

61048

SILICON PHOTOTRANSISTOR



09/22/03

Features:

- Hermetically sealed
- High Sensitivity
- Base lead provided for conventional transistor biasing
- Wide receiving angle for easy alignment

Applications:

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

DESCRIPTION

This is a N-P-N Planar Silicon phototransistor in a flat window TO-46 three-lead package featuring 0.040" X 0.040" sensitive area. It is available in a range of sensitivities and is ideal for use wherever system considerations dictate the use of external optics to focus radiation on the sensor. Available custom binned to customer specifications and/or screened to MIL-PRF-19500.

ABSOLUTE MAXIMUM RATINGS

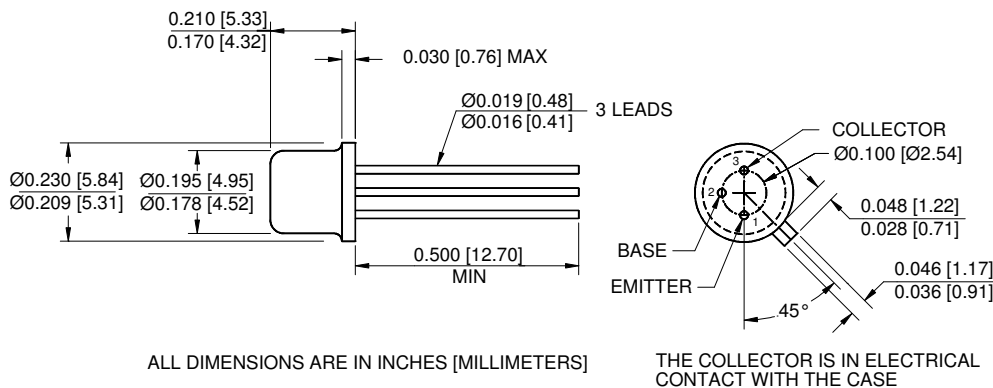
Collector-Emitter Voltage	30V
Emitter-Collector Voltage	7V
Continuous Collector Current	50mA
Power Dissipation (Note 1)	250mW
Storage Temperature	-65°C to +150°C
Operating Temperature	-55°C to +125°C
Lead Soldering Temperature (10 seconds, 1/16" from case)	240°C

Notes:

1. Derate linearly at the rate of 2.5 mW/°C above 25°C

Package Dimensions

Schematic Diagram



61048

09/22/03

SILICON PHOTOTRANSISTOR

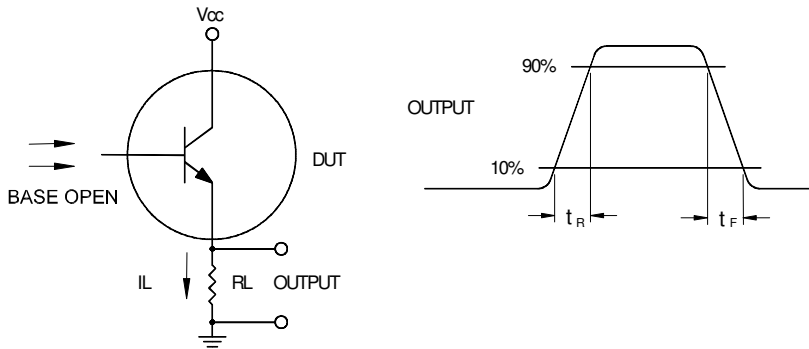
ELECTRICAL CHARACTERISTICS $T_A = 25^\circ\text{C}$ unless otherwise specified.

PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS	TEST CONDITIONS	NOTE
Light Current	-X01	5		20	mA	$V_{CE} = 5.0\text{V}$, $H = 20\text{ mW/cm}^2$	1
	-X02	20		30			
	-X03	30		50			
	-X04	50		--			
Dark Current	I_D			50	nA	$V_{CE} = 5\text{V}$, $H = 0$	
Collector-Emitter Breakdown Voltage	BV_{CEO}	30			V	$I_C = 100\mu\text{A}$	
Emitter-Collector Breakdown Voltage	BV_{ECO}	7			V	$I_E = 100\mu\text{A}$	
Light Current Rise Time	-X01		8		μs	$R_L = 100\Omega$, $V_{CC} = 5\text{V}$, $I_L = 1.0\text{mA}$	
	-X02		10				
	-X03		15				
	-X04		20				
Saturation Voltage	$V_{CE(sat)}$		0.2		V	$I_C = 0.4\text{mA}$, $H = 20\text{ mW/cm}^2$	
Angular Response	θ		45		degrees		2

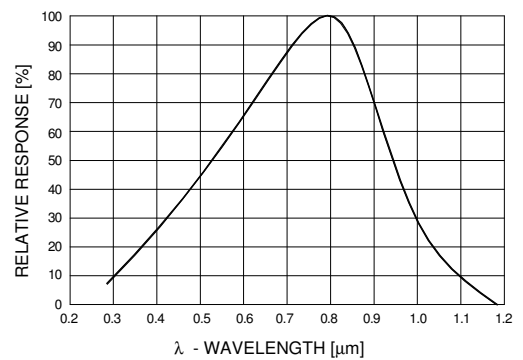
NOTES:

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

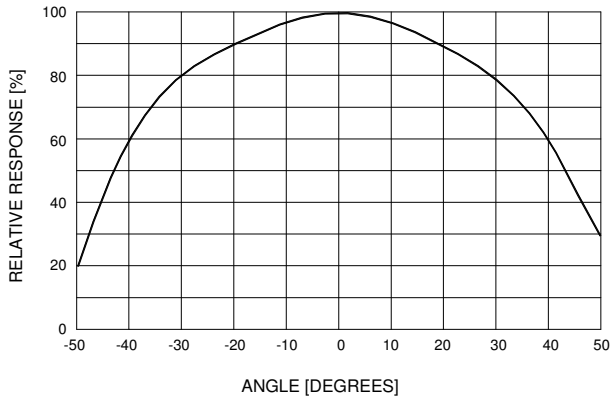
PULSE RESPONSE TEST
CIRCUIT AND WAVEFORM



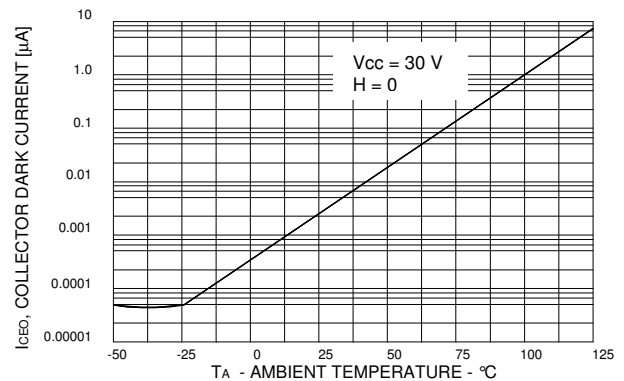
RELATIVE SPECTRAL RESPONSE



ANGULAR RESPONSE



DARK CURRENT versus TEMPERATURE



RECOMMENDED OPERATING CONDITIONS:

PARAMETER	SYMBOL	MIN	MAX	UNITS
Collector/Emitter Current	I_F	5	10	mA
Irradiance (H)	H	15	25	mW/cm^2

SELECTION GUIDE

PART NUMBER	PART DESCRIPTION	I_L Range
61048-001	Commercial	5 to 20mA
61048-101	Screened	5 to 20mA
61048-002	Commercial	20 to 30mA
61048-102	Screened	20 to 30mA
61048-003	Commercial	30 to 50mA
61048-103	Screened	30 to 50mA
61048-004	Commercial	50mA min
61048-104	Screened	50mA min