

HLMP-U802-N0000

T-1¾ (5 mm) LED Lamp



Data Sheet



Description

This yellow green LED is designed in industry standard T-1¾ package with untinted and non-diffused optics. It is ideal for the use as indicators.

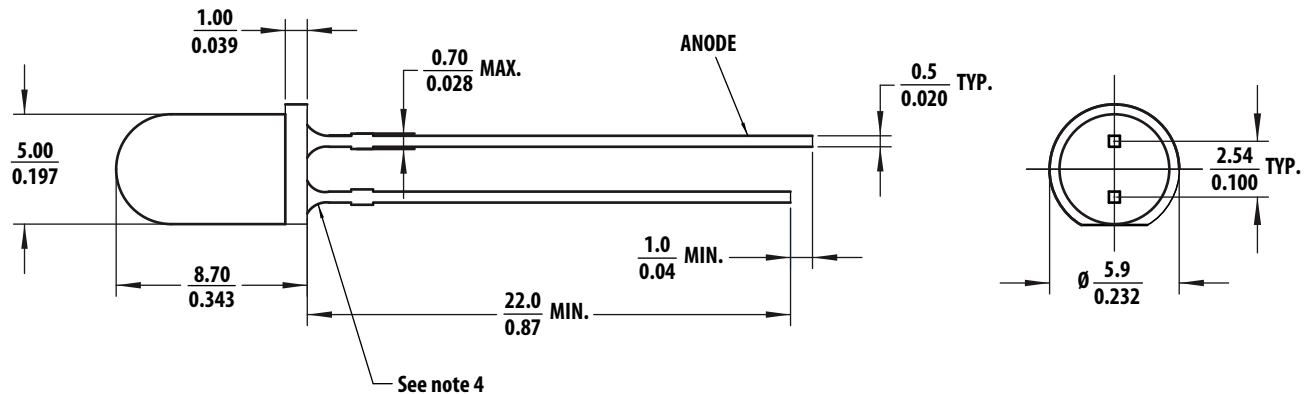
Application

- Status indicator

Features

- High luminous intensity output
- Low power consumption
- Popular T-1¾ package
- High efficiency
- Versatile mounting on PCB or panel

Package Dimensions



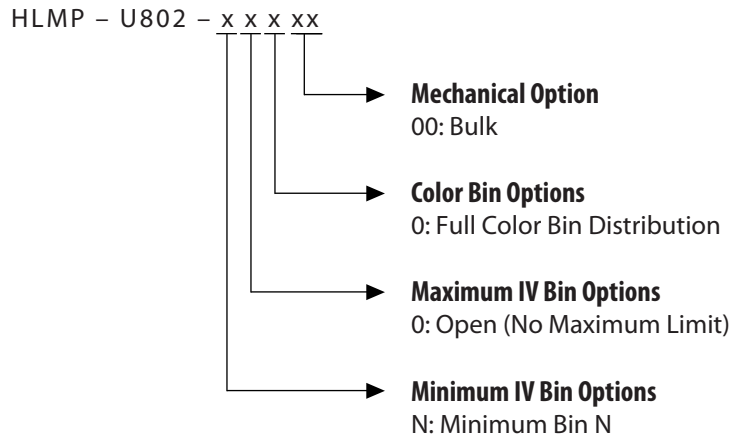
Notes:

1. All dimensions are in millimeter / inches.
2. Dimension tolerances are ± 0.25 mm unless otherwise specified.
3. Lead spacing is measured at where the leads emerge from the package.
4. Epoxy meniscus is 1.0 mm maximum below the body.

Selection Guide

Part Number	Color	Package Description
HLMP-U802-N0000	AllnGaP Yellow Green	Untinted, Non-diffused

Part Numbering System



Absolute Maximum Rating at $T_A = 25^\circ\text{C}$

Parameter	HLMP-U802-N0000	Unit
DC Forward Current ^[1]	30	mA
Peak Forward Current (1/10 Duty Cycle, 0.1ms Pulse Width)	60	mA
Reverse Voltage ($I_R = 100\ \mu\text{A}$)	5	V
Power Dissipation	72	mW
Operating Temperature Range	-40 to +85	$^\circ\text{C}$
Storage Temperature Range	-40 to +85	$^\circ\text{C}$

Notes:

1. Derate linearly as shown in Figure 4.

Electrical / Optical Characteristics at $T_A = 25^\circ\text{C}$

Parameter	Symbol	Min.	Typ.	Max.	Units	Test Conditions
Luminous Efficacy	I_v	417.0	800.0		mcd	$I_F = 20\ \text{mA}$, Note 1
Viewing Angle	$2\theta_{1/2}$		25		deg	Note 2
Spectral Half Width	$\Delta\lambda$		13		nm	$I_F = 20\ \text{mA}$
Forward Voltage	V_F		2.1	2.4	V	$I_F = 20\ \text{mA}$
Peak Wavelength	λ_p		572.5		nm	$I_F = 20\ \text{mA}$
Dominant Wavelength	λ_d	564.5	572.0	576.5	nm	$I_F = 20\ \text{mA}$, Note 3
Reverse Voltage	V_R	5			V	$I_R = 100\ \mu\text{A}$

Notes:

1. The luminous intensity is measured on the mechanical axis of the lamp package.
2. $2\theta_{1/2}$ is the off-axis angle where the luminous intensity is $1/2$ the on axis intensity.
3. The dominant wavelength, λ_d is derived from the CIE 1931 Chromaticity Diagram and represents the perceived color of the device.

