HSMB-HB00
HSMB-HM00

Technical Data

High-Flux Surface Mount LED

Features

- **High-Flux Device**
- **-40°C to 100°C Operating Temperature Range**
- **Compatible with IR and Through-the-Wave Solder Processes**
- **Available in 8 mm Tape on 178 mm (7") Reels; 2000 pieces per reel**

Applications

- **Telltale Backlighting in Instrument Clusters**
- **Backlighting (LCD, Phones, Switches, Displays, Advertising)**
- **General Status Indicators**
- **Coupling into Light Guides**
- **Passenger Information Panels**
- **General Information Panels**

Description

The HSMB-HX00 device is designed for applications requiring high-flux in surface mount designs. The product is ideal for telltale backlighting in automotive instrument clusters, LCD backlighting, or general status indication. The high light output lowers the cost of lighting by reducing the number of LEDs required for any application.

The package is compatible with IR and convective reflow soldering processes. These parts are also compatible with through-the-wave soldering processes.

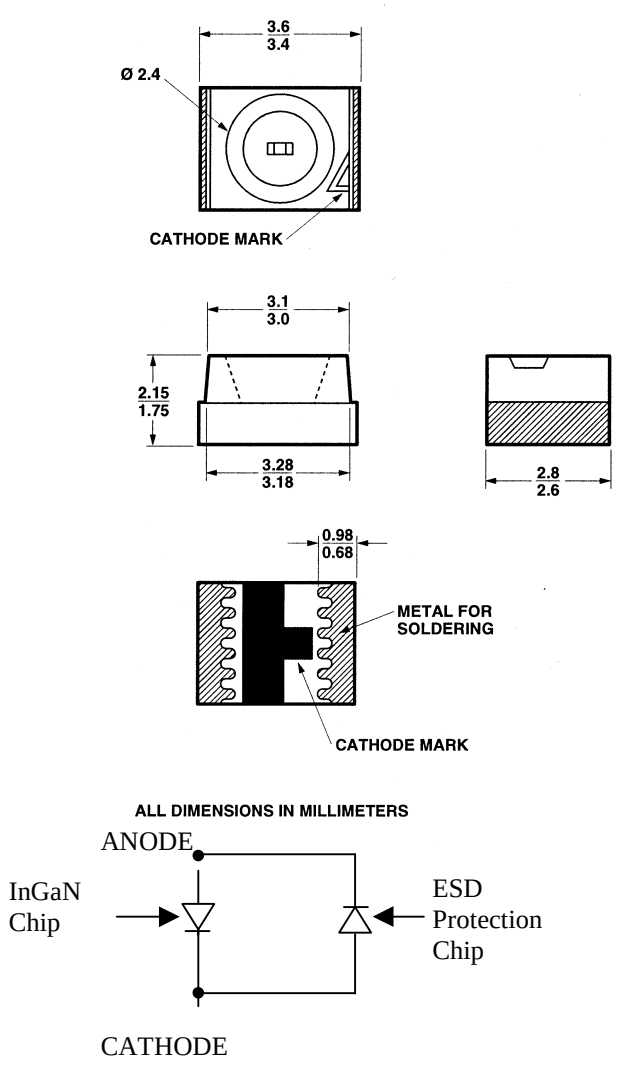
Device Selection Guide

Part Number	Color, Typical Dominant Wavelength [1] (nm)	Luminous Intensity I_V (mcd) @I_F = 20 mA Min.	Luminous Intensity I_V (mcd) @I_F = 20 mA Typ.	Viewing Angle [2] ($2\theta_{½}$, Degrees)
HSMB-HB00-P1S20	Blue 472	40	100	120
HSMB-HM00-R1T20	Green 526	100	200	120

Notes:

1. The dominant wavelength, λ_d, is derived from the CIE Chromaticity Diagram and represents the perceived color of the LED.
2. $\theta_{½}$ is the off-axis angle where the luminous intensity is 1/2 of the peak intensity.

Package Dimensions



Absolute Maximum Ratings at T_A = 25ºC for HSMB-HB00/HM00

Parameter	Max. Rating	Units
DC Forward Current [1]	20	mA
Power Dissipation ($T_A \leq 70ºC$)	80	mW
Average Forward Current	20	mA
Junction Temperature	110	ºC
Reverse Current	20	mA
Operating Temperature Range	-40 to 100	ºC
Storage Temperature Range	-40 to 100	ºC

Note:
1. Derate linearly as shown in Figure 5 for temperatures above 70ºC.

