

**61010****PHOTODARLINGTON "PIGTAIL"  
(TYPE GS3030)****Mii****OPTOELECTRONIC PRODUCTS  
DIVISION****Features:**

- Hermetically sealed
- High Sensitivity
- Small Package
- Suitable for High-Density PC Board Mounting
- Spectrally Matched to the 62017 Series LED.

**Applications:**

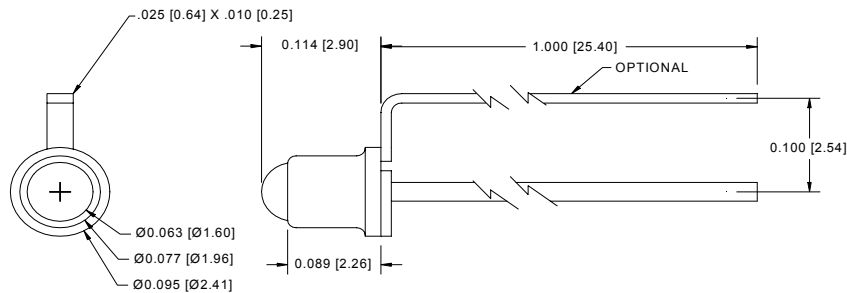
- Incremental Encoding
- Reflective Sensors
- Position Sensors
- Level Sensors

**DESCRIPTION**

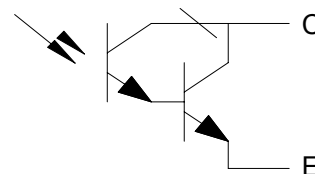
The **61010** is an N-P-N Planar Silicon Photodarlington Transistor in a package designed to be mounted in a single-clad printed circuit board. Its large effective aperture and narrow angular response make this a highly sensitive device with minimum response to off-axis or stray light. This sensor is also available with a lead attached to the case so that it may be connected without the use of a printed circuit board. Available in custom binned to customer specifications and/or screened to MIL-PRF-19500.

**ABSOLUTE MAXIMUM RATINGS**

Storage Temperature.....	-65°C to +150°C
Operating Temperature (See part selection guide for actual operating temperature) .....	-65°C to +125°C
Collector-Emitter Voltage.....	50V
Emitter-Collector Voltage.....	7V
Power Dissipation (Derate at the rate of 0.5 mW/°C above 25°C) .....	50mW
Lead Soldering Temperature (3 minutes) .....	240°C

**Package Dimensions****Schematic Diagram**

ALL DIMENSIONS ARE IN INCHES [MILLIMETERS]



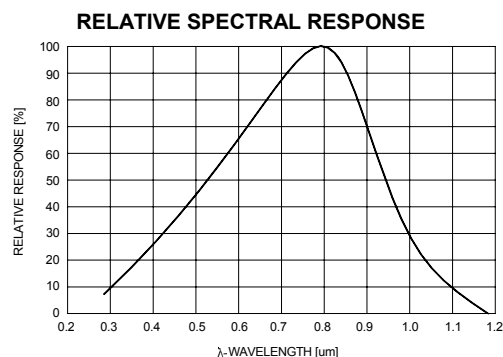
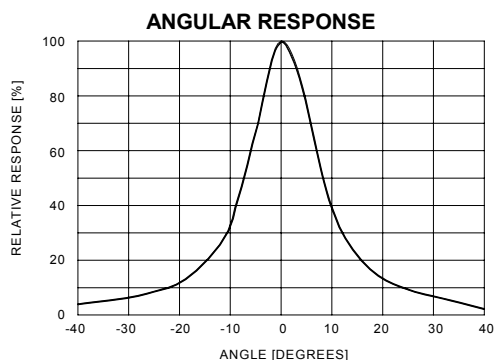
## ELECTRICAL CHARACTERISTICS

T<sub>A</sub> = 25°C unless otherwise specified.

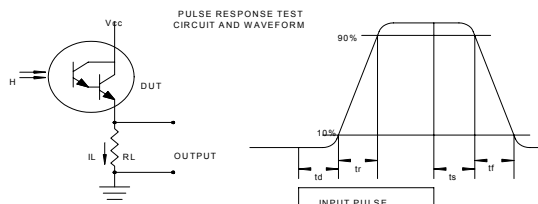
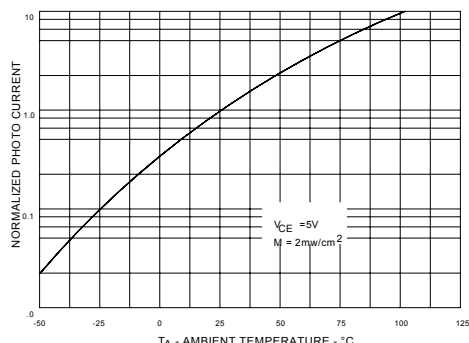
PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS	TEST CONDITIONS	NOTE
Light Current	61010-X01	0.6		2.5			
	61010-X02	2		5	mA	V <sub>CE</sub> = 5.0V, H = 0.2 mW/cm <sup>2</sup>	1
	61010-X03	4		—			
Dark Current	61010-XXX			250	nA	V <sub>CE</sub> = 10V, H = 0	
Collector-Emitter Breakdown Voltage	61010-XXX	BV <sub>CEO</sub>	15		V	I <sub>C</sub> = 100μA	
Emitter-Collector Breakdown Voltage	61010-XXX	BV <sub>ECO</sub>	5		V	I <sub>E</sub> = 100μA	
Light Current Rise Time	61010-X01		15		μs		
	61010-X02		20		μs	R <sub>L</sub> = 100Ω, V <sub>CC</sub> = 5V, I <sub>L</sub> = 1.0mA	
	61010-X03		20		μs		
Saturation Voltage	61010-X0X	V <sub>CE(sat)</sub>	1.1		V	I <sub>C</sub> = 1mA, H = 0.2 mW/cm <sup>2</sup>	
Angular Response	61010-X0X	θ	12		degrees		2

## NOTES:

- Irradiance in mW/cm<sup>2</sup> from a tungsten source at a color temperature of 2870K..
- The angle between incidence for peak response and incidence for 50% of peak response.



## PHOTO CURRENT versus TEMPERATURE



## RECOMMENDED OPERATING CONDITIONS:

PARAMETER	SYMBOL	MIN	MAX	UNITS
Bias Voltage-Collector/Emitter	V <sub>CE</sub>	5	10	mA
Irradiance (H)	H	0.2	1	mW/cm <sup>2</sup>

## SELECTION GUIDE

PART NUMBER	PART DESCRIPTION	I <sub>L</sub> Range
61010-001	Silicon Photodarlington in pigtail package, commercial version	1 to 4mA
61010-101	Silicon Photodarlington in pigtail package (-55° to +125°C) with 100% screening	1 to 4mA
61010-002	Silicon Photodarlington in pigtail package, commercial version	3 to 7mA
61010-102	Silicon Photodarlington in pigtail package (-55° to +125°C) with 100% screening	3 to 7mA
61010-003	Silicon Photodarlington in pigtail package, commercial version	+6mA
61010-103	Silicon Photodarlington in pigtail package (-55° to +125°C) with 100% screening	+6mA