LITEON®
OPTOELECTRONICS

IR Emitter and Detector

Product Data Sheet

LTR-S320-DB-L

Spec No.: DS50-2013-0056

Effective Date: 09/25/2013

Revision: -

LITE-ON DCC

RELEASE

BNS-OD-FC001/A4

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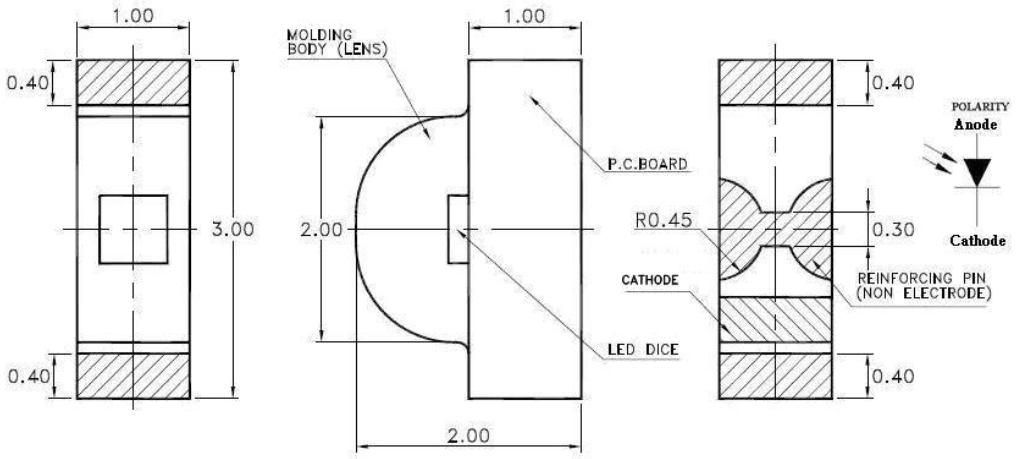
REV.- SEP 2013

Features

* Meet ROHS, Green Product.
* Pb free
* Plastic mold with day light cut-off black resin lens
* Package In 8mm Tape On 7" Diameter Reels.
* Compatible With Automatic Placement Equipment.
* Compatible With Infrared Reflow Solder Process.
* EIA STD package.

Package Dimensions



Notes:

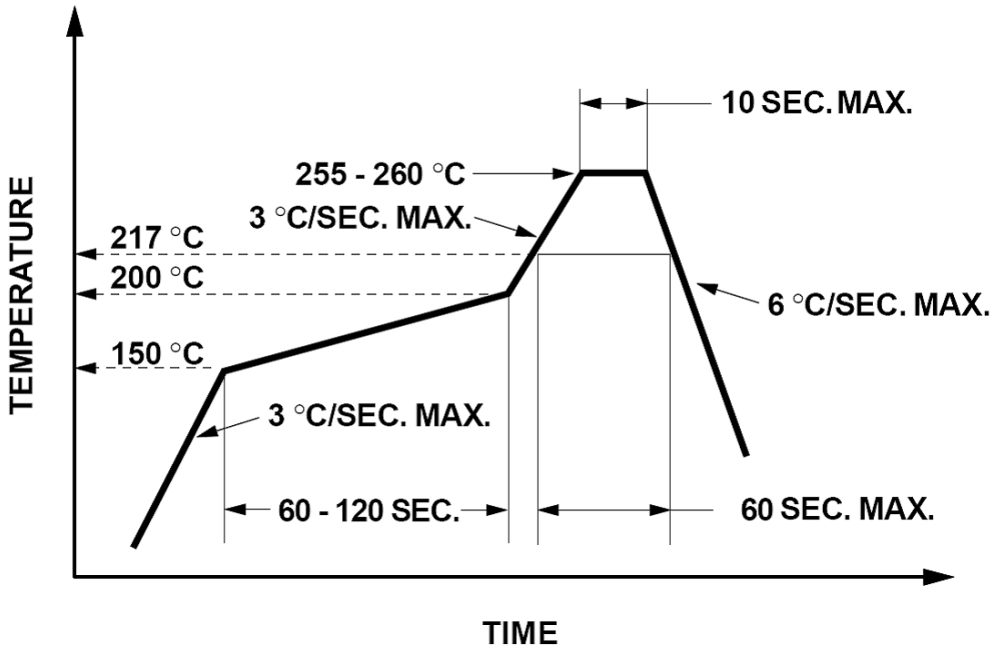
1. All dimensions are in millimeters (inches).
2. Tolerance is ± 0.10 mm (.004") unless otherwise noted.
3. Specifications are subject to change without notice.