Optical Characteristics at T_A = 25ºC

Part Number	Color	Color, Dominant Wavelength λ_d [1] (nm) Typ.	Peak Wavelength λ_{peak} (nm) Typ.	Luminous Intensity I_V (mcd) @I_F = 20 mA Min.	Luminous Intensity I_V (mcd) @I_F = 20 mA Typ.
HSMB-HB00	Blue	472	470	40	100
HSMB-HM00	Green	526	524	100	200

Note:

1. The dominant wavelength, λ_d, is derived from the CIE Chromaticity Diagram and represents the perceived color of the LED.

Optical Characteristics at T_A = 25ºC, continued

Part Number	Color	Luminous Flux [2] @ 20 mA (mlm) Min.	Luminous Flux [2] @ 20 mA (mlm) Typ.	Luminous Efficiency [3] Φ_v/P_{in} (lm/W) Typ.	Viewing Angle[3] ($2\theta_{½}$ Degrees) Typ.
HSMB-HB00	Blue	110	270	4.5	120
HSMB-HM00	Green	270	540	9.0	120

Note:

2. Luminous flux values are not measured in production.
3. Luminous Efficiency = emitted luminous flux/electrical power input
4. $\theta_{1/2}$ is the off-axis angle where the luminous intensity is ½ of the peak intensity.

Electrical Characteristics at T_A = 25ºC

Part Number	Color	Forward Voltage V_F (Volts) @I_F = 20 mA Min.	Forward Voltage V_F (Volts) @I_F = 20 mA Typ.	Forward Voltage V_F (Volts) @I_F = 20 mA Max.	Reverse Voltage V_R (Volts) @I_R = 20 mA Min.	Reverse Voltage V_R (Volts) @I_R = 20 mA Max.
HSMB-HB00	Blue	2.3	3.0	4.1	1.3	2.1
HSMB-HM00	Green	2.3	3.0	4.1	1.3	2.1

Electrical Characteristics at T_A = 25ºC, continued

Part Number	Color	Thermal Resistance of Device $R\theta_{J\text{-}PIN}$ (ºC/W)	Thermal Resistance on PC Board (≥ 16 mm^2 Pad Size, FR4) $R\theta_{J\text{-}AIR}$ (ºC/W)	Capacitance C (pF) VF = 0, f = 1MHz Typ.
HSMB-HB00	Blue	240	500	43
HSMB-HM00	Green	240	500	43

Intensity Bin Definitions
(Check with LumiLeds Sales Engineer for availability of bin selections)

Bin ID	Intensity (mcd)
P1	40 - 60
P2	50 - 80
Q1	63 - 100
Q2	80 - 125
R1	100 - 160
R2	125 - 200
S1	160 - 250
S2	200 - 320
T1	250 - 400
T2	320 - 500

Color Bin Definitions, HSMB-HB00

Bin ID	Dominant Wavelength (nm)
A	458 - 467
B	463 - 472
C	468 - 477
D	473 - 482
0	Bins A through D

Color Bin Definitions, HSMB-HM00

Bin ID	Dominant Wavelength (nm)
C	518 - 527
D	523 - 532
E	528 - 537
F	533 - 542
0	Bins A through D

Color and Intensity Option Codes
(Check with Lumileds Field Sales Engineer for availability)

HSMB-HX00-X0X00
- Last digit identifies the color bin options (Use 0 as there are no color bin selections available at this time)
- First four digits identify the min and max of the intensity bin

Examples: HSMB-HB00-P1R20 designates HSMB-HB00 with a 178-mm reel, no intensity or color bin selection

HSMB-HM00 R1T20 designates HSMB-HM00 with a 178-mm reel, no intensity or color bin selection

