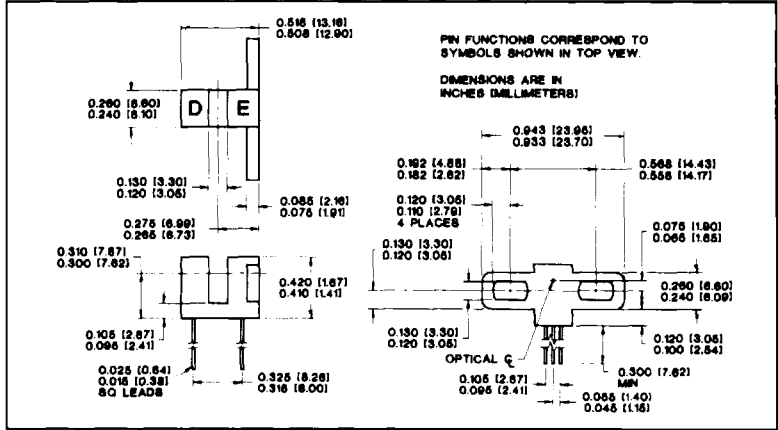
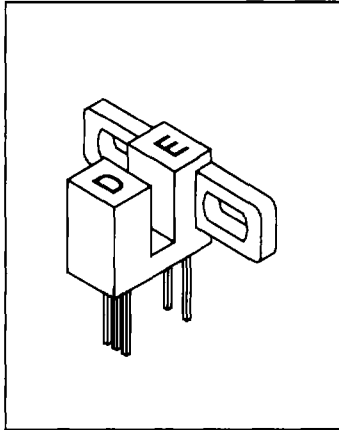


S-940 Series

Slotted Optical Switches with Digital Output



Features

- unambiguous output state
- buffer or inverter output
- side-mounting tabs
- pc board mount or wires
- rugged, single-piece housing

Description

The S-940 series consists of a gallium arsenide IRED and silicon IC sensor mounted in a rigid one-piece polycarbonate housing. Both buffer and inverter outputs are offered; the output is an open-collector, npn transistor. This series is also available with 18" (457mm) minimum length flexible wire leads; see note 3 on next page. This package style is also available with a phototransistor sensor as the S-180 series. For additional information or for applications assistance, call OptoSwitch.

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

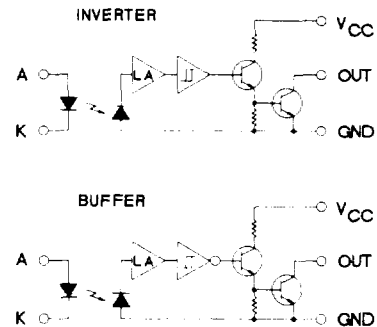
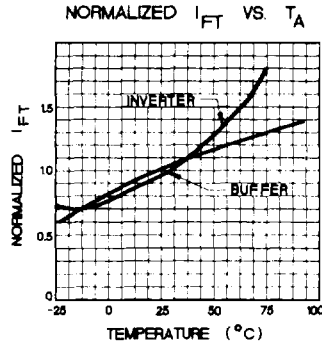
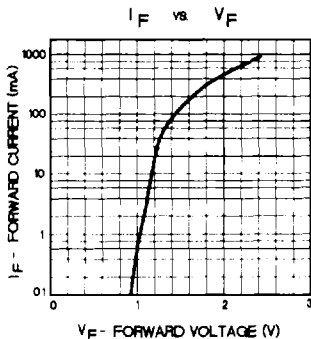
Sensor

Supply Voltage, V_{CC}	6.5V
Supply Voltage for the Output Lead	18V
Output Current Sink	20mA
Power Dissipation	250mW ⁽⁵⁾

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. (pc board mount configuration)
3. 260°C maximum when wave soldering. (pc board mount configuration)
4. Derate linearly from 25°C at -1.33 mW/°C.
5. Derate linearly from 25°C at -3.33 mW/°C.

Fundamental Characteristics



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CLAROSTAT Sensors and Controls

S-940 Series

Slotted Optical Switches with Digital Output



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 Integrated Circuit Sensor⁽¹⁾					
V _{CC}	Supply Voltage Range	4.75	5.25	V	
V _{CC(out)}	Supply Voltage Range (output pin)	4.00	16.0	V	
I _{CC}	Supply Current Drain	-	20	mA	V _{CC} = 5V
Coupled⁽²⁾					
I _{FT}	IRED Current to Change Output State	-	20	mA	V _{CC} = 5V
I _{OH}	Off-state Output Leakage				
	S-941 - buffer	-	100	μA	V _{CC1} = 5V, V _{CC2} = 16V, I _F = 20mA
	S-943 - inverter	-	100	μA	V _{CC1} = 5V, V _{CC2} = 16V, I _F = 0mA
V _{OL}	On-state Output Voltage				
	S-941 - buffer	-	0.4	V	I _{OL} = 16mA, I _F = 0mA, V _{CC1} = 5V
	S-943 - inverter	-	0.4	V	I _{OL} = 16mA, I _F = 20mA, V _{CC1} = 5V

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 levels of threshold current can be specified; call OptoSwitch for applications assistance.
- These devices are also available with wire leads; use a '-W' suffix to designate 18" (457mm) minimum, seven (7) strand, 26 AWG, UL1429 style, insulated wire. The free end is stripped and tinned approximately 0.125" (3.2mm). Wire color code is:

Red - Anode White - V_{CC}
 Black - Cathode Blue - Output
 Green - Ground

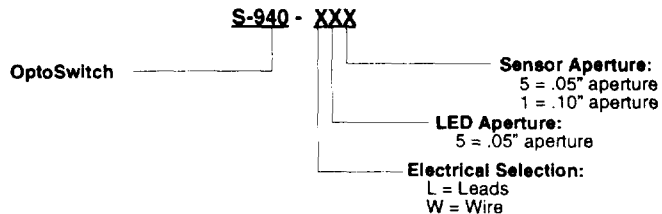
Typical Characteristics

(see page 43)

Definitions:

- Buffer** - Sensor output is in the low-state [V_{CE(sat)}] when input excitation to the IRED = 0 mA or the radiation path blocked.
Inverter - Sensor output is in the low-state when input excitation to the IRED is ≥ I_{FT} and the radiation path unobstructed.

Part Number Guide



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