BRIGHTEK
BRIGHTEK (EUROPE) LIMITED
Brighten Up The World With LED !

ISO/TS 16949:2009 | BS EN ISO 14001:2004 | QC 080000 IECQ HSPM

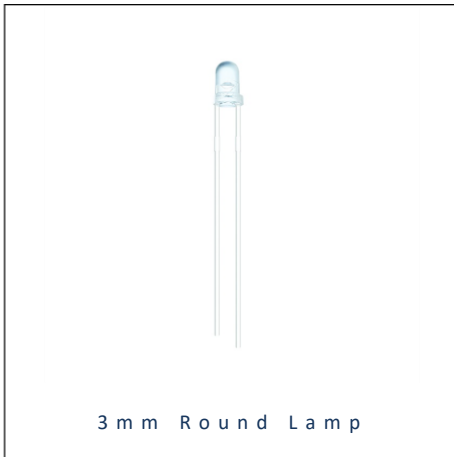# PRODUCT DATASHEET

ATTENTION
OBSERVE PRECAUTIONS FOR HANDLING ELECTROSTATIC SENSITIVE DEVICES

► PTH/THT Lamp

► 3mm Round 5.3t

► Photodiode (PD)

N0P51L55 (Bulk)
N0P51L55T (Tape)

3mm Round Lamp

3mm Round Lamp
RoHS Compliant | Pb

FEATURES:

N0P51L55 is silicon planar PIN photodiodes incorporated in THT/PTH packages that simultaneously serve as filters, and also transparent for infrared emission. The PIN photodiodes are outstanding for low junction capacitance, high cut–off frequency and fast switching times.

- **Package:** PTH/THT LED Lamp 3mm Round 5.3t
- **Wavelength of Max. Sensitivity (typ.):** 950nm
- **Receiving Angle:** 70°
- **Materials:**
  - Die: Silicon Planar
  - Resin: Epoxy (Water Clear)
- **Operating Temperature:** -40~+85°C
- **Storage Temperature:** -50~+100°C
- **Soldering methods:** Hand; Soldering Heat (DIP)
- **MSL Level:** acc. to JEDEC Level 3
- **Packing:** 500pcs/bulk; 2000pcs/tape (Ammo Pack)

APPLICATIONS:

- Remote Control
- Automatic Control System
- Burglar Alarm
- Photo Detector
- Smoke
- Detector
- Computer I/O Peripheral
- Industrial Use

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CHARACTERISTICS:

Absolute Maximum Characteristics (Ta=25°C)

Parameter	Symbol	Ratings	Unit
Power Dissipation	P_D	100	mW
Operating Temperature	T_{OPR}	-40~+85	°C
Storage Temperature	T_{STG}	-50~+100	°C
Relative Humidity at 85°C	hr	85	%

Electrical & Optical Characteristics (Ta=25°C)

Parameter	Symbol	Values			Unit	Test Condition
		Min.	Typ.	Max.		
Reverse Light Current	I_L	18	50	---	µA	V_R=5V E_e=1mW/cm^2 λ_p=940nm
Wavelength of Peak Sensitivity	$\lambda_{p(MAX)}$	---	950	---	nm	---
Reverse Breakdown Voltage	$V_{(BR)R}$	33	170	---	V	Ir=100µA E_e=0mW/cm^2
Open Circuit Voltage	V_{OC}	---	165	---	mV	E_e=0.5mW/cm^2 λ_p=940nm
		---	110	---	mV	E_e=0.05mW/cm^2 λ_p=940nm
Short Circuit Current	I_{SC}	---	1.5	---	µA	E_e=0.1mW/cm^2 λ_p=940nm
Turn-On Time	T_{on}	---	50	---	nS	RL=1K V_R=10V
Turn-Off Time	T_{off}	---	50	---	nS	RL=1K V_R=10V
Temperature Coefficient of Vo	T_c	---	-2.6	---	mV/K	---
Radiant Sensitive Area	A	---	7.7	---	mm^2	---
Dark Current	$I_{D(R)}$	---	2	30	nA	V_R=10V E_e=0mW/cm^2
Total Capacitance	C_t	---	25	30	PF	V_R=3V F=1MHz E_e=0mW/cm^2

OUTLINE DIMENSION:

Package Dimension:
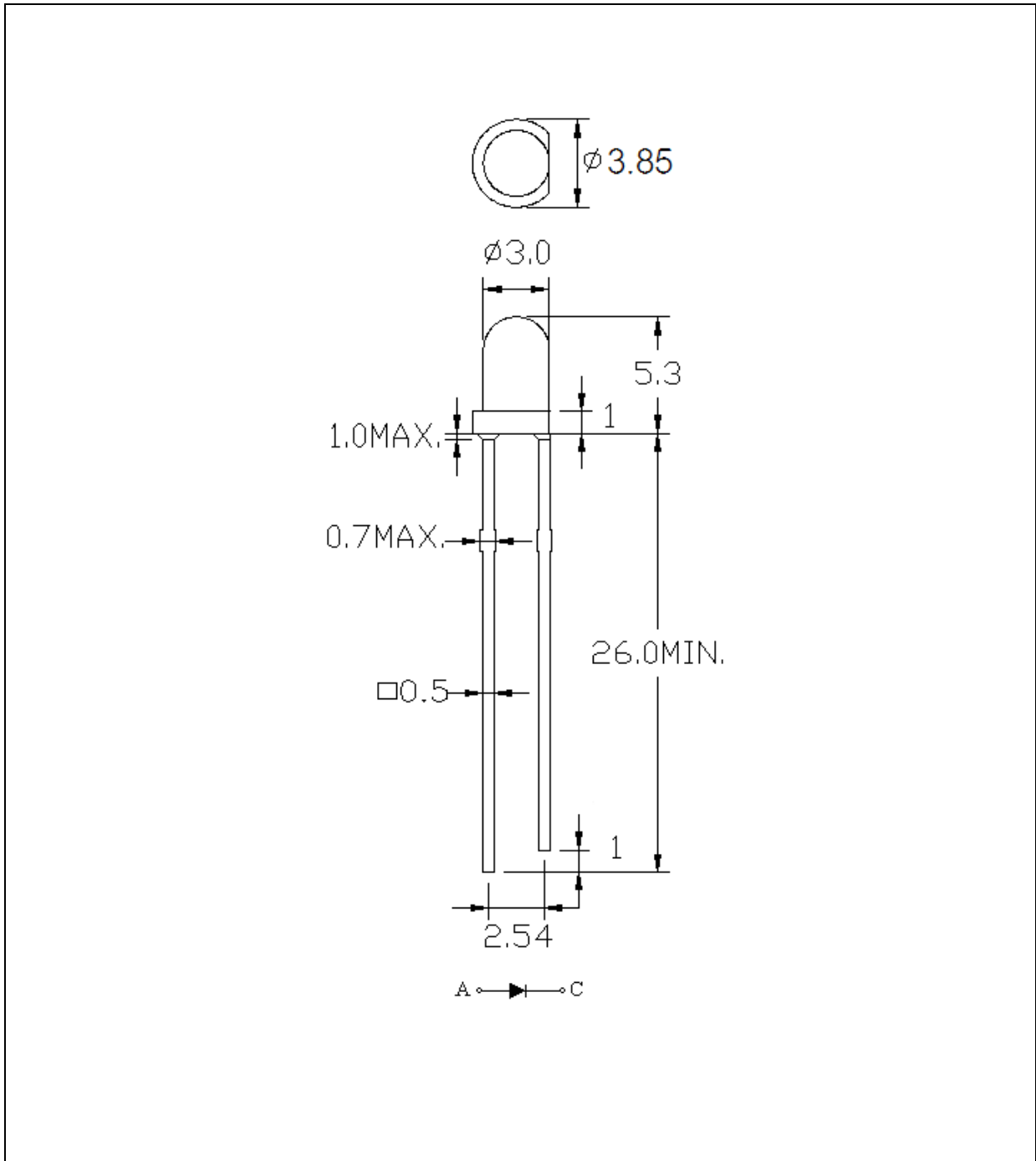
1. All dimensions are in millimetre (mm).
2. Tolerance ±0.2mm, unless otherwise noted.

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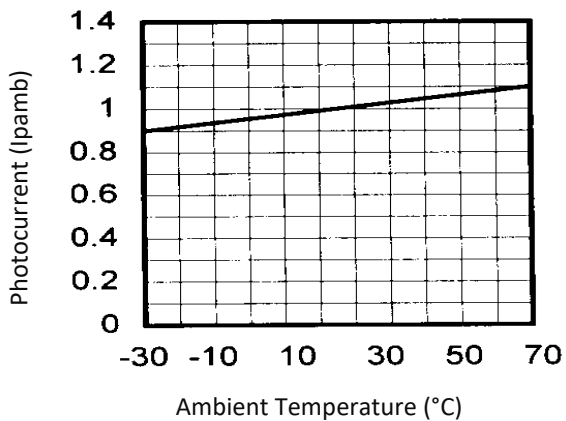## ELECTRO-OPTICAL CHARACTERISTICS:

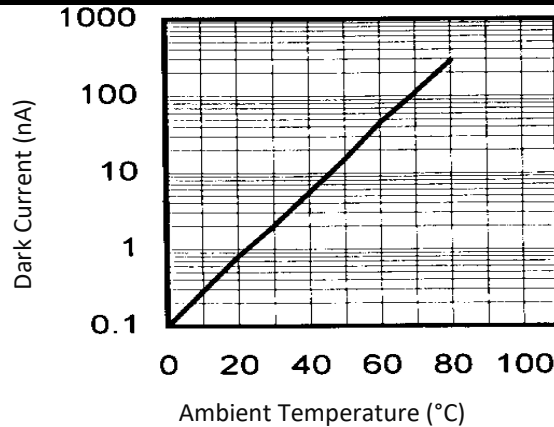### Dark Current v.s. Reverse Voltage
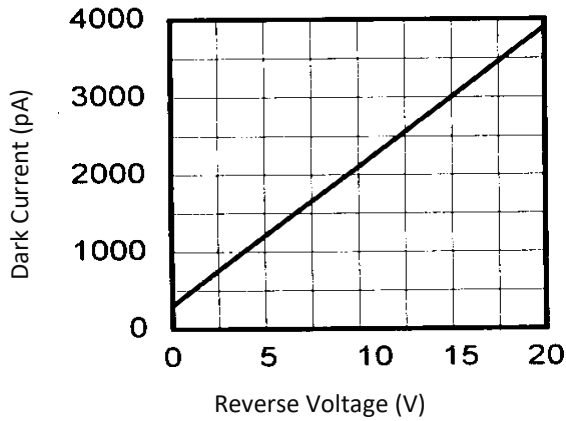
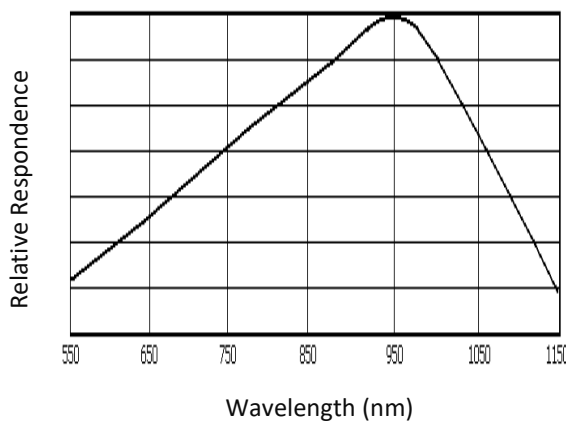### Capacitance v.s. Reverse Voltage
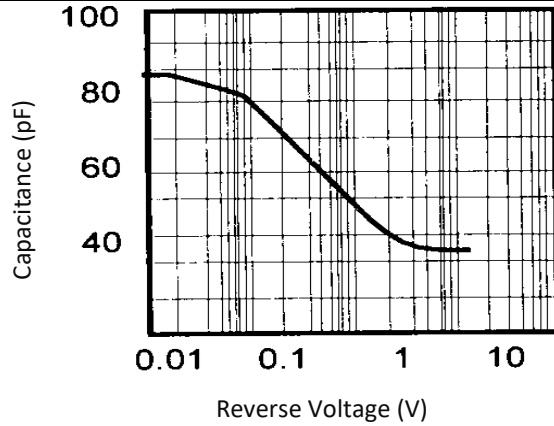
Photocurrent v.s. Ambient Temperature

