



BRIGHTTEK
BRIGHTTEK (EUROPE) LIMITED

Brighten up The World With LED!



ISO/TS 16949:2009

BSI EM ISO 14001:2004

QC 800000 IECQ HSP98

PRODUCT DATASHEET



- ▶ CHIP LED
- ▶ 0803 (2008) 0.75t
- ▶ Infrared (IR) 940nm / Deep Red 660nm

NOD60S84



Release Date: 27 May 2022 Version: A1.1



0803 (2008) 0.75t

RoHS
Compliant



FEATURES:

- **Package:** Top View White CHIP LED with White Frame
- **Forward Current:** 20/20mA*
- **Forward Voltage (typ.):** 1.4/2.0V
- **Radiant Power (typ.):** 9/11mW@20mA
- **Radiant Intensity (typ.):** 3.0/3.7mW/sr@20mA
- **Colour:** Infrared (IR)/Deep Red
- **Peak Wavelength (typ.):** 940/660nm
- **Viewing angle:** 60/60°
- **Materials:**
 - Resin: Epoxy (Water Clear)
 - L/T Finish: Ag plated
- **Operating Temperature:** -40~+85°C
- **Storage Temperature:** -40~+85°C
- **Grouping parameters:**
 - Forward Voltage
 - Radiant Power
 - Peak Wavelength
- **Soldering methods:** Reflow
- **Preconditioning:** MSL3 according to J-STD020

* In order of IR/Red

APPLICATIONS:

- Health Monitor
- Heart Rate Monitor
- Pulse Oximetry

CHARACTERISTICS:

Absolute Maximum Characteristics (Ta=25°C)

Parameter	Symbol	Ratings	Unit
DC Forward Current	I _{FMAX}	60/40	mA
	I _{FMIN}	1/3	
Pulse Forward Current (tp≤2.3ms; D≤0.005)	I _{FP}	1000/30	mA
Power Consumption	P _{tot}	110/100	mW
Reverse Voltage	V _R	5/5	V
Reverse Current @5V	I _R	10/10	μA
Junction Temperature	T _j	145	°C
Electrostatic withstand Voltage (HBM: C 2)	ESD	2	kV
Dimensions of Active Chip Area (LxM)	---	0.35x0.35	mm ²
Operating Temperature	T _{OPR}	-40~+85	°C
Storage Temperature	T _{STG}	-40~+85	°C
Soldering Temperature	T _{SOL}	260	°C

