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3.2x1.6mm, 1.6mm Round Subminiature

Round Subminiature Package Chip LED Phototransistor

Technical Data Sheet

Features:

- Fast response time
- High photo sensitivity
- Small junction capacitance
- Pb free
- The product itself will remain within RoHS compliant version.
- Compliance with EU REACH

Descriptions:

- SR160PTD is a phototransistor in miniature SMD package which is molded in a black with spherical top view lens.
- The device is Spectrally matched to visible and infrared emitting diode.

Applications:

- Miniature switch
- Counters and sorter
- Position sensor
- Infrared applied system
- Encoder

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3.2x1.6mm, 1.6mm Round Subminiature

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Technical Data Sheet

Part No.	Emitting Color	Lens Color
SR160PTD-1AX-T	PT	Black

Package Dimension:





Polarity





Recommended Soldering Pad Dimensions



Notes:

- 1. All dimensions are in millimeters (inches).
- 2. Tolerance is \pm 0.25 mm (.010") unless otherwise noted.

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E-mail:	sales@luckylight.cn
http://	www.luckylight.cn
Page:	2/9

Luckylight

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Technical Data Sheet

Absolute Maximum Ratings at Ta=25℃

Parameters	Symbol	Rating	Unit
Power Dissipation At (or below) 25 °C free Air Temperature	PD	75	mW
Collector-Emitter Voltage	VCEO	30	V
Emitter-Collector-Voltage	VECO	5	V
Collector Current	IC	20	mA
Operating Temperature	Topr	-25 to +85	°C
Storage Temperature	Tstg	-40 to +85	°C
Soldering Temperature	Tsol	260°C for 5 Seconds	

Electrical Optical Characteristics at Ta=25 $^\circ\!\mathrm{C}$

Parameters	Symbol	Min.	Тур.	Max.	Unit	Condition
Collector-Emitter Breakdown Voltage	BVCEO	30			V	IC=100µA, Ee=0mW/cm²
Emitter-Collector Breakdown Voltage	BVECO	5			V	IE=100µA, Ee=0mW/cm²
Collector-Emitter Saturation Voltage	VCE(SAT)			0.5	V	IC=2mA, Ee=1mW/cm²
Collector Dark Current	ICEO			50	nA	VCE=20V, Ee=0mW/cm²
On State Collector Current	IC(ON)		1.0		mA	VCE=5V, Ee=1mW/cm²
Photo-current	IL		0.6		mA	VCE=5V, Ee=1mW/cm²
Optical Rise Time (10% to 90%)	TR		15			VCE=5V,
Optical Fall Time (90% to 10%)	$T_{\rm F}$		15		μs	IC=1mA, RL=1000Ω
Wavelength Of Peak Sensitivity	λΡ		940		nm	
Rang Of Spectral Bandwidth	λ0.5	820		1100	nm	

Date:12-Sep-2017E-mail:sales@luckylight.cnhttp://www.luckylight.cnPage:3 / 9

3.2x1.6mm, 1.6mm Round Subminiature

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Technical Data Sheet

Typical Electrical / Optical Characteristics Curves (25°C Ambient Temperature Unless Otherwise Noted)



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Date:	12-Sep-2017
E-mail:	sales@luckylight.cn
http://	www.luckylight.cn
Page:	4 / 9

3.2x1.6mm, 1.6mm Round Subminiature

Round Subminiature Package Chip LED Phototransistor

Technical Data Sheet

Reel Dimensions:

Unit: mm Tolerance: ±0.25mm

Carrier Tape Dimensions:

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3.2x1.6mm, 1.6mm Round Subminiature

Round Subminiature Package Chip LED Phototransistor

Technical Data Sheet

Packing & Label Specifications:

Moisture Resistant Packaging:

Spec No.: SR160	Date:	12-Sep-2017
Issue No.: G-Rev-4	E-mail:	sales@luckylight.cn
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3.2x1.6mm, 1.6mm Round Subminiature

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Technical Data Sheet

CAUTIONS

1. Handling Precautions:

- 1.1. Handle the component along the side surfaces by using forceps or appropriate tools.
- 1.2. Do not directly touch or handle the silicone lens surface. It may damage the internal circuitry.
- 1.3. Do not stack together assembled PCBs containing exposed LEDs. Impact may scratch the silicone lens or damage the internal circuitry.

Compare to epoxy encapsulant that is hard and brittle, silicone is softer and flexible. Although its characteristic significantly reduces thermal stress, it is more susceptible to damage by external mechanical force. As a result, special handling precautions need to be observed during assembly using silicone encapsulated LED products. Failure to comply might lead to damage and premature failure of the LED.

2. Storage

- 1.4. Do not open moisture proof bag before the products are ready to use.
- 1.5. Before opening the package, the LEDs should be kept at 30°C or less and 60%RH or less.
- 1.6. The LEDs should be used within a year.
- 1.7. After opening the package, the LEDs should be kept at 30°C or less and 60%RH or less.
- 1.8. The LEDs should be used within 168 hours after opening the package.
- 1.9. If the moisture adsorbent material has fabled away or the LEDs have exceeded the storage time, baking treatment should be performed using the following conditions. Baking treatment: 65±5°C for 24 hours.

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Technical Data Sheet

3. Soldering Condition

1.10. Pb-free solder temperature profile

- 1.11. Reflow soldering should not be done more than two times.
- 1.12. When soldering, do not put stress on the LEDs during heating.
- 1.13. After soldering, do not warp the circuit board.
- 1.14. Recommended soldering conditions:

Reflow soldering		Soldering iron		
Pre-heat	150~200°C	Temperature	300°C Max.	
Pre-heat time	120 sec. Max.	Soldering time	3 sec. Max.	
Peak temperature	260°C Max.		(one time only)	
Soldering time	10 sec. Max.(Max. two times)			

1.15. Because different board designs use different number and types of devices, solder pastes, reflow ovens, and circuit boards, no single temperature profile works for all possible combinations.

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Luckylight

3.2x1.6mm, 1.6mm Round Subminiature

Round Subminiature Package Chip LED Phototransistor

Technical Data Sheet

However, you can successfully mount your packages to the PCB by following the proper guidelines and PCB-specific characterization.

Drive Method

1.16. An LED is a current-operated device. In order to ensure intensity uniformity on multiple LEDs connected in parallel in an application, it is recommended that a current limiting resistor be incorporated in the drive circuit, in series with each LED as shown in Circuit A below.

a Recommended circuit.

bThe brightness of each LED might appear different due to the differences in the I-V characteristics of those LEDs.

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