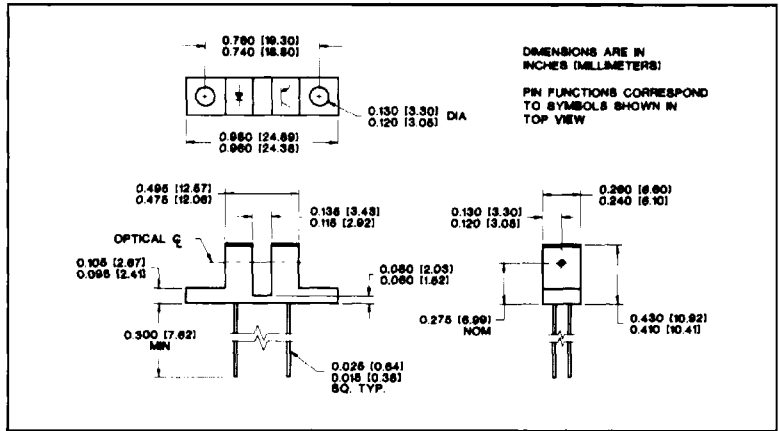
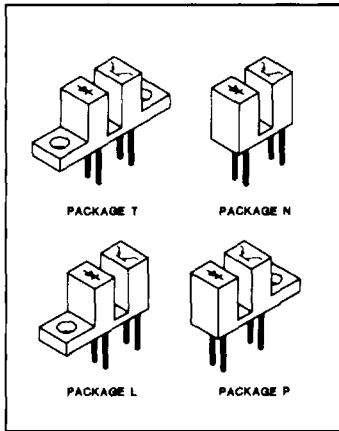


S-860/870 Series

Slotted Optical Switches



Features

- aperture widths to 0.005" (0.13mm)
- five electrical selections
- two lead spacings
- IR-transparent⁽¹⁾ or opaque housing
- four mounting options

Description

The S-860/870 family of optical switches offers the designer the most flexible semi-custom specification available in commercial optoelectronics. Electrical, optical, and mechanical parameters may be specified allowing the use of this standard product in many applications that would otherwise have to be custom-designed. Additional variety is found in the wired versions: S-880/890 series. See the S-960/970 and S-980/990 datasheets for similar devices with digital outputs or call OptoSwitch for applications assistance.

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

Storage and Operating Temperature	.....	-40°C to +85°C
Lead Soldering Temperature ⁽²⁾	240°C ⁽³⁾

IRE D

Continuous Forward Current	.....	50mA
Peak Forward Current (1 μ s pulse width, 300pps)	.....	3A
Reverse Voltage	.....	3V
Power Dissipation	.....	100mW ⁽⁴⁾

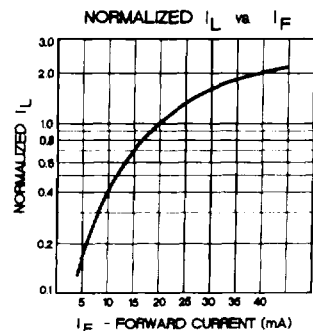
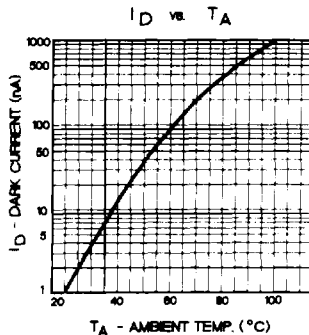
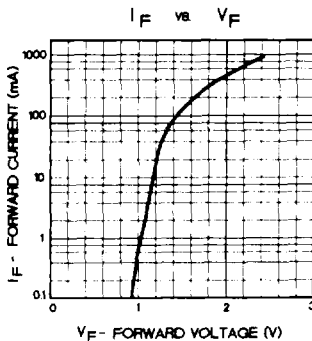
Sensor

Collector-Emitter Voltage	.....	30V
Emitter-Collector Voltage	.....	5V
Power Dissipation	.....	100mW ⁽⁴⁾

Notes:

1. Housing is soluble in some common industrial solvents; recommended cleaning agents are isopropanol or methanol.
2. 0.06" (1.5mm) from the case for 5 seconds maximum.
3. 260°C maximum when wave soldering.
4. Derate linearly from 25°C at -1.33 mW/°C.