* In order of IR/Red

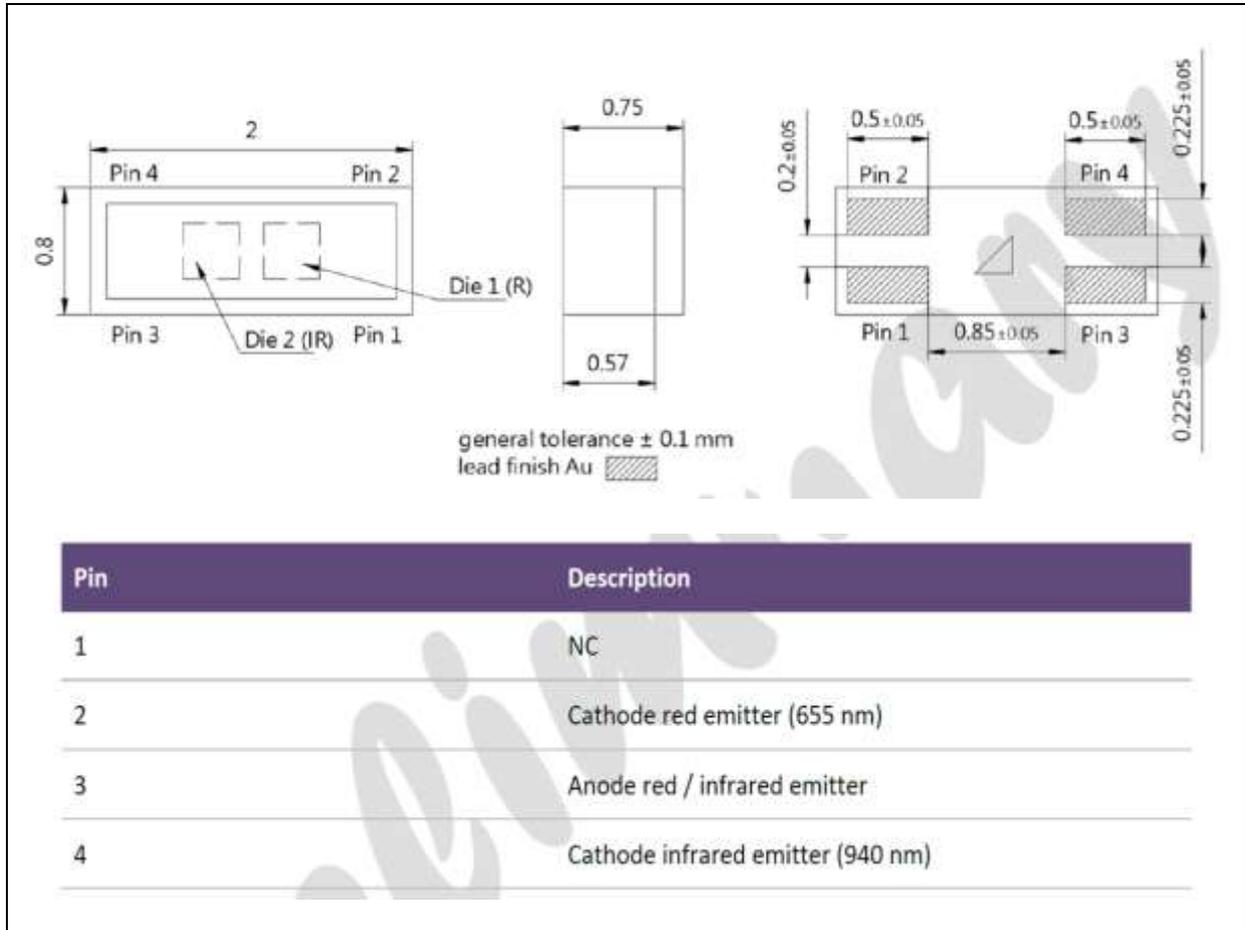
Electrical & Optical Characteristics (Ta=25°C, I_F=20mA, t_p=20ms)

Parameter	Symbol	Values			Unit	Test Condition
		Min.	Typ.	Max.		
Forward Voltage	V _F	---	1.4/2.0*	---	V	I _F =20mA
Radiant Power	Φ _e	---	9/11	---	mW	I _F =20mA
Radiant Intensity	I _e	---	3.0/3.7	---	mW/sr	I _F =20mA
Peak Wavelength	λ _p	---	940/660	---	nm	I _F =20mA
Centroid Wavelength	λ _{centr}	931/653	940/655	950/658	nm	I _F =20mA
Spectral Bandwidth at 50% FWHM	Δλ	---	32/16	---	nm	I _F =20mA
Rise Time (10%/90%)	T _r	---	16/17	---	ns	I _F =100mA; R _L =50Ω
Fall Time (10%/90%)	T _f	---	16/17	---	ns	I _F =100mA; R _L =50Ω
Viewing Angle	2θ _{1/2}	---	60/60	---	deg	I _F =20mA

1. Radiant Power (P_O) ±10%, Forward Voltage (V_F) ±0.1V, Viewing angle(2θ_{1/2}) ±10°
2. * In order of IR/Red

OUTLINE DIMENSION:

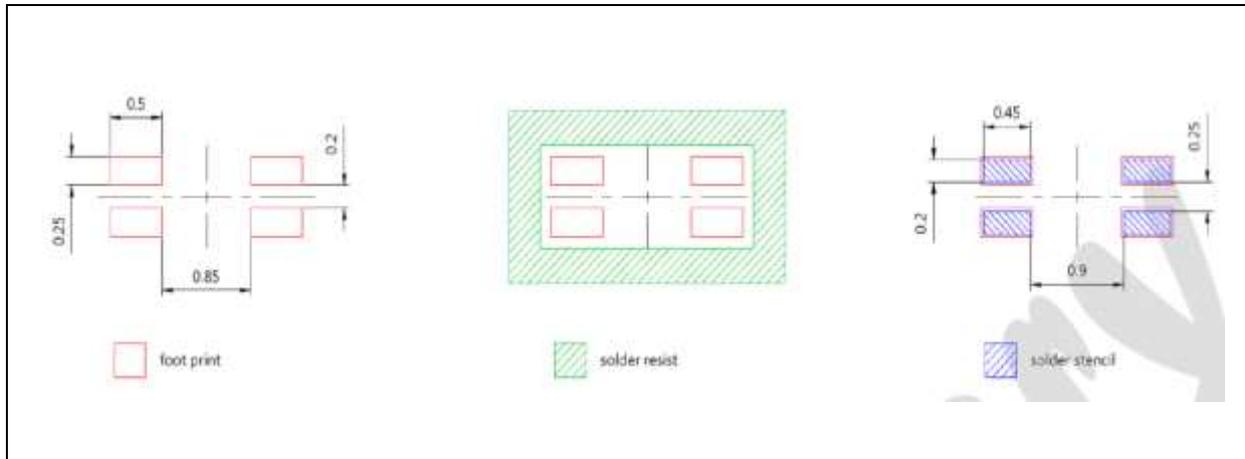
Package Dimension:



1. All dimensions are in millimetre (mm).
2. Tolerance ±0.13mm, unless otherwise noted.

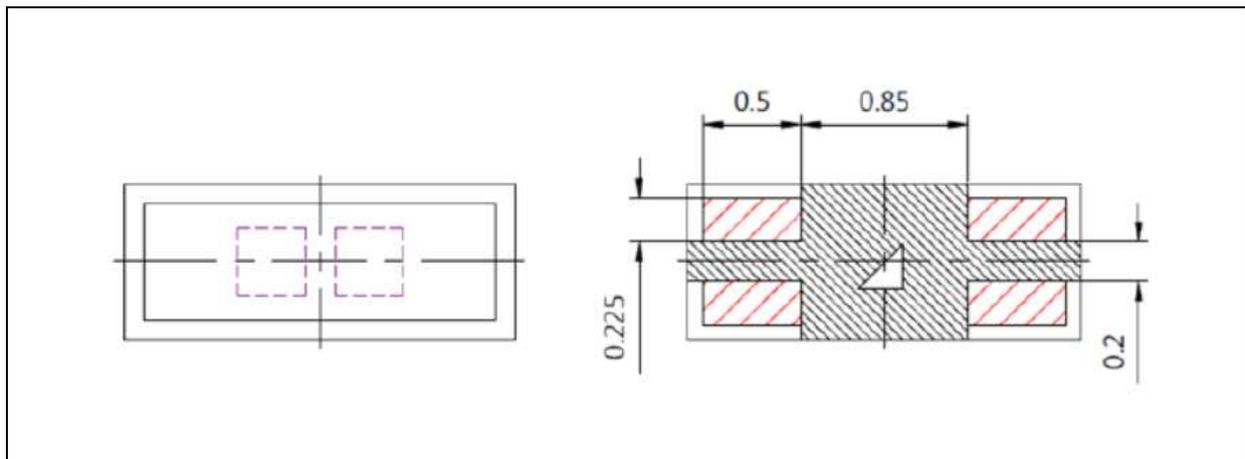
SOLDERING PAD DIMENSION:

Recommended Soldering Pad Dimension:



1. Dimensions are in millimetre (mm).
2. Tolerance $\pm 0.12\text{mm}$ with angle tolerance $\pm 0.5^\circ$.

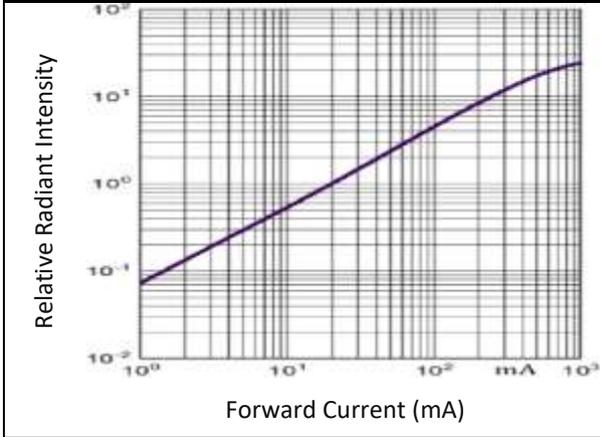
Component's Location in Pad:



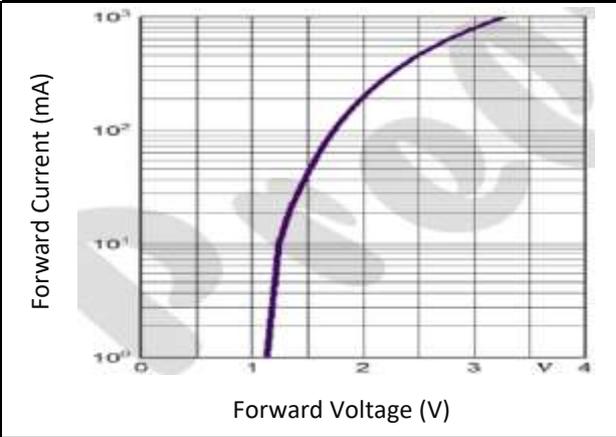
1. Dimensions are in millimetre (mm).
2. Tolerance $\pm 0.12\text{mm}$ with angle tolerance $\pm 0.5^\circ$.

ELECTRO-OPTICAL CHARACTERISTICS (IR):

