

61059**0.060" COAXIAL SILICON PHOTOTRANSISTOR**

11/07/03

Features:

- Hermetically sealed
- High sensitivity
- Small package
- Suitable for high-density PC Board mounting

Applications:

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

DESCRIPTION

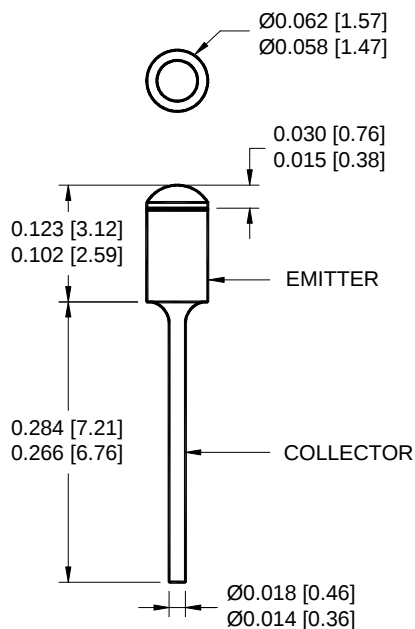
The **61059** is an N-P-N Planar Silicon Transistor in a 0.060" coaxial package designed to be mounted in a double-clad printed circuit board. It is available in a range of sensitivities and is lensed for minimum response to stray light. High sensitivity, low dark current leakage, and low saturation voltage make this device ideal for interfacing with TTL circuits. Available as commercial or screened versions.

ABSOLUTE MAXIMUM RATINGS

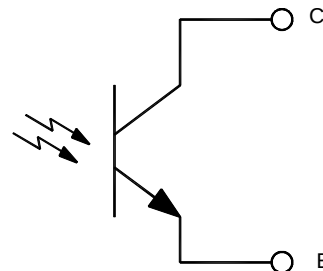
Collector-Emitter Voltage	50V
Emitter-Collector Voltage	7V
Power Dissipation (Note 1)	50mW
Storage Temperature	-65°C to +150°C
Operating Temperature	-55°C to +125°C
Soldering Temperature (10 seconds)	240°C

Notes:

1. Derate linearly at the rate of 0.5 mW/°C above 25°C

Package Dimensions

DIMENSIONS ARE IN INCHES [MILLIMETERS]

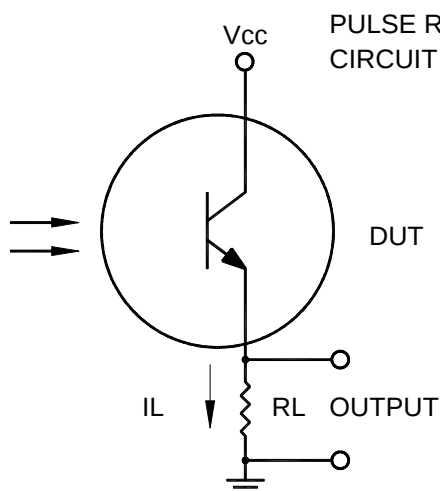
Schematic Diagram

ELECTRICAL CHARACTERISTICS $T_A = 25^\circ\text{C}$ unless otherwise specified.

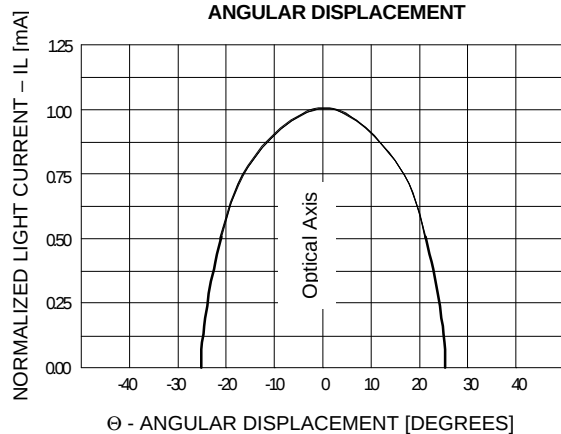
PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS	TEST CONDITIONS	NOTE
Light Current	-X01 -X02 -X03 -X04	0.5 2.0 4.0 7.0		3.0 5.0 8.0 -	mA	$V_{CE} = 5.0\text{ V}$, $H = 20\text{ mW/cm}^2$	1
Dark Current	I_D			25	nA	$V_{CE} = 30\text{ V}$, $H = 0$	1
Collector-Emitter Breakdown Voltage	BV_{CEO}	50			V	$I_C = 100\text{ }\mu\text{A}$, $H = 0$	
Emitter-Collector Breakdown Voltage	BV_{ECO}	7			V	$I_E = 100\text{ }\mu\text{A}$, $H = 0$	
Light Current Rise Time	-X01 -X02 -X03 -X04		2.0 3.0 5.0 7.0		μsec	$R_L = 1\text{ K}\Omega$, $V_{CC} = 5.0\text{ V}$, $I_L = 1.0\text{ Ma}$	
Saturation Voltage	$V_{CE(sat)}$			0.5	V	$I_C = 0.4\text{ mA}$, $H = 20\text{ mW/cm}^2$	
Angular Response	θ		22		degrees	$R_L = 1\text{ K}\Omega$, $V_{CC} = 5\text{ V}$, $I_L = 1.0\text{ mA}$	2

