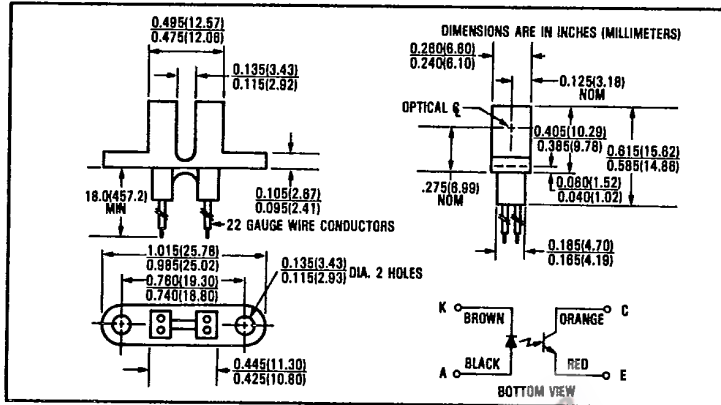
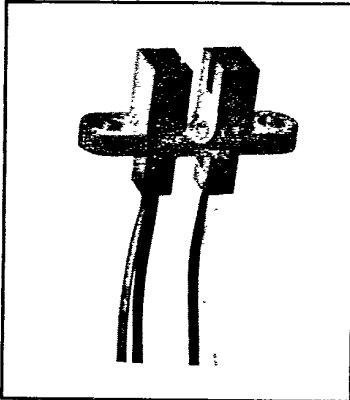


T-41-73

Slotted Optical Switches

Types OPB823A, OPB824A



Features

- Non-contact switching
- Lead wires for electrical connection
- Fast switching speed

Description

The OPB823A and OPB824A each consist of an infrared emitting diode and an NPN silicon phototransistor mounted in a low cost black plastic housing on opposite sides of a 0.125" (3.18 mm) wide slot. Phototransistor switching takes place whenever an opaque object passes through the slot. 18" (457.2 mm) minimum length lead wires ease assembly where PC board mounting is not practical.

The OPB823A and OPB824A each utilize an OP140 or OP240 type LED and an OP550 family sensor.

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

Storage and Operating Temperature Range -40°C to +85°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

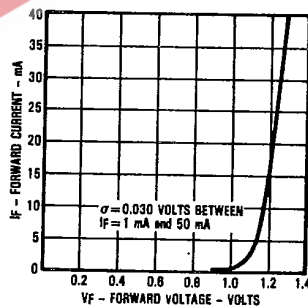
Collector-Emitter Voltage 30 V
 Emitter-Collector Voltage 5.0 V
 Power Dissipation 100 mW⁽²⁾

Notes:

- (1) Derate linearly 1.33 mW/°C above 25°C.
- (2) Junction temperature maintained at 25°C.
- (3) Methanol or isopropyl alcohols are recommended as cleaning agents.

Typical Performance Curves

Forward Current vs Forward Voltage Input Diode

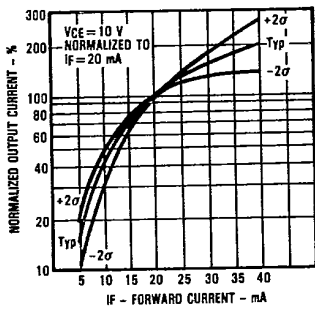


Electrical Characteristics (TA = 25°C unless otherwise noted)

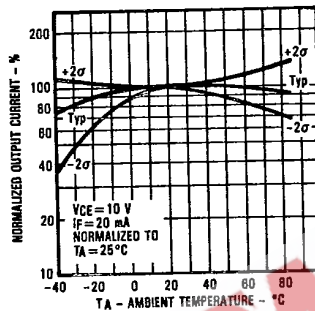
Symbol	Parameter	Min.	Max.	Units	Test Conditions
Input Diode					
V _F	Forward Voltage		1.70	V	I _F = 20 mA
I _R	Reverse Current		100	μA	V _R = 2.0 V
Output Phototransistor					
V _{(BR)CEO}	Collector-Emitter Breakdown Voltage	30.0		V	I _C = 1.00 mA
V _{(BR)ECO}	Emitter-Collector Breakdown Voltage	5.0		V	I _C = 100 μA
I _{CEO}	Collector-Emitter Dark Current		100	nA	V _{CE} = 10.0 V, I _F = 0, E _B = 0
Coupled					
V _{(CE)SAT}	Collector-Emitter Saturation Voltage	OPB823A OPB824A	0.40 0.40	V	I _F = 20 mA, I _C = 100 μA I _F = 20 mA, I _C = 250 μA
I _(ON)	On-State Collector Current	OPB823A OPB824A	200 500	μA μA	I _F = 20 mA, V _{CE} = 10.0 V I _F = 20 mA, V _{CE} = 10.0 V

Typical Performance Curves

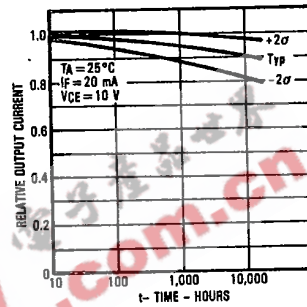
Normalized Output Current vs Forward Current



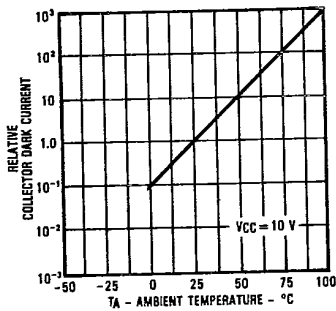
Normalized Output Current vs Ambient Temperature



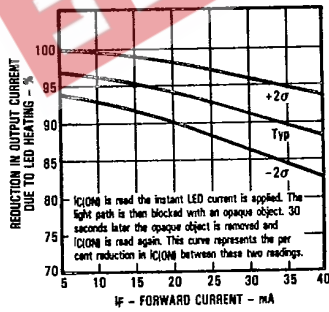
Relative Output Current vs Time



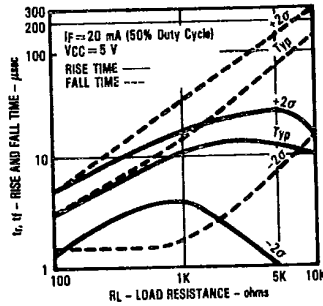
Relative Collector Dark Current vs Ambient Temperature



Reduction in Output Current Due to LED Heating vs Forward Current



Rise and Fall Time vs Load Resistance



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
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