Dark Current v.s. Ambient Temperature
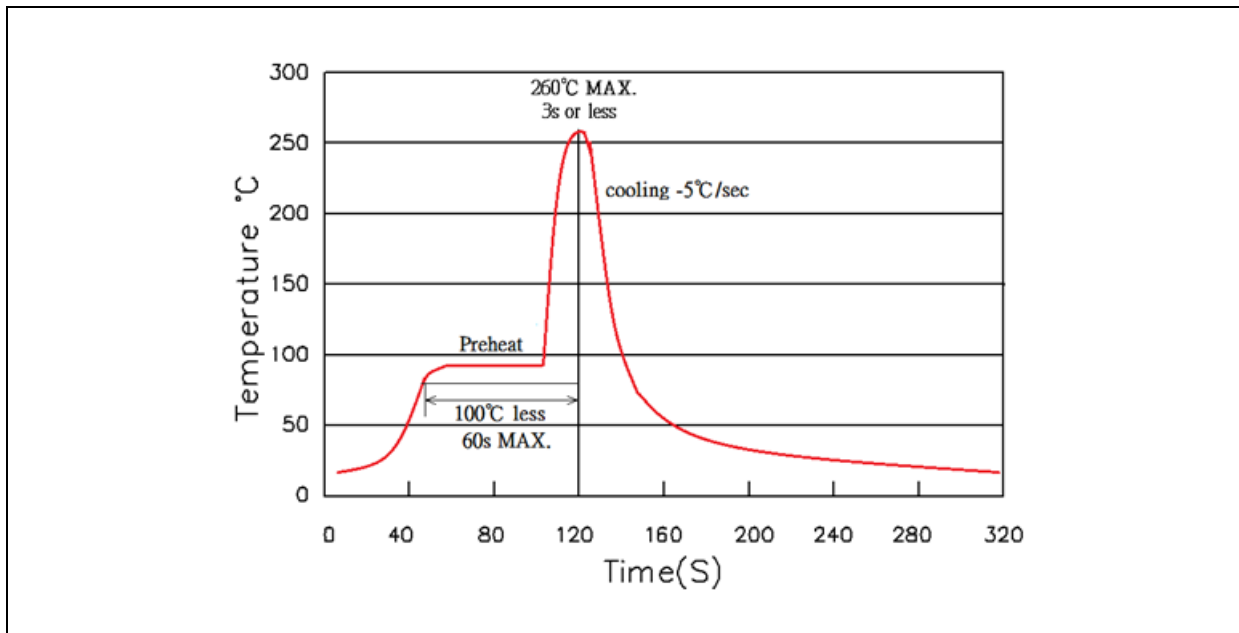

Photodiode Relative Curves

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RECOMMENDED SOLDERING PROFILE:

Hand Solder (Solder Iron):
- Temperature at tip of iron: 350°C Max.
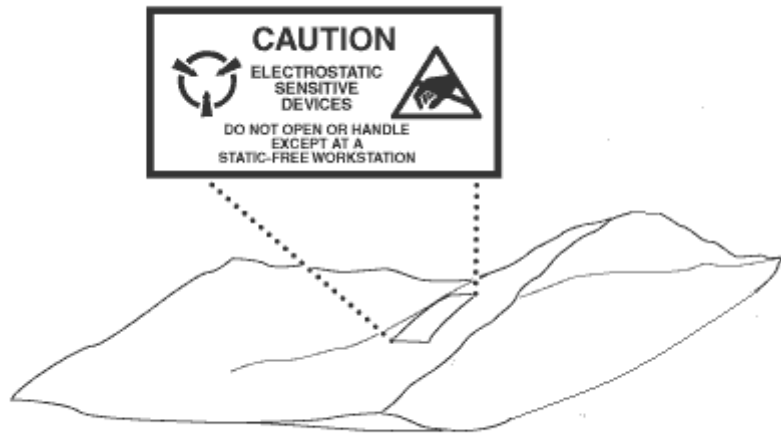- Soldering Time: 3 seconds ± 1 sec.

Soldering Heat (DIP):

Note:
1. Maximum reflow soldering: 1 time.
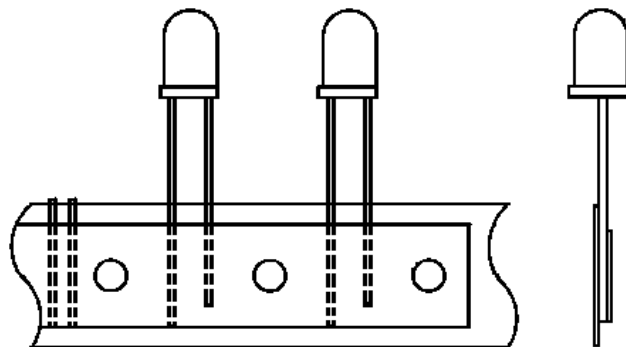2. Before, during, and after soldering, should not apply stress on the components and PCB board.

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PACKING SPECIFICATION:

Reel Dimension:

500pcs/Bulk

CAUTION
ELECTROSTATIC
SENSITIVE
DEVICES
DO NOT OPEN OR HANDLE
EXCEPT AT A
STATIC-FREE WORKSTATION

2000pcs/Taping

PRECAUTIONS OF USE:

Storage:

It is recommended to store the products in the following conditions:
- Humidity: 60% R.H. Max.
- Temperature: 5°C~30°C (41°F ~86°F).

Shelf life in sealed bag: 12 months at 5°C~30°C and <60% R.H.

Once the package is opened, the products should be used within a week. Otherwise, they should be kept in a damp-proof box with descanting agent <10% R.H. and apply baking before use.

Baking:

It is recommended to bake the LED before soldering if the pack has been unsealed for longer than 24hrs. The suggested baking conditions are as followings:
- 60±5°C x 24hrs and <5%RH, taped / reel package.

It's normal to see slight color fading of carrier (light yellow) after baking in process.

Testing Circuit:

Must apply resistor(s) for protection (over current proof).

Cleaning:

Use alcohol-based cleaning solvents such as isopropyl alcohol to clean the LED carrier / package. Avoid putting any stress force directly on to the LED lens.

ESD (Electrostatic Discharge):

Static Electricity or power surge will damage the LED. Use of a conductive wrist band or anti-electrosatic glove is recommended when handing the LED all time. All devices, equipment, machinery, work tables, and storage racks must be properly grounded.

In the events of manual working in process, make sure the devices are well protected from ESD at any time.

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REVISION RECORD:

Version	Date	Summary of Revision
A1.0	16/04/2023	Datasheet set-up.