NOTES:

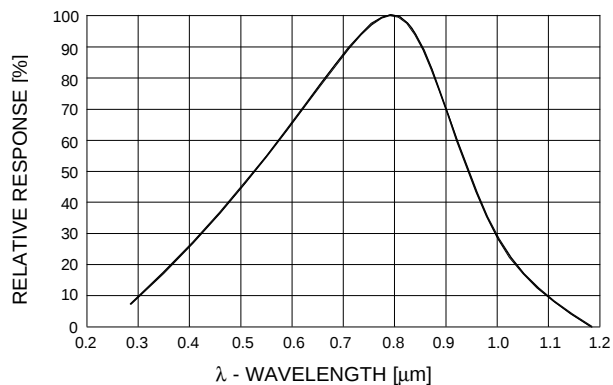
1. Irradiance in mW/cm^2 from a tungsten source at a color temperature of 2870K.
2. The angle between incidence for peak response and incidence for 50% of peak response.

**TYPICAL CHARACTERISTICS**

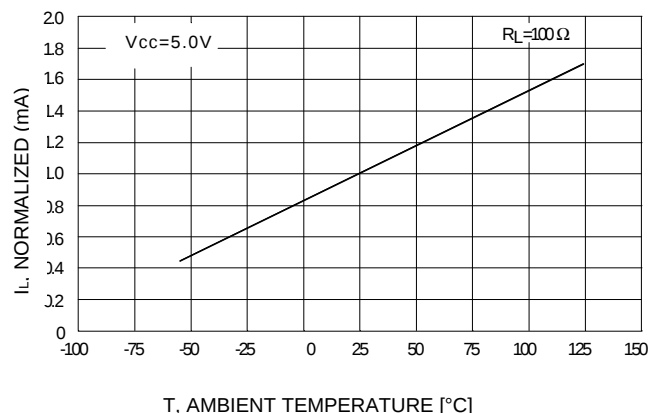
**NORMALIZED LIGHT CURRENT
vs.
ANGULAR DISPLACEMENT**



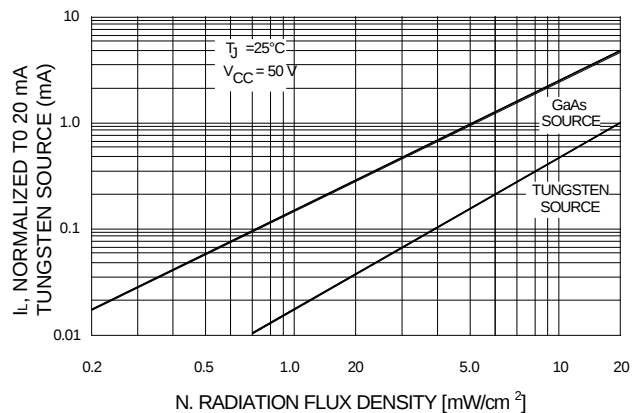
RELATIVE SPECTRAL RESPONSE



NORMALIZED LIGHT CURRENT
vs.
TEMPERATURE



NORMALIZED LIGHT CURRENT
vs.
RADIATION FLUX DENSITY



RECOMMENDED OPERATING CONDITIONS:

PARAMETER	SYMBOL	MIN	MAX	UNITS
Bias Voltage – Collector / Emitter	V_{CC}	5	35	V
Irradiance (H)	H	15	25	mW/cm^2

SELECTION GUIDE

PART NUMBER	PART DESCRIPTION	I_L Range
61059-001	Commercial	0.5 to 3mA
66159-101	Screened	0.5 to 3mA
61059-002	Commercial	2 to 5mA
61059-102	Screened	2 to 5mA
61059-003	Commercial	4 to 8mA
61059-103	Screened	4 to 8mA
61059-004	Commercial	7 to 12mA
61059-104	Screened	7 to 12 mA