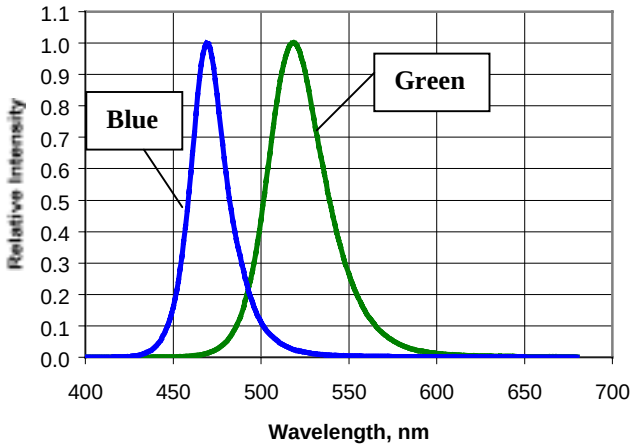


Figure 1. Relative Intensity vs. Wavelength

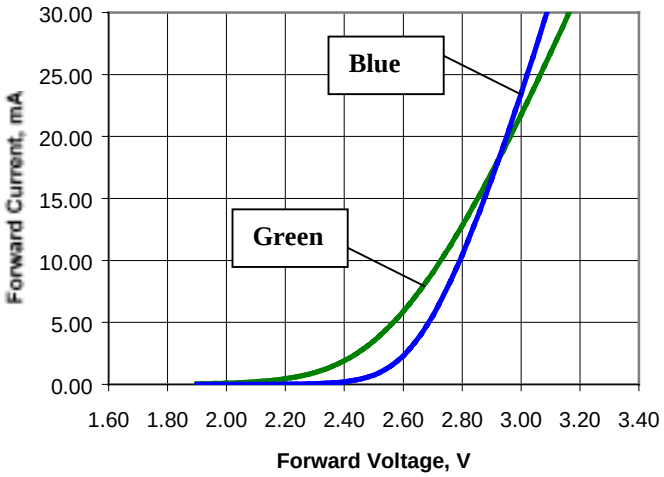


Figure 2. Forward Current vs. Forward Voltage (0 - 30 mA)

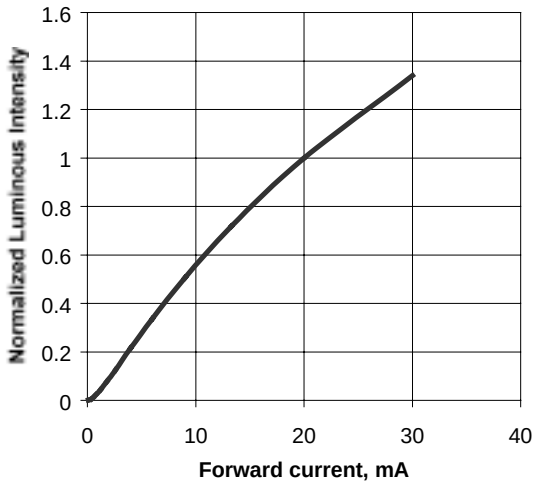


Figure 3. Relative Iv vs. DC Forward Current (Normalized at 20 mA).

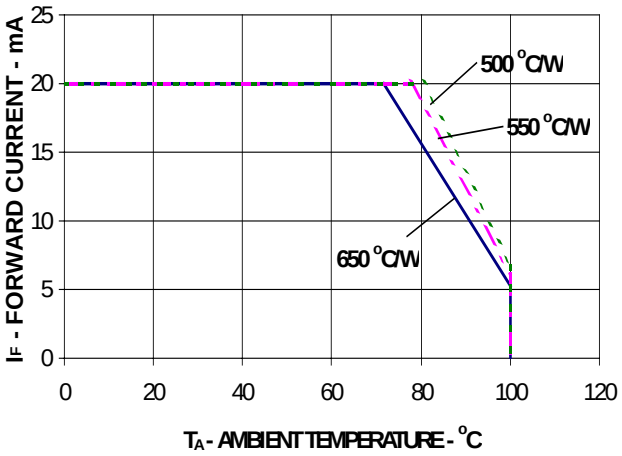


Figure 4. Maximum DC Current vs. Ambient Temperature. (Based on typical Vf at Maximum Current).

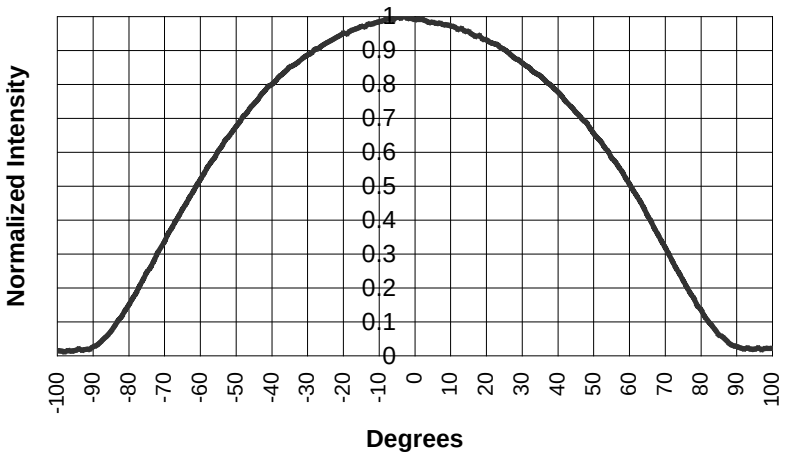


Figure 5. Relative Intensity vs. Angle.

