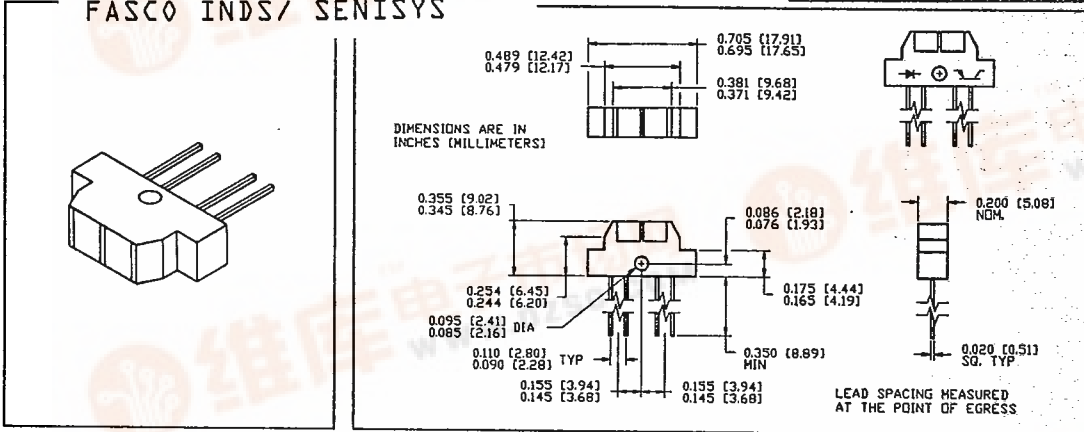


# R-210 Series

## Reflective Optical Switches



FASCO INDS/ SENISYS



### Features

- pc board mount or wire leads<sup>(1)</sup>
- visible light rejection
- low-profile housing<sup>(2)</sup>
- side-mounting provision
- two sensitivity ranges

### Description

The R-210 series consists of a gallium arsenide IRED and silicon phototransistor mounted in an injection-molded plastic housing. The mechanical axes of the sensor and IRED coincide 0.150" (3.8mm) in front of the device; peak current-transfer-ratio occurs at approximately 0.125" (3.2mm). The device is designed to provide usable photocurrents only when a reflective object is within the field of view. Call Senisys for applications assistance or additional information.

### Absolute Maximum Ratings (TA = 25°C unless otherwise stated.)

Storage and Operating Temperature.....-40°C to +85°C  
Lead Soldering Temperature<sup>(3)</sup>.....240°C<sup>(4)</sup>

### IRED

Continuous Forward Current.....50mA  
Peak Forward Current (1µs pulse width, 300pps).....3A  
Reverse Voltage.....3V  
Power Dissipation.....100mW<sup>(5)</sup>

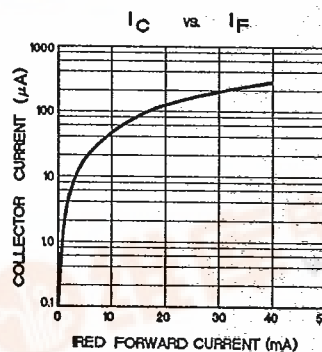
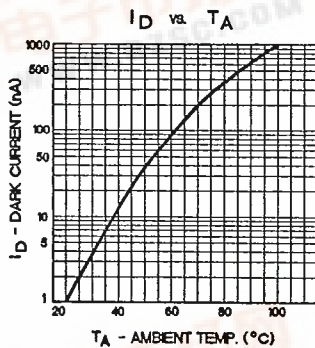
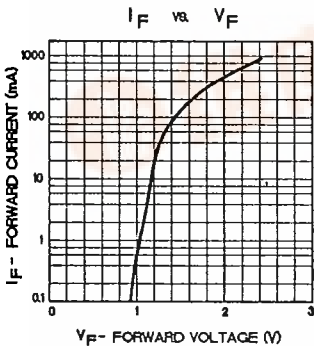
### Sensor

Collector-Emitter Voltage.....30V  
Emitter-Collector Voltage.....5V  
Power Dissipation.....100mW<sup>(5)</sup>

### Notes:

1. Add a -W suffix to order with 12" (305mm) minimum, 26 AWG, UL 1429 wire.
2. Housing is soluble in some common industrial solvents; recommended cleaning agents are isopropanol or methanol.
3. 0.06" (1.5mm) from the case for 5 seconds maximum. (pc board mount configuration)
4. 260°C maximum when wave soldering. (pc board mount configuration)
5. Derate linearly from 25°C at -1.33 mW/°C.

### Fundamental Characteristics



Senisys • 1600 West Plano Parkway • Plano, Texas 75075 • Phone: 214-422-1844 • FAX: 214-423-4661



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## Reflective Optical Switches



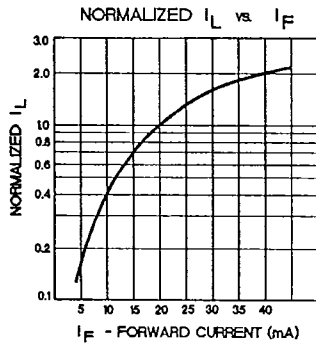
**Electrical Characteristics** ( $T_A = 25^\circ\text{C}$  unless otherwise stated)

Symbol	Parameter	min	max	units	Test Conditions	
<b>Input Diode</b>						
$V_F$	Forward Voltage	-	1.60	V	$I_F = 40\text{mA}$	
$I_R$	Reverse Current	-	10	$\mu\text{A}$	$V_R = 3.0\text{V}$	
<b>Output Phototransistor<sup>(1)</sup></b>						
$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage	30	-	V	$I_C = 1.0\text{mA}$	
$V_{(BR)ECO}$	Emitter-Collector Breakdown Voltage	5.0	-	V	$I_E = 100\mu\text{A}$	
$I_D$	Dark Current	-	100	nA	$V_{CE} = 10\text{V}, E_o = 0$	
<b>Coupled</b>						
$I_L$	Light Current					
		R-210-A <sup>(2) (3)</sup>	100	-	$\mu\text{A}$	$I_F = 40\text{mA}, V_{CE} = 5\text{V}, d = 0.150''$
		R-210-B <sup>(2) (3)</sup>	50	-	$\mu\text{A}$	$I_F = 40\text{mA}, V_{CE} = 5\text{V}, d = 0.150''$
$I_{CX}$	Crosstalk <sup>(4)</sup>					
		R-210-A	-	5	$\mu\text{A}$	$I_F = 40\text{mA}, V_{CE} = 5\text{V}, d = \infty$
		R-210-B	-	5	$\mu\text{A}$	$I_F = 40\text{mA}, V_{CE} = 5\text{V}, d = \infty$

**Notes:**

1. 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.
2. Other ranges of light current can be specified; call Senisys for applications assistance.
3. 'd' is the distance to a Kodak neutral test card (90% diffuse reflectance); for all testing,  $d = 0.150''$  (3.8mm).
4. Crosstalk is the measure of radiation transferred through the housing material.  $d = \infty$  implies no reflective surface and the absence of spurious external radiation paths.

**Typical Characteristics**



**Wire Color Code:**  
 Collector .....White  
 Emitter .....Blue  
 Anode .....Orange  
 Cathode .....Green