

STS-88-066

Single Channel Optical Switch Assembly Over / Under Optical Axis

The STS-88-066 consists of an infrared emitting diode and an NPN silicon phototransistor mounted on opposite side of a 0.150" wide slot. Phototransistor switching takes place whenever an opaque object passes through the slot. The polysulfone housing reduces interference from ambient light and provides dirt and dust protection.

Applications

Industrial Switching

Features

Non-Contact Switching

Fast Switching Speed

Absolute Maximum Ratings

Parameter	Symbol	Min	Max	Unit
LED				
Reverse Voltage	V_R	-	3	V
Forward Current	I_F	-	50	mA
Peak Forward Current	$I_{\Delta F}$	-	3	A
Power Dissipation ¹	P_d	-	100	mW
PHOTOTRANSISTOR (PTX)				
Collector-Emitter Voltage	V_{CEO}	-	30	V
Emitter-Collector Voltage	V_{ECO}	-	5	V
Power Dissipation ²	P_d	-	100	mW
Operating Temperature	T_{OP}	-40	+85	°C
Storage Temperature	T_{STG}	-40	+85	°C

Plastic housing is soluble in chlorinated hydrocarbons and ketones. Recommended cleaning agents are methanol or isopropanol.

¹ Derate linearly 2.6 mW/°C above 25°C

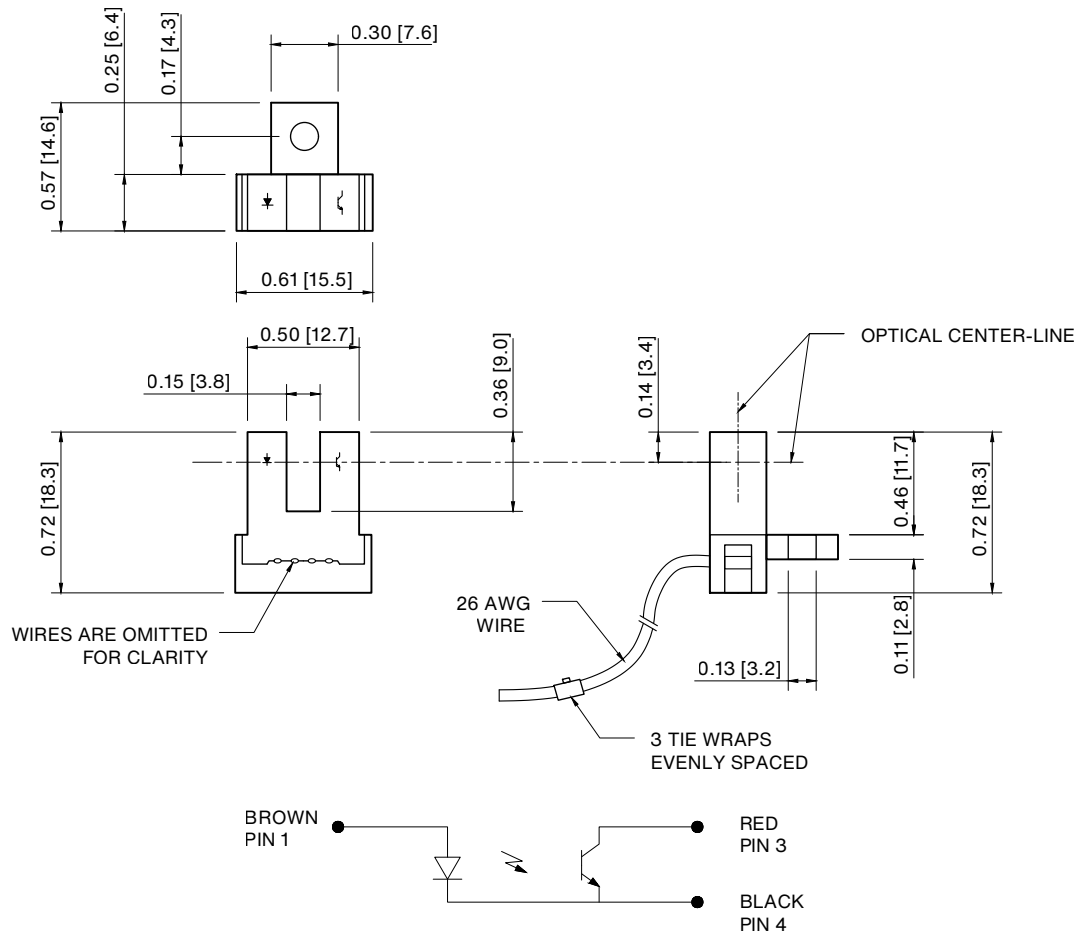
² Derate linearly 1.3 mW/°C above 25°C

Typical Electro-Optical Specifications at $T_A=25^\circ\text{C}$

Parameter	Test Conditions	Symbol	Min	Typ	Max	Unit
LED						
Forward Voltage	$I_F=20\text{mA}$	V_F	-	1.2	1.7	V
Reverse Current	$V_R=3\text{V}$	I_R	-	-	10	μA
Reverse Voltage	-	V_R	-	-	3	V
PHOTOTRANSISTOR (PTX)						
Collector Dark Current	$V_{CE}=10\text{V}, E_o=0$	I_{CEO}	-	-	100	nA
Collector-Emitter Breakdown Voltage	$I_C=100\mu\text{A}, E_o=0$	BV_{CEO}	30	-	-	V
Emitter-Collector Breakdown Voltage	$I_C=100\mu\text{A}, E_o=0$	BV_{ECO}	5	-	-	V
COUPLED						
Collector-Emitter Saturation Voltage	$I_C=100\mu\text{A}, I_F=20\text{mA}$	$V_{CE(SAT)}$	-	-	0.4	V
On-State Collector Current	$V_{CE}=10\text{V}, I_F=20\text{mA}$	$I_{C(ON)}$	1.5	-	-	mA

Mechanical Specifications

Units are in inches [mm]



General Care and Handling Instructions

Photodiodes:

Handling and Storage

- Handle Photodiodes gently to prevent damage.
- Avoid exposing Photodiodes to temperatures exceeding the storage temperature rating of the device.
- Maintain a non-condensing environment for optimum performance and lifetime.

Cleaning

- Gently clean the glass (borosilicate or quartz window) using a 50/50 mixture of Methanol and isopropyl alcohol and a soft, optical-grade pad.

Special Considerations for Plastic or Epoxy Encapsulated Photodiodes

- Protect from intense light sources such as direct sunlight.
- Avoid exposure to harsh chemicals like THINNERS, ACETONE, and TRICHLOROETHYLENE.
- Cleaning with a 50/50 mixture of Methanol and isopropyl alcohol (IPA) is recommended. Cleaning in an ultrasonic bath is generally not recommended.

CdS Photocells:

Handling and Storage

- Handle CdS Photocells gently to prevent damage.
- Avoid exposing CdS Photocells to temperatures exceeding the storage temperature rating of the device.
- Maintain a non-condensing environment for optimum performance and lifetime.

Cleaning