ABSOLUTE MAXIMUM RATINGS AT TA=25℃

PARAMETER	MAXIMUM RATING	UNIT
Power Dissipation	150	mW
Collector-Emitter Voltage	30	V
Operating Temperature Range	-40℃ to + 85℃	
Storage Temperature Range	-55℃ to + 100℃	
Infrared Soldering Condition	260°C For 10 Seconds	

Suggestion Profile:

Suggestion IR Reflow Profile For Pb Free Process



ELECTRICAL OPTICAL CHARACTERISTICS AT TA=25℃

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITION
Reverse Break Down Voltage	$V_{(BR)R}$	33	170		V	I_R = 100 μA Ee = 0mW/c ㎡
Reverse Dark Current	ID			10	nA	V_R = 10V Ee = 0mW/c ㎡
Open Circuit Voltage	V_{OC}		390		mV	λ = 940nm Ee = 0.5mW/c ㎡
Rise Time	Tr		30		ns	V_R = 10V λ = 940nm R_L = 1KΩ
Fall Time	Tf		30		ns	
Short Circuit Current	I_S	1.2	1.8	-	μA	V_R = 5V λ = 940nm Ee = 0.5mW/c ㎡
Total Capacitance	C_T		1		pF	V_R = 5V f = 1MHZ Ee = 0mW/c ㎡
Rang Of Spectral Bandwidth	$\lambda_{0.5}$	750	-	1100	nm	
Wavelength Of Peak Sensitivity	λ_P	-	940	-	nm	

TYPICAL ELECTRICAL / OPTICAL CHARACTERISTICS CURVES

(25℃ Ambient Temperature Unless Otherwise Noted)

