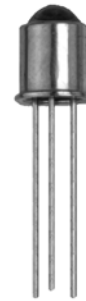


# High Reliability NPN Silicon Phototransistor

OP803, OP804, OP805 (TX, TXV)



**Features:**

- TO-18 hermetically sealed package
- Lensed for high sensitivity
- Narrow acceptance angle
- Processed after MIL-PRF-19500
- Mechanically and spectrally matched to high reliability IREDs in the OP235 and OP236 series

**Description:**

Each device in this series consists of a high reliability NPN silicon phototransistor mounted in a hermetically sealed TO-18 package, which offers high power dissipation and superior hostile environment operation. Device lensing creates a 12° angle when measured from the optical axis to the half power point.

These devices can be matched with a solid state infrared source (such as the high resolution OP235 and OP236 series of IREDs), or can be used to sense infrared content in a visible light source (such as a tungsten bulb or sunlight) for automatic brightness control.

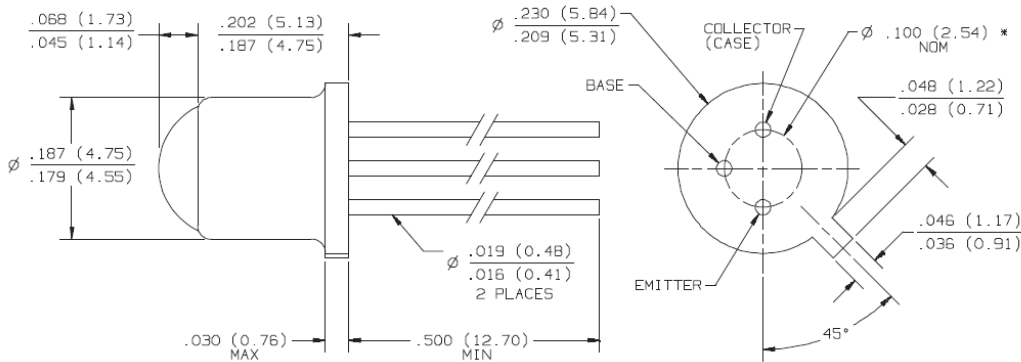
*TX and TXV devices are processed to MIL-PRF-19500.*

*Please refer to Application Bulletins 208 and 210 for additional design information and reliability (degradation) data.*

**Applications:**

- Space-limited applications
- Hostile environment applications

Part Number	Sensor	Light Current I <sub>C(ON)</sub> (mA) Min / Max	V <sub>CE</sub> Typ/Max	Input Power E <sub>E</sub> (mW/cm <sup>2</sup> )	Viewing Angle	Lead Length
OP803TX	Transistor	4.00 / 8.00	5	5.0	25°	0.50"
OP803TXV						
OP804TX		7.00 / 22.00				
OP804TXV						
OP805TX		15.00 / NA				
OP805TXV						



\* THIS DIMENSION CONTROLLED AT HOUSING SURFACE.  
DIMENSIONS ARE IN INCHES (MILLIMETERS)

General Note  
TT Electronics reserves the right to make changes in product specification without notice or liability. All information is subject to TT Electronics' own data and is considered accurate at time of going to print.

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OP803, OP804, OP805 (TX, TXV)



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

Storage Temperature Range	-65° C to +150° C
Operating Temperature Range	-55° C to +125° C
Collector-Base Voltage	30 V
Collector-Emitter Voltage	30 V
Emitter-Base Voltage	5 V
Emitter-Collector Voltage (applies to all OP800 and OP830 devices)	5 V
Lead Soldering Temperature [1/16 inch (1.6mm) fro case for 5 seconds with soldering iron] <sup>(1)</sup>	260° C
Power Dissipation <sup>(2)</sup>	250 mW

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

### Input Diode

SYMBOL	PARAMETER	MIN	TYP	MAX	UNITS	TEST CONDITIONS
$I_{C(ON)}$	On-State Collector Current					$V_{CE} = 5.0\text{V}$ , $E_e = 20\text{ mW/cm}^2$ <sup>(3)</sup>
	OP803 (TX, TXV)	4.0		-	mA	
	OP804 (TX, TXV)	7.0		8		
$I_{CEO}$	Collector-Emitter Dark Current			100	nA	$V_{CE} = 10.0\text{ V}$ , $E_e = 0$
				100	$\mu\text{A}$	$V_{CE} = 30.0\text{ V}$ , $E_e = 0$ $T_A = 100^\circ\text{ C}$
$V_{(BR)CEO}$	Collector-Base Breakdown Voltage	30			V	$I_C = 100\ \mu\text{A}$ , $I_B = 0$ , $E_e = 0$
$V_{(BR)ECO}$	Emitter-Collector Breakdown Voltage	7.0			V	$I_C = 100\ \mu\text{A}$ , $E_e = 0$
$V_{CE(SAT)}$	Collector-Emitter Saturation Voltage			0.40	V	$I_C = 0.4\text{ mA}$ , $E_e = 20\text{ mW/cm}^2$ <sup>(2)(3)</sup>
$t_f$	Rise Time			10.0	$\mu\text{s}$	$V_{CC} = 30\text{ V}$ , $I_C = 1.00\text{ mA}$ , $R_L = 100\ \Omega$
	OP804 (TX, TXV)			15.0		
$t_r$	Fall Time			10.0		
	OP804 (TX, TXV)			15.0		

### Notes:

- (1) RMA flux is recommended. Duration can be extended to 10 seconds maximum when flow soldering.
- (2) Derate linearly 2.5 mW/° C above 25° C.
- (3) Light source is an unfiltered tungsten lamp operated at a temperature of 2870 K

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