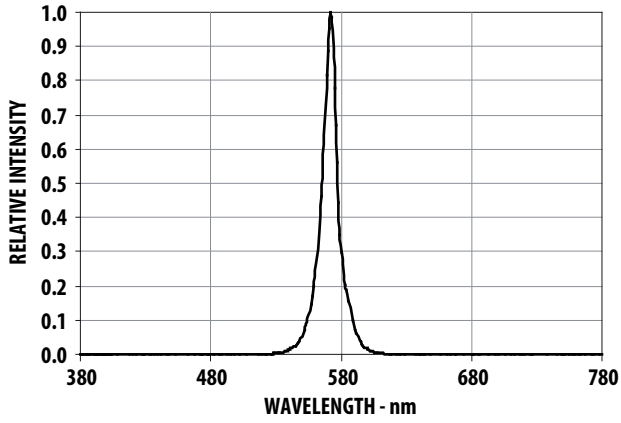


Figure 1. Relative Intensity vs. Wavelength

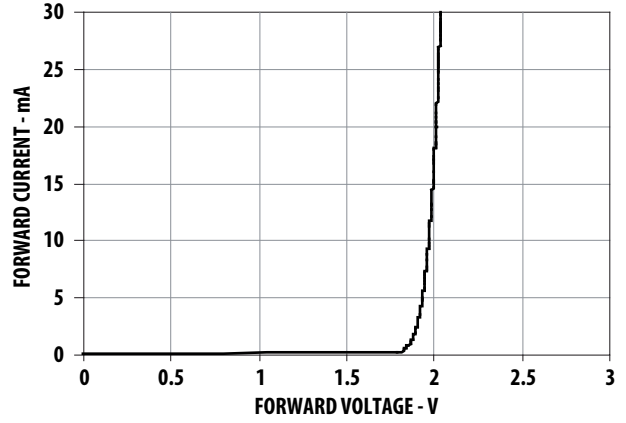


Figure 2. Forward Current vs. Forward Voltage

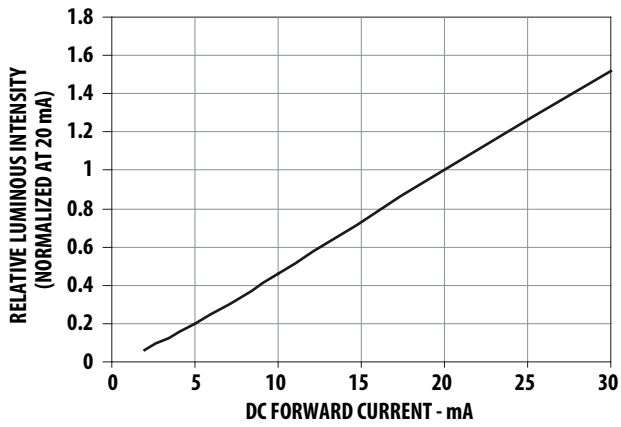


Figure 3. Relative Luminous Intensity vs. Forward Current

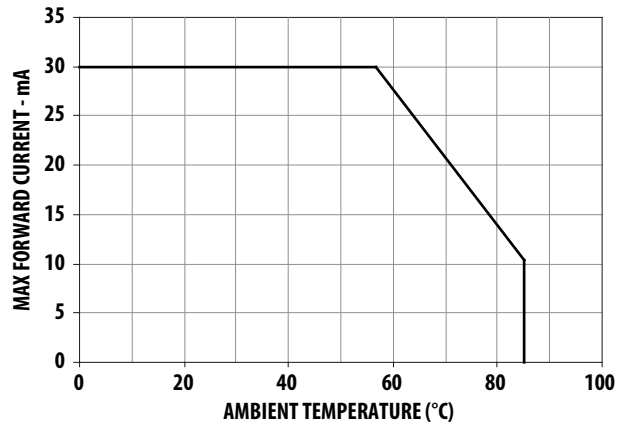


Figure 4. Maximum Forward Current vs. Ambient Temperature

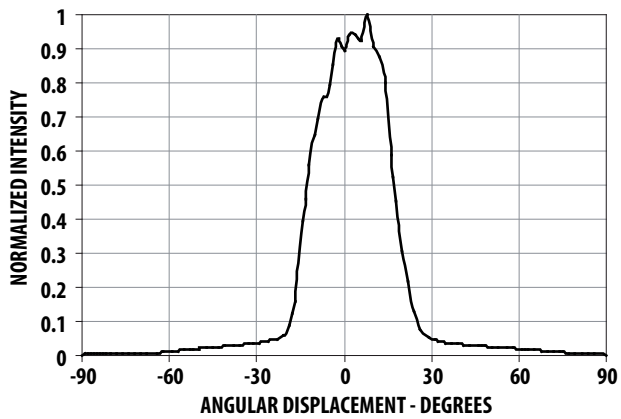


Figure 5. Radiation Pattern

Intensity Bin Limits

Bin ID	Intensity (mcd) at 20 mA	
	Min.	Max.
N	417.0	680.0
O	680.0	1100.0
P	1100.0	1800.0
Q	1800.0	2700.0