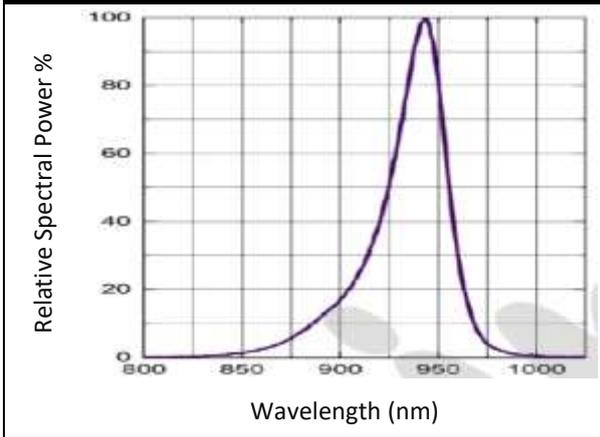
Radiant Intensity v.s. Forward Current



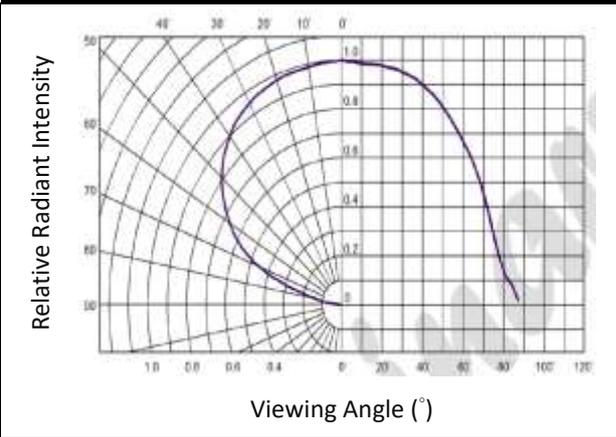
Forward Voltage v.s. Forward Current



Relative Spectral Power v.s. Wavelength

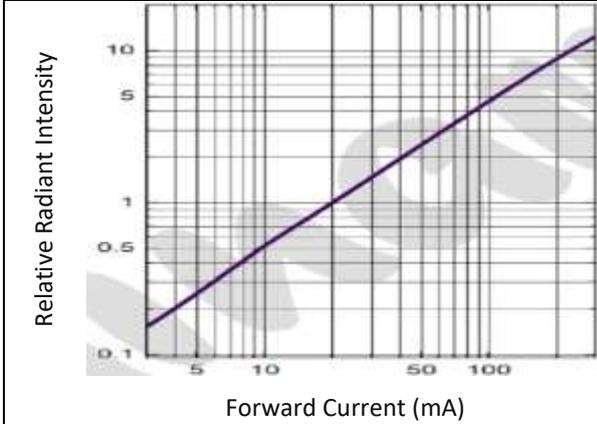


Directive Radiation

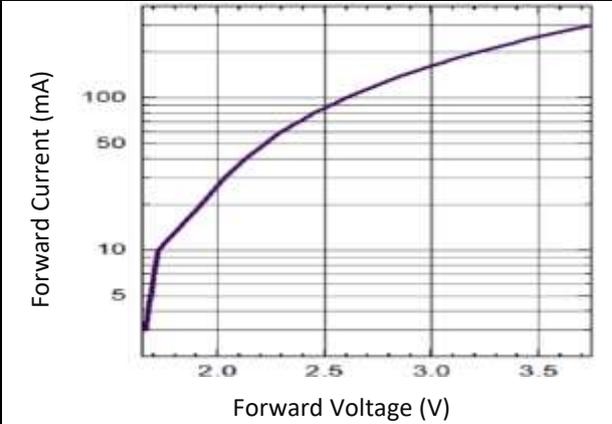


ELECTRO-OPTICAL CHARACTERISTICS (RED):

