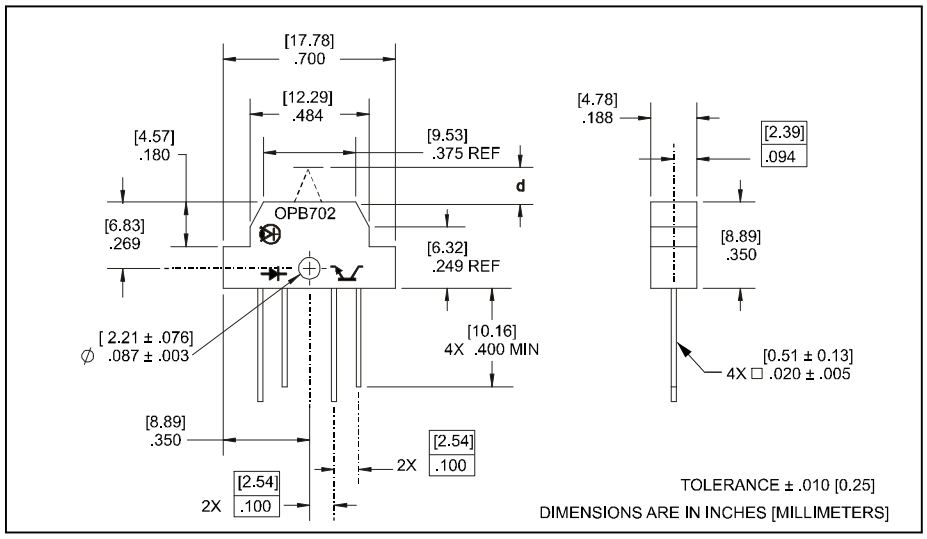
Reflective Object Sensors
Type OPB702, OPB702D, OPB702R





Features

- Focused for maximum sensitivity
- Phototransistor (OPB702) or Photodarlington (OPB702D) or Phototransistor with base-emitter resistor (OPB702R)
- Low cost plastic housing

Description

The OPB702 family consists of an infrared emitting diode and a choice of NPN silicon phototransistor (OPB702), photodarlington (OPB702D), or base-emitter resistor for low light suppresion (OPB702R). The IR LED and phototransistor are mounted side-by-side on converging optical axes, in a black plastic housing.

Both parts are constructed using either OP165 or OP265 series LEDs. The OPB702 uses and OP505 type. The OPB702D uses an OP535 type. The OPB702R uses an OP705.

Custom electrical, wire or cabling is available. Contact your local representative or Optek for more information.

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

Storage and Operating Temperature Range . . . . . -40° C to +85° C
Lead soldering temperature (1/16 inch [1.6 mm] from case for 5 sec. with soldering iron) . . . . . 240° C(2)

Input Diode
Reverse Voltage . . . . . 2.0 V
Peak Forward Current . . . . . 50 mA
Power Dissipation . . . . . 100 mW(1)

Output Photosensor
Collector-Emitter Voltage - OPB702 & OPB702R . . . . . 30 V
OPB702D . . . . . 15 V
Emitter-Collector Voltage - OPB702 & OPB702D . . . . . 5.0 V
Power Dissipation - OPB702 & OPB702D & OPB702R . . . . . 100 mW(1)

NOTES:
(1) Derate linearly 1.67 mW/° C above 25° C.
(2) RMA flux is recommended. Duration can be extended to 10 sec. max. when flow soldering.
(3) d is the distance from the assembly face to the reflective surface.
(4) Measured using Eastman Kodak gray card. The white side of the card is used as a 90% diffuse reflectance surface. Reference Eastman Kodak, Catalog #E152 7795.
(5) All parameters tested using pulse techniques.
(6) Lead spacing controlled at body egress.

PRECAUTIONS: Exposure of the plastic body to chlorinated hydrocarbons and ketones such as thread lock and instant adhesive products will degrade the plastic body. Cleaning agents methanol and isopropanol are recommended. Spray or wipe do not submerge.

Visit our website at www.optekinc.com or email us at sensors@optekinc.com

Type OPB702

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

SYMBOL	PARAMETER	MIN	MAX	UNITS	TEST CONDITIONS
Input Diode					
V_F	Forward Voltage		1.8	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 = 100 µA, I_F = 0, E_e = 0
$V_{(BR)ECO}$	Emitter-Collector Breakdown Voltage	5.0		V	I_E = 100 µA, I_F = 0, E_e = 0
I_{CEO}	Collector-Emitter Leakage Current		100	nA	V_{CE} = 10 V, I_F = 0, E_e = 0
Coupled					
$I_{C(ON)}$	On-State Collector Current	50		µA	V_{CE} = 5.0 V, I_F = 40 mA, d = 0.150" (3.81 mm)[3][4]
$V_{CE(SAT)}$	Collector-Emitter Saturation Voltage		0.40	V	I_C = 250 µA, I_F = 40 mA, d = 0.150" (3.81 mm)[3][4]

Type OPB702D

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

SYMBOL	PARAMETER	MIN	MAX	UNITS	TEST CONDITIONS
Input Diode					
V_F	Forward Voltage		1.8	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	15.0		V	I_C = 1 mA, I_F = 0 , E_e = 0
$V_{(BR)ECO}$	Emitter-Collector Breakdown Voltage	5.0		V	I_E = 100 µA, I_F = 0, E_e = 0
I_{CEO}	Collector-Emitter Leakage Current		250	nA	V_{CE} = 10.0 V, I_F = 0, E_e = 0
Coupled					
$I_{C(ON)}$	On-State Collector Current	2.0		mA	V_{CE} = 5.0 V, I_F = 40 mA, d = 0.150” (3.81 mm)[3][4]
$V_{CE(SAT)}$	Collector-Emitter Saturation Voltage		1.10	V	I_C = 400 µA, I_F = 40 mA, d = 0.150” (3.81 mm)[3][4]

Type OPB702R

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

SYMBOL	PARAMETER	MIN	MAX	UNITS	TEST CONDITIONS
Input Diode					
V_F	Forward Voltage		1.8	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 = 100 µA, I_F = 0, E_e = 0
I_{ECO}	Emitter-Reverse Current		100	µA	V_{EC} = 0.4 V, I_F = 0, E_e = 0
I_{CEO}	Collector-Emitter Leakage Current		100	nA	V_{CE} = 10.0 V, I_F = 0, E_e = 0
Coupled					
$I_{C(ON)}$	On-State Collector Current	50		µA	V_{CE} = 5.0 V, I_F = 40 mA, d = 0.150" (3.81 mm)[3][4]
$V_{CE(SAT)}$	Collector-Emitter Saturation Voltage		0.40	V	I_C = 250 µA, I_F = 40 mA, d = 0.150" (3.81 mm)[3][4]

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