Tolerance for each bin limit is $\pm 15\%$

Color Bin Limits

Bin ID	Dominant Wavelength (nm) at 20 mA	
	Min.	Max.
5	564.5	567.5
4	567.5	570.5
3	570.5	573.5
2	573.5	576.5

Tolerance for each bin limit is ± 1 nm

Precautions:

Lead Forming:

Assembly method: This product is not meant for auto-insertion.

- The leads of an LED lamp may be preformed or cut to length prior to insertion and soldering into PC board.
- If lead forming is required before soldering, care must be taken to avoid any excessive mechanical stress induced to LED package. Otherwise, cut the leads of LED to length after soldering process at room temperature. The solder joint formed will absorb the mechanical stress of the lead cutting from traveling to the LED chip die attach and wirebond.
- During lead forming, the leads should be bent at a point at least 3mm from the base of the lens. Do not use the base of the lead frame as a fulcrum during forming. Lead forming must be done before soldering at normal temperature.
- It is recommended that tooling made to precisely form and cut the leads to length rather than rely upon hand operation.

Soldering Conditions:

- Care must be taken during PCB assembly and soldering process to prevent damage to LED component.
- The closest LED is allowed to solder on board is 1.59 mm below the body (encapsulant epoxy) for those parts without standoff.

- Recommended soldering conditions:

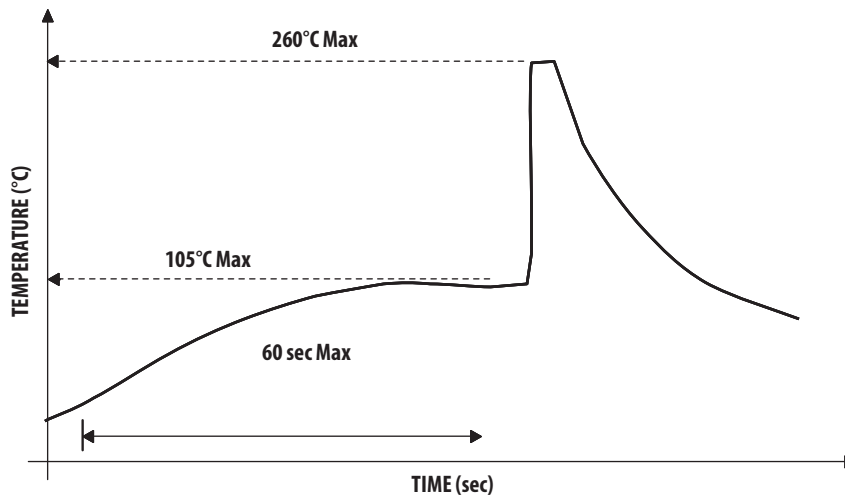
Wave Soldering	
Pre-heat Temperature	105°C Max.
Preheat Time	60 sec Max
Peak Temperature	260°C Max.
Dwell Time	5 sec Max.

- Wave soldering parameter must be set and maintained according to recommended temperature and dwell time in the solder wave. Customer is advised to periodically check on the soldering profile to ensure the soldering profile used is always conforming to recommended soldering condition.
- If necessary, use fixture to hold the LED component in proper orientation with respect to the PCB during soldering process.
- Proper handling is imperative to avoid excessive thermal stresses to LED components when heated.
- Therefore, the soldered PCB must be allowed to cool to room temperature, 25°C, before handling.
- Special attention must be given to board fabrication, solder masking, surface plating and lead holes size and component orientation to assure solderability.
- Recommended PC board plated through-hole sizes for LED component leads:

LED Component Lead Size	Diagonal	Plated Through Hole Diameter
0.50 x 0.50 mm (0.020 x 0.020 inch)	0.718 mm (0.029 inch)	1.050 to 1.150 mm (0.042 to 0.046 inch)

Note: Refer to application note AN1027 for more information on soldering LED component.

Example of Wave Soldering Temperature Profile for TH LED



Recommended solder:
Sn63 (Leaded solder alloy)
SAC305 (Lead free solder alloy)

Flux: Rosin flux

Solder bath temperature: $255^{\circ}\text{C} \pm 5^{\circ}\text{C}$
(maximum peak temperature = 260°C)

Dwell time: 3.0 sec - 5.0 sec
(maximum = 5sec)

Note: Allow for board to be sufficiently cooled to room temperature before exerting mechanical force.

Figure 6. Recommended Wave Soldering Profile.

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