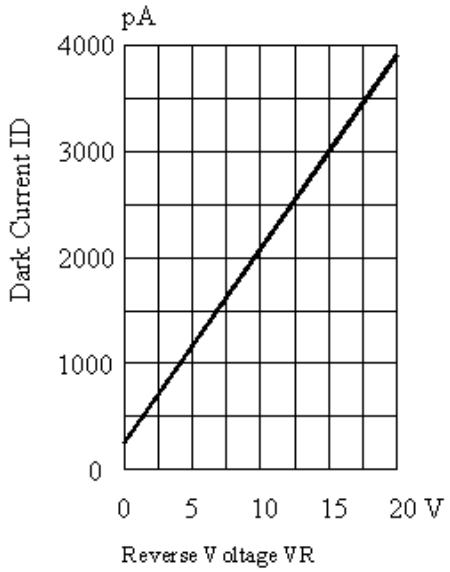


Fig.1 DARK CURRENT VS. REVERSE VOLTAGE
TA=25°C, Ee=0mW/cm^2

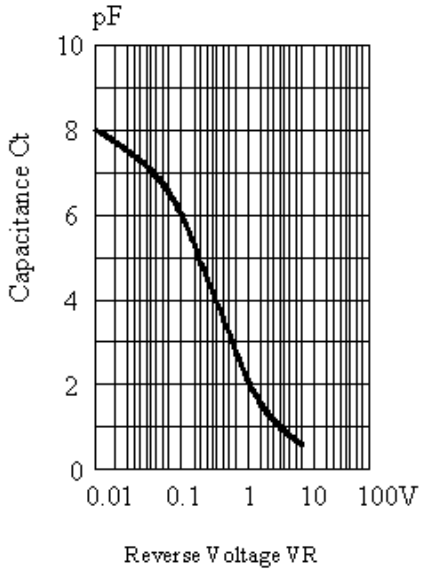


Fig.2 CAPACITANCE VS. REVERSE VOLTAGE
F=1MHZ; Ee=0mW/cm^2

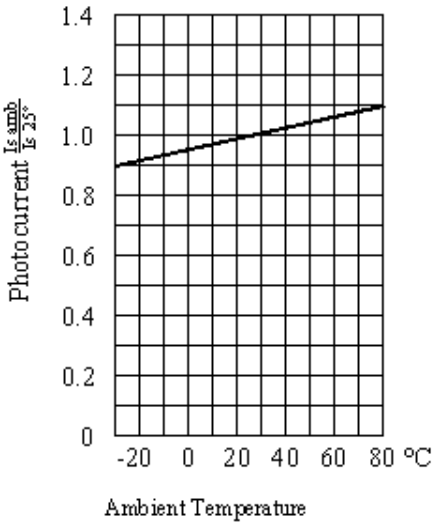


Fig.3 PHOTOCURRENT VS. AMBIENT TEMPERATURE

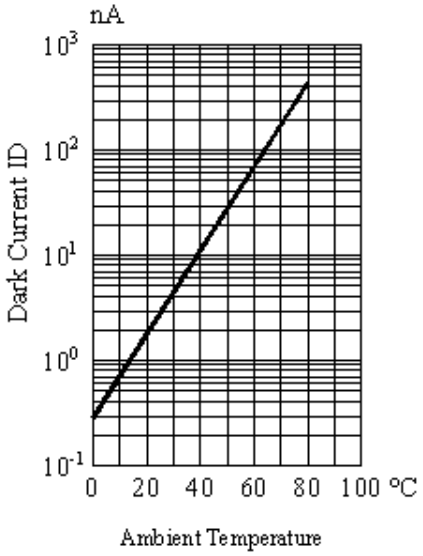


Fig.4 DARK CURRENT AMBIENT TEMPERATURE
VR=10; Ee=0mW/cm^2

TYPICAL ELECTRICAL / OPTICAL CHARACTERISTICS CURVES

(25℃ Ambient Temperature Unless Otherwise Noted)

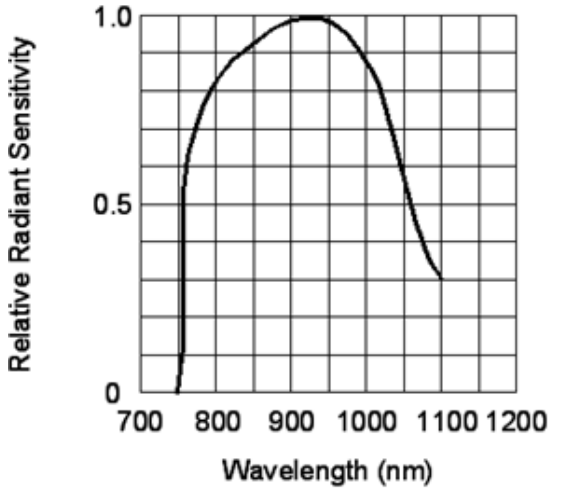
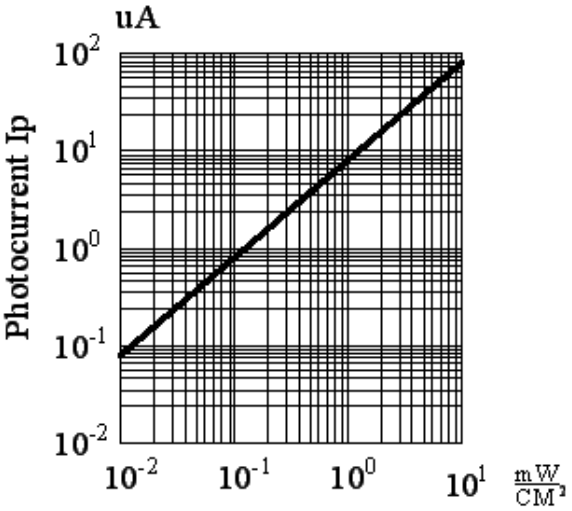