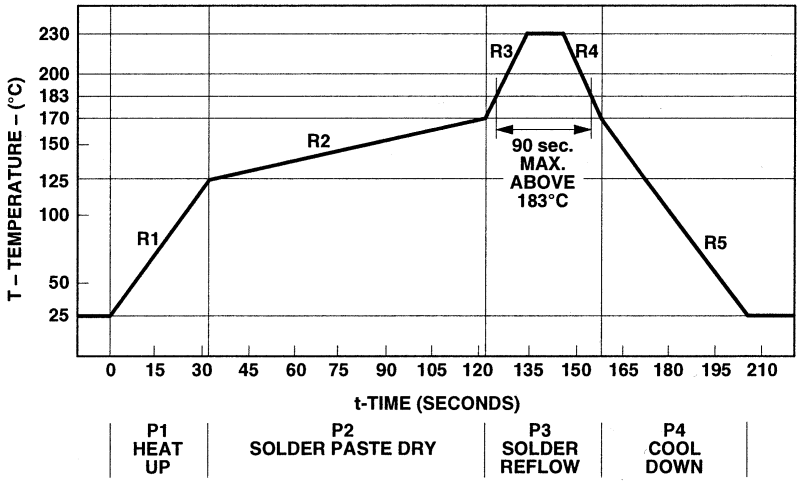


Figure 6. Recommended InfraRed Reflow Solder Profile..

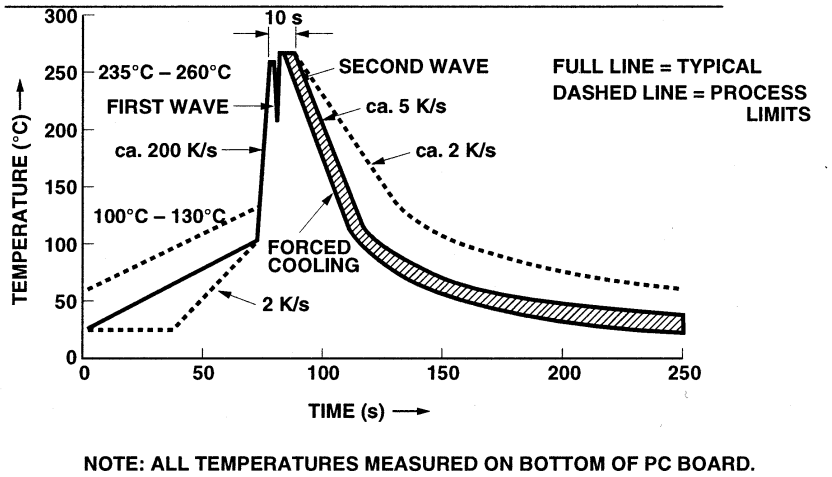


Figure 7. Recommended Wave-Soldering Profile.

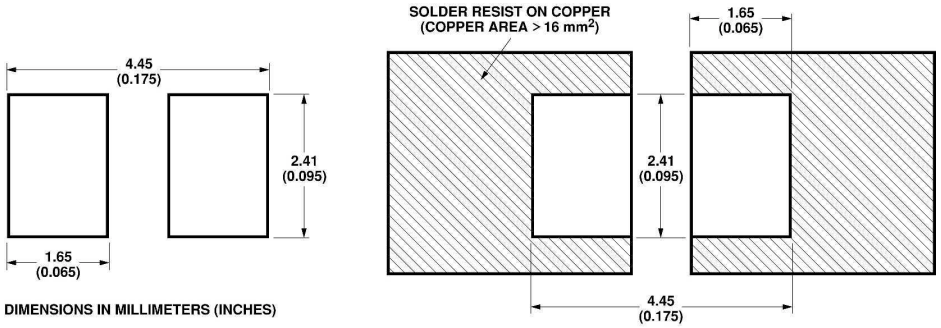


Figure 8. Recommended Solder Pad Dimensions and Pad Design.