Fundamental Characteristics



OptoSwitch • 1500 International Parkway, Suite 100 • Richardson, Texas 75081 • Phone: 214-479-1122 • 800-448-2900
CLAROSTAT Sensors and Controls

S-860/870 Series

Slotted Optical Switches

CLAROSTAT
SENSORS AND CONTROLS GROUP

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

Symbol	Parameter	min	max	units	Test Conditions
Input Diode					
V _F	Forward Voltage	-	1.60	V	I _F = 20mA
I _R	Reverse Current	-	10	μA	V _R = 3.0V
Output Phototransistor⁽¹⁾					
V _{(BR)CEO}	Collector-Emitter Breakdown Voltage	30	-	V	I _C = 1.0mA
V _{(BR)ECO}	Emitter-Collector Breakdown Voltage	5.0	-	V	I _E = 100μA
I _D	Dark Current	-	100	nA	V _{CE} = 10V, E _e = 0
Coupled⁽²⁾					
I _L	Light Current				
	Parameter A	0.5	-	mA	I _F = 20mA, V _{CE} = 5V
	Parameter B	1.0	-	mA	I _F = 10mA, V _{CE} = 5V
	Parameter C	2.0	-	mA	I _F = 20mA, V _{CE} = 0.4V
	Parameter D	4.0	-	mA	I _F = 20mA, V _{CE} = 5V
	Parameter E	0.2	-	mA	I _F = 20mA, V _{CE} = 5V
V _{CE(sat)}	Collector-Emitter Saturation Voltage				
	Parameter A	-	0.4	V	I _F = 20mA, I _C = 0.4mA
	Parameter B	-	0.4	V	I _F = 10mA, I _C = 0.8mA
	Parameter C	-	0.4	V	I _F = 20mA, I _C = 2.0mA
	Parameter D	-	0.4	V	I _F = 20mA, I _C = 2.0mA
	Parameter E	-	0.4	V	I _F = 20mA, I _C = 0.26mA

Notes:

- Radiation outside the sensitivity range of the device may be present during these measurements. Sufficient protection has been provided when the parameter being measured cannot be altered by further irradiation shielding.
- Other ranges of light current can be specified; call OptoSwitch for applications assistance.
- Some combinations of apertures are not available with IR-transmissive housings and certain electrical specifications. See the combination table on page 39 for specific information on availability of devices in this family and the S-880/890 families. Specifically, apertures narrower than 0.010" (0.25mm) are not available in IR-transmissive plastics and the higher current-transfer-ratios (parameters B, C, and D) are not available with smaller apertures.

Part Number Guide

S - 8 w x - y z z OptoSwitch Optical Switch Phototransistor Output PCB mount, housing material 6 = IR-transparent 7 = IR-opaque		Aperture Widths and Allowed Combinations: ⁽³⁾ <table border="1"> <thead> <tr> <th>ZZ</th> <th>IRE D</th> <th>Sensor</th> </tr> </thead> <tbody> <tr> <td>55</td> <td>0.050*(1.27mm)</td> <td>0.050*(1.27mm)</td> </tr> <tr> <td>51</td> <td>0.050*(1.27mm)</td> <td>0.010*(0.25mm)</td> </tr> <tr> <td>5F</td> <td>0.050*(1.27mm)</td> <td>0.005*(0.13mm)</td> </tr> <tr> <td>11</td> <td>0.010*(0.25mm)</td> <td>0.010*(0.25mm)</td> </tr> <tr> <td>1F</td> <td>0.010*(0.25mm)</td> <td>0.005*(0.13mm)</td> </tr> <tr> <td>FF</td> <td>0.005*(0.13mm)</td> <td>0.005*(0.13mm)</td> </tr> </tbody> </table>	ZZ	IRE D	Sensor	55	0.050*(1.27mm)	0.050*(1.27mm)	51	0.050*(1.27mm)	0.010*(0.25mm)	5F	0.050*(1.27mm)	0.005*(0.13mm)	11	0.010*(0.25mm)	0.010*(0.25mm)	1F	0.010*(0.25mm)	0.005*(0.13mm)	FF	0.005*(0.13mm)	0.005*(0.13mm)
ZZ	IRE D	Sensor																					
55	0.050*(1.27mm)	0.050*(1.27mm)																					
51	0.050*(1.27mm)	0.010*(0.25mm)																					
5F	0.050*(1.27mm)	0.005*(0.13mm)																					
11	0.010*(0.25mm)	0.010*(0.25mm)																					
1F	0.010*(0.25mm)	0.005*(0.13mm)																					
FF	0.005*(0.13mm)	0.005*(0.13mm)																					
Electrical Selection with: Lead Spacing = 0.320*(8.13mm) Lead Spacing = 0.220*(5.59mm) 0 = Electrical Parameter A 5 = Electrical Parameter A 1 = Electrical Parameter B 6 = Electrical Parameter B 2 = Electrical Parameter C 7 = Electrical Parameter C 3 = Electrical Parameter D 8 = Electrical Parameter D 4 = Electrical Parameter E 9 = Electrical Parameter E		Mounting Configuration: L = one mounting tab, IRED side N = no mounting tabs T = two mounting tabs P = one mounting tab, sensor side																					

OptoSwitch • 1500 International Parkway, Suite 100 • Richardson, Texas 75081 • Phone: 214-479-1122 • 800-448-2900
CLAROSTAT Sensors and Controls