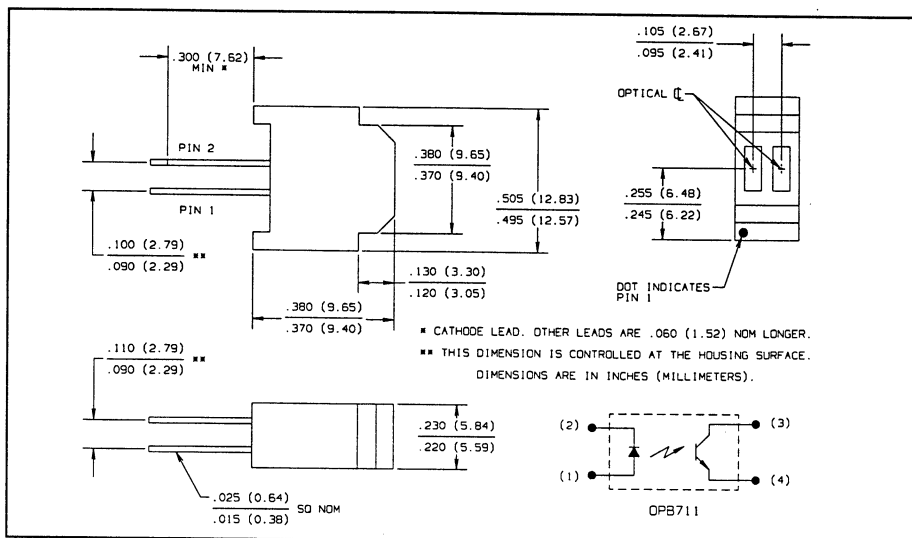
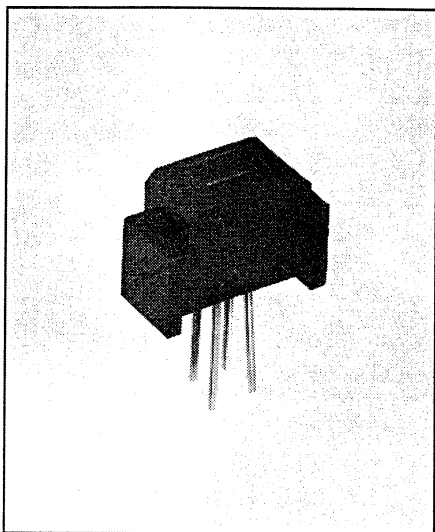


Reflective Object Sensor Type OPB711



Features

- Phototransistor output
- Unfocused for sensing diffuse surface
- Low cost plastic housing

Description

The OPB711 consists of an infrared emitting diode and an NPN silicon phototransistor mounted "side-by-side" on parallel axes in a infrared transmissive plastic housing. Both the emitting diode and photosensor are molded out of black infrared transmissive plastic to reduce ambient light noise. The photosensor responds to radiation from the emitter only when a reflective object passes within its field of view.

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

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

Input Diode

Forward DC Current 50 mA
 Peak Forward Current (1 μs pulse width, 300 pps) 3.0 A
 Reverse DC Voltage 2.0 V
 Power Dissipation 80 mW⁽²⁾

Output Phototransistor

Collector-Emitter Voltage 3 V
 Emitter-Collector Voltage 5.0 V
 Collector DC Current 25 mA
 Power Dissipation 80 mW⁽²⁾

Notes:

- (1) RMA flux is recommended. Duration can be extended to 10 sec. max when flow soldering.
- (2) Derate linearly 1.33 mW/° C above 25° C.
- (3) d is the distance from the assembly head to the reflective surface.
- (4) Measured using Eastman Kodak neutral white test card with 90% diffuse reflectance as a reflecting surface. Reference: Eastman Kodak, Catalog #1257795.
- (5) Crosstalk (I_{CX}) is the collector current measured with the indicated current in the input diode and with no reflecting surface.
- (6) Lower curve is based on a calculated worst case condition rather than the conventional -2σ limit.
- (7) Performance curves are those of the OPB706. These curves represent the response of the OPB711 at the same conditions.
- (8) All parameters tested using pulse technique.

Type OPB711

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

REFLECTIVE OBJECT SENSORS

SYMBOL	PARAMETER	MIN	MAX	UNITS	TEST CONDITIONS
Input Diode					
V_F	Forward Voltage		1.70	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	$I_C = 100\ \mu\text{A}$
$V_{(BR)ECO}$	Emitter-Collector Breakdown Voltage	5.0		V	$I_E = 100\ \mu\text{A}$
I_{CEO}	Collector Dark Current		100	nA	$V_{CE} = 10\text{ V}$, $I_F = 0$, $E_e \leq 0.1\ \mu\text{W}/\text{cm}^2$
Combined					
$I_{C(ON)}$	On-State Collector Current	350		μA	$V_{CE} = 5\text{ V}$, $I_F = 20\text{ mA}$, $d = 0.080\text{ in. (2.03 mm)}$ ⁽³⁾⁽⁴⁾
I_{CX}	Crosstalk		100	nA	$V_{CE} = 5\text{ V}$, $I_F = 20\text{ mA}$, No Reflecting Surface ⁽⁵⁾
$V_{CE(SAT)}$	Collector-Emitter Saturation Voltage		0.40	V	$I_F = 20\text{ mA}$, $I_C = 50\ \mu\text{A}$, $d = 0.080\text{ in. (2.03 mm)}$ ⁽³⁾⁽⁴⁾

Typical Performance Curves