FIG.5 SPECTRAL SENSITIVITY



Irradiance Ee
Fig6 PHOTOCURRENT VS
IRRADIANCE λ=940nm

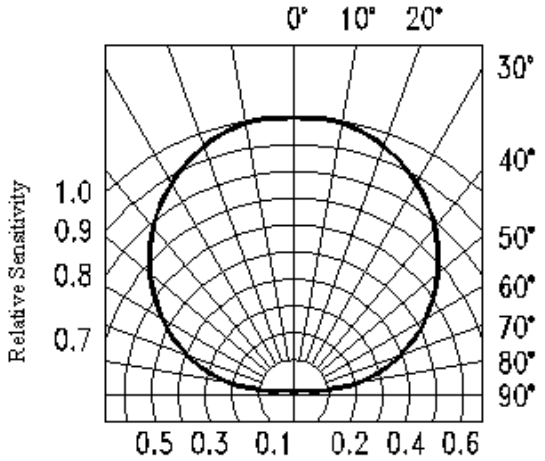


Fig7 SENSITIVITY DIAGRAM

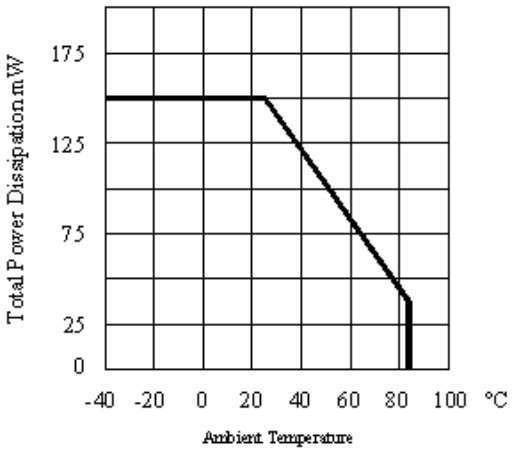
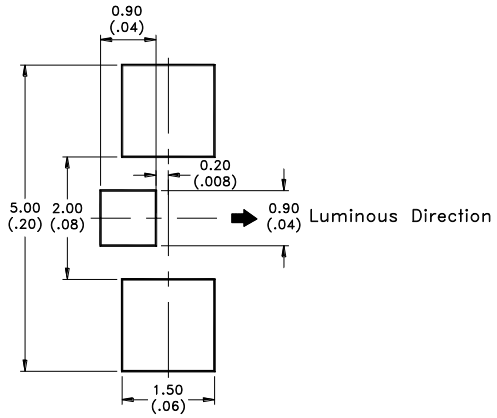


Fig8 TOTAL POWER DISSIPATION VS
AMBIENT TEMPERATURE

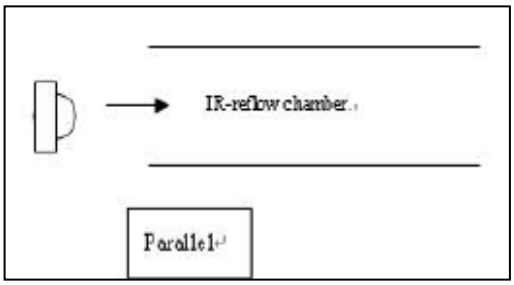
Cleaning

Do not use unspecified chemical liquid to clean LED they could harm the package.
If clean is necessary, immerse the LED in ethyl alcohol or in isopropyl alcohol at normal temperature for less one minute.