- Gently clean the glass or plastic covering using a 50/50 mixture of Methanol and isopropyl alcohol and a soft, optical-grade pad.

Special Considerations

- DO NOT use Vapor Phase Soldering or Reflow Soldering for CdS components.

Optocouplers and LEDs:

Handling and Storage

- Handle Optocouplers and LEDs gently to prevent damage.
- Avoid exposing the devices to temperatures exceeding the storage temperature rating of the device.
- Maintain a non-condensing environment for optimum performance and lifetime.

Cleaning

- For plastic molded devices, cleaning with a 50/50 mixture of Methanol and isopropyl alcohol is recommended. Cleaning in an ultrasonic bath is generally not recommended.

Special Considerations

- Avoid exposing plastic molded devices or epoxy glob top devices to harsh chemicals like THINNERS, ACETONE, and TRICHLOROETHYLENE.

Electrostatic Discharge (ESD) Sensitivity:

- All devices are considered ESD-sensitive. They are shipped in ESD protective packaging. When unpacking and using these products, anti-ESD precautions should be observed.

Lead Trimming and Bending:

- Standard lead trimming after soldering is an acceptable practice; however, do not attempt to bend or modify the leads incorrectly, as it can damage the glass feed-through or the plastic encapsulant.

Soldering Instructions:

- Use a soldering iron with a tip temperature of 300°C max.
- Consult with your preferred solder manufacturer to determine a solder alloy and flux combination, as well as the reflow profile appropriate for your application.

General Precautions for all Devices

1. Moisture Prevention:

Ensure devices are stored in a dry environment to prevent moisture ingress, which can cause damage during soldering. Refer to J-STD-20 for guidance on proper baking procedures to prevent moisture related damage.

2. Lead Splaying:

If required, carefully splay the leads of the devices according to the specific application needs. Be cautious when splaying leads, as improper techniques may damage the device. Consult technical support or device datasheets for guidance on lead splaying.

3. Mechanical Stress:

Handle devices with care throughout the installation process to prevent damage.

4. Circuit Protection and Layout:

Optimize the circuit design and layout to ensure proper functioning and prevent damage to the devices. Include appropriate protection measures like ESD protection diodes, current-limiting resistors, and voltage regulation.

5. After-Sale Support:

For troubleshooting and device-specific inquiries, please consult with our technical support team. They can offer valuable guidance and suggestions on handling, operation, and application-related questions. To reach them, please contact the Advanced Photonix Applications group at Techsupport@advancedphotonix.com.

Legal Disclaimer

Information in this data sheet is believed to be correct and reliable. However, no responsibility is assumed for possible inaccuracies or omission. Specifications are subject to change without notice.