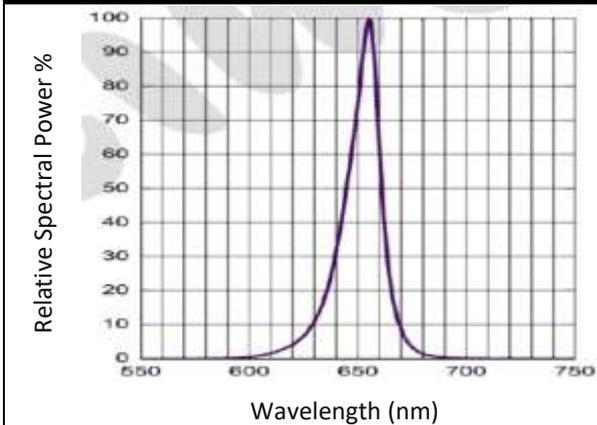
Radiant Intensity v.s. Forward Current



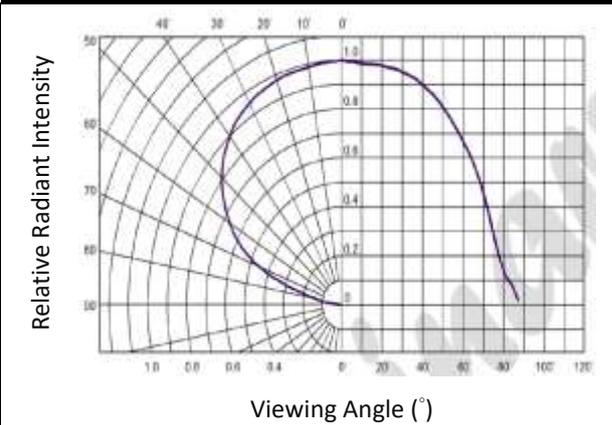
Forward Voltage v.s. Forward Current



Relative Spectral Power v.s. Wavelength

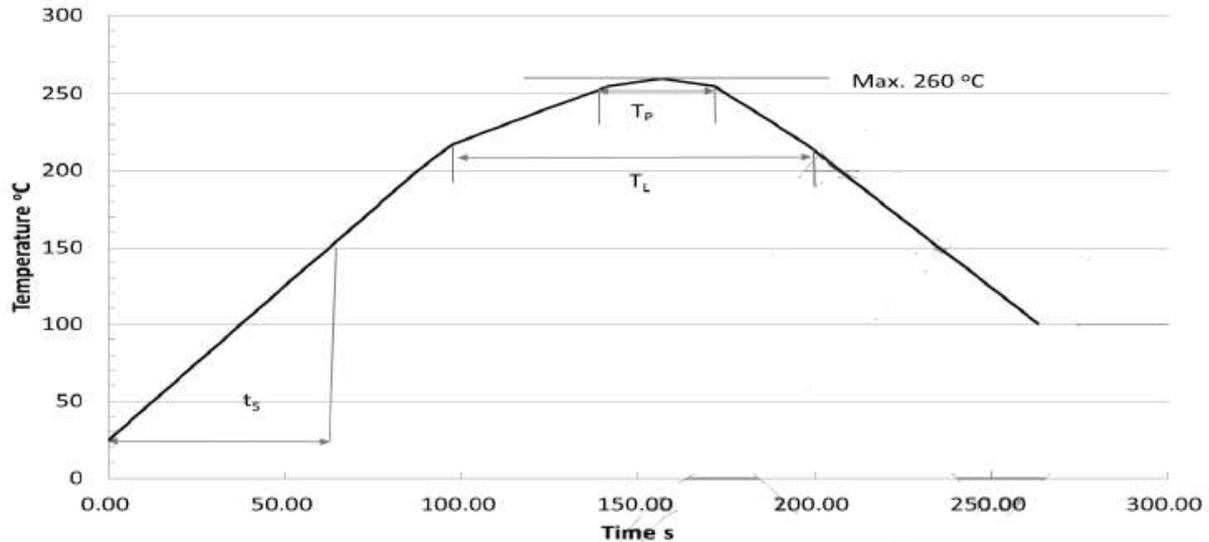


Directive Radiation



RECOMMENDED SOLDERING PROFILE:

Reflow Lead-free Solder:



Profile Feature	Symbol	Pb-Free (SnAgCu) Assembly			Unit
		Minimum	Recommendation	Maximum	
Ramp-up Rate to Preheat (25°C to 150°C)			2	3	K/s
Time t_s (T_{Smin} to T_{Smax})	t_s	60	100	120	s
Ramp-up Rate to Peak (T_{Smax} to T_P)			2	3	K/s
Liquidus Temperature	T_L	217			°C
Time above Liquidus temperature	t_L		80	100	s
Peak Temperature	T_P		245	260	°C
Time within 5 °C of the specified peaktemperature $T_P - 5$ K	t_p	10	20	30	s
Ramp-down Rate (T_P to 100 °C)			3	4	K/s
Time 25 °C to T_P				480	s

Note:

1. Maximum reflow soldering: 2 times.
2. Recommended soldering temperature is 245°C. The maximum soldering temperature should be limited to 260°C.
3. Before, during, and after soldering, should not apply stress on the components and PCB board.

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 desiccating agent <10% R.H. and apply baking before use.

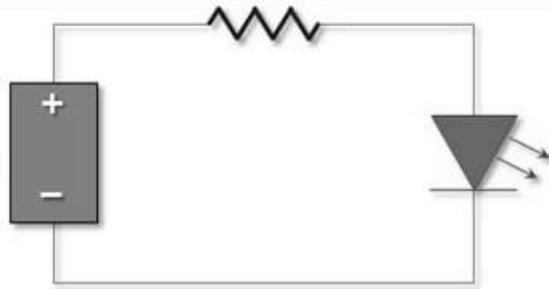
Baking:

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±3°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-electrostatic glove is recommended when handling 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.

REVISION RECORD:

Version	Date	Summary of Revision
A1.0	24/05/2022	Datasheet set-up.
A1.1	27/05/2022	Revise drawings.