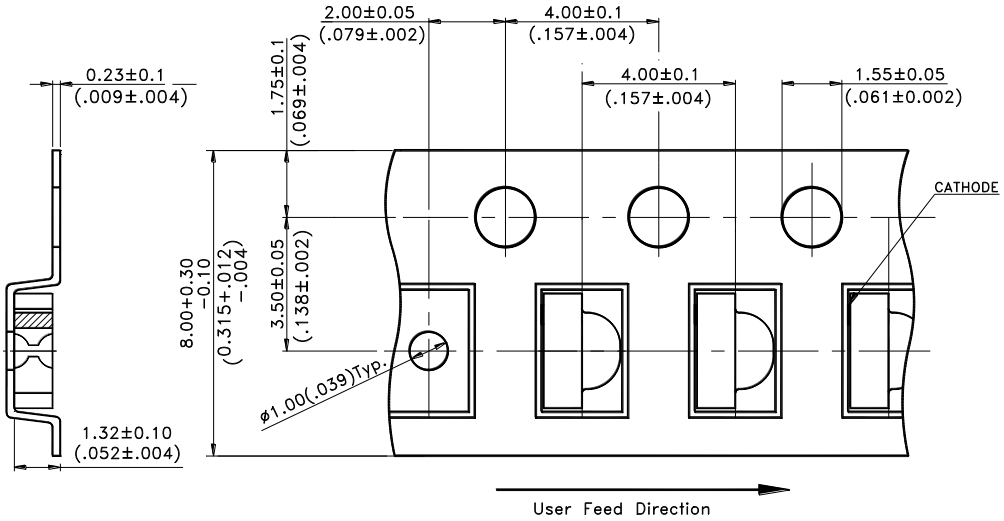
Suggest Soldering Pad Dimensions



Suggest Soldering direction:

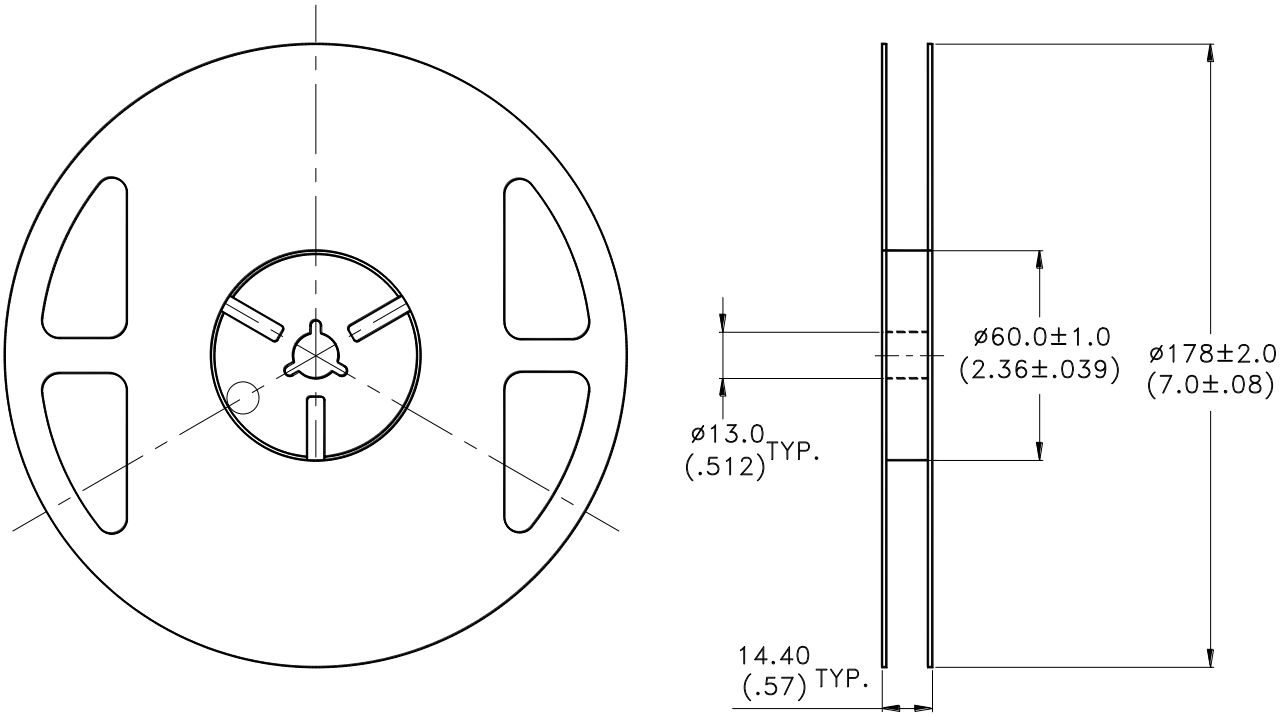


Package Dimensions Of Tape And Reel



Notes:

1. All dimensions are in millimeters (inches).



Notes:

1. All dimensions are in millimeters (inches).
2. Empty component pockets sealed with top cover tape.
3. 7 inch reel-3000 pieces per reel.
4. The maximum number of consecutive missing lamps is two.
5. In accordance with ANSI/EIA 481-1-A-1994 specifications.

CAUTIONS

1. Application

The LEDs described here are intended to be used for ordinary electronic equipment (such as office equipment, communication equipment and household applications).Consult Liteon's Sales in advance for information on applications in which exceptional reliability is required, particularly when the failure or malfunction of the LEDs may directly jeopardize life or health (such as in aviation, transportation, traffic control equipment, medical and life support systems and safety devices).

2. Storage

The package is sealed:
The LEDs should be stored at 30℃ or less and 90%RH or less. And the LEDs are limited to use within one year, while the LEDs is packed in moisture-proof package with the desiccants inside.
The package is opened:
The storage ambient for the LEDs should not exceed 30℃ temperature or 60% relative humidity.
It is recommended that LEDs out of their original packaging are IR-reflowed within one week hrs.
For extended storage out of their original packaging, it is recommended that the LEDs be stored in a sealed container with appropriate desiccant, or in a desiccators with nitrogen ambient.
LEDs stored out of their original packaging for more than one week hrs should be baked at about 60 deg C for at least 20 hours before solder assembly.

3. Cleaning

Use alcohol-based cleaning solvents such as isopropyl alcohol to clean the LED if necessary.

4. Soldering

Recommended soldering conditions:

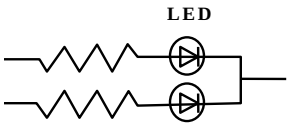
Reflow soldering		Soldering iron	
Pre-heat	150~200℃	Temperature	300℃ Max.
Pre-heat time	120 sec. Max.	Soldering time	3 sec. Max.
Peak temperature	260℃ Max.		(one time only)
Soldering time	10 sec. Max.(Max. two times)		

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.
However, you can successfully mount your packages to the PCB by following the proper guidelines and PCB-specific characterization.
LITE-ON Runs both component-level verification using in-house **KYRAMX98** reflow chambers and board-level assembly.
The results of this testing are verified through post-reflow reliability testing.
Profiles used at LITE-ON are based on JEDEC standards to ensure that all packages can be successfully and reliably surface mounted.
Figure on page3 shows a sample temperature profile compliant to JEDEC standards.
You can use this example as a generic target to set up your reflow process.
You should adhere to the JEDEC profile limits as well as specifications and recommendations from the solder paste manufacturer to avoid damaging the device and create a reliable solder joint.

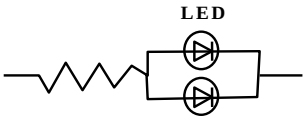
5. Drive Method

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.

Circuit model A



Circuit model B



(A) Recommended circuit.

(B) The brightness of each LED might appear different due to the differences in the I-V characteristics of those LEDs.