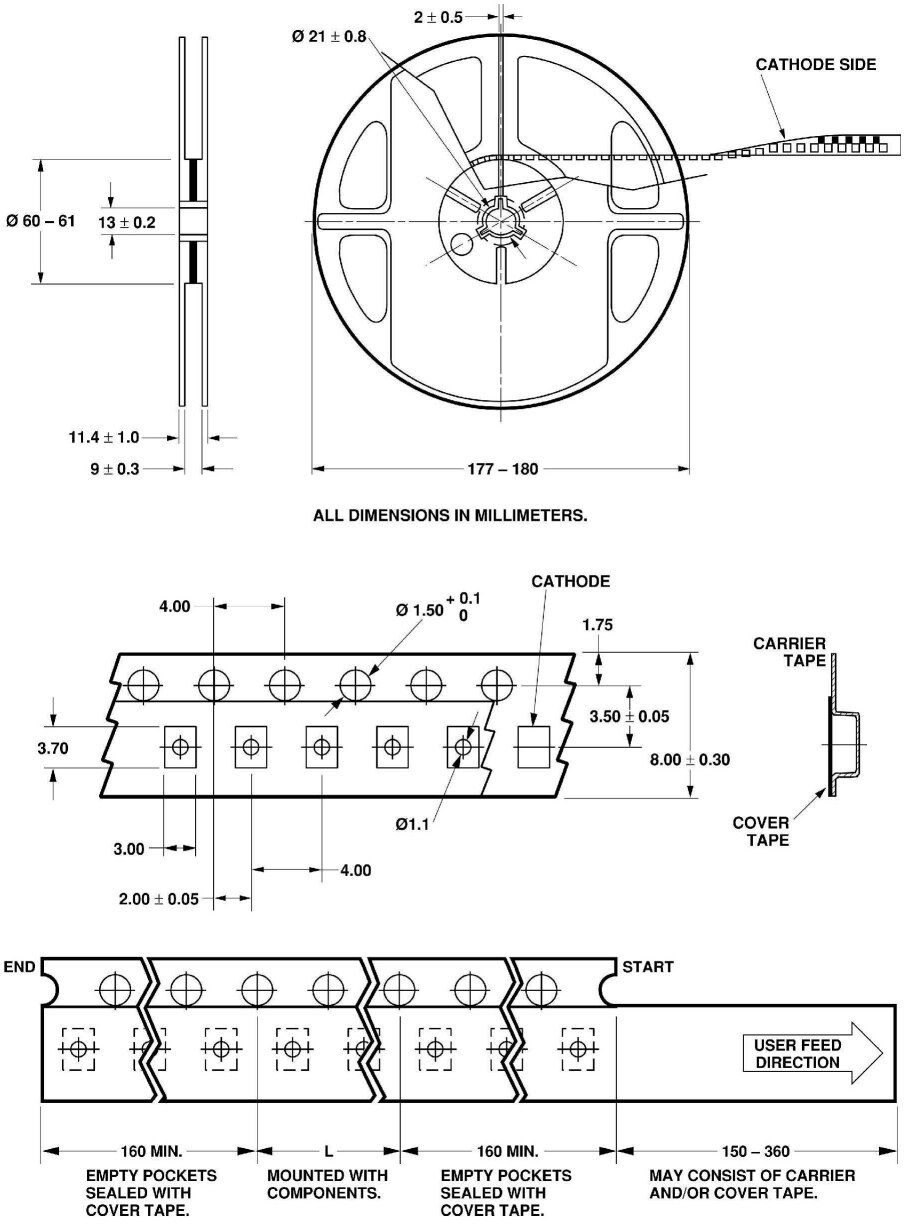


Figure 9. Tape and Reel Dimensions.

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LumiLeds Lighting:
Enabling a New World of Lighting

LumiLeds Lighting is creating a new world of lighting, where end users get better, brighter products, the light source lasts as long as the product, and the environment is preserved with less waste and less harmful materials.

LumiLeds Lighting is the leader in high power LEDs, dedicated to developing innovative solid-state lighting solutions in markets such as automotive lighting, traffic signaling, building signage, and general lighting. The company is vertically integrated, producing core LED material, LED packaging, and light source solutions. LumiLeds is one of the few companies with LED material producing capabilities in all three base colors- Red, Green, Blue

LumiLeds Lighting, headquartered in San Jose, California, is a joint venture company between two multi-billion dollar global companies: **Agilent Technologies** and **Philips Lighting**. LumiLeds maintains a global infrastructure including operations in Best, The Netherlands, Penang, Malaysia, and sales offices